

San Pedro Riparian National Conservation Area

Proposed Resource Management Plan and Final Environmental Impact Statement

Volume II: References, Glossary, Appendices



Estimated Lead Agency Total Cost
Associated with Developing and
Producing this EIS:
\$2,674,000



BLM Mission

The Bureau of Land Management's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

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Glossary

Activity plan. A type of implementation plan (see *Implementation plan*), an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans are interdisciplinary management plans, habitat management plans, recreation area management plans, and grazing plans.

Actual use. Means where, how many, what kind or class of livestock, and how long livestock graze on an allotment or on a portion or pasture of an allotment (43 USC 315).

Adaptive management. A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.

Administrative access. Travel related access for official use by BLM employees and agency representatives during the course of their duties. Access is for resource management and administrative purposes and may include fire suppression, cadastral surveys, permit compliance, law enforcement, and resource monitoring or other access needed to administer BLM-managed lands or uses.

Air basin. A land area with generally similar meteorological and geographic conditions throughout. To the extent possible, air basin boundaries are defined along government boundary lines and include both the source and receptor areas.

Air pollution. The addition to the atmosphere of any material that may have a deleterious effect on life.

Air quality standard. The specified average concentration of a pollutant in ambient air during a specified period, at or above the level where public health may be at risk. National ambient air quality standards have been set for the following criteria pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead, and two categories of particulate matter (that with an aerodynamic diameter of 10 microns or less [PM₁₀] and that with an aerodynamic diameter of 2.5 microns or less [PM_{2.5}]).

Allotment. An area of land in which one or more operators graze their livestock. Allotments generally consist of BLM-administered lands but may include other federally managed, state-owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment management plan (AMP). A concisely written program of livestock grazing management, including supportive measures, if required, designed to attain specific, multiple-use management goals in a grazing allotment. An AMP is prepared in consultation with the permittees, lessees, and other affected interests. Livestock grazing is considered in relation to other uses of the range and to renewable resources, such as watershed, vegetation, and wildlife. An AMP establishes

seasons of use and the number of livestock to be permitted, the range improvements needed, and the grazing system used.

Alluvial soil. A soil developed from recently deposited alluvium (see below) and exhibiting essentially no horizon development or modification of the recently deposited materials.

Alluvium. Clay, silt, sand, gravel, or other rock materials transported by moving water. It was deposited in comparatively recent geologic time as sorted or semi-sorted sediment in rivers, floodplains, lakes, and shores and in fans at the base of mountain slopes.

Ambient air. Any unconfined portion of the atmosphere; the outside air.

Ambient air quality. The state of the atmosphere at ground level, as defined by the range of measured or predicted ambient concentrations of all significant pollutants for all averaging periods of interest.

Animal unit month (AUM). The amount of forage necessary for the sustenance of one cow or its equivalent for one month.

Aquatic. Living or growing in or on the water.

Aquifer. A water-bearing bed or layer of permeable rock, sand, or gravel capable of yielding large amounts of water.

Aquifer recharge. Adding water to an aquifer; a process that occurs naturally from the infiltration of rainfall and from water flowing over earth materials that allow it to infiltrate below the land surface.

Areas of critical environmental concern (ACEC). Special area designation established through the BLM's land use planning process (43 CFR 1610.7-2). An ACEC is where special management attention is required, when such areas are developed or used or where no development is required, to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The level of allowable use in an ACEC is established through collaborative planning. Designation of an ACEC allows for resource use limitations to protect identified resources or values.

Potential ACECs are areas determined to meet the relevance and importance criteria, as defined by 43 CFR 1610.7-2(a)(1) and (2) and guidance in BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988).

Arizona Standards for Rangeland Health and Guidelines for Grazing Administration. Standards and guidelines developed collaboratively by the BLM and the Arizona Resource Advisory Council to address the minimum requirements of the Department of the Interior's final rule for Grazing Administration, effective August 21, 1995 (BLM 1997).

Atmospheric deposition. Air pollution produced when acid chemicals are incorporated into rain, snow, fog, or mist and fall to the earth. Sometimes referred to as acid rain, it comes from sulfur oxides and nitrogen oxides, which are the products of burning coal and other fuels, and from certain industrial processes. If the acid chemicals in the air are blown into wet weather areas, the acids can fall to earth in

the rain, snow, fog, or mist. In areas where the weather is dry, the acid chemicals may become incorporated into dust or smoke.

Attainment area. A geographic area in which levels of a criteria air pollutants meet the health-based National Ambient Air Quality Standard for that specific pollutant.

Authorized access/use. Travel related access for users authorized by the BLM or otherwise officially approved. Access may include motorized access for permittees, lessees or other authorized users, along with approved access across BLM-administered public lands for other state and federal agencies.

Avoidance/avoidance area. An area identified through resource management planning to be avoided but that may be available for locating a right-of-way, with special stipulations.

Backcountry setting. Areas with undeveloped, primitive, and self-directed visitor experiences without provisions for motorized or mechanized access, except for identified routes.

Base flow (discharge). Sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by groundwater discharges.

Baseline. The condition of a defined area or resource that can be quantified by appropriate measurements. During environmental reviews, the baseline is considered the affected environment at the time of the reviews begin. It is used to compare predictions of the impacts of the proposed action or a reasonable range of alternatives.

Best management practice (BMP). A technique that guides or may be applied to management actions to aide in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered planning decisions unless the plans specify that they are mandatory.

Big game. Indigenous, hoofed wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn antelope.

Biodiversity (biological diversity). The variety of life and its processes and the interrelationships in and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

BLM sensitive species. Those species that are not federally listed as endangered, threatened, or proposed under the Endangered Species Act but that are designated by the BLM State Director under 16 USC 1536(a)(2) for special management consideration. By national policy, federally listed candidate species are automatically included as BLM sensitive species. Sensitive species are managed so they will not need to be listed as proposed, threatened, or endangered under the Endangered Species Act.

Candidate species. Species for which the US Fish and Wildlife Service has sufficient information on their status and threats to propose them for listing as endangered or threatened under the Endangered Species Act, but for which issuing a proposed rule is currently prevented by higher priority listing

actions. Lists for plants, vertebrate animals, and invertebrate animals are published periodically in the *Federal Register* (BLM 2008).

Carbon dioxide equivalents (CO₂e). A term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ that would have the equivalent global warming impact.

Carbon monoxide (CO). A colorless, odorless toxic gas produced by incomplete combustion of carbon in fossil fuels.

Channel. A natural or artificial watercourse with a definite bed and banks to confine and conduct continuously or periodically flowing water.

Channelization. The process of rebuilding the natural course of a stream to make it flow into a restricted path.

Channel morphology. Relating to the form and structure of channels.

Ciénega. A type of wetland resulting from a specific combination of a permanent water source, topography, and water-bearing soils.

Closed area. An area where off-road vehicle use is prohibited. Use of off-road vehicles in closed areas may be allowed for certain reasons; however, such use is made only with the approval of the BLM Authorized Officer (43 CFR 8340.0-5[h]).

Collaboration. A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands. Collaboration may take place with any interested parties, whether or not they are a cooperating agency.

Communication site. Sites that include broadcast types of uses, such as television, AM/FM radio, cable television, and a broadcast translator; and non-broadcast uses, such as commercial or private mobile radio service, cellular telephone, microwave, local exchange network, and passive reflector.

Condition class (fire regimes). Fire regime condition classes measure the degree of departure from historical fire regimes, possibly altering key ecosystem components, such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, or introduced insects or disease.

Conformance. A proposed action should be specifically provided for in the land use plan or, if not specifically mentioned, should clearly conform to the goals, objectives, or standards of the approved land use plan.

Conservation plan. The recorded decisions of a landowner or operator, cooperating with a conservation district, on how the landowners or operators plan, within practical limits, to use their land according to its capability. Conservation plans also cover how they treat the land according to its needs for maintaining or improving the soil, water, animals, plants, and the air.

Conservation strategy. A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threat. Conservation strategies are generally developed for species of plants and animals that are designated as BLM sensitive or that the US Fish and Wildlife Service or National Oceanographic and Atmospheric Administration-Fisheries has determined to be a federal candidate under the Endangered Species Act.

Cooperating agency. Assists the lead federal agency in developing an environmental assessment or environmental impact statement. This can be any agency with jurisdiction by law or special expertise for proposals covered by the National Environmental Policy Act of 1969 (40 CFR 1501.6). Any tribe or federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Council on Environmental Quality (CEQ). An advisory council to the president, established by the National Environmental Policy Act of 1969. It reviews federal programs to analyze and interpret environmental trends and information.

Criteria pollutant. The US Environmental Protection Agency uses six criteria pollutants as indicators of air quality: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. It has established for each of them a maximum concentration above which there may be adverse effects on human health. These threshold concentrations are called National Ambient Air Quality Standards.

Cultural resources. Locations of human activity, occupation, or use. Examples are archaeological, historic, or architectural sites, structures, or places with important public and scientific uses and locations of traditional cultural or religious importance to specific social or cultural groups.

Cumulative effects. The direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action.

Decision area. Lands and federal mineral estate in the BLM-administered planning area.

Deferment. A period when livestock are not grazed during part of the growing season.

Deferred/deferred use. To set aside, or postpone, a particular resource use or activity on the public lands to a later time. Generally, when this term is used, the period of the deferral is specified. Deferments sometimes follow the sequence time frame of associated serial actions; for example, Action B would be deferred until Action A is completed.

Designated roads and trails. Specific roads and trails identified by the BLM or other agency where some type of motorized or nonmotorized use is appropriate and allowed, either seasonally or year-round (BLM 2005).

Desired outcome. A type of land use plan decision expressed as a goal or objective.

Direct impact. Caused by an action or implementation of an alternative; direct impacts take place at the same time and place.

Diversity. The relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

Easement. A right afforded a person or agency to make limited use of another's real property for access or other purposes.

Ecological site description. This provides a system for comparing existing vegetation conditions to potential or desired future conditions. An ecological site is a unit of land occupying a specific environmental zone and that can support a native plant community. Ecological sites are delineated by such criteria as topographic position, percent slope, soils and parent geologic material, precipitation, and elevation.

Ecosystem services. Human benefits resulting from appropriate ecosystem structure and function.

Eligible river segment. Qualification of a river for inclusion in the National Wild and Scenic Rivers System by determining that it is free flowing and, with its adjacent land area, has at least one river-related value considered to be outstandingly remarkable.

Endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range (BLM 2008). Under the Endangered Species Act in the United States, "endangered" is the more protected of two categories; the other is "threatened." Designation as endangered or threatened is determined by the US Fish and Wildlife Service under the Endangered Species Act.

Endangered Species Act (ESA) of 1973 (as amended). Designed to protect critically imperiled species from extinction because of economic growth and development, untempered by adequate concern and conservation. The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration administer the ESA. Its purpose is to protect species and the ecosystems that they depend on (16 USC 1531–1544).

Enhance. The improvement of habitat by increasing missing or modifying unsatisfactory components or attributes of the plant community to meet objectives.

Entrenchment. The process by which a stream erodes downward (incision), creating vertical, often eroding banks and abandoning its floodplain. Entrenched streams are often referred to as gullies.

Environmental impact statement (EIS). A detailed statement, prepared by the responsible official, in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and impacts are analyzed (BLM 2001).

Environmental justice (Executive Order 12898). The fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences of industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Ephemeral stream. A stream or portion of a stream that (1) flows only in direct response to precipitation, (2) receives little or no water from springs or no long continued supply from snow or other sources, and (3) has a channel that is always above the water table.

Exchange. A transaction whereby the federal government receives land or interests in land in exchange for other land or interests in land.

Exclusion area. An area identified through resource management planning that is not available for a right-of-way under any conditions.

Existing routes. The roads, trails, or ways used by operators of motorized vehicles, such as jeeps, all-terrain vehicles, and motorized dirt bikes, or by those engaged in mechanized uses, such as mountain bikes, wheelbarrows, and game carts, or by pedestrians (hikers), and horseback riders. Existing routes are, to the best of the BLM's knowledge, in existence at the time a resource management plan/environmental impact statement is published.

Extensive recreation management area (ERMA). Administrative units that require specific management to address recreation use, demand, or visitor services. ERMAs are managed to support and sustain their principal recreation and their associated qualities and conditions. ERMA management is commensurate with, and considered in context with, the management of other resources and resource uses.

Federal Land Policy and Management Act of 1976 (FLPMA). Public Law 94-579, October 21, 1976, often referred to as the BLM's Organic Act, which provides most of its legislated authority, direction policy, and basic management guidance. Section 302 of the FLPMA allows for the issuance of easements, leases, and permits for any use that is not specifically authorized under other laws or regulations and not specifically forbidden by law. Examples of permits are for commercial filming, apiaries, temporary storage yards, military uses, and agricultural uses.

Fire frequency. A general term referring to the recurrence of fire in a given area over time.

Fire management plan (FMP). The purpose of the fire management plan is to lay out how fire management strategies and tactics will protect values and provide tools to meet resource goals and objectives.

