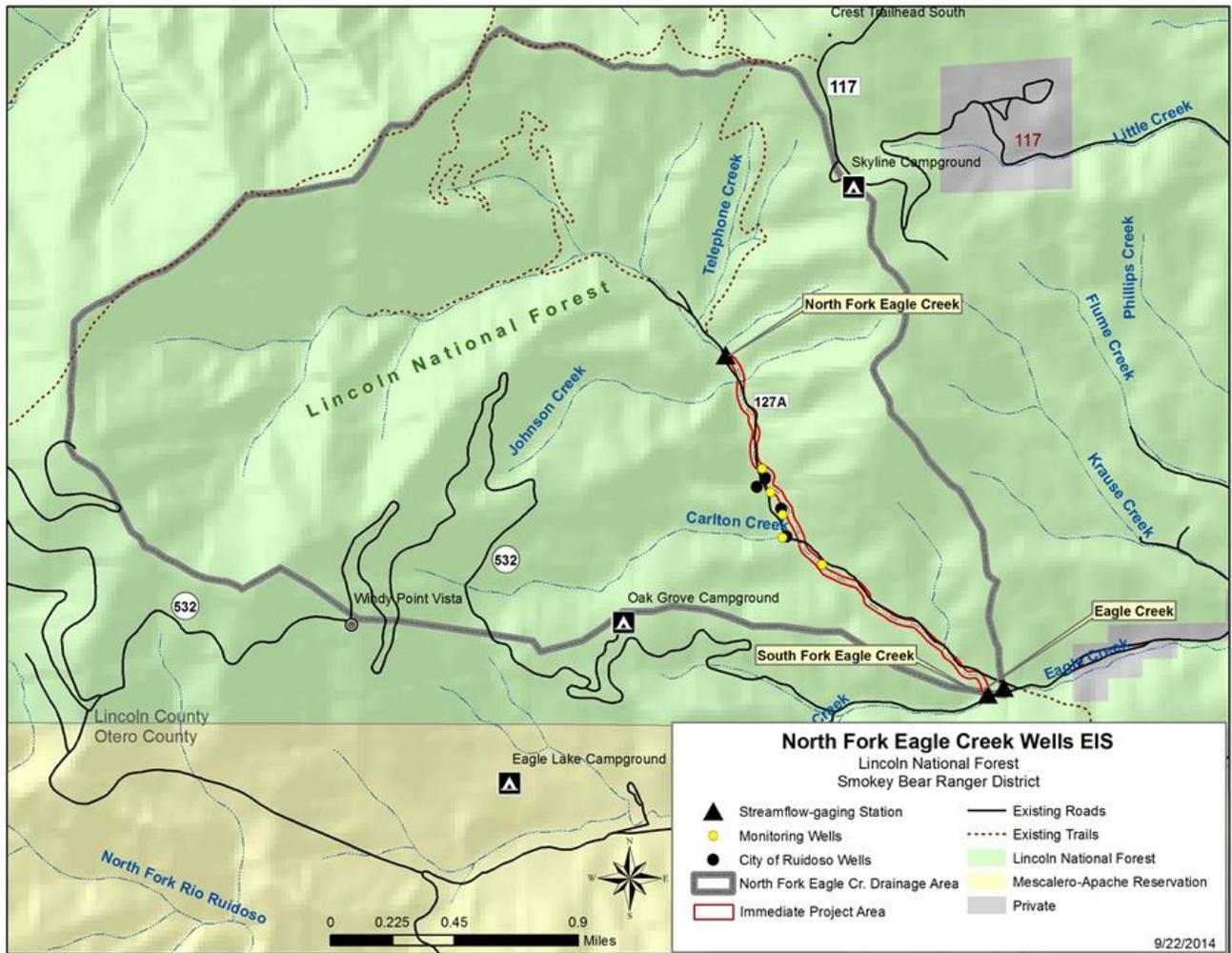




United States Department of Agriculture

Draft Record of Decision

North Fork Eagle Creek Wells Special Use Authorization



Forest Service

Southwestern Region

Lincoln National Forest
MB-R3-08 04A

August 2015

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Draft Record of Decision for the North Fork Eagle Creek Wells Special Use Authorization

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Introduction

This is the draft record of decision for the North Fork Eagle Creek Wells Special Use Authorization. We, the USDA Forest Service, Lincoln National Forest, prepared a final environmental impact statement (FEIS) for this project pursuant to the requirements of the National Environmental Policy Act (NEPA, 40 CFR 1500-1508), the National Forest Management Act and its implementing regulations, and the Lincoln National Forest Land and Resources Management Plan (USDA Forest Service 1986). The environmental impact statement analyzed the potential effects of authorizing the Village of Ruidoso to continue to operate four wells on National Forest System Lands. The final environmental impact statement (FEIS) documents the analysis of two action alternatives for continued authorization of ground water pumping and the no action (no pumping) alternative. In this decision I, Travis M. Mosely, Forest Supervisor of the Lincoln National Forest, as the Responsible Official, select an alternative for implementation.

The decision presented in this document addresses activities proposed on lands administered by the Forest Service for which Federal decisions are required. In this case, the Federal decision is whether or not to authorize the Village of Ruidoso's application for occupancy and use of National Forest System lands for access to their state-adjudicated water rights in the North Fork of Eagle Creek. This decision document sets forth a rationale, including how well the decision addresses the purpose and need for action, consistency with laws, regulations, management of conflicting water uses, and consideration of agency policy and jurisdiction. It also outlines the non-discretionary measures and mitigation necessary for implementation.

Background

North Fork Eagle Creek is located in the Sacramento Mountains of south-central New Mexico in Lincoln County north of the Village of Ruidoso and approximately 2.5 miles west of Alto, New Mexico (figure 1). The project area consists of approximately 5 acres of National Forest System land occupied by the Village of Ruidoso's four wells, associated infrastructure, and surrounding National Forest System land upstream from the Eagle Creek gaging station (figure 2). This area is within the North Fork Eagle Creek drainage, which totals 5.3 square miles, or approximately 3,400 acres.

The Village of Ruidoso drilled four production wells on National Forest System land along the North Fork of Eagle Creek. Three of these wells were put into service in 1988 and remain in use. The wells supply a substantial amount of the Village of Ruidoso's municipal water system. They provide, on average, a direct contribution to the Village of Ruidoso water supply ranging from 24 to 29 percent. When indirect annual contributions are added to direct contributions this increases to 36 to 43 percent. During the summer months, data show that 57 to 87 percent of total direct and indirect annual diversions can be attributable to the North Fork wells.

The permit for the operation of these wells expired on December 31, 1995. Between 1996 and 2005, the USDA Forest Service began discussions with the Office of the State Engineer, the Village of Ruidoso, and the Eagle Creek Conservation Association concerning permit renewal. In 2005, Eagle Creek Conservation Association, Inc., Gerald Ford, and Dr. William S. Midkiff filed a lawsuit based on concerns that operating these wells could be affecting streamflow in Eagle Creek. The case was dismissed in 2006 after all parties to the lawsuit signed a Stipulation Agreement, in which the Lincoln National Forest agreed to complete an environmental analysis before a new permit can be issued to the Village of Ruidoso. As part of that analysis, the agreement also requires that an independent watershed and geohydrologic study of Eagle Creek and the North Fork wells be undertaken by an entity not previously involved in the lawsuit.