Fire suppression. All work and activities connected with control and fire extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

Flood frequency. Natural Resources Conservation Service (NRCS) flood frequency classes are based on the interpretation of soil properties and other evidence gathered during soil survey fieldwork. The NRCS uses the following flood frequency classes listed in the NRCS Soil Survey Handbook to indicate the number of times flooding occurs over a period of time: very frequent, frequent, occasional, rare, very rare, or none. Some soils in the soil survey data were interpreted to have a flood frequency of common, or having a 50 percent chance of flooding in all months in any year. "Common" is not a defined flood frequency class in the NRCS Soil Survey Handbook, so its attributes were combined with the frequent class to depict one frequent flood frequency class. (NRCS National Soil Survey Handbook Section 618.30 [NRCS 2018]). The classes are defined as follows:

- **Very Frequent**—Flooding is likely to occur very often under usual weather conditions; more than a 50 percent chance of flooding in all months of any year
- **Frequent**—Flooding is likely to occur often under usual weather conditions; more than a 50 percent chance of flooding in any year (i.e., 50 times in 100 years), but less than or equal to a 50 percent chance of flooding in all months in any year
- **Occasional**—Flooding is expected infrequently under usual weather conditions; 5 to 50 percent chance of flooding in any year or 5 to 50 times in 100 years
- **Rare**—Flooding is unlikely but is possible under unusual weather conditions; 1 to 5 percent chance of flooding in any year or nearly 1 to 5 times in 100 years
- **Very Rare**—Flooding is very unlikely but is possible under extremely unusual weather conditions; less than one percent chance of flooding in any year or less than one time in 100 years but more than one time in 500 years.
- **None**: No reasonable possibility of flooding; one chance out of 500 of flooding in any year or less than once in 500 years

Floodplain. A geographic area of relatively level land that is occasionally subject to inundation by surface water from rivers or streams.

Forage. All browse and herbaceous foods that are available to grazing animals.

Forage base. The amount of vegetation available for wildlife and livestock use.

Fugitive dust. Airborne soil particles resulting from direct surface disturbance, such as from construction equipment, or from natural sources, such as wind.

Gaining stream. A stream that gains water from the inflow of groundwater, because the channel bottom is lower than the level of the surrounding groundwater table.

Gauging station. Particular site on a stream, canal, lake, or reservoir where systematic observations of height or discharge are obtained.

Geographic information system (GIS). A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and display a potentially wide array of geospatial information.

Geologic erosion. The natural rate of erosion occurring gradually over long periods, with episodic periods of locally high rates in response to rains, runoff, and flooding. Geologic erosion can vary by slope steepness, with steeper slopes resulting in higher rates of erosion.

Goal. A broad statement of a desired outcome; it is usually not quantifiable and may not have established time frames for being achieved.

Grandfathered use. The right to use in a nonconforming manner because it existed before conforming terms and conditions were established.

Grant. Any authorization or instrument, such as an easement, lease, license, or permit, that the BLM issues under Title V of the Federal Land Policy and Management Act (43 USC 1761 et. seq.) and those authorizations and instruments that the BLM and its predecessors issued for like purposes before October 21, 1976, under the existing statutory authority. It does not include authorizations issued under the Mineral Leasing Act (43 USC 185).

Grazing system. Scheduled grazing use and non-use of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation. Grazing systems include developing pastures, utilization levels, grazing rotations, timing and duration of use periods, and necessary range improvements.

Greenhouse gas (GHG). A gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

Ground-disturbing activity. An action that alters the vegetation, surface/near surface soil resources, or surface geological features beyond natural site conditions and on a scale that affects other public land values. Examples of ground-disturbing activities are operating heavy equipment to construct well pads, roads, pits and reservoirs; installing pipelines and power lines; and conducting several types of vegetation treatments, such as prescribed fire. Ground-disturbing activities may be either authorized or prohibited.

Groundwater. Water held underground in soil or permeable rock, often feeding springs and wells.

Guidelines. Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process; however, they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2.

Habitat. An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycles.

Hazardous material. A substance, pollutant, or contaminant that, due to its quantity, concentration, or physical or chemical characteristics, poses a potential hazard to human health and safety or to the environment if released.

Historic climax plant community (HCPC). A historic climax plant community is a plant community that existed on an ecological site before European immigration and settlement. The historic climax plant community of an ecological site is not a precise assemblage of species for which the proportions are the same from place to place or from year to year. In all plant communities, variability is apparent in productivity and occurrence of individual species. Spatial boundaries of the communities; however, can be recognized by characteristic patterns of species composition, association, and community structure (adapted from USDA-Natural Resources Conservation Service 1997, amended 2003; Habich 2001). The historic plant community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described represent plant communities that are known to occur when the site is disturbed by factors such as grazing, fire or drought.

Historic properties. Cultural resources that meet specific criteria that make them eligible for listing on the National Register of Historic Places.

Impact. The effect, influence, alteration, or imprint caused by an action.

Impairment. The degree to which a distance of clear visibility is degraded by human-made pollutants.

Implementation decisions. Decisions that take action to implement land use planning; generally appealable to Interior Board of Land Appeals under 43 CFR 4.410.

Implementation plan. An area- or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans.

Indicators. Factors that describe resource conditions and changes and can help the BLM determine trends over time.

Indirect impacts. Result from implementing an action or alternative but usually occur later in time or are removed in distance and are reasonably certain to occur.

Intermittent stream. A stream that flows only at certain times of the year, when it receives water from springs or from some surface sources, such as melting snow in mountainous areas. During the dry season and throughout minor drought periods, these streams do not flow. The characteristics of such streams are not well defined and are often inconspicuous. In the absence of external limiting factors, such as pollution and thermal modifications, plant and animal species are scarce and are adapted to the wet and dry conditions of the fluctuating water level.

Invertebrate. An animal lacking a backbone or spinal column, such as insects, snails, and worms. The group includes 97 percent of all animal species.

Invasive plants. Nonnative plants that have been introduced into an environment in which they did not evolve; they can establish sustaining populations in areas beyond their natural range. These plants are characteristically adaptable and aggressive and lack natural enemies to limit their reproduction and spread. Their vigor, rapid growth, and high reproductive capacity allow them to outcompete native plants for key resources. This can result in their dominance of both human-influenced and native ecosystems. Once established, invasive plants can cause significant harm to environmental and economic values.

K factor erosion risk rating. Erosion factor K appears in the Universal Soil Loss Equation (Wischmeier and Smith 1978) as a relative index of susceptibility of bare cultivated soil to sheet and rill erosion by rainfall. The ratings are as follows: low = 0.05 to 0.20, medium = 0.21 to 0.40, high = 0.41+. Soils high in clay and coarse texture soils have low K values because they resist detachment. Medium-textured soils, such as fine sandy loams, have moderate K values because they are moderately susceptible to detachment and runoff.

Land tenure adjustments. Landownership or jurisdictional changes. To improve the manageability of BLM-administered lands and their usefulness to the public, the BLM has numerous authorities for repositioning lands into a more consolidated pattern, for disposing of lands, and for entering into

cooperative management agreements. These land pattern improvements are completed primarily using land exchanges but also through land sales, jurisdictional transfers to other agencies, and the use of cooperative management agreements and leases.

Land treatment. All methods of artificial range improvement arid soil stabilization, such as reseeding, brush control (chemical and mechanical), pitting, furrowing, and water spreading.

Land use allocation. The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions (BLM 2005).

Land use plan. A set of decisions that establish management direction for land in an administrative area, as prescribed under the Federal Land Policy and Management Act; an assimilation of land use plan level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes both resource management plans and management framework plans (BLM 2005).

Land use plan decision. Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals.

Lentic. Pertaining to standing water, such as lakes and ponds.

Long-term effect. The effect could occur for an extended period after an alternative is implemented. The effect could last several years or more.

Lotic. Pertaining to moving water, such as streams or rivers.

Management decision. A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

Mine. An underground opening or open pit for extracting minerals.

Mineral entry. The filing of a claim on public land to obtain the right to any locatable minerals it may contain.

Mineral estate. The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation.

Mitigation. Specific means, measures, or practices that could reduce, avoid, or eliminate adverse impacts. Mitigation can apply to the following:

- Avoiding an impact altogether by not taking a certain action or parts of an action
- Minimizing an impact by limiting the magnitude of the action and its implementation
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment

- Reducing or eliminating an impact over time by preservation and maintenance operations during the life of the action
- Compensating for an impact by replacing or providing substitute resources or environments

Monitoring (plan monitoring). The process of tracking the implementation of land use plan decisions and collecting and assessing data necessary to evaluate the effectiveness of those decisions.

Motorized travel. Moving by means of vehicles that are propelled by motors, such as cars, trucks, off-highway vehicles, motorcycles, snowmobiles, aircraft, and boats.

Motorized vehicles or uses. Vehicles that are motorized, such as jeeps, trail motorcycles or dirt bikes, aircraft, and all-terrain vehicles, such as four-wheelers and three-wheelers.

Multiple use. There are many definitions of multiple use, as follows (BLM 2016):

- The management of the public lands and their various resources, in the combination that will best meet the present and future needs of the American people
- Making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide for periodic adjustments to changing needs and conditions
- The use of some land for less than all of the resources
- A combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historic values
- Harmonious and coordinated management of the various resources without permanent impairment of the land productivity and the quality of the environment, with consideration given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output

National Environmental Policy Act of 1969 (NEPA). Public Law 91-190. Establishes environmental policy for the nation. In part, NEPA requires federal agency officials to consider environmental values in decision-making.

National Wild and Scenic Rivers System (NWSRS). A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams, as follows:

- Recreation—Rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past
- Scenic—rivers or sections of rivers free of impoundments, with shorelines or watersheds still largely undeveloped but accessible in places by roads
- Wild—rivers or sections of rivers free of impoundments and generally inaccessible, except by trails, with watersheds or shorelines essentially primitive and waters unpolluted

Native vegetation. Plant species that were extant before Euro-American settlement and, consequently, are in balance with their ecosystems because they have well-developed parasites, predators, and pollinators.

Natural processes. Fire, drought, insect and disease outbreaks, flooding, and other events that existed before Euro-American settlement and that shaped vegetation composition and structure.

Naturalness. Consistent with what would occur without human intervention.

Nitrogen dioxide (NO₂). A molecule of one nitrogen atom and two oxygen atoms. Results usually from further oxidation of nitric oxide (NO) in the atmosphere. Ozone accelerates the conversion.

Nitrogen oxide. A gaseous mixture of nitric oxide (NO) and nitrogen dioxide (NO₂) and symbolically represented as NO₃.

Nonmotorized travel. Moving by foot, stock or pack animal, nonmotorized boat, skis, or mechanized vehicle, such as a bicycle.

Nonfunctional condition. Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or woody debris to dissipate energies associated with flows and thus are not reducing erosion or improving water quality.

Noxious weeds. A subset of invasive plants designated and regulated by state and federal laws. This is because they are known to be detrimental to agriculture, commerce, natural resources, and public health. The Arizona Department of Agriculture maintains lists of prohibited, regulated, and restricted noxious weeds through the Arizona Administrative Code (AAC R3-4-244 and -245) (ADA 2006).

Object. The resources, localities, and materials, both individually and collectively, in the context of the natural environments that support and protect them as identified in the enabling legislation that founded the San Pedro Riparian National Conservation Area.

Objective. A description of a desired outcome for a resource. Objectives can be quantified and measured and, where possible, have established time frames for being achieved.

Off-highway vehicle (OHV; also off-road vehicle). Any motorized vehicle capable of, or designated for, travel on or immediately over land, water, or other natural terrain. OHVs do not include the following:

- Any non-amphibious registered motorboat
- Any military, fire, emergency, or law enforcement vehicle while being used for emergencies
- Any vehicle whose use is expressly authorized by the BLM Authorized Officer or otherwise officially approved
- Vehicles in official use
- Any combat or combat support vehicle when used for national defense emergencies (43 CFR 8340.0-5)

Outstandingly remarkable value (ORV). Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: “scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values...” Other similar values that may be considered are ecological, biological, or botanical.

Ozone. A faint blue gas produced in the atmosphere from chemical reactions of burning coal, gasoline, and other fuels and chemicals found in such products as solvents, paints, and hairsprays.

Paleontological resource. Any fossilized remains or traces of organisms that are preserved in or on the earth’s crust, that are of scientific interest, and that provide information about the history of life.

Particulate matter (PM). One of the six criteria pollutants for which the US Environmental Protection Agency established National Ambient Air Quality Standards. Particulate matter is defined as two categories: fine particulates, with an aerodynamic diameter of 10 micrometers (PM₁₀) or less, and fine particulates, with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}).

Perennial stream. One that flows continuously. Perennial streams are generally associated with a water table in the localities that they flow through.

Permitted use. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and expressed in animal unit months (43 CFR 4100.0-5).

Permittee. A person or company permitted to graze livestock on public land.

Planning area. The area that corresponds to the Riparian National Conservation Area boundary designated by PL 100-696. The planning area for the San Pedro Riparian National Conservation Area RMP/EIS covers approximately 58,254 surface acres and includes BLM-administered, private, and state land. The subsurface mineral estate was withdrawn under PL 100-696 from all forms of entry, appropriation, or disposal; from location, entry, and patent under the US mining laws; and from disposition under all laws pertaining to mineral and geothermal leasing and all amendments thereto.

Planning criteria. The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision-making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Planning issues. Concerns, conflicts, and problems with the existing management of public lands. Frequently, issues are based on how land uses affect resources. Some issues concern how land uses can affect one another or how protecting resources affects land uses.

Point bar. The point bar is the deposit formed around and against the convex bank in a channel bend. (Dunne & Leopold 1979)

Policy. This is a statement of guiding principles or procedures designed and intended to influence planning decisions, operating actions, or other affairs of the BLM. Policies are established interpretations of legislation, executive orders, regulations, or other presidential, secretarial, or management directives.

Prescribed fire. A wildland fire planned to meet specific objectives identified in a written, approved, and prescribed fire plan for which National Environmental Policy Act requirements (where applicable) have been met.

Prevention of significant deterioration (PSD). An air pollution permitting program intended to ensure that air quality does not diminish in attainment areas. PSD sets limits on the amount of air pollution considered significant in an area. Class I applies to areas where almost any change in air quality would be significant; class II applies to areas where the deterioration normally accompanying moderate well-controlled growth would be insignificant; and class III applies to areas where industrial deterioration would generally be insignificant.

Primitive and unconfined recreation. Nonmotorized, nonmechanized (except as provided by law), and undeveloped types of recreation. Bicycles are considered mechanical transport, so their use is not considered primitive and unconfined recreation.

Primitive road. A linear route managed for use by four-wheel drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

Proclamation. A statement issued by a president on a matter of public policy intended to protect an array of scientific, biological, archaeological, geological, cultural, and historic objects.