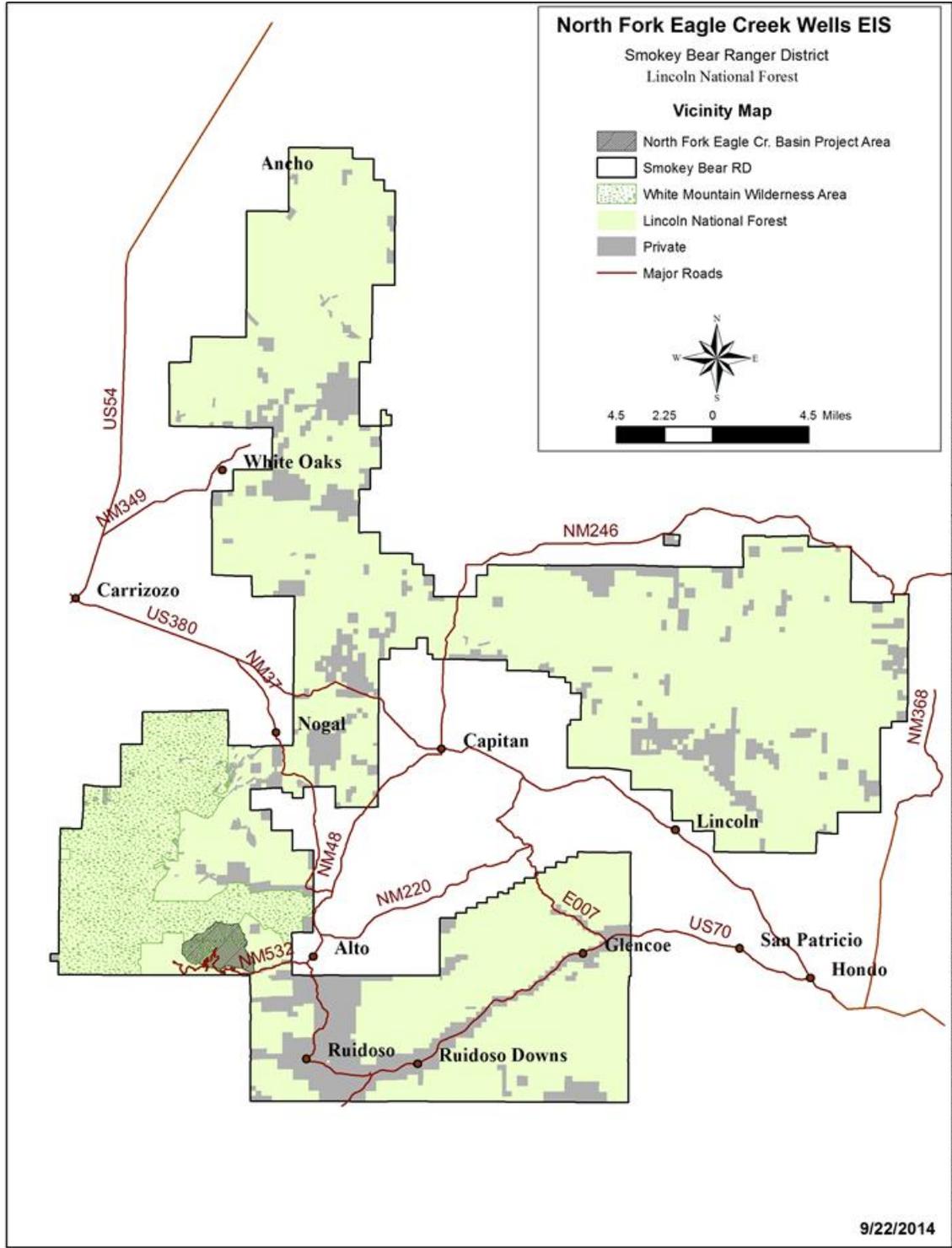


Figure 1. Project vicinity

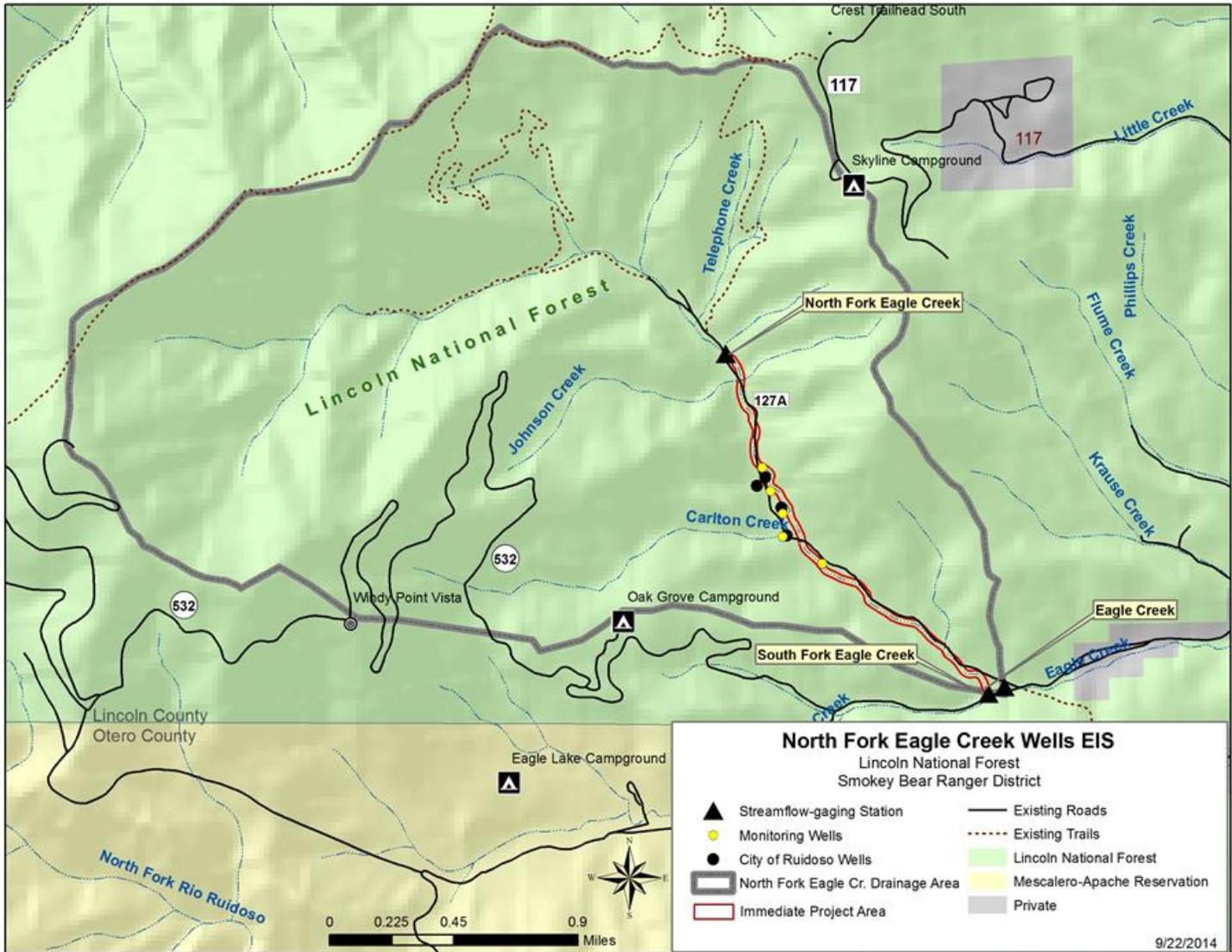


Figure 2. Project area

North Fork Eagle Creek

From 2007 to 2009 the U.S. Geological Survey conducted an independent study of the North Fork of Eagle Creek that characterizes the stream flow (Matherne, Myers and McCoy 2011). North Fork Eagle Creek is a perennial stream maintained by base flow from groundwater in its upper reaches. It becomes an intermittent stream in the 2 miles upstream from Eagle Creek gauge. Without pumping, the North Fork Eagle Creek would remain an intermittent stream below the wells. About 1,600 feet downstream of the North Fork stream gage the creek's water sinks into the stream channel alluvium and bedrock aquifer, so this stream reach lacks surface flow during dry periods, although water resurfaces from the alluvium in some downstream reaches (stretches ranging from 10 to 50 feet long). Streamflow, when present, tends to occur in reaches where there are bedrock outcrops in the channel or the alluvium is thin. Sustained flows greater than 2.2 cubic feet per second (threshold rate of 1.0 cubic feet per second loss to bedrock plus 1.2 cubic feet per second) are needed to both saturate the alluvium and maintain continuous flow in the North Fork.

Vegetation within the project area riparian corridor consists primarily of ponderosa pine and boxelder in the overstory and grass in the understory. Obligate wetland species are generally not supported by this stream based on the results of surveys conducted in 2010–2011; willows and sedges were only occasionally observed. Limited anecdotal evidence and one historic photo would indicate this reach did not support many obligate wetland vegetation species prior to well installations.

North Fork Eagle Creek provides limited streamside recreation and wildlife viewing. In the past, the North Fork was stocked with various species of trout to support a recreational fishery, although New Mexico Game and Fish likely discontinued stocking in the 1970s and 1980s due to fluctuating water levels and the quality of the habitat (Hansen, personal communication 2011).

Effects of groundwater pumping

When groundwater is pumped from the North Fork wells, a temporary decline in the water table results and creates a cone of depression in the groundwater around the wells. Pumping and streamflow are related, and pumping near a stream (generally) will cause streamflow depletion. However, the degree of connection and the nature of groundwater flow paths is complex in this area and has not been fully characterized.

During the U.S. Geological Survey study period there was less available sustained base flow than there was before the wells began pumping in 1988. Annual discharge, direct runoff, and base flow were lower during the study period (2007–2009) than before 1988 (1969–1980). Although years of below average precipitation were recorded during both time periods, there were no days of zero flow recorded at the Eagle Creek gage from 1969–1980. No-flow days were recorded in 11 years (totaling 789 days) of the 20 years analyzed after 1988, with 8 of the last 10 years having no-flow days at the gauge. No-flow days occurred during periods of both below and above average precipitation during the study period but no-flow days did not occur during periods of below average precipitation before 1988. It is important to note that the Eagle Creek gage measures flow from both North Fork and South Fork, and that the Eagle Creek gage used to be (1969–1980) at a different location further downstream along Eagle Creek. The exact position of this prior location is not known with certainty (this is described in more detail in the water resources section of chapter 3). This change of location may have some bearing on the flow comparison of the two timeframes and creates some element of uncertainty.

If the cone of depression continues to expand, it could impact water-dependent resources outside the stream corridor, such as, seeps and springs and riparian vegetation. This situation is exacerbated by the location of the wells within the stream channel, together with the apparent low storage capacity of the aquifer.

The 2012 Little Bear Fire

The June 2012 Little Bear Fire, started by lightning, burned approximately 35,300 acres within the Smokey Bear Ranger District. It affected the North Fork Eagle Creek drainage area where it burned approximately 3,380 acres of the 3,400-acre project area (or 99 percent). The drainage area burned with a mix of severities with more than a quarter of the area having a high burn severity and almost half having a low, very low, or unburned severity. Burn intensities in the riparian area (200 feet on each side of Eagle Creek) were generally low (53 percent) and unburned (47 percent).

Wildfire is widely acknowledged to be a major watershed disturbance, which potentially creates substantial changes in watershed dynamics and water balance factors. These changes are often more pronounced when these extensive, severe fires occur in coniferous mountain watersheds such as the Eagle Creek headwaters. Several hydrological aspects of the North Fork Eagle Creek watershed have been changed or are expected to change over time because of the Little Bear Fire, such as: changes in vegetation resulting in modified moisture availability and runoff, increased overland water flow and reduced infiltration, temporary increases in ‘flashy’ responses to rainfall and snowmelt, increased sediment and debris yields, and changes to vegetation as a result of flooding. Though the fire has caused some long term changes to the system, recovery of the North Fork riparian areas to conditions similar to those pre-fire is expected to occur within five to seven years.

Water Rights

As described in more detail in chapter 3 of the FEIS, the Village of Ruidoso (the applicant; the entity that is applying for a special use permit) owns water rights in Eagle Creek basin. In New Mexico, the Office of New Mexico State Engineer has authority to administer water rights, even on Federal land, except in the case of Federal reserved water rights (which does not apply to North Fork Eagle Creek).

In 2010, a consent order was negotiated with the Village of Ruidoso and the Office of the State Engineer to more accurately define the Village of Ruidoso’s water rights in Eagle Creek. This subfile order adjudicates the groundwater rights on four wells (H-1979 through H-1982) in the total combined amount of 1,692.88 acre-feet per year at each respective point of diversion and also recognizes the Village of Ruidoso’s right to place an additional 846.46 acre-feet per year into use subject to filing of proof of beneficial use by December 31, 2024. There are also 12 wells located on private lands within Eagle Creek and downstream from the aforementioned wells (H-1979 through H-1982). These wells supplement the Village of Ruidoso’s water production should wells H-1979 through H-1982 fail to produce the full acre-feet amounts. The 2010 Consent Order also discusses the Village of Ruidoso’s surface rights along Eagle Creek (located off National Forest System lands and adjudicated in subfile R.33). The surface diversion can be combined with supplemental water pumped from the North Fork wells to satisfy the Village of Ruidoso’s surface water rights along Eagle Creek. This surface water right and supplemental groundwater pumped from the North Fork wells is in addition to and separate from the Village of Ruidoso’s groundwater rights. Therefore, an additional 761.12 acre-feet per year could be pumped from the

National Forest System wells as supplemental to the Village of Ruidoso's surface water rights. This consent order is the Village of Ruidoso's adjudicated water rights as of 2014.

On October 23, 2014, the Office of the State Engineer issued a permit to the Village of Ruidoso allowing the transfer of 700.83 acre feet per year from H-1979 to the surface point of diversion at Eagle Creek and Alto Lake. The permit severed the adjudicated rights to H-1979. However, the Village of Ruidoso's municipal rights pertaining to proof of beneficial use, in the amount of 350.42 acre-feet per year, remain provable at H-1979. In addition, the Village or Ruidoso has several pending applications with the Office of the State Engineer (State of New Mexico, Office of the State Engineer, personal communication, September 2014) that could affect groundwater and surface water withdrawal along Eagle Creek.

The 2012 Little Bear Fire halted the production of both surface and groundwater diversions along Eagle Creek due to water quality and debris flow issues. The shift has created a temporary redistribution of water rights and production along the Rio Ruidoso (also impacted by water quality from the Little Bear Fire). Approved on an emergency basis by the Office of the State Engineer, the Village of Ruidoso received a temporary additional point of diversion, at the confluence of the Rio Ruidoso and Carrizo Creek, to provide water to the Grindstone Dam for use in the municipal supply. This redistribution is anticipated to be short-term in nature and historic water rights and allocation will remain as defined in the 2010 Consent Order.

While the Forest Service does not have authority to regulate water rights, the Forest Service does have authority and an affirmative responsibility to regulate use of and reasonable access to surface lands and resources.

Purpose and Need

An overarching tenet of the Forest Service mission is to provide for the wise use of natural resources, such as water, derived from National Forest System lands. Our (USDA Forest Service, Lincoln National Forest's) purpose for taking action at this time is to respond to a request by the Village of Ruidoso for authorization to access their existing wells on National Forest System lands, as a substantial component of the Ruidoso municipal water supply system that residents and visitors rely upon. There is also a compelling need to provide for the sustenance or improvement of riparian and aquatic ecosystems on National Forest System lands in the project area that may be affected by groundwater draw down from pumping these wells.

The Lincoln National Forest is to be managed to provide a favorable flow of water for users by maintaining watersheds in satisfactory condition. The Lincoln National Forest plan standards and guidelines provide that riparian areas and fish habitat are to be maintained and enhanced; and existing water rights are to be maintained and protected. Forest Service Manual and Handbook direction requires 'thoughtful and prudent' management be applied to groundwater beneath National Forest System lands as a valuable resource.

Public Involvement

We (USDA Forest Service, Lincoln National Forest) published a Notice of Intent to prepare an environmental impact statement in the Federal Register on February 3, 2011, initiating the public scoping period for this project. We held a public meeting on February 17, 2011, in Ruidoso to answer questions from the public and discuss the project and process. We received a total of 102 comment letters from the public—including agencies, organizations, individuals, and elected officials—in response to our request for input. We analyzed all of these scoping comments to

identify issues related to the proposed action and information that have been addressed in this EIS (appendix A). Based on public and internal scoping results, we identified five significant issues. These significant issues can be characterized as conflicts between resource uses and include effects of well pumping on water resources, aquatic habitat and fish, riparian vegetation, water rights, and socioeconomics.

We released the North Fork Eagle Creek Wells Special Use Authorization Project Draft Environmental Impact Statement on May 25, 2012. However, the Little Bear Fire started on June 4, 2012 and burned a substantial portion of the analysis area. Because of the substantial impact this wildfire had on the project area analyzed in the DEIS, Lincoln National Forest Supervisor Trujillo decided to stop the comment period on the DEIS and begin the process to prepare a supplemental DEIS to address the changed conditions in the project area. This was published in the Federal Register on July 20, 2012. While we discontinued the formal comment period on the DEIS, we did invite any comments on the changed conditions in the project area by September 7, 2012. During the ensuing two years many of the short-term effects of the wildfire on the project area watershed were realized and the area began to restabilize. Supplemental reports were finalized characterizing the changed conditions.

Throughout this timeframe we held meetings with the Village of Ruidoso and the Eagle Creek Conservation Association and other interested parties to discuss progress, glean relevant information and gather input.

We released a Supplemental Draft Environmental Impact Statement (DEIS) on November 14, 2014 for public comment. We published the notification of its availability for public comment in the Federal Register, and published a legal notice in the Ruidoso News. We also sent email and letter notifications to all those on the project mailing list. We requested comments within 45 days. We received several requests for extensions to the comment period and Forest Supervisor Moseley granted two additional 15-day extensions, requesting all comments be submitted no later than January 28, 2015. We received 23 responses during the 75-day public comment period for the SDEIS. Appendix E of the FEIS contains a list of the comments received and our response to the comments.

Alternatives Considered

Forest Service regulations require that an EIS “document the examination of a reasonable range of alternatives to the proposed action” (36 CFR 220.5(e)). Considering public comments, USDA Forest Service direction, internal scoping, and changed conditions resulting from the Little Bear Fire, we developed three alternatives for detailed analysis and briefly considered 30 other alternatives. The three alternatives considered in detail include a ‘no change’ alternative that would continue pumping at historic levels with no change in current management, a ‘no action’ alternative that would discontinue pumping, and the proposed action alternative. A more detailed comparison of these alternatives can be found in the EIS on pages 63-89. Alternative 2 is the environmentally preferred alternative.

Alternative 1 - Continued current pumping (Selected Alternative)

Alternative 1 is the Village of Ruidoso’s proposal as reflected in their request for a new special use permit. This alternative allows continued pumping from the North Fork well field, a continuation of current management, reflected under a new special use permit. It includes new monitoring and mitigation measures. This is the Selected Alternative and it is described in more detail in the Decision section below.

Alternative 2 – No Action (No Pumping) – Discontinue All Pumping (Environmentally Preferred Alternative)

The no action alternative sets the baseline against which the effects of pumping are compared. A no action alternative is required in an EIS (40 CFR 1502.14(c)). Under the no-action alternative, the USDA Forest Service would deny a new permit for the Village of Ruidoso's North Fork well operations and maintenance. Using these four municipal water supply wells and associated monitoring wells; well house control station; underground pipeline and power line; and road access located on National Forest System land would not be authorized and would be discontinued, except those identified for future monitoring. These wells and associated facilities would be removed from service and from National Forest System lands within approximately 6–12 months of notifying the Village of Ruidoso their permit would not be reissued. National Forest System road 127A would no longer be maintained by the Village of Ruidoso.

This alternative is considered the environmentally preferred alternative. According to Forest Service regulations, “the environmentally preferable alternative is the alternative that will best promote the national environmental policy as expressed in NEPA's section 101 (42 U.S.C. 4321). Ordinarily, the environmentally preferable alternative is that which causes the least harm to the biological and physical environment; it also is the alternative which best protects and preserves historic, cultural, and natural resources” (36 CFR 220.3). Though alternative 2 would result in some short-term effects from ground disturbing activities to remove of existing infrastructure, it would also result in increased water flow and reduced no flow days in the creek in the short term. This means that eventually, the natural water balance would be restored without water extraction from the watershed, and there would be no impacts to the North Fork of Eagle Creek biological and physical environment from well pumping.

The no action alternative was not selected because it failed to meet the purpose and need to respond to the Village of Ruidoso's request for special use authorization. It would not provide for reasonable access to the existing points of diversion for their adjudicated water rights or their rights that have yet to be put to beneficial use, called inchoate water rights. These inchoate water rights are reasonably projected additional needs for the Village of Ruidoso and would be lost altogether because the opportunity to put these rights to beneficial use are associated with the particular points of diversion and are non-transferrable.

While the points of diversion for adjudicated water rights are transferable to other locations in order to enjoy the beneficial use of the water in question, it would create a great deal of uncertainty and hardship related to domestic water availability to the Village of Ruidoso and its residents. These wells provide a very high proportion of the water utilized by residents of Ruidoso. It is highly unlikely the Village would locate and possibly acquire an acceptable site, gain approval for the transfer through the New Mexico Office of the State Engineer processes, and put into production wells and associated infrastructure within the 6-12 month timeframe contemplated under this alternative. In fact the transfer at best would take years or even decades if protests and litigation ensued.

Water extraction has been well established for over thirty years and the watershed and riparian and aquatic habitats and recreational uses have likely restabilized at a new equilibrium under the existing pumping regime and it is questionable if they have changed at all. The actual water removed from this well field has averaged 721 acre-feet during its highest production years (2008-2010). During the time that diversion data was available between 2002 and 2010 an average of 569 acre-feet was pumped. The ability to realize actual production of water allowed under adjudicated and inchoate water rights, (1838.51 acre-feet), on an annual basis is unlikely

due to the practicalities of timing and amount of demand and the limitations of aquifer storage and replenishment. Also there is uncertainty as to the overall aquifer storage and replenishment and if these elements naturally limit the amount of water that can be extracted. So it is currently unclear as to whether or not it is physically possible to extract more water, and if so, what the effects to riparian and aquatic habitats would be, if any, relative to the ecological potential presumably achieved under this alternative.

Alternative 3 – Adaptive Management

Alternative 3 is similar to alternative 1 in that it would authorize continued pumping from the North Fork well heads and associated maintenance activities. However, alternative 3 would include adaptive management strategies to mitigate potential adverse impacts to surface water and ground water availability resulting from well operations. This adaptive management would be reflected in annual operating plans. This alternative would also limit water use to approximately 900 cumulative acre feet or less over any 3 consecutive water years. This limit would be adjusted based on the adaptive management triggers related to surface water flow, water table depth, and riparian vegetation (see figure 3 on page 35 of the trigger descriptions on pages 36-41 of the FEIS).