Proper functioning condition (PFC). A term describing stream health that is based on the presence of adequate vegetation, landform, and debris to dissipate energy, reduce erosion, and improve water quality.

Public land. Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM without regard to how the United States acquired ownership. The exception is lands on the Outer Continental Shelf and lands held for the benefit of Indians, Aleuts, or Eskimos (BLM 2005).

Range improvement. An authorized physical modification or treatment designed to improve production of forage, to change vegetation composition, to control patterns of use, to provide water, to stabilize soil and water conditions, and to restore, protect, and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means (43 CFR 4100.0-5).

Reclamation. The suite of actions taken in an area affected by human disturbance, the outcome of which is intended to change the condition of the disturbed area to meet predetermined objectives or to make it acceptable for certain defined resources, such as wildlife habitat, grazing, and ecosystem function.

Recreation and Public Purpose (R&PP) Act leases—BLM-administered and classified land, under the terms of the R&PP Act, are leased for the benefit of state and local governments or qualified nonprofit organizations for public uses, such as campgrounds, schools, parks, fire stations, hospitals, and historic monument sites.

Recreation experiences. Psychological outcomes realized either by recreationists and tourists as a direct result of their on-site leisure engagements and recreation-tourism activity participation or by nonparticipating community residents because of their interaction with visitors and guests in their community or interaction with the BLM and other public and private recreation-tourism providers and their actions.

Recreation management zone (RMZ). An area in an SRMA or ERMA managed according to specific objectives that support desired recreation in the area.

Recreation opportunities. Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and to attain more lasting, value-added beneficial outcomes.

Recreation setting characteristic. Derived from the recreation opportunity spectrum, these characteristics are categorized as physical, social, and operation components and are further subdivided into specific characteristics (attributes). These characteristics are categorized across a spectrum of classes that describe a range of qualities and conditions of a recreation setting. The classes are primitive, backcountry, middle country, front country, rural, and urban.

Rehabilitate. Returning disturbed lands as near to its pre-disturbed condition as is reasonably practical or as specified in approved permits.

Resource management plan (RMP). A land use plan prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land use allocations and coordination guidelines for multiple use, objectives, and actions to be achieved.

Restore/restoration. Implementation of passive or active management actions designed to increase or maintain perennial herbaceous species and landscape cover of sagebrush so that plant communities are more resilient to disturbance and invasive species over the long term. A long-term goal may be to create functional, high quality habitat that is occupied by special status species. A short-term goal may be to restore the landform, soils, and hydrology and to increase the percentage of preferred vegetation, seeding of desired species, or treatment of undesired species.

Restriction/restricted use. A limitation or constraint on public land uses and operations. Restrictions can be of any kind but most commonly apply to certain types of vehicle use, temporal or spatial constraints, or certain authorizations.

Revegetation. The process of putting vegetation back in an area where it previously existed, which may or may not simulate natural conditions.

Right-of-way (ROW). The most common form of BLM land use authorization. They are issued under the regulations at 43 CFR 2800 and 2880 for the use of BLM-administered land by private, commercial, and government entities. Facilities requiring ROW grants from the BLM include those for power lines, pipelines, roads, railroads, communication, and utility-scale wind and solar energy testing and development projects.

Riparian area. A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, next to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

Riparian zone. The areas bordering rivers and other bodies of surface water. They include the floodplain as well as the riparian buffers adjacent to the floodplain.

Road. A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels and maintained for regular and continuous use.

Roadless. The absence of roads that have been constructed and maintained by mechanical means to ensure regular and continuous use.

Rotation. Grazing rotation between pastures in the allotment for the permitted time.

Routes. Multiple roads, trails, and primitive roads; a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system.

Saturated soils. A state when the infiltration capacity of the soil is exceeded from above due to rainfall or snowmelt runoff. Soils can also become saturated from groundwater.

Scoping process. An early and open public participation process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

Season of use. The time during which livestock grazing is permitted on a given range area, as specified in the grazing lease.

Seeding. A vegetation treatment that includes the application of grass, forb, or shrub seed, either by air or from the ground. Seeding allows native species or placeholder species to become established and disturbed areas to be restored to a cover dominated by perennial plants, thereby decreasing the risk of subsequent invasion by exotic plant species. Seeding is used primarily as a follow-up treatment in areas where disturbance or the previously described treatments have removed exotic plant species and their residue.

Sensitive soils. Those with characteristics that, more than healthy soils, make them susceptible to impacts or that make them more difficult to restore or reclaim after disturbance.

Short-term effect. Occurs only during or immediately after implementation of an alternative.

Slope gradient. The difference in elevation between two points, expressed as a percentage of the distance between those points.

Solitude. The state of being alone or remote from habitations; isolation; a lonely or secluded place. Factors contributing to opportunities for solitude may include size, natural screening, topographic relief, vistas, physiographic variety, and the ability of the user to find a secluded spot.

Special recreation management area (SRMA). An administrative public lands unit identified in land use plans where the existing or proposed recreation opportunities and recreation setting are recognized for their unique value, importance, or distinctiveness, especially as compared with other areas used for recreation.

Special recreation permit (SRP). Authorization that allows for recreation on public lands and related waters. Issued as a means to control visitor use, to protect recreation and natural resources, and to provide for the health and safety of visitors. Commercial SRPs are also issued to provide a fair return for the commercial use of public lands.

Special status species. As defined in BLM Manual 6840, BLM special status species are those listed, candidate, or proposed for listing under the Endangered Species Act. It is also those species requiring special management consideration to promote their conservation and to reduce the likelihood and need for future listing under the Endangered Species Act and that are designated as sensitive by a BLM state director. All federally listed candidate species, proposed species, and delisted species in the 5 years following delisting are conserved as BLM sensitive species.

Stabilize. The process of stopping further damage from occurring.

Standard. A description of the physical and biological conditions or degree of function required for healthy, sustainable lands, such as land health standards. A standard is expressed as a desired outcome (goal).

Stipulation (general). A term or condition in an agreement or contract.

Sustained yield. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands, consistent with multiple uses.

Technically/economically feasible. An action that is practical or feasible from the technical and economic standpoint and using common sense, rather than simply one that is desirable from the applicant's standpoint. It is the BLM's sole responsibility to determine what actions are technically and economically feasible. The BLM will consider whether implementation of the proposed action is likely, given past and current practice and technology. This consideration does not necessarily require a cost-benefit analysis or speculation about an applicant's costs and profit (CEQ 1981).

Temporary/temporary use. A relative term to be considered in the context of the resource values affected and the nature of the resource uses and activities taking place. Generally, a temporary activity is considered to be one that is not fixed in place and is of short duration.

Terrestrial. Living or growing in or on the land.

Threatened species. Any species that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range (BLM 2008). Under the Endangered Species Act in the

United States, a species deemed threatened is less protected than an endangered species. The US Fish and Wildlife Service designates a species as threatened or endangered, as directed by the Endangered Species Act.

Tier IA species. Federally listed species, candidate species, species with a signed conservation agreement, species that require monitoring following delisting, or species that are not allowed to be harvested, known as closed season species.

Tier IB species. Those that do not match the criteria for Tier IA but are vulnerable in at least one of eight vulnerability categories.

Tier IC species. Those species with insufficient information available to fully assess their status but that still require monitoring.

Total dissolved solid. Salt or salts aggregated from carbonates, bicarbonates, chlorides, sulfates, phosphates, and nitrates of calcium, magnesium, manganese, sodium, potassium, and other cations that form salts.

Total maximum daily load (TMDL). An estimate of the total quantity of pollutants (from all point, nonpoint, and natural sources) that may be allowed into waters without exceeding applicable water quality criteria.

Trail. A linear route managed for human power, such as for hiking or bicycling; stock, such as horseback riding; or off-highway vehicle forms of transportation or for enjoying an area's historic or heritage values. Trails are not generally managed for four-wheel drive or high-clearance vehicle use.

Traditional cultural property (TCP). One that is eligible for inclusion on the National Register of Historic Places, based on its association with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community.

Traditional use area. Places associated with cultural practices, such as plants, minerals, or other resources for gathering or that are important to a living community for ceremonial or religious practices.

Transmission. The movement or transfer of electric energy over an interconnected group of lines and associated equipment between points of supply and points where it is transformed for delivery to consumers or is delivered to other electric systems. Transmission is considered to end when the energy is transformed for distribution to consumers.

Transportation system. The roads, primitive roads, and trails designated as facility assets and maintained by the BLM.

Trespass. Any unauthorized use of public land.

Tribal interests. Native American or Native Alaskan economic rights, such as Indian trust assets, resource uses, access guaranteed by treaty rights, and subsistence uses.

Understory. That portion of a plant community growing underneath the taller plants on the site.

Unnecessary or undue degradation. Conditions, activities, or practices that are characterized as follows (43 CFR 3809.5):

- Fail to comply with one or more of the following: the performance standards in 43 CFR 3809.420, the terms and conditions of an approved plan of operations, operations described in a complete notice, and other federal and state laws related to environmental and cultural resources protection
- Are not “reasonably incident” to prospecting, mining, or processing operations, as defined in 43 CFR 3715.0-5
- Fail to attain a stated level of protection or reclamation required by specific laws in areas such as Wild and Scenic Rivers, BLM-administered portions of the National Wilderness System, and BLM-administered national monuments and national conservation areas

Utility corridor. Tract of land varying in width and forming a passageway that various commodities, such as oil, gas, and electricity, are transported through.

Valid existing rights. Documented legal rights or interests in the land that allow a person or entity to use said land for a specific purpose and that are still in effect. Such rights include fee title ownership, mineral rights, rights-of-way, easements, permits, and licenses. Such rights may have been reserved, acquired, leased, granted, permitted, or otherwise authorized over time.

Vegetation condition class (VCC). Quantifies the extent that current vegetation has departed from the simulated historical vegetation reference conditions. Three condition classes describe low departure (VCC 1), moderate departure (VCC 2), and high departure (VCC 3). VCC is calculated based on changes to species composition, structural stage, and canopy closure.

Vegetation manipulation. Planned alteration of vegetation communities through use of mechanical or chemical means, seeding, or prescribed fire or managed fire to achieve desired resource objectives.

Vegetation treatments. Management practices that change the vegetation structure to a different stage of development. Vegetation treatment methods include managed fire, prescribed fire, treatment by chemical or mechanical means, and seeding.

Vegetation type. A plant community with immediately distinguishable characteristics based on and named after the apparent dominant plant species.

Visibility (air quality). A measure of the ability to see and identify objects at different distances.

Visitor day. Twelve hours of single or multiple visits by one or more persons.

Visual resource management. The BLM system to identify and evaluate visual resources to determine appropriate levels of management.

Visual resources. The visible physical features on a landscape, (topography, water, vegetation, animals, structures, and other features) that comprise the scenery of the area.

Watershed. Topographical region or area delineated by water draining to a particular watercourse or body of water.

Wild and Scenic River. A river identified for study by Congress under Section 5(a) of the Wild and Scenic Rivers Act, or one identified for study by the Secretary of Agriculture or the Secretary of the Interior under Section 5(d)(1) of the Wild and Scenic Rivers Act. These rivers are studied under the provisions of Section 4 of the Wild and Scenic Rivers Act (BLM 2012a), as follows:

Eligible river. A river or river segment found to meet the criteria in Sections 1(b) and 2(b) of the Wild and Scenic Rivers Act of being free flowing and possessing one or more outstandingly remarkable value

Suitable river. An eligible river segment found through administrative study to meet the criteria for designation as a component of the national system of rivers, as specified in Section 4(a) of the Wild and Scenic Rivers Act

Wilderness. A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that has the following characteristics:

- Generally, appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable
- Has outstanding opportunities for solitude or a primitive and unconfined type of recreation
- Has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition
- May also contain ecological, geological, or other features of scientific, educational, scenic, or historic value

The definition is contained in Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

Wilderness characteristics. Wilderness characteristics are an area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values, such as ecological, geological, or other features of scientific, educational, scenic, or historical value. Lands with wilderness characteristics have been inventoried and determined by the BLM to contain wilderness characteristics, as defined in Section 2(c) of the Wilderness Act, as follows:

- Naturalness—The degree to which an area generally appears to have been affected primarily by the forces of nature, with the imprint of people's work substantially unnoticeable
- Opportunity—A situation or condition favorable for attainment of a goal
- Outstanding—(1) Standing out among others of its kind, conspicuous, prominent; (2) superior to others of its kind, distinguished, and excellent
- Primitive and unconfined recreation—Nonmotorized, nonmechanized (except as provided by law), and undeveloped types of recreation
- Solitude—The state of being alone or remote from others, isolation; a lonely or secluded place

Wilderness inventory road. Any route outside of Wild and Scenic Areas or designated wilderness that has been improved and maintained by mechanical means to ensure relatively regular and continuous use (BLM 2012b).

Wilderness Study Area (WSA). A designation made through the land use planning process of a roadless area found to have wilderness characteristics, as described in Section 2(c) of the Wilderness Act of 1964.

Wildland fire. Any non-structure fire that occurs in the wild. The three distinct types of wildland fire that have been defined are wildfire, wildland fire use, and prescribed fire; these are defined as follows:

- **Wildfire**—An unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fires, escaped prescribed fires, and all other wildland fires where the objective is to put out the fire
- **Wildland fire use**—The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined designated areas outlined in fire management plans (operational management is described in the wildland fire implementation plan)
- **Prescribed fire**—Any fire ignited by management actions to meet specific objectives; a written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, before the fire is started

Wildland-urban interface (WUI). The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels.

Wind erosion groups. Rate the tons per acre of soil loss potential for wind erosion on 70 percent-plus unvegetated soil. Ratings are 1 = 160–310 tons per acre per year; 2 = 134 tons; 3 and 4 = 86 tons; 5 = 56 tons, 6 = 48 tons; 7 = 38 tons; and, 8 = 0 tons (USDA 1999). Wind erosion ratings between 3 and 4 are considered moderately susceptible to wind erosion, and those with ratings between 4 and 8 are considered to have a low susceptibility to wind erosion.