The original proposed action (alternative 3), also referred to as the adaptive management alternative, was developed in an attempt to try to balance reasonable access to the North Fork wells with opportunities to improve natural resources conditions. While it is clear from the evidence in the EIS that this alternative would increase flow and reduce dry periods on the North Fork in the short term, it is unclear that this would result in any substantial improvements in other natural resource conditions such as aquatic habitat or riparian resources. Given that the stretch of North Fork of Eagle Creek downstream of the North Fork gauge within National Forest System lands does not represent a high quality fishery or host rare species, it is difficult to justify the high financial and social costs of the adaptive management alternative without evidence of substantial benefits to natural resources.

Alternatives Considered, But Eliminated From Detailed Study

Federal agencies are required by the NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14).

We received comments from the public on our proposed action during the scoping period and the formal SDEIS comment period, and many of these offered suggestions for alternative methods for achieving the purpose and need. For an alternative to be analyzed in detail in an EIS, it should meet the purpose and need for action, address one or more significant issues, and reduce the potential for significant impacts. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint; they do not necessarily have to be within USDA Forest Service jurisdiction to implement. Alternatives not considered in detail in an EIS may include, but are not limited to, those that fail to meet the purpose and need, are technologically infeasible or illegal, or would result in unreasonable environmental harm.

Thirty alternatives were considered, but eliminated from detailed analysis. These alternatives and the rationale for eliminating them are described in detail in chapter 2 of the FEIS (pages 46-62).

Issues Addressed

The significant issues described below identify the nature of effects used to compare differences among alternatives. These issues and their measurement indicators are described in more detail in the FEIS, chapter 1.

1. **Water resources:** Well pumping may affect the quantity and quality of streamflow, groundwater, wetlands, springs, and seeps. Water resources over time can also be affected by climate change.
2. **Aquatic habitat:** Well pumping results in changes in the water table which may affect streamflow to varying degrees. Lowering streamflow may increase temperatures and temperature related fish mortality. Quantity, quality, and waterflow availability that mirrors natural flow patterns are important for aquatic habitat and fish. Suitable water quality and temperatures, which are partially based on water depth and channel conditions, are necessary to support fish populations. Sufficient water supplies must also be available during summer months to provide water temperatures needed for survival of aquatic species.
3. **Riparian vegetation:** Well pumping results in changes in the water table which may affect streamflow and free water availability to varying degrees. These water quantity changes could directly affect soil moisture conditions and indirectly quantity and quality of riparian vegetation requiring moist or saturated soil conditions along the stream corridor.
4. **Socioeconomics:** The effects on water available for diversion have the potential to affect local social and economic conditions. Well pumping may result in changes in groundwater and surface water availability. Limiting access to groundwater pumping has the potential to alter municipal water supply, affect streamside recreational use (public use of streams for streamside recreation, fishing, and wildlife viewing), and affect private land (availability of water for domestic wells, irrigation, aquatic and riparian habitat, and aesthetics).
5. **Water rights:** Well pumping results in changes in dynamics of groundwater and surface water. Surface water and groundwater availability are linked and are limited not only by accessible available quantities of water, but also by available water rights. Limiting access to groundwater pumping has the potential to alter municipal water supply and affect beneficial use of the Village of Ruidoso's total adjudicated water rights.

Decision and Reason for the Decision

Decision

Based upon my review of the alternatives, I have decided to implement Alternative 1 (the preferred alternative, continued pumping at historic levels), as described in chapter 2 of the FEIS.

Alternative 1 is the Village of Ruidoso's proposal as reflected in their request for a new special use permit. It reflects continued pumping from the North Fork well field and the associated infrastructure to support this use, under the terms and conditions of a new special use permit. My decision also includes nondiscretionary mitigation and monitoring measures that are not currently being conducted as part of the Village of Ruidoso's annual operating plan. The mitigation measures provide necessary protections related to ground disturbing activities for wildlife and water quality. Monitoring information is included to help better understand currently uncertain environmental effects and inform periodic permit reviews and future management.

This monitoring correlates most closely with cause-effect relationships of pumping to alluvial water depth and water depth to rooting depth of existing riparian obligate species. This monitoring will allow us to better understand the interrelationship of watershed conditions that effect water quantity and quality at the surface, alluvium and aquifers.

This alternative meets requirements under NEPA to select an alternative within the range of alternatives analyzed (36 CFR 220.4(c)). Under alternative 1, the monitoring does not trigger any change in the pumping or annual operating plan.

Description of Selected Alternative –Alternative 1

Alternative 1 is the Village of Ruidoso’s proposal as reflected in their request for a new special use permit. It reflects continued pumping from the North Fork well field, a continuation of current management, reflected under a new special use permit. It includes new monitoring and mitigation measures, described in more detail below.

Municipal Well Operation and Associated Activities

The USDA Forest Service would authorize, under a new special use permit and associated operating plan, the operation and maintenance of four municipal supply water wells (three equipped and one unequipped) and associated monitoring wells; well house control station; underground pipeline and power line; and road access located in the North Fork Eagle Creek drainage on National Forest System land. The new permit would be authorized for up to 20 years, with stipulations for frequent reviews and verification of the permit terms and conditions, as detailed in an annual operating plan. The Forest Service and Village of Ruidoso would meet periodically to determine overall success of implementation and applicability of terms and conditions and determine if changes are necessary due to monitoring results. These reviews could occur as often as every year but would occur at least every 5 to 10 years. These reviews may result in adjustments to the annual operating plan or permit amendments. The existing municipal water supply system is composed of these four wells (three equipped and one unequipped) and the following associated facilities and structures which were, except for the monitoring wells, previously approved by the USDA Forest Service and constructed and installed in 1985-1986:

- Approximately 1.4 miles of 14-inch diameter underground ductile iron pipeline
- One cinder block pump control house (6 foot by 8 foot)
- Approximately 1.3 miles of underground electric power cable
- Four alluvial monitoring wells (MW-1A, MW-2A, MW-3A, and MW-5A) and one nested bedrock monitoring well (MW-1B and MW-1C) which were previously installed by the U.S. Geological Survey along the North Fork in the area of the North Fork well field to measure groundwater (figure 2).

The Village of Ruidoso would conduct periodic routine repair and maintenance to these structures as needed. Prior to any maintenance or repair, the Village of Ruidoso would contact us for approval and scheduling prior to performing the work. For this analysis, it is assumed that any ground disturbance necessary for anticipated maintenance or repair of the pipeline, control house, well, monitoring wells, or underground electric cable would be minimized with application of mitigation measures. Prior review and approval of any maintenance or repair activities would ensure any needed mitigations would be applied to minimize any potential for adverse impacts due to ground disturbance or noise (see the mitigation measures section beginning on page 16).

The Village of Ruidoso would also maintain National Forest System Road 127A from State Road 532 to the North Fork well sites. Any maintenance activities performed by the Village (including the low water crossing of National Forest System Road 127A across North Fork Eagle Creek) would only occur following review and approval by the Forest Service. Security fencing may be installed around each wellhead; the Village of Ruidoso would contact the Forest Service for approval and scheduling prior to this work being performed to ensure that any needed mitigations would be applied to minimize any potential for adverse impacts due to this ground disturbance or noise (see the mitigation measures section beginning on page 16).

We would issue a new permit with no change in existing well pumping operations. This means that pumping would continue at historic levels¹, in accordance with the Village of Ruidoso's water rights. The new permit would be issued with similar terms, conditions, and history of water use that has been in operation since 1988, as described below. While the terms and conditions of the permit would be similar to the expired permit, the new permit would adhere to the most current templates.

Based on past water use levels, water use would likely average approximately 740 acre feet per year, with highest use between March and September (ranging from a combined total of 60 to 117 acre feet per month). While it is possible that recent or future water rights transfer may affect (reduce) the pumping levels (see the water rights section in chapter 1 and 3 of the FEIS for more information on this topic), due to uncertainty of any potential transfer of rights, the analysis assumes that historic (pre-2010) pumping levels would continue. This represents a conservative or 'maximum' potential effect because pumping is likely to be less than the historic level with any transfer.

As part of the special use permit, the authorization would include an annual operating plan that the Village of Ruidoso would prepare in consultation with us. We would require the Village of Ruidoso to prepare monthly reports, with electronic reports in spreadsheet format, with the following information:

- **Well Static/Pumping Water Levels:** Water levels (static and pumping) would be collected at least once a month from the following wells within and upstream of the project area: MW-1A, B, C; MW-2A; MW-3A; and MW-5A. Where possible, data would be collected electronically via transducers and data loggers that would provide daily measurements.
- **Well Pumping Reports:** Daily pumping quantities of water from each of the North Fork wells would be reported in gallons per minute (summarized for the month).

The Village of Ruidoso would be responsible for daily operations, facilities and road maintenance (National Forest System Road 127A maintenance is the responsibility of the Village of Ruidoso from NM 532 to the gate below the summer homes) and coordinating with us on maintenance and repair projects or data collection activities.

¹ These estimates of historic water use are based on the best available information at the time of preparation of this document. We recognize that the applicant has instituted some changes in the way in which the North Fork well field is managed in conjunction with its Eagle Creek surface diversion and its water rights from the Rio Ruidoso due to the changes caused by Little Bear Fire. We recognize that these recent management adjustments are not typical and that the applicant anticipates resumption of pumping levels from the North Fork well field in a period of years when the effects of the Little Bear Fire are reduced (Atkins Engineering Associates, Inc. 2014).

The Village of Ruidoso would be required to notify us if they implement stage 5 water restrictions (stringent water conservation measures). This would prompt a joint Forest Service and Village of Ruidoso review of the annual operation plan and development of an agreement to temporarily modify well pumping if needed to address a critical water situation.

An implementation plan (with schedule, tasks, responsible parties, reporting requirements, quality control measures and costs) would also be developed.

Monitoring and Mitigation Measures

While alternative 1 (no change) is essentially continuing the Village of Ruidoso's current well operations, it does include added mitigation and monitoring measures that are not currently part of the Village of Ruidoso's annual operating plan. These would not constitute new restrictions on water availability and use; but would provide necessary protections related to ground disturbing activities for wildlife and water quality, and improved monitoring information. The following monitoring parameters are direct or indirect effects of pumping or will help to calibrate what is attributable to the pumping. Analyzed together in an integrated fashion, they will help to better characterize how the watershed is responding to water removal through pumping. Monitoring information would be used to inform discussions between the Village of Ruidoso and the Forest Service to develop annual monitoring plans and make future management decisions about this authorization.