Withdrawal. An action that restricts the use of public land and segregates the land from the operation of some or all the public land and mineral laws. Withdrawals are also used to transfer jurisdiction of management of public lands to other federal agencies.

Xerophytic. A species of plant that has adaptations to survive in an environment with little available liquid water.

Appendix A

Figures

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APPENDIX A

Figures

- I-1 San Pedro Riparian Conservation Area










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- 2-5 Wildland Fire Management: Alternative A
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-
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 - 3-14 Visual Resource Inventory Scenic Quality Ratings
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Figure 1-1 San Pedro Riparian National Conservation Area

 SPRNCA Planning Area

Surface Management

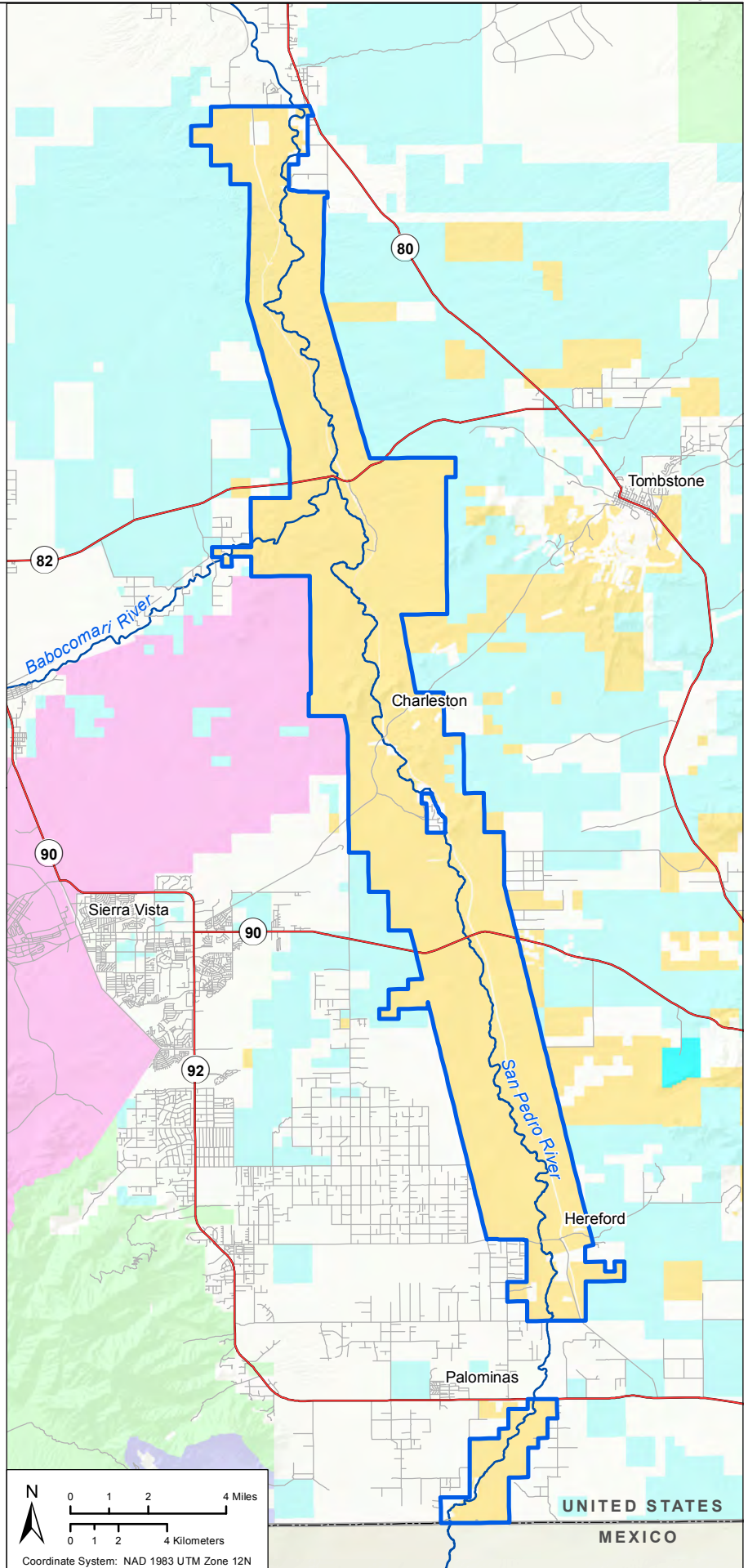
-  BLM
-  International Boundary Water Commission (IBWC)
-  Local or State Parks
-  Military
-  NPS
-  Private
-  State
-  Sierra Vista Shooting Range
-  USFS



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**Figure 2-1
Soils: Wind Erosion**

 SPRNCA Planning Area

Bare Ground Wind Erosion Susceptibility

-  High
-  Moderate
-  Low



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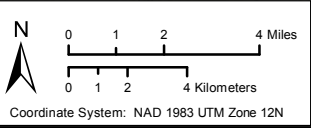
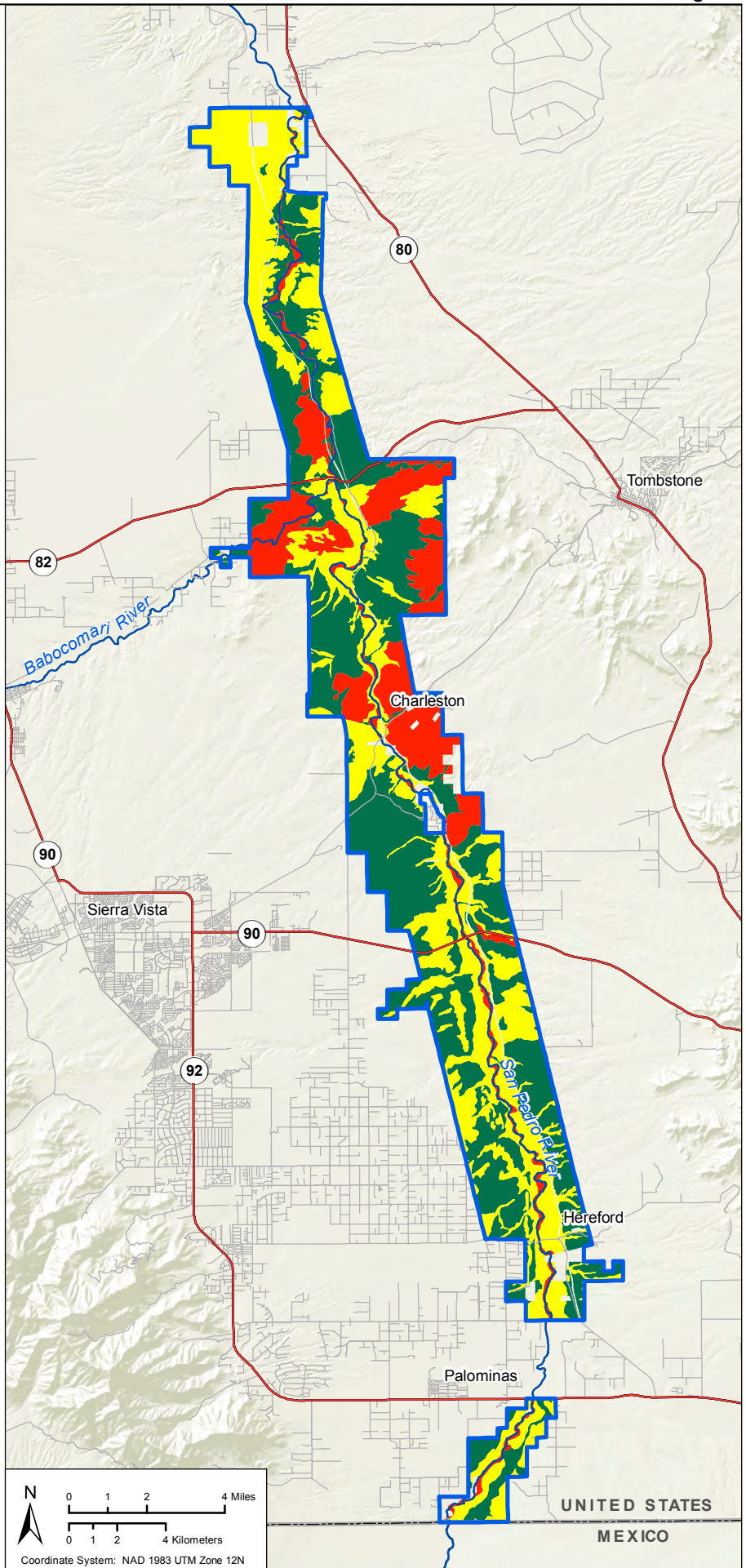


Figure 2-2
Soils: Rainfall Erosion

 SPRNCA Planning Area

Rainfall Erosion Susceptibility

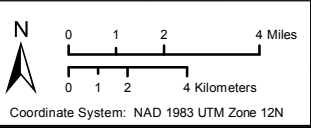
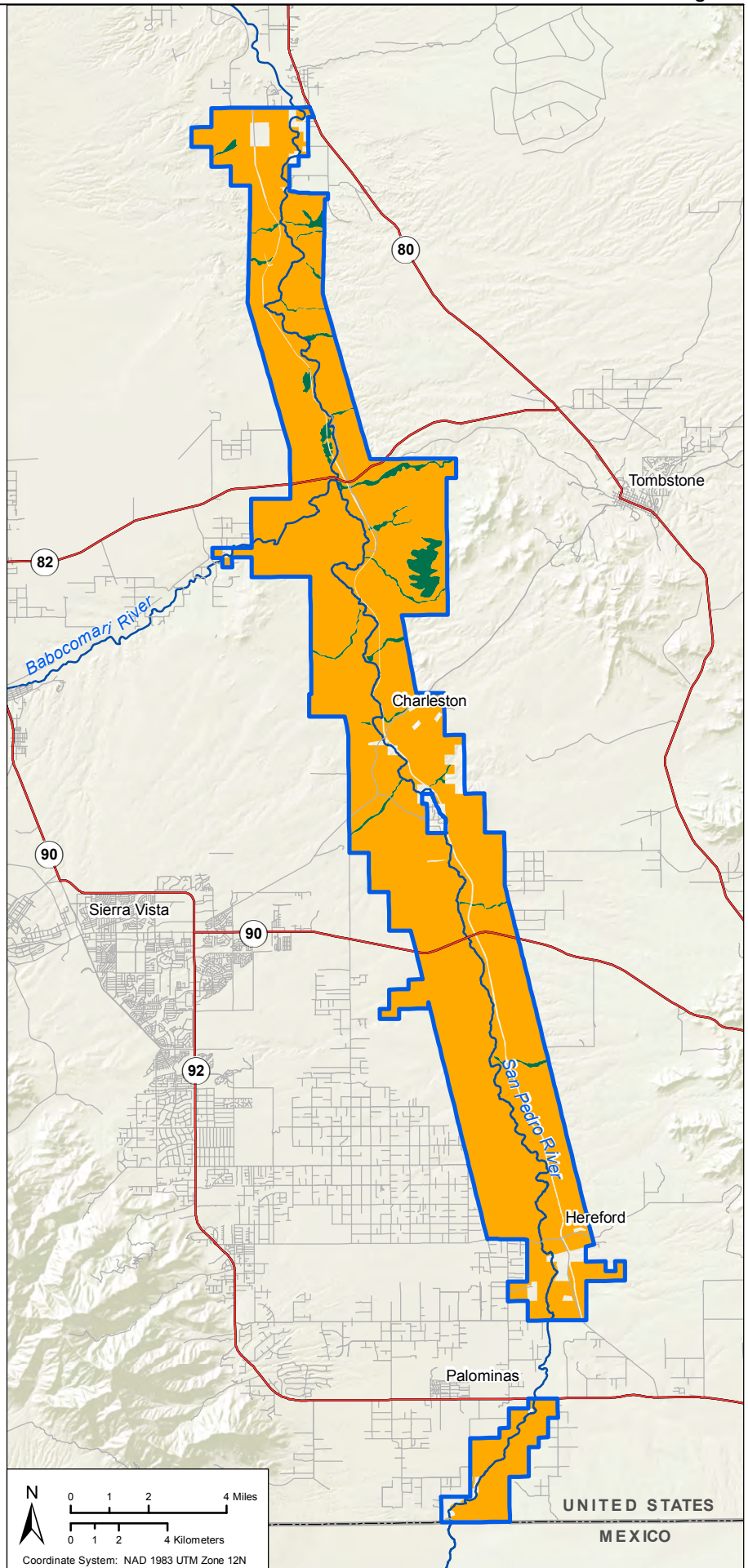
 Moderate
 Low



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**Figure 2-3
Priority Habitats:
Alternative A**

 SPRNCA Planning Area

Priority Habitat

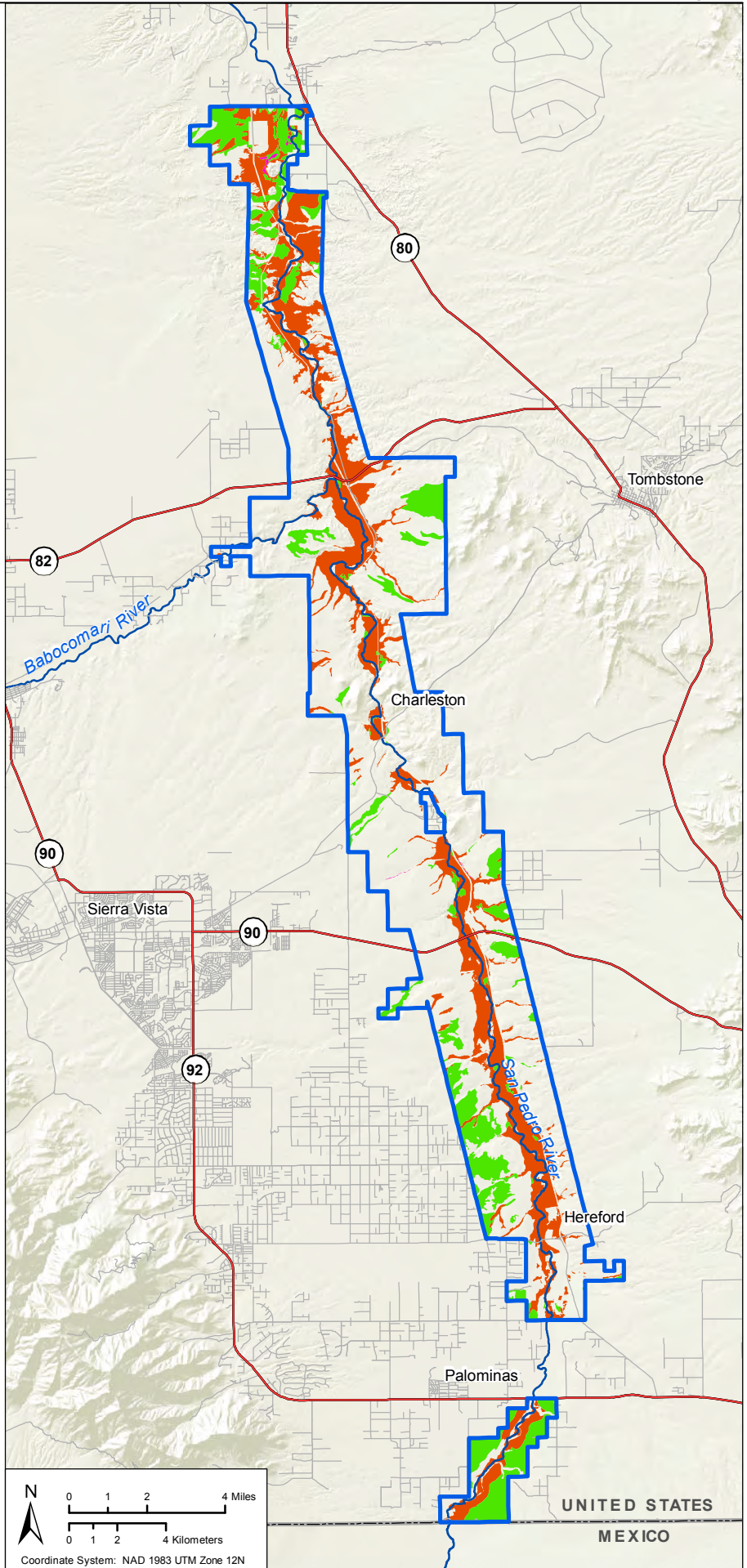
-  Riparian
-  Semidesert grassland
-  Wetlands



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**Figure 2-4
Priority Habitats:
Alternatives B, C, D,
and the Proposed Plan**




 SPRNCA Planning Area

Priority Habitat



Upland Vegetation

-  Chihuahuan desert scrub
-  Semidesert grassland


Riparian Vegetation

-  Fremont cottonwood-Goodding's willow
-  Mesquite forest (bosque)
-  Big sacaton grassland

Wetlands

-  Interior marshland (ciénega)
-  Aquatic (open water)

Xeric Riparian

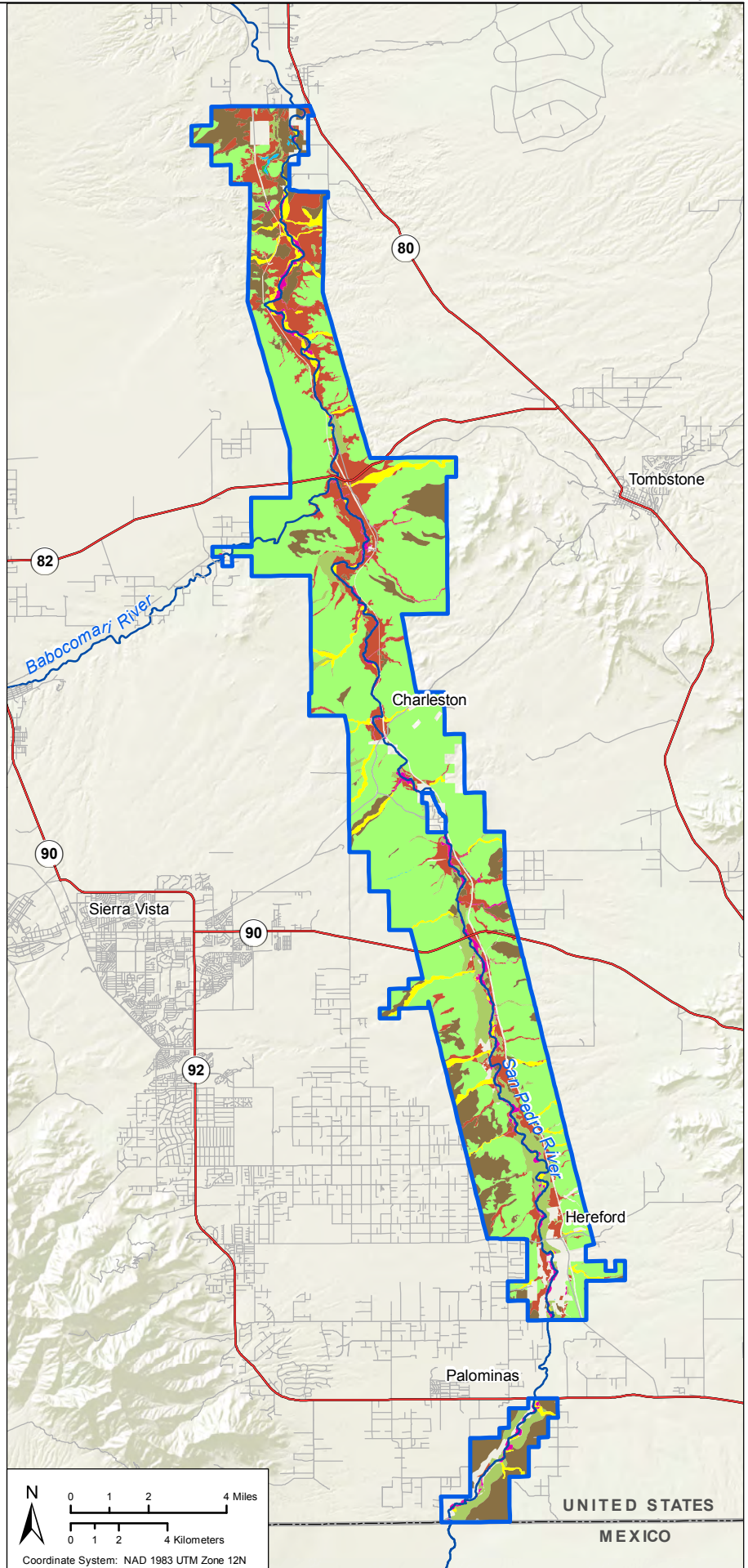
-  Sandy wash (xeric riparian)



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**Figure 2-5
Wildland Fire Management:
Alternative A**

 SPRNCA Planning Area

Wildland Fire Management

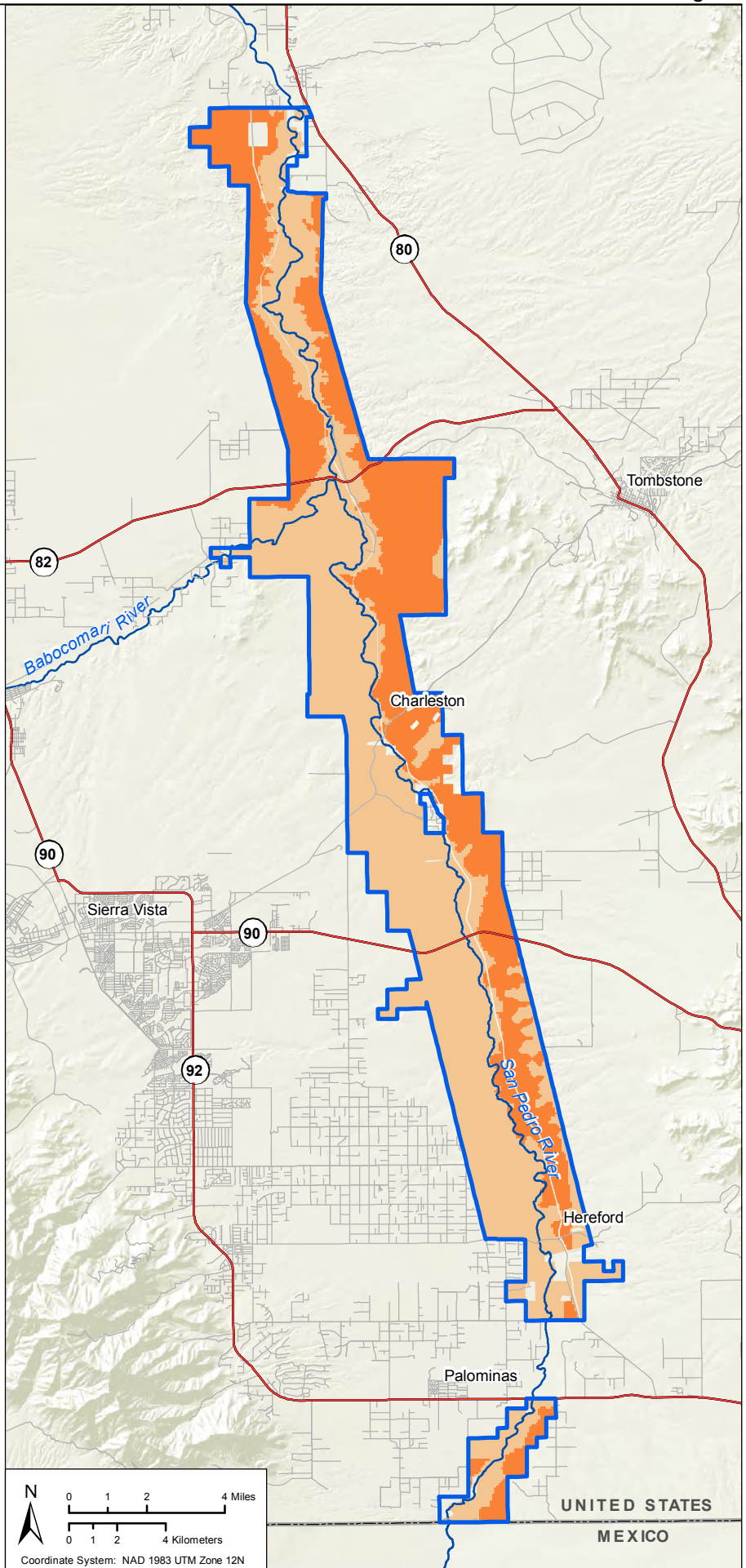
 Wildland fire use
 Non wildland fire use



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**Figure 2-6
Wildland Fire Management:
Alternatives B, C, D,
and the Proposed Plan**

 SPRNCA Planning Area

Wildland Fire Management (BCD)

 Full suppression



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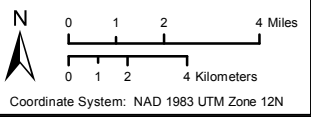
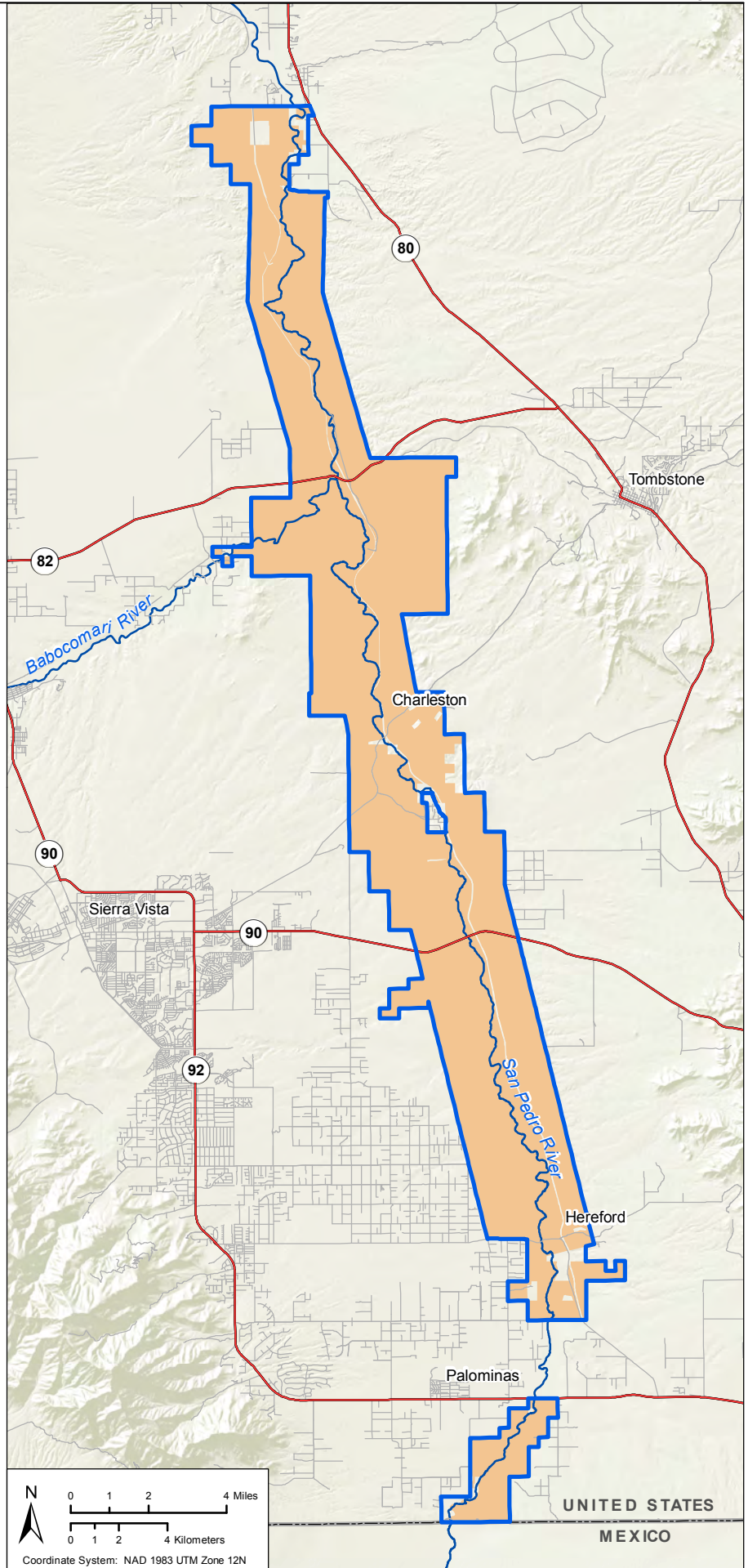