Non-discretionary monitoring

- 1. Monitoring wells: Is the depth of alluvial ground water available within the rooting zone of riparian obligate plant species?** The results of this monitoring will be used (along with proposed riparian monitoring) to assist in determining potential effects to riparian vegetation by comparing minimum rooting depths of facultative wetland species. The Village of Ruidoso will rehabilitate existing monitoring wells, and if necessary, construct new ones upstream and downstream of the well field, to ensure that only one individual water-bearing zone of interest is monitored within each screened zone. These new alluvial monitoring wells will be constructed² by the Village of Ruidoso adjacent to the North Fork of Eagle Creek, at the locations of the existing North Fork stream gage (U.S. Geological Survey 08387550) and Eagle Creek below the South Fork stream gage (U.S. Geological Survey 08387600). In order of increasing depth, the individual groundwater zones of interest in the well field area include the stream alluvium, shallower fractured and weathered zones within volcanic bedrock, and deeper bedrock zones within the same volcanic aquifer system. Well rehabilitation can include sealing off multiple completions with bentonite and grout as appropriate; or other means of isolating a source zone by adaptations of the wells already in place. In addition, deep, long-screen wells will be selected or constructed and monitored both upstream and downstream of the well field to track water table depths as part of monitoring. The screened portions of these two wells will be the same as the elevation range of the screened or open zones of the pumping wells.
- 2. Slug Tests or Aquifer Pumping: What are the water holding capacities and recharge rates of respective water-bearing zones?** The results of this monitoring will be used for greater understanding of the hydrologic nature of the well field. Using the reconfigured as well as new monitoring wells completed from monitoring measure 1, the Village of Ruidoso

² Alluvial wells would be approximately 10 to 20 feet deep. Installing new wells generally consists of mobilizing a drill rig to drill the holes and casing the holes to prevent collapse.

will conduct slug tests³ or aquifer pumping tests⁴ of the individual water-bearing zones of interest at the well field. The choice of tests will ultimately depend on the time and resources available, and on conclusions reached during coordinating efforts between the Village of Ruidoso and USDA Forest Service. Comparable and contemporaneous tests will be completed for each water-bearing zone of interest, so that appropriate test results can be compared, and the hydrogeologic nature of the well field can be better understood. Surface flow observations will also be made before, during, and after the groundwater tests at selected locations along North Fork Eagle Creek.

3. **Water quality: What is the relationship of water quality to surface water quantity and the effects to aquatic species?** This monitoring measure will be used in correlation with water quantity (monitoring measures 1, 2, 4). This information will help determine effects to aquatic and riparian resources. Monthly water quality field measurements will be made by the Village of Ruidoso at all three existing surface flow gages on the North Fork, South Fork, and Eagle Creek. An additional streamflow sampling location will be identified and marked or monumented immediately below the well field, at or near existing monitoring well MW-5 or wherever surface flow frequently occurs downstream. Field sampling constituents will include water temperature, air temperature, pH, turbidity, dissolved oxygen, and specific conductance. If approved in writing by the USDA Forest Service, the frequency of sampling can be reduced to a quarterly basis or less. All data records will be filed with the Lincoln National Forest Supervisor's office on a quarterly basis during the first year, and as agreed-on thereafter.
4. **Flow and water level: What is the effect of pumping on the quantity of surface and subsurface stream flow?** This monitoring measure will be used to correlate surface and subsurface flow, flows bypassing surface stream gauges, and to generally better understand the relative amount of water flowing into and out of the well field given various pumping regimes and precipitation inputs. Daily mean flow and water level measurements will continue to be recorded or calculated by the Village of Ruidoso at the three stream gages or new monitoring wells, and at monitoring wells used in the U.S. Geological Survey program. Foundation conditions at the Eagle Creek stream gage will be ascertained, and if significant alluvial underflow occurs, then modifications will be implemented to either minimize or measure alluvial underflow past the gage. An investigation of the relationships between South Fork gage readings and the Eagle Creek gage readings will be undertaken to further understand any correlations. Rehabilitated or newly constructed wells described in monitoring measure 1 above may be substituted for existing monitoring wells as needed, and may be used to substitute for surface flow gages. Recording devices or methods, and measurement frequencies, will be determined cooperatively between the USDA Forest Service and Village of Ruidoso. If digital devices are employed, data recording time-steps and clocks will be consistent among all monitoring wells and flow gages. Time-steps will be four hours, six hours, or twelve hours and will not fluctuate. Flow or water level

³ The slug test is performed utilizing existing wells and does not typically involve any ground disturbance; it involves either removing or adding a volume of water from or to the well and measuring the rate of recovery or decline of the water level in the well. If an aquifer test is necessary, it may also be done utilizing existing wells, if they are deemed adequate with known screen intervals. A site review would be necessary prior to performing an aquifer test.

⁴ The pumping, or aquifer test involves a pumping well and one or more observation wells and pumping at a relatively constant rate for a period of time ranging from a few weeks to a couple of months (at least). The water pumped from the well during the test would need to be disposed of (e.g. released on site or hauled away).

measurements will generally correspond to water quality field data collection efforts if conducted under monitoring measure 3. Data will be reported on a monthly basis to the USDA Forest Service, U.S. Geological Survey, and the New Mexico Office of the State Engineer, and stored in a publicly available database maintained by one of these agencies as determined through further coordination and decisionmaking. Quarterly and annual data summaries and conclusions will be developed and made publically available by the Village of Ruidoso, with the USDA Forest Service acting in an agency review and approval capacity.

5. **Springs and Seeps: What are the effects of groundwater pumping on the quantity and quality of ground water emerging from seeps and springs within the area of potential effects?** This monitoring measure will be used to supplement water quantity and quality effects from pumping within the expected cone of depression. Eight springs and seeps in the North Fork Eagle Creek drainage will be identified and monitored by the Village of Ruidoso on a monthly basis for 1 year. Priority locations will be springs and seeps alongside or in the channels in the upper North Fork Eagle Creek and Carlton Canyon. Locations are shown on figure 2 (and also on figures 1 and 33-B in the water resources report, AECOM 2015). Monitoring constituents at springs will consist of common parameters including flow rate, temperature, pH, and specific conductivity. Additional water quality constituents (e.g. carbonate, bicarbonate, chloride, sulfate) will be included for springs if specified by the USDA Forest Service, and samples will then be retrieved and handled for laboratory analyses of those constituents if they are deemed necessary.
6. **Stream gradient, planform, and stability indicators: How are the geomorphic characteristics of the stream changing and what effect does it have on surface and subsurface flows and water availability within rooting zones?** This monitoring measure will be used to determine physical changes of the streambed. This will better calibrate information such as depth to water table or effects of flooding events on aquatic and riparian species and their habitat. Stream gradient, planform, and stability indicators will be monitored and documented annually by the Village of Ruidoso between June 1 and July 15 at selected and benchmarked cross-section locations along the North Fork Eagle Creek for the first 5 years. Cross-sections will be located a minimum of every 1,000 feet downstream from the existing North Fork Eagle Creek streamgage location to the Eagle Creek below South Fork streamgage location, below major tributary junctions, and at selected sharp bends. Stream channel width, bank height and angle, aggradation or degradation of sediment or debris, longitudinal profile, flow estimates, pool locations, and other selected geomorphic characteristics will be documented each year in the field by the Village of Ruidoso and submitted in an annual summary report to the USDA Forest Service that includes data forms, summary tables, photographs and figures, and interpretations. After the first 5 years of the term of the permit, The Village of Ruidoso will measure these parameters at these same locations every 3 years or less, if approved in advance by the Forest Service, between June 1 and July 15.
7. **Snowpack and Precipitation: What is the amount of water input to the system?** This monitoring measure will be used to better understand precipitation inputs and potential for groundwater recharge of Eagle Creek and its affected watershed subdivisions. Snowpack on Sierra Blanca will be monitored by the Village of Ruidoso for the permit duration through the Natural Resources Conservation Service data portal. Anticipated dry, average, or wet spring seasonal moisture conditions will be ascertained monthly and documented by monthly memoranda to the Forest Service for the months of January, February, March, and April every year. At least one precipitation gage along the North Fork Eagle Creek watershed divide will be maintained by the Village of Ruidoso for the term of the permit in cooperation with the

U.S. Geological Survey, and monthly total precipitation accumulations will be reported to the USDA Forest Service on a quarterly basis every year.

8. **Visualization Tool: How can we integrate water inputs, outputs and their respective influences on water quality to better describe and predict watershed responses to pumping?** The Village of Ruidoso will develop and apply a data-synthesis and visualization tool depicting historic and updated hydrologic conditions and management in the North Fork watershed. The purpose of this tool is to depict historic and recent pumping management with contemporaneous hydrologic states at locations within the watershed, and to inform subsequent pumping management to the extent possible. Information from this will be shared with the USDA Forest Service. The implementation can consist of a set of spreadsheets and associated graphics, a database with a graphical user interface, an adaptation of an existing non-proprietary agency tool, or a more specific numerical model. From this application, system behavior under pumping and no-pumping conditions will be better understood and predicted. Time-steps for historic and updated conditions (e.g., weekly, monthly, etc.) will be determined through coordination between the USDA Forest Service and Village of Ruidoso. If practicable, the USDA Forest Service preference will be to develop, reasonably calibrate, document, and update a site-specific groundwater computer model in a cooperative effort among the Forest Service and other selected, qualified parties representing appropriate stakeholder interests along the North Fork of Eagle Creek. Such a model will be developed and calibrated during the initial three years of the term of the permit, and used throughout the permit term to further inform adaptive management of surface and groundwater relationships along the North Fork Eagle Creek.
9. **Riparian Vegetation: What are the condition and trends of riparian vegetation and can effects be correlated to pumping?** The 2010 baseline riparian vegetation survey will be repeated every 5 years, as described in the adaptive management strategy description of alternative 3. Annual monitoring of riparian obligate tree species (e.g. willows, boxelder) and other facultative wetland species within the project area will also be used to detect short-term changes in condition and canopy cover. This monitoring will be coordinated with stream geometry and stability monitoring measure 6.