Figure 2-7
Paleontology:
Alternatives B, C, D,
and the Proposed Plan

 SPRNCA Planning Area

Potential Fossil Yield Classification

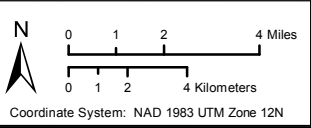
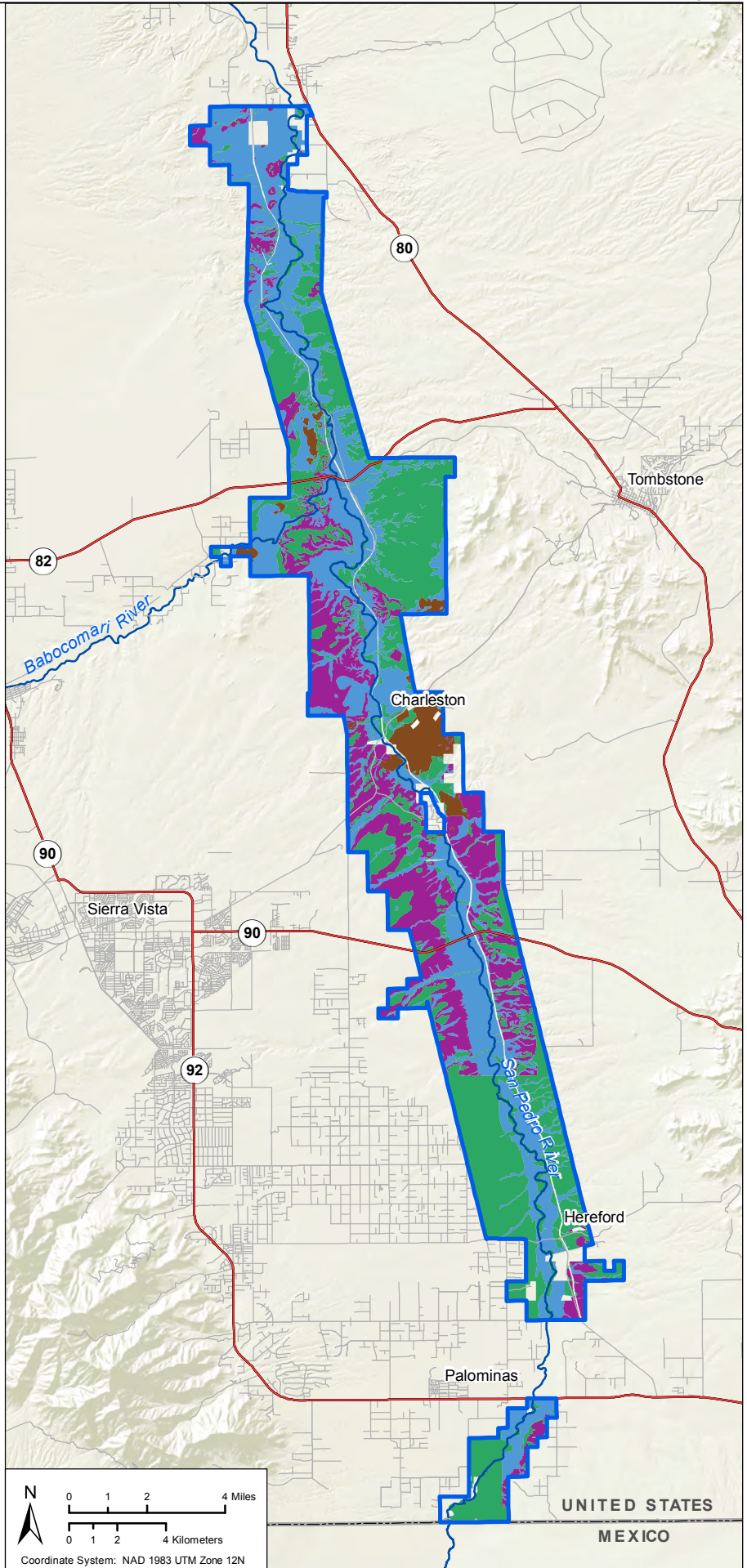
-  1—Very low sensitivity
-  2—Low sensitivity
-  4—High sensitivity
-  U—Unknown sensitivity



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



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**Figure 2-8
Visual Resources:
Alternative A**

 SPRNCA Planning Area

Visual Resource Management Class

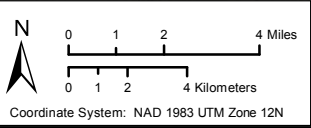
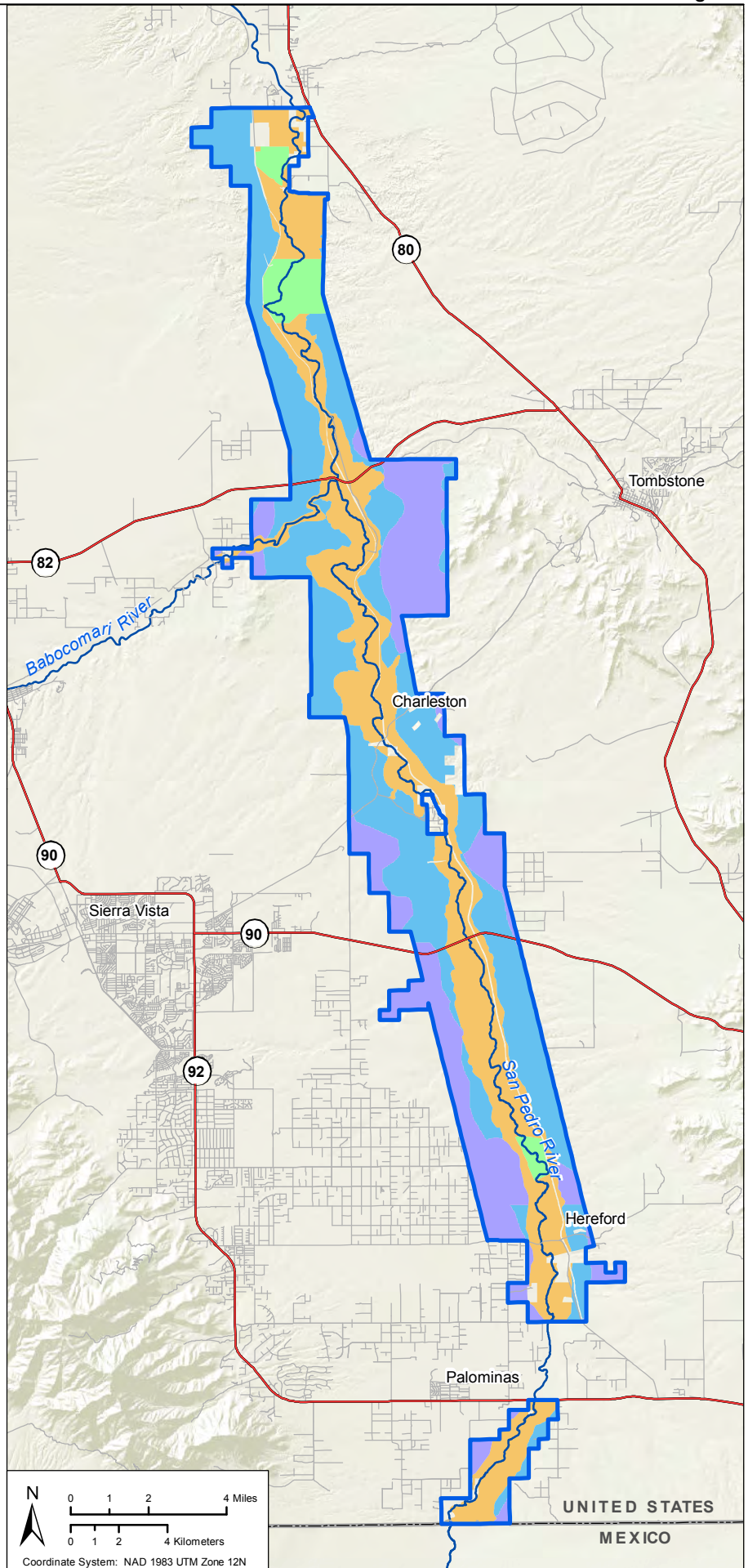
-  1
-  2
-  3
-  4



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**Figure 2-9
Visual Resources:
Alternative B**

 SPRNCA Planning Area

Visual Resource Management Class

 2
 3



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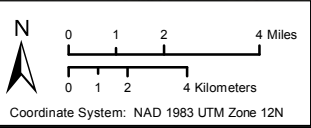
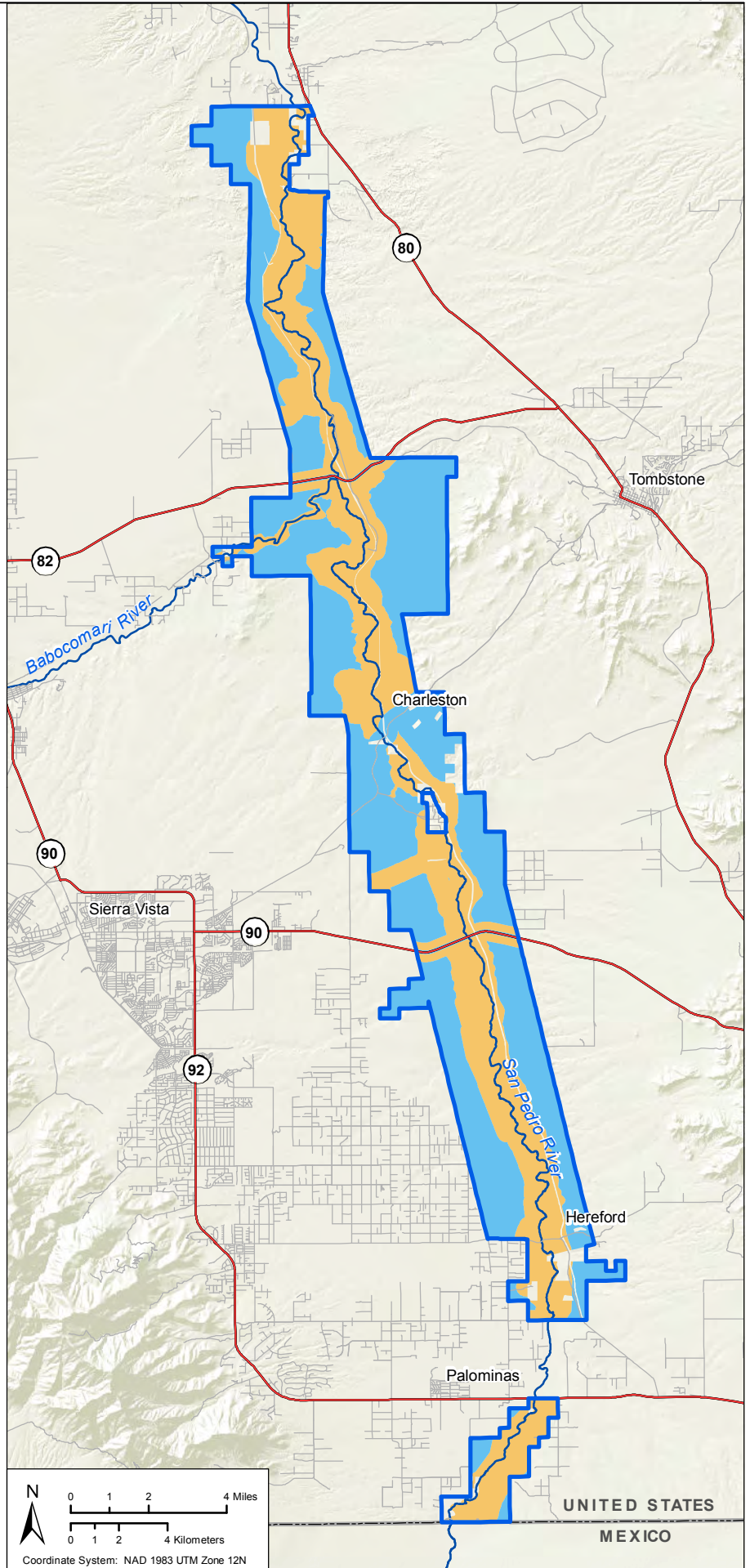




Figure 2-10
Visual Resources:
Alternative C and
the Proposed Plan

 SPRNCA Planning Area

Visual Resource Management Class

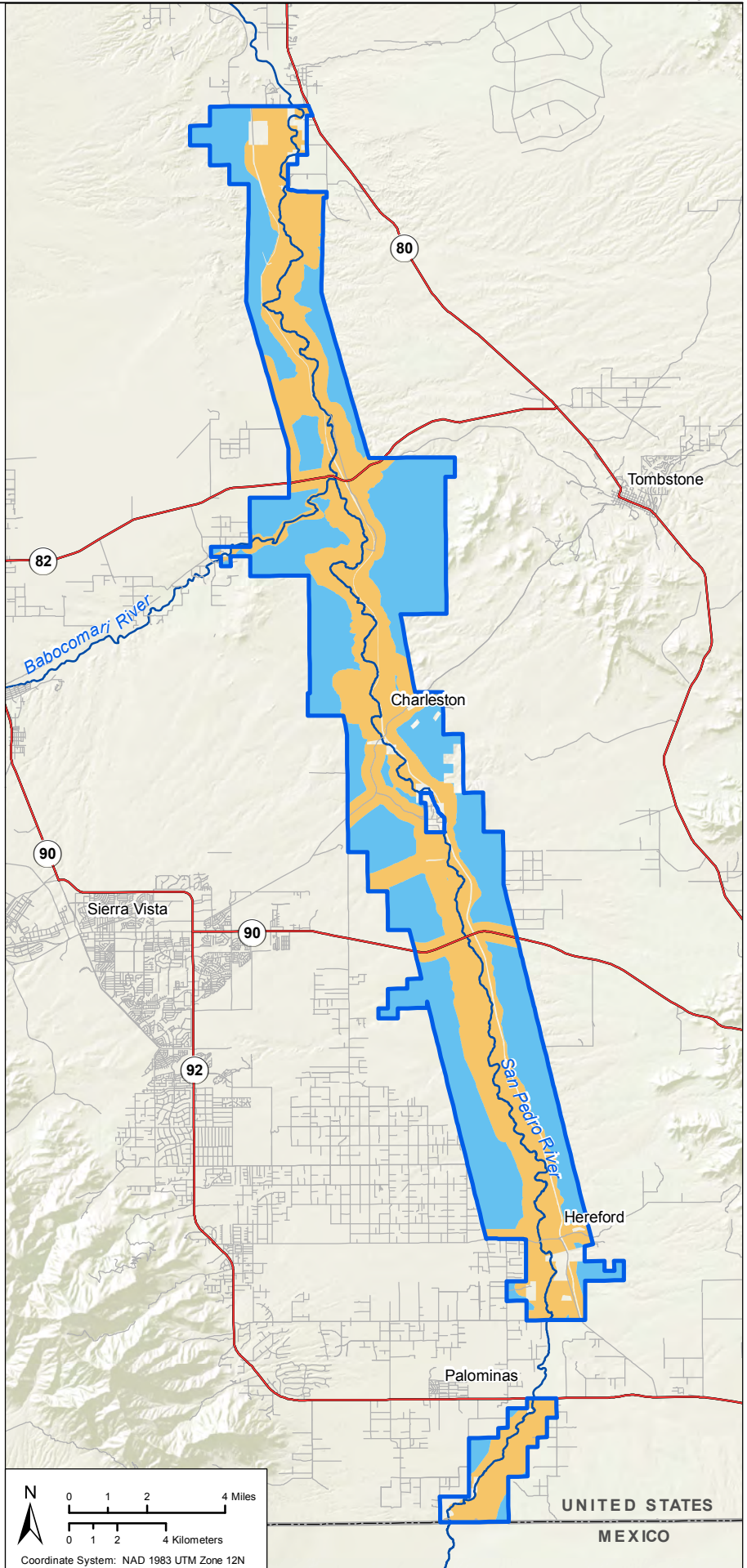
 2
 3



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**Figure 2-11
Visual Resources:
Alternative D**

 SPRNCA Planning Area

Visual Resource Management Class

 2
 3



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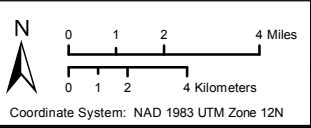
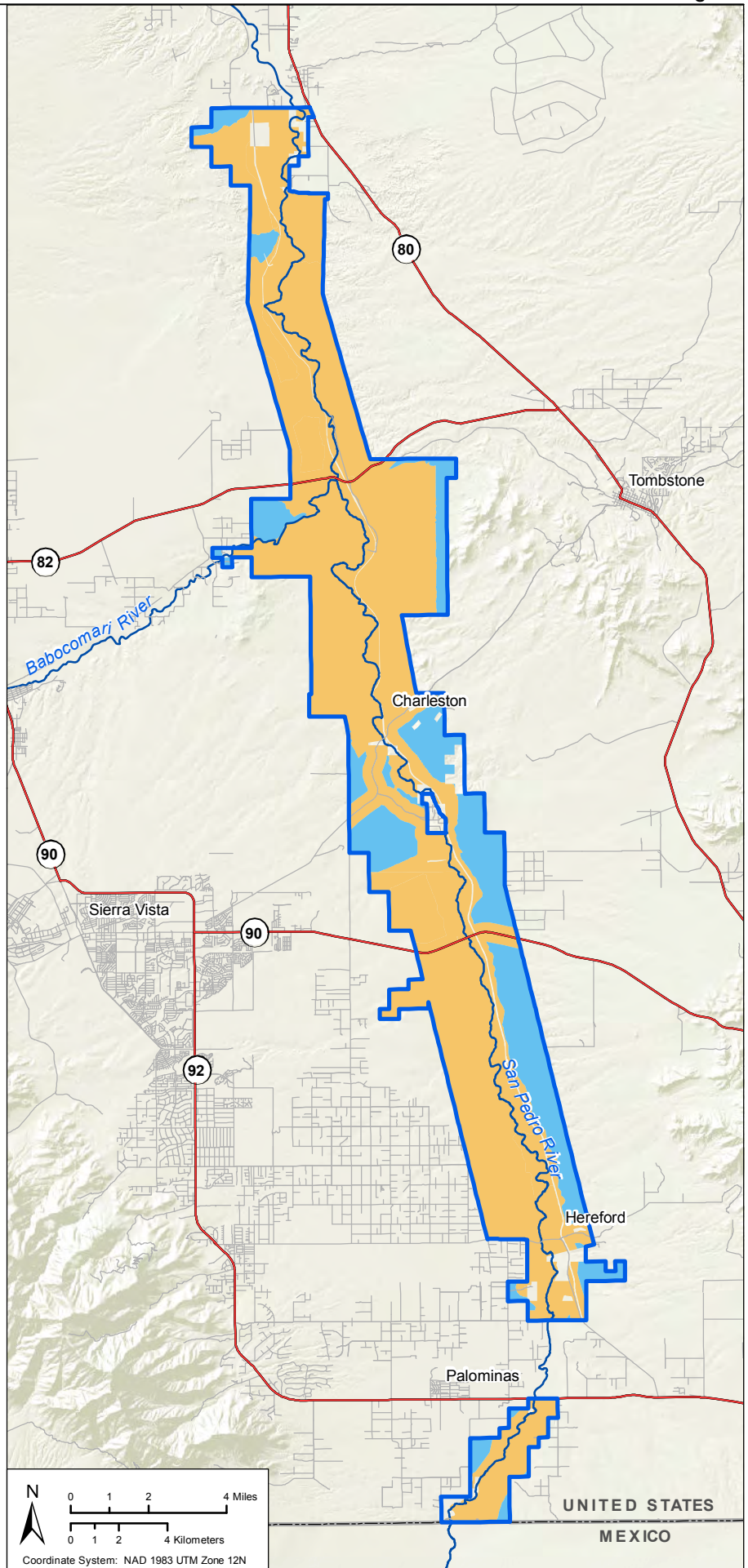




Figure 2-12
Wilderness Characteristics:
Alternatives A, B, C,
and the Proposed Plan

-  SPRNCA Planning Area
-  BLM-administered land

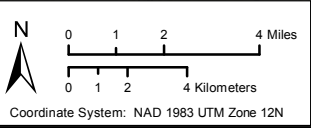
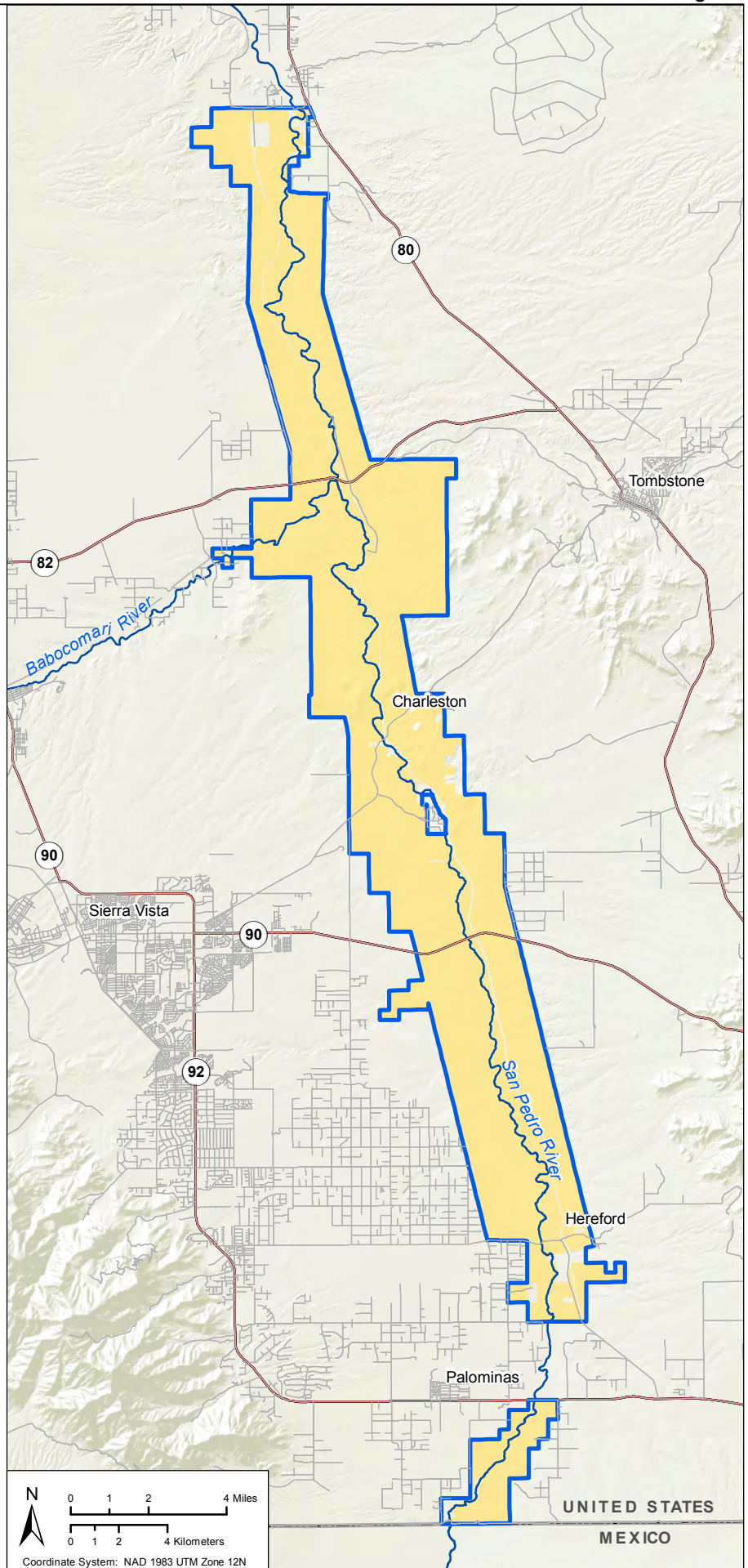
No areas would be allocated to protect wilderness characteristics as a priority.





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**Figure 2-13
Wilderness Characteristics:
Alternative D**

-  SPRNCA Planning Area
-  BLM-administered land

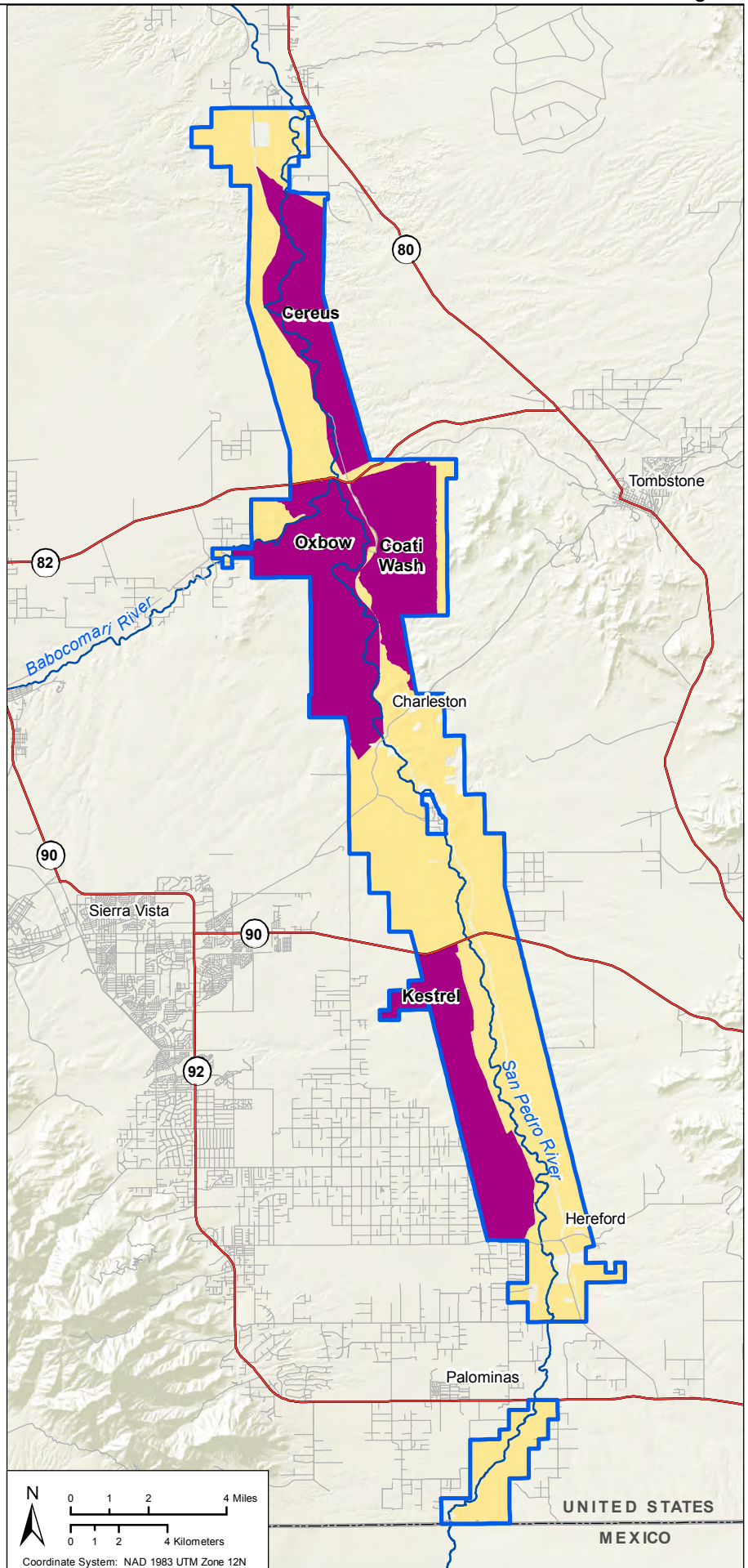
- Wilderness Characteristics (D)**
-  Lands managed to protect wilderness characteristics