Mitigation Measures

To avoid or minimize environmental harm from the alternative, we developed the following mitigation measures to reduce environmental effects.

Wildlife and Fish

- In the event that any mechanized equipment is needed for repairing, maintaining or operating the wells and associated facilities; for fencing activities around the wells, or for monitoring or adaptive management (or for well and facility removal under alternative 2 (no pumping)); no activity will occur within 0.25 mile of the northern goshawk post-fledging area from March 1 to September 30 to minimize disturbance during the breeding season. The Village of Ruidoso will contact the Smokey Bear Ranger District for this location.
- In the event that any mechanized equipment is needed for repair, maintenance or operation activities of the wells and associated facilities, or for monitoring or adaptive management (or for well and facility removal under alternative 2 (no pumping)); no activity will occur within 0.25 mile of the adjacent protected activity center during the Mexican spotted owl breeding season (March 1–August 31).

Water, Soil, and Vegetation

- USDA Forest Service Southwestern Region best management practices (USDA Forest Service 1982) for water quality management will be applied to any ground-disturbing activities related to maintenance and operation of the wells and associated facilities, or for monitoring (or for well and facility removal under alternative 2 (no pumping)). These practices will ensure that any potential for increased soil erosion or vegetation disturbance is minimized.
- The Village of Ruidoso will be required to develop and implement a water conservation strategy as part of the terms and conditions of their special use permit and associated annual operating plan.

Cultural Resources

- If any human remains or artifacts that fall under the Native American Graves Protection and Repatriation Act guidelines are found during project activities, we will consult with all appropriate tribes.

Public Safety and Health

- The Village of Ruidoso is responsible for ensuring all wells and associated facilities are safe and do not pose a danger to public health or safety.

Decision Rationale

In making my decision, I have carefully considered the analysis completed and presented in specialist reports and the FEIS, the comments received, and the changed circumstances resulting from the Little Bear Fire. My decision rationale is presented in terms of how well the selected alternative meets the project purpose and need and how it addresses the issues, in comparison with the other alternatives. I have also considered additional factors such as uncertainty and incomplete information.

Purpose and Need

The USDA Forest Service's purpose of taking action at this time is to respond to a request by the Village of Ruidoso for authorization to access their existing wells on National Forest System lands. There is also a need to provide for conservation and sustainability of forest resources on National Forest System lands in the project area. Management objectives included:

- Recognizing the importance of the well field as a municipal water supply providing water to the Village of Ruidoso; while also encouraging water conservation, management flexibility, and opportunities for transferring water rights to locations off of National Forest System land; and
- Minimizing impacts of groundwater drawdown from well field pumping by maintaining adequate surface and groundwater flows and protecting water dependent ecosystems.

Municipal water supply

The selected alternative meets the purpose and need for recognizing the importance of the well field to the municipal water supply needs of the Village of Ruidoso by continuing to provide the current levels of ground water pumping. Over the long term (i.e., after the wildfire recovery period) average annual contributions from North Fork Eagle Creek wells would continue to provide a significant contribution (25 percent or more) to the Village of Ruidoso water supply if

current trends in total diversion relative to North Fork Eagle Creek wells diversion continue. At the same time, the Village of Ruidoso is working with stakeholders on regional water supply strategies and agreements that may result in adjustments in water supplies and conservation strategies to meet its demands, and may have less reliance on the North Fork of Eagle Creek wells in the future.

Maintaining and protecting natural resources

Given the information presented in the FEIS and the uncertainties surrounding effects to natural resources, I have determined that the purpose and need for conservation and sustainability of natural resources on the national forest is satisfied by the selected alternative. The FEIS concludes that this alternative meets this portion of the purpose and need to a lesser degree than alternative 2 and 3. However, it does maintain existing or current riparian conditions on National Forest System lands in the near term. In the long term though, this alternative may fail to meet the purpose and need as pumping has the potential to further reduce aquatic habitat and riparian vegetation due to the added effect of climate change. Climate change in and of itself is unpredictable and uncertain and if realized is likely to be incremental in nature and over a long time horizon. As such, opportunities for future adjustments to management will remain and will have the benefit of better monitoring data and baselines of comparison

In making my decision I have also considered that there are several areas of uncertainty with regard to the selected alternative that indicate the selected alternative could meet this objective. This includes the uncertainty related to the relationship between surface flows and vegetation changes. The FEIS presents a reasonable analysis of possible effects for vegetation based on deductive reasoning that greater water availability would shift species composition towards more riparian species. However, at this time the evidence is not strong that alterations to vegetation are a direct result of pumping due to a lack of baseline riparian vegetation characteristics for comparison. Limited anecdotal evidence and one historic photograph would suggest the riparian habitat looked somewhat similar to what it does today. A greater influence on the aquatic and riparian features seems to have been past flooding and the recent Little Bear Fire. In addition, the aquatic habitat and riparian vegetation that currently exist are very likely the result of the North Fork of Eagle Creek having been an intermittent stream system for many years, even prior to well pumping. The stream reach in question does not represent high quality aquatic and riparian habitat and the area is not critical to rare, sensitive, threatened or endangered species. Fish that may have existed in the past were a result of a stocking program that was ultimately discontinued presumably due, at least in part, to poorer quality habitat and seasonal water availability in the intermittent stream reach.

It should also be noted that the influence of climate change on the southwestern United States will continue to be of great concern in managing the region's water resources. Similarly, it will present challenges in balancing the needs of water use and the need to protect water-dependent natural resources. The FEIS acknowledges that the decision to continue current levels of North Fork well pumping, combined with the future effects of climate change, may mean that the purpose and need to protect natural resources (particularly surface flows, aquatic habitat, and riparian vegetation) may not be achievable in the long term, but not before adjustments could be made.

Monitoring requirements included in the selected alternative will allow me to continue monitoring natural resources conditions, which would track the achievement of this portion of the purpose and need. It would also provide information related to any changes over time which may come as a result of post-fire recovery or stressors such as climate change. Periodic review of the permit would provide an opportunity to better ascertain cause and effect relationships, resource

conditions and trends, discuss any concerns related to natural resources effects that are measured as part of the operating plan and to make adjustments in future permit decisionmaking, as needed.

Responding to Issues

In making my decision, I have considered the detailed analysis of environmental impacts presented in the FEIS chapter 3, related to the following issues. This section briefly summarizes the effects related to the issues (as presented in greater detail in chapter 3 of the FEIS). Here I describe how I have considered the magnitude of these effects and the uncertainties and unavailable information in making my decision.

Water resources

As described in chapter 3 of the FEIS (pages 100 to 150), under both the selected alternative and alternative 3, some unavoidable adverse effects to water resources are anticipated. These would be a continuation of past effects that have been generally ongoing since pumping began. With continued pumping, intermittent stream flows would continue near and downstream of the well field, creating site-specific and local impacts on flow rates and extent. A cone of depression will occur in the groundwater in the vicinity of well pumping with continued groundwater pumping. It is likely that groundwater drawdown will reduce streamflow in the North Fork and main stem Eagle Creek at some locations some of the time. Pumping may continue to create no-flow conditions. It is also anticipated that the groundwater drawdown may reduce the flow and duration of two springs within the project area. The extent and severity of natural resource impacts would vary depending on the amount of precipitation inputs, conditions under which pumping would occur and the amount of water withdrawn. There would be a greater degree of adverse effects to water resources with the selected alternative than with alternative 3 because more water may be withdrawn from the North Fork wells. All of these effects could be made more adverse in significance and duration by possible climate changes toward more extended drier conditions.

Cumulative water resources impacts from alternative 1 would involve ongoing flow reductions along Eagle Creek within the cumulative impact study area. Supplemental wells belonging to the Village on private lands downstream from the National Forest will likely continue to withdraw water in order to supplement any shortages in achieving full beneficial use of water rights associated with the wells. In the long term, these effects could be adverse, and more extensive impacts to National Forest surface resources in Eagle Creek watershed may occur. Additional water supply developments in the region, many of which are not controlled by the Village, could create further impacts to surface water, groundwater, and associated resources. In the end if realized, scarcity of water, due to over-appropriation will be governed by Prior Appropriation Doctrine as managed by the New Mexico Office of the State Engineer.

Although a substantial amount of surface water and groundwater data are available in the study area and the cumulative impact area, much of these data are sparse and have been retrieved at different times and locations and therefore are difficult to compare or consistently align. Information needed in the water resources data and analysis include water quantity and quality information for surface water and groundwater; further definition of water-bearing zone characteristics; information about springs and seeps; and a strong definition of the temporal and spatial relationships between pumping activities, groundwater levels in the various zones, and the extent, magnitudes, and durations of surface flows. This information gap prevents a thorough understanding of the hydrologic systems involved. In addition, various uncertainties still exist related to current and future recharge and groundwater availability estimates based on differences

of opinion about post-fire watershed effects and recovery. These relate primarily to the reduction of evapotranspiration losses following post-fire vegetation changes, and the amount of incoming precipitation that is partitioned to surface runoff instead of to groundwater recharge and storage.

Despite these uncertainties, we can consider the potential effects of continued reduced flow in the context of historical and current conditions. The North Fork had intermittent downstream segments prior to well pumping. Since then, well pumping has affected the flow of the creek for over 30 years. While the selected alternative does result in adverse effects to water resources other than the declared beneficial uses, the degree of effects should be considered in the context of the uncertain resource potential and the establishment of baseline conditions for the North Fork of Eagle Creek to evaluate their significance in the future.

Aquatic habitat

As described in chapter 3 of the FEIS (pages 154 to 165), there are no federally listed, proposed, or candidate fish species, nor any Regional Forester sensitive species occurring in the North Fork Eagle Creek. Historical information indicates that the North Fork never provided a high quality trout fishery and conditions appear to always have been variable from year to year. Introduced brook trout and rainbow trout are the only fish species currently documented in the portion of the North Fork between the North Fork gage and Eagle Creek gage. These brook trout populations resulted from fish stocking that occurred in the river many years prior to well pumping. It is likely that reduced flows from well pumping, among other factors (such as reductions in fish stocking or loss of manmade ponds), has further reduced the fishery potential in more recent years. In addition, there is some evidence that the ash flows and floods following the 2012 Little Bear Fire have extirpated the remaining fish population that may have persisted without stocking in the North Fork Eagle Creek.