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**Figure 2-14
Livestock Grazing:
Alternative A**

 SPRNCA Planning Area

Livestock Grazing

 Lands available for grazing

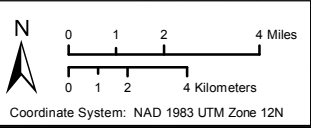
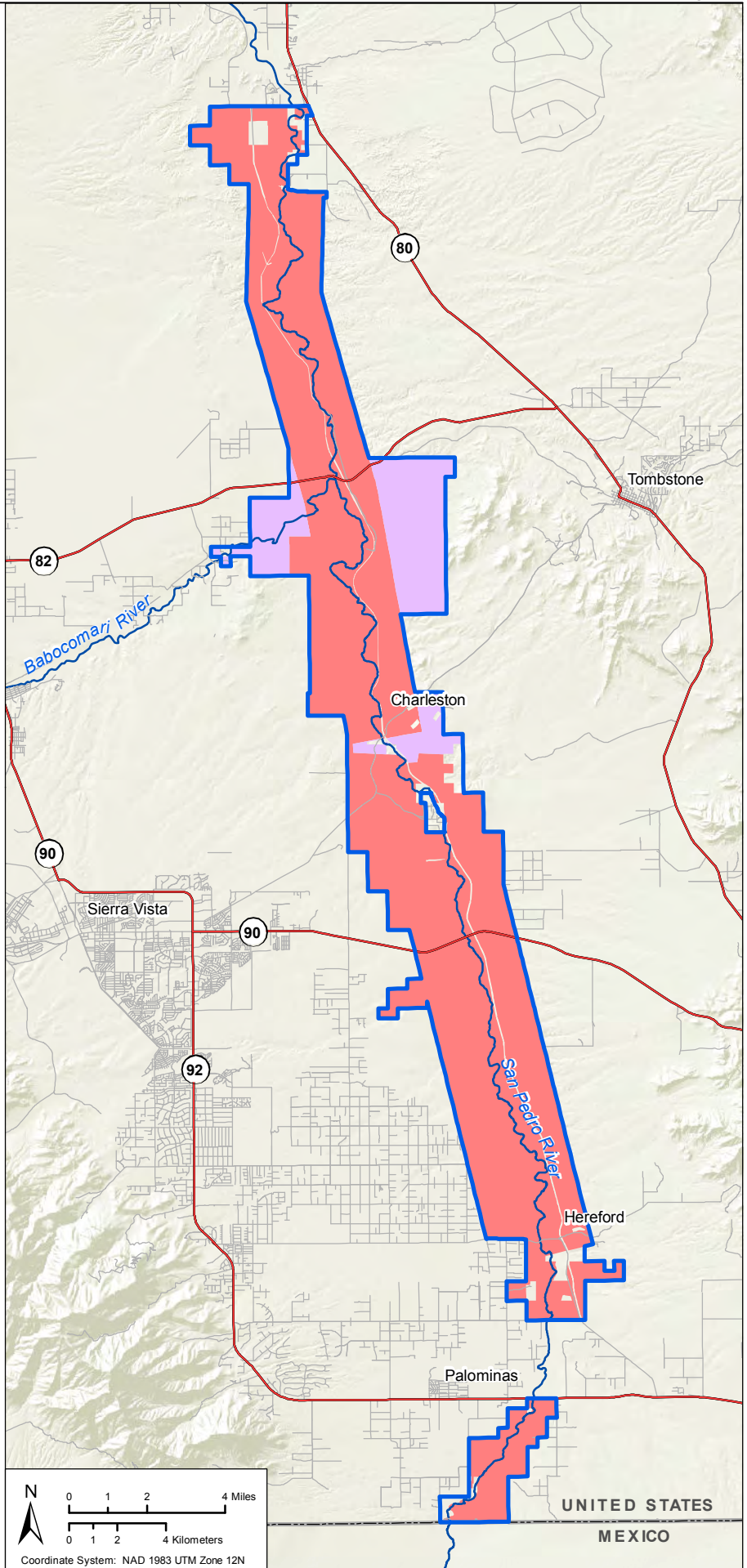
 Lands not available for grazing



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**Figure 2-15
Livestock Grazing:
Alternative B**

 SPRNCA Planning Area

Livestock Grazing

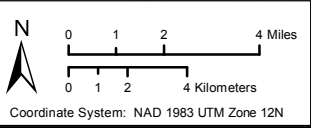
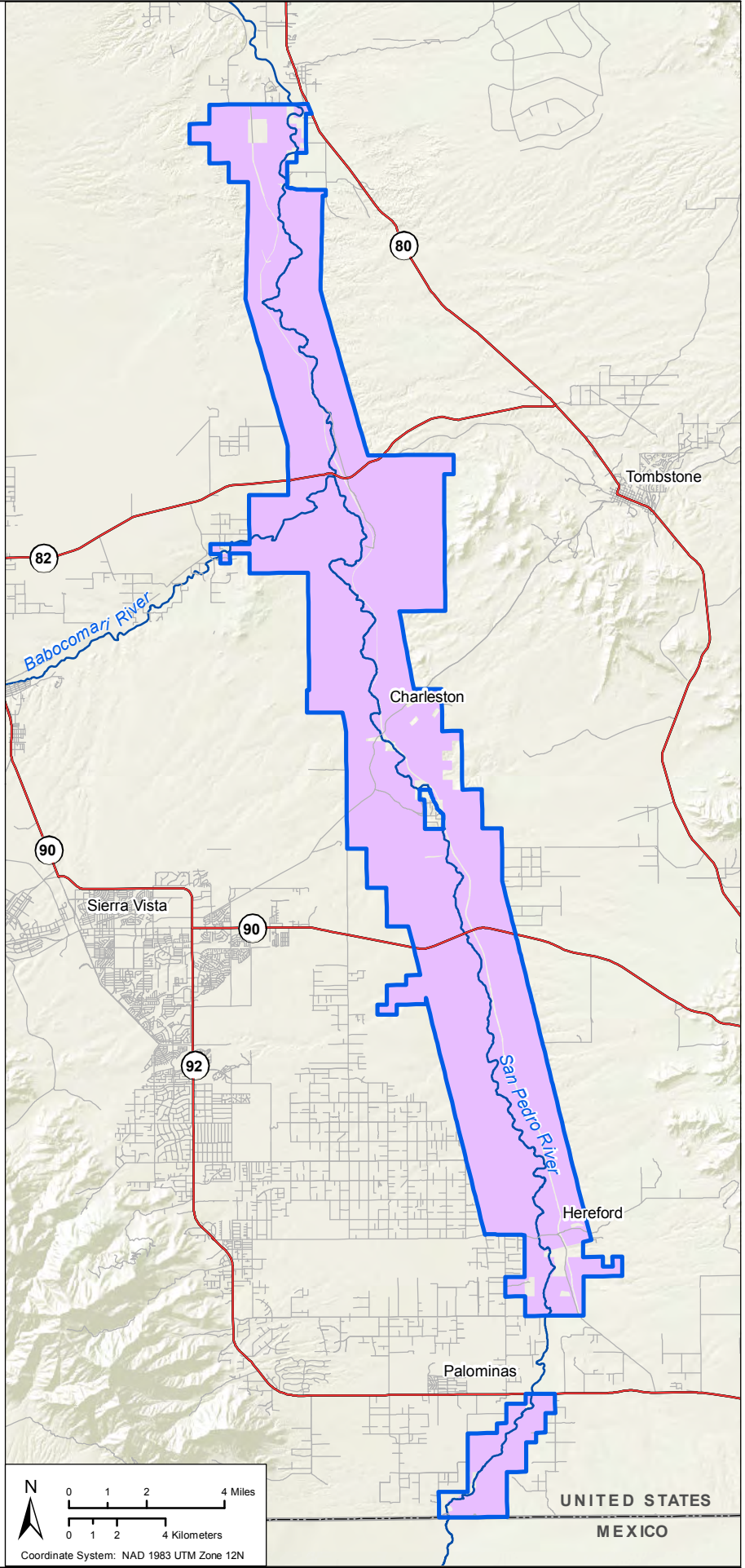
 Lands available for grazing



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**Figure 2-16
Livestock Grazing:
Alternative C**

 SPRNCA Planning Area

Livestock Grazing

 Lands available for grazing

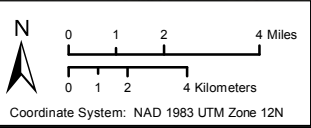
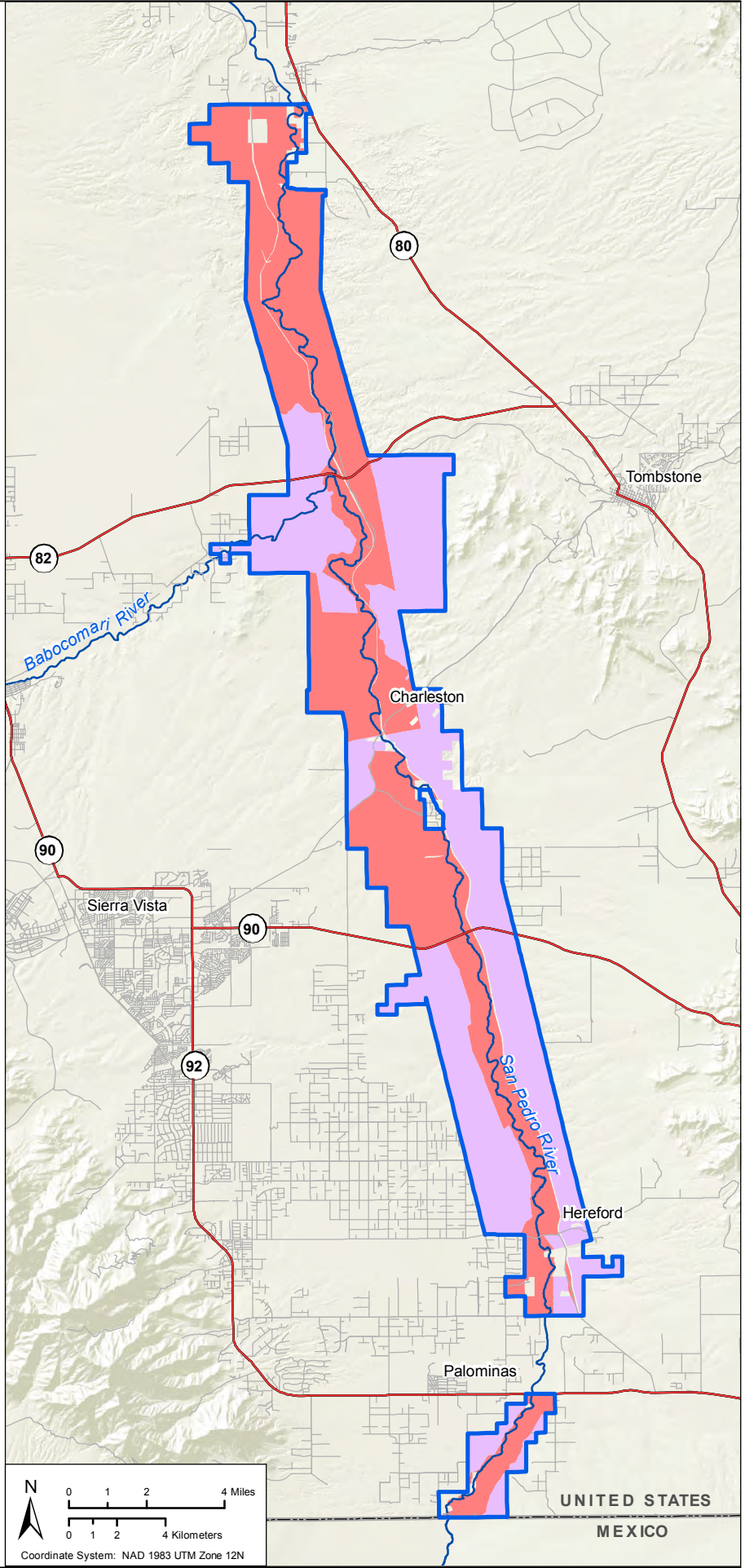
 Lands not available for grazing



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**Figure 2-17
Livestock Grazing:
Proposed Plan**


 SPRNCA Planning Area

Livestock Grazing

 Lands available for grazing

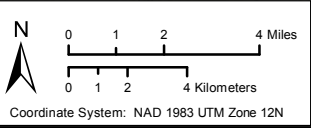