The selected alternative would continue the current condition of reduced water levels and increased dry periods. This would maintain the currently limited opportunities for fish and aquatic habitat improvement. However, the highest quality portion of the watershed above the wells would remain unaffected by pumping. It should be noted that the North Fork of Eagle Creek is not a high priority fishery for the National Forest and New Mexico Department of Natural Resources. Still, the North Fork would continue to contribute as an important tributary to Eagle Creek and the water-dependent values it provides (including aquatic and riparian habitat and recreational opportunities).

Compared to the selected alternative, the FEIS noted that opportunities for marginal improvement to the aquatic habitat and reestablishment of recreational fishing could increase under the no pumping and adaptive management alternatives. However, those benefits are limited, particularly in the context of the naturally limited intermittent stream potential, effects of the Little Bear Fire (short term) and potential effects of climate change (long term).

Riparian vegetation

As described in chapter 3 of the FEIS (pages 165 to 177), the sparse presence of willow, Wootton's hawthorn and seven facultative wetland species indicates that the North Fork Eagle Creek maintains some moister localized microhabitats with sufficiently shallow groundwater and or soil moisture to support such species. Historical information (records and photos) suggests a similar condition existed prior to well pumping, and some evidence shows a lack of obligate wetland species one would associate with a riparian community along a perennial stream (e.g. willow and cottonwood in the overstory). As described in the above sections, this also suggests that the lower

half of the North Fork was intermittent prior to well pumping and may have provided limited habitat for wetland obligate species.

Some change has occurred as a result of the Little Bear Fire. Burn intensities in the riparian area (200 feet on each side of Eagle Creek) were low in general. A field visit on November 19, 2013 revealed that most of the riparian vegetation in the sampling area looked minimally affected by the wildfire and related indirect effects such as flooding. Some shifting of sediment and cobble may occur and channel instability has or could result in some riparian areas being buried or uprooted, but this is offset by the opportunity for some species to colonize new areas.

Though groundwater pumping would likely have no effect on periodic high flows and related fluvial processes, reductions in base flow (surface and subsurface) levels could cause this riparian area to become compositionally similar to adjacent uplands. Shifts in vegetation along riparian areas would be expected to correspond to the degree of hydrologic change. Overall, the selected alternative would either maintain current riparian vegetation condition in the project area in the short term or result in some declines due to continued reductions in water availability. Over the long term, however, climate change induced shifts toward drier conditions would result in additional stress to riparian vegetation which would experience adverse effects. These potential adverse effects may be compensated depending on how groundwater availability changes as a result of the Little Bear Fire.

This can be compared to the no pumping or adaptive management alternatives where there is some potential for increase in communities featuring facultative wetland species due to increased water availability over the current condition. However, over the long term, even these positive changes would likely be limited by the effects and stresses of climate change.

Though the effects analysis presents a reasonable conclusion based on deductive reasoning that reduced flow may have some effect on riparian vegetation composition, there is no clear site-specific evidence of a direct relationship between the two in the North Fork of the Eagle Creek. It is not possible to empirically compare current conditions to the historic pre-pumping condition as there is minimal information available. In this way, the evidence is unclear that current well pumping has affected riparian vegetation in the past. In addition, the EIS recognized that the riparian habitat in this stretch of the North Fork is and has been limited by a variety of factors. Given the limited anecdotal evidence suggesting that riparian vegetation was sparse prior to the well fields' existence, it is important to note that even when the selected alternative is compared to the no pumping alternative, the differences in predicted vegetative responses would likely be slight and difficult to detect.

Socioeconomics

As described in chapter 3 of the FEIS (pages 177 to 205), groundwater withdrawal would not be affected under the selected alternative within the limits of the Village's declared Water Rights, as it relates to North Fork Eagle Creek wells diversion. Over the short term (i.e., until watershed recovery) contributions would remain uncertain during the transitional wildfire recovery period. Over the long term (i.e., after the wildfire recovery period) average annual contributions from North Fork Eagle Creek wells could continue to provide over 25 percent of the Village of Ruidoso water supply if current trends in total diversion and North Fork Eagle Creek wells diversion continue.

According to the FEIS, the discounted present net value of costs would range from \$4.5 to \$7.2 million dollars. The present net value of costs is the total cost of the monitoring measures through

the 20 year life of the permit, including a 4 percent discount rate to adjust for changes in currency value over time. The Village of Ruidoso would pay for all monitoring measures except riparian vegetation monitoring (which would be covered by the Forest) thus their cost would be slightly less than the total. While less financially efficient than the no pumping alternative, the village would benefit from ongoing use of wells for municipal water supply. The selected alternative best meets the water supply demand, while also reducing costs over alternative 3 when factoring in the replacement costs of lost inchoate water rights (water rights yet to be put to beneficial use) due to predicted restrictions.

Quality of life as it relates to municipal water supply would remain unchanged under this alternative. In addition, quality of life associated with the quality of recreation experience would remain unchanged under this alternative. While the project area only hosts a minor amount of dispersed recreation use, under the selected alternative, it is anticipated that over the short term the quality of recreation experience would remain uncertain during the transitional wildfire recovery period. However, over the long term streamflow quantity would be the same as experienced by recreationists in the recent past and therefore recreation patterns and uses are expected to remain unchanged. Thus, under this alternative, the Lincoln National Forest would continue to support quality of life at levels experienced currently.

Water rights

As described in chapter 3 of the FEIS (pages 205 to 212), with the selected alternative, the Village of Ruidoso would have the opportunity to put to beneficial use their adjudicated water right (992.05 acre-feet) and attempt to put to beneficial use their remaining inchoate water rights (846.46 acre-feet) at the current points of diversion, which total 1,838.51 acre-feet per year. The historic rate of water production from these wells is expected to continue to provide, on average, a direct contribution to the Village of Ruidoso water supply ranging from 24 to 29 percent. When indirect annual contributions are added to direct contributions (based on factoring in diversions within the Rio Ruidoso watershed from return flow credits, described in more detail in chapter 1 and in chapter 3), this increases to 36 to 43 percent. During the summer months, data show that 57 to 87 percent of total direct and indirect annual diversions can be attributable to the North Fork wells. This is obviously a very significant and important source of water to the Village. In addition to utilizing the North Fork wells, the Village is also currently working to diversify their sources of municipal water, which may reduce reliance on water pumping from North Fork Eagle Creek and provide for greater flexibility.

Alternatives 2 and 3 would limit the Village of Ruidoso's beneficial use of their adjudicated water rights at the current diversion points in North Fork Eagle Creek. It is predicted the Village would lose altogether the opportunity to establish, or put to beneficial use, the inchoate water rights (846.46 acre-feet) as they are non-transferable. The Village would have the option, and be compelled, to file an application with the Office of the State Engineer to transfer the point of diversion to another location in order to enjoy the portion of their adjudicated water rights (992.05 acre-feet) associated with the wells. This is a State of New Mexico process that does not involve the USDA Forest Service, but as described above for alternative 2 (no pumping), can potentially be costly, time consuming and lengthy; the Office of the State Engineer has authority to approve or disapprove an application for transfer of water rights.

The availability of domestic well water downstream would likely remain unchanged under this alternative, although the potential for reduced precipitation as a result of climate change and the addition of more wells or water diversions downstream could reduce downstream water

availability. In the event of water scarcity, any effects to downstream beneficial uses are primarily an issue of State jurisdiction under Prior Appropriation Doctrine.

Incomplete or Unavailable Information

I am basing my rationale on the best available information, as presented in the FEIS. However, many uncertainties still remain regarding the hydrological systems, and in particular, how they may respond to the Little Bear Fire (as described in the Issues Addressed section above). The selected alternative includes non-discretionary monitoring that may help us reduce uncertainty over time and if necessary make adjustments to National Forest System lands access in future decisions.

Conclusion

While considering the minimization of environmental effects in conjunction with balancing the need for access to municipal water rights, I have decided to select alternative 1. Project design features and best management practices will be implemented and monitoring will occur to help minimize adverse effects.

My decision will result in some unavoidable adverse effects to the North Fork Eagle Creek. Groundwater pumping will continue to reduce stream flow and increase no flow days, resulting in limited opportunity to enhance the downstream sections of the creek. However, based on my review of the analysis, I have concluded that the continued effects of North Fork well pumping on water resources, aquatic habitat, riparian vegetation, and recreational uses, when viewed in the context of the past and existing river condition as an intermittent stream without outstanding features, are outweighed by the need to provide reasonable access to the Village of Ruidoso's for beneficial use of their adjudicated and inchoate water rights. My decision represents my best effort at resolving scientific uncertainty and controversy, the competing interests of reasonable access to water rights and protection of natural resources.

I believe all reasonable and practicable means to avoid or minimize environmental harm have been explored and adopted within the alternative selected (40 CFR 1505.2), in order to balance the need for various resource uses and provide for long-term sustainability. Water extraction has been well established for the last 30 years and the limited data gives me sufficient evidence that the riparian and aquatic habitats have not significantly changed during that time. They are not predicted to substantially change into the future.

The major environmental factor that has changed the affected environment is the Little Bear wildfire; and aside from the immediate stream morphology changes from already evident flood events; the watershed is predicted, with some level of uncertainty, to produce more water to the aquifer and surface flow due to reduced evapotranspiration. In addition, a rigorous monitoring regime will be implemented to empirically identify baseline watershed and associated habitat conditions, measure changes and explore interrelationships that are directly or indirectly correlated to the actions of the selected alternative. This information can be used in a timely manner at 5 to 10 year intervals to ascertain any need for changes in the future that may come about due to factors such as climate change or unexpected wildfire effects. The rates and degree of change to riparian and aquatic habitats are expected to be slow and incremental such that review intervals of 5 to 10 years should be sufficient to make adjustments; and at a minimum a comprehensive review upon the required permit renewal after 20 years will be sufficient to minimize or avoid long term environmental harm.

Findings Required by Other Laws and Regulations

National Environmental Policy Act

The National Environmental Policy Act requires Federal agencies to consider and disclose the effects of proposed actions that significantly affect the quality of the human environment. The FEIS analyzes the alternatives and discloses effects in conformance with the Act and its implementing regulations (40 CFR 1500 to 1509 and FSH 1909.15).

Short-term Uses and Long-term Productivity

The National Environmental Policy Act requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

If the short-term use of the water resources in the North Fork is defined as the special use permit authorization period of up to 20 years, with stipulations for review and verification of the permit terms and conditions at least every 5 to 10 years, then long-term productivity would extend at least that far into the future. Under alternative 1 (no change), surface water and groundwater available for forest management (including watershed condition, riparian and aquatic habitat, and recreation) would be limited to the existing conditions or further reduced.

Unavoidable Adverse Effects

The decision includes implementation of project design features, and best management practices (Monitoring and Mitigation Measures) intended to avoid, minimize the extent of, or reduce the potential for adverse effects on the environment. However, there would be unavoidable adverse effects to water resources of the North Fork of Eagle Creek, as described above. Each section of chapter 3 of the FEIS describes the spatial and temporal context for unavoidable adverse effects predicted.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

There are no irreversible commitments of forest resources resulting from the decision. The presence and uses of surface water or groundwater resources eventually could be returned to a prior state through subsequent management actions, subsequent precipitation and runoff, and groundwater recharge.

Under the selected alternative, ongoing substantial withdrawals by the village for municipal supply would represent irretrievable losses for other uses. Water resources and their uses could be eventually retrieved under changing management conditions.

National Forest Management Act

This decision is consistent with the intent of the forest plan's long-term goals for water resources management listed on pages 12 and 13 of the FEIS. The project was designed in conformance with forest plan standards and incorporates appropriate Forest Plan guidelines for water resources, aquatic and riparian habitat, water rights, and special use permits (Forest Plan, page 28).

Endangered Species Act

The wildlife threatened, endangered, and sensitive species section of chapter 3 of the FEIS identify threatened, endangered, candidate and proposed species in the planning area and discuss effects of the proposed action and alternatives. There would be no effect to Mexican spotted owls, owl habitat, or prey species as a result of the decision. No other federally listed species, or their suitable habitat or designated critical habitat, occur in the project area or that could potentially be affected by continuation of North Fork well operations. This decision complies fully with the laws and regulations that ensure protection of threatened, endangered, candidate and proposed species.

National Historic Preservation Act

Any actions undertaken will comply fully with the laws and regulations that ensure protection of cultural resources. There is little potential for measurable effects to cultural resources based on implementation of the alternatives; archaeological surveys have been conducted in the project area and there are no known sites within the vicinity of the wells. Under any of the alternatives the impacts of this disturbance would be adequately minimized by implementation of mitigation measures as described in chapter 2. These measures would require that the forest archaeologist be notified before any ground-disturbing activities to ensure surveys are up to date and no protection measures are needed.

This decision complies with the National Historic Preservation Act and other statutes that pertain to the protection of cultural resources.

Clean Water Act

The effects to water quality are analyzed in depth in chapter 3 of the FEIS. Any actions undertaken will comply fully with the laws and regulations that ensure protection of water quality. This decision complies with the Clean Water Act and other statutes that pertain to the protection of water quality.

Environmental Justice

Executive Order 12898 directs federal agencies to identify and address, as appropriate, any disproportionately high and adverse human health or environmental effects on low-income and minority populations. This decision is not expected to have a disproportionately high and adverse human health or environmental effect on minority or low income populations.

Other Required Disclosures

Municipal Watersheds

The availability of municipal water would remain unchanged under this decision.

American Indian Religious Freedom Act

This decision will not conflict with any religious freedom rights of any Tribal group.

American Indian Rights

This decision will not conflict with any inherent rights or treaty provisions of any Tribal group.

Congressionally Designated Areas

Wilderness: Portions of the North Fork Eagle Creek watershed are within the White Mountain Wilderness. However, the wilderness is approximately 2 miles from the immediate project area upstream from the North Fork gage and would not be affected by implementation of alternatives downstream.

Wilderness Study Areas: There are no lands designated in the planning area as wilderness study areas or recommended for wilderness classification

National Recreation Areas: There are no lands designated in the planning area as national recreation areas.

Wild and Scenic Rivers: There are no wild and scenic rivers in the planning area.

Wetlands and Floodplains (Executive Orders 11990 and 11988)

There will be no effect to wetlands from implementing this decision.

There will be no effects to floodplains (as defined in this executive order) in the planning area from implementing this decision. There are no federally-delineated floodplains in the project area (FEMA 2015).

National Landmarks

There are no National Landmarks in the planning area. Therefore, no impacts will occur for any National Landmark.

Parklands

There are no lands within the proposed planning area that will be characterized as parklands.

Prime Farmlands, Rangelands, and Forestlands

The planning area is not located in or adjacent to prime farmlands; therefore, there will be no impacts to prime farmlands. The planning area does not contain prime rangeland and none of the proposed activities in the planning area will convert rangelands to other uses. Therefore, there will be no impacts on prime rangelands. The project will not convert forestlands to other uses. All lands designated as forested will be retained and managed as forested; therefore, there will be no negative impacts on prime forestland.

Compatibility with Plans of Other Agencies

This decision is compatible with the goals and plans of other public agencies, most notably the Village of Ruidoso and with the State of New Mexico, as expressed in comments from the State Engineer.

Required permits, licenses or other authorizations

As a condition of their Forest Service permit, it is the responsibility of the Village of Ruidoso to comply with other federal, state, and local laws that regulate well pumping and associated activities.

Administrative Review or Objection Opportunities

This decision is subject to objection pursuant to 36 CFR Part 218, subparts A and B. Objections will only be accepted from individuals or organizations who have previously submitted specific written comments regarding this proposed planning effort during scoping or other designated opportunity for public comment in accordance with §218.5(a). Issues raised in objections must be based on previously-submitted timely, specific written comments regarding this proposed planning effort unless based on new information arising after the designated comment opportunities.

The notice of objection must meet the content requirements at 36 CFR 218.8(d) and incorporation of documents by reference is permitted only as provided in §218.8(b). All objections are available for public inspection during and after the objection process. At a minimum an objection must include the following (36 CFR 218.8(d)): (1) The objector's name and address, with a telephone number, if available; (2) a signature or other verification of authorship upon request (a scanned signature for Email may be filed with the objection); (3) when multiple names are listed on an objection, identification of the lead objector (verification of the identity of the lead objector shall be provided upon request); (4) the name of the proposed project, the name and title of the Responsible Official, and the name(s) of the National Forest(s) and Ranger District(s) (if applicable) on which the proposed project will be implemented; and (5) a description of those aspects of the proposed project addressed by the objection, including specific issues related to the proposed project, if applicable, how the objector believes the environmental analysis or draft decision specifically violates law, regulation, or policy; suggested remedies that would resolve the objection; supporting reasons for the reviewing officer to consider; and (6) a statement that demonstrates connection between prior specifically written comments on the particular proposed activity and the content of the objection, unless the objection concerns an issue that arose after the opportunity for formal comment.

Objections, including attachments, must be filed within 45 days from the publication date of legal notice in the Ruidoso News, the newspaper of record. Attachments received after the 45-day objection period will not be considered. The publication date in the newspaper of record is the exclusive means for calculating the time to file an objection. Those wishing to object to this project should not rely upon dates or timeframe information provided by any other source. It is the objector's responsibility to ensure timely filing of a written objection with the reviewing officer pursuant to §218.9. The regulations prohibit extending the time to file an objection.

The objection must be filed by way of regular mail, fax, e-mail, hand-delivery, or express delivery or messenger service (Monday through Friday, 8:00 a.m. to 4:30 p.m., excluding holidays). Objections may be submitted via e-mail in word (.doc), portable document format (.pdf), rich text format (.rtf), text (.txt), or hypertext markup language (.html) with Subject: North Fork Eagle Creek Wells. An automated response will confirm the electronic objection has been received. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification. Please submit your objections to the Regional Forester as follows:

Mail:

Southwestern Region
333 Broadway SE
Albuquerque, NM 87102

Phone: 505-842-3292

TTY: 505-842-3198

FAX: 505-842-3110

Email: objections-southwestern-regional-office@fs.fed.us

Implementation

If no objections are filed within the 45-day time period, I will sign the Final Record of Decision (ROD) indicating approval of the project, and the project may be implemented 5 business days following the end of the objection filing period.

If an objection is filed, a resolution meeting with the objector(s) may be completed within a 45-day period that follows the end of the objection filing period, which, at the option of the objection reviewing officer, may be extended up to another 30 days, if needed. Once responses to the objections are completed and recorded in writing, the reviewing officer will make recommendations as to the FEIS, and final ROD for signature/approval. A project that has undergone the objection review process may be implemented immediately after the signing of the final ROD.

In either case, according to regulations (36 CFR 218) no legal notice is required once a final ROD is signed. However, the Forest Service may send out a letter or news release to notify any interested parties of the availability of the final decision document(s).

Authorization of the North Fork Eagle Creek Wells Special Use Permit will occur soon after a final Decision is signed.

Contact Person

For additional information concerning this decision or the Forest Service objection process, contact Dave Warnack, District Ranger, 901 Mechem Drive, Ruidoso, NM 88345, phone: 575-257-4095.

TRAVIS G. MOSELEY
Forest Supervisor
Lincoln National Forest

[DATE]

Selected References

- Matherne, A. M., N. C. Myers, and K. J. McCoy. 2011. Hydrology of Eagle Creek Basin and Effects of Groundwater Pumping on Streamflow, 1969–2009. U.S. Geological Survey Scientific Investigations Report 2010-5205 (revised November 2011). Prepared in cooperation with the Village of Ruidoso, New Mexico. U.S. Geological Survey, Reston, Virginia.
- USDA Forest Service. 1986. Lincoln National Forest Land and Resource Management Plan, as amended. Federal Emergency Management Administration (FEMA). 2015. Floodplain maps for Lincoln County, New Mexico, Unincorporated Areas. FEMA Flood Map Service Center. Internet URLs: <https://msc.fema.gov/portal/advanceSearch> and <https://msc.fema.gov/portal/advanceSearch#searchresultsanchor> Accessed Jun 23, 2015.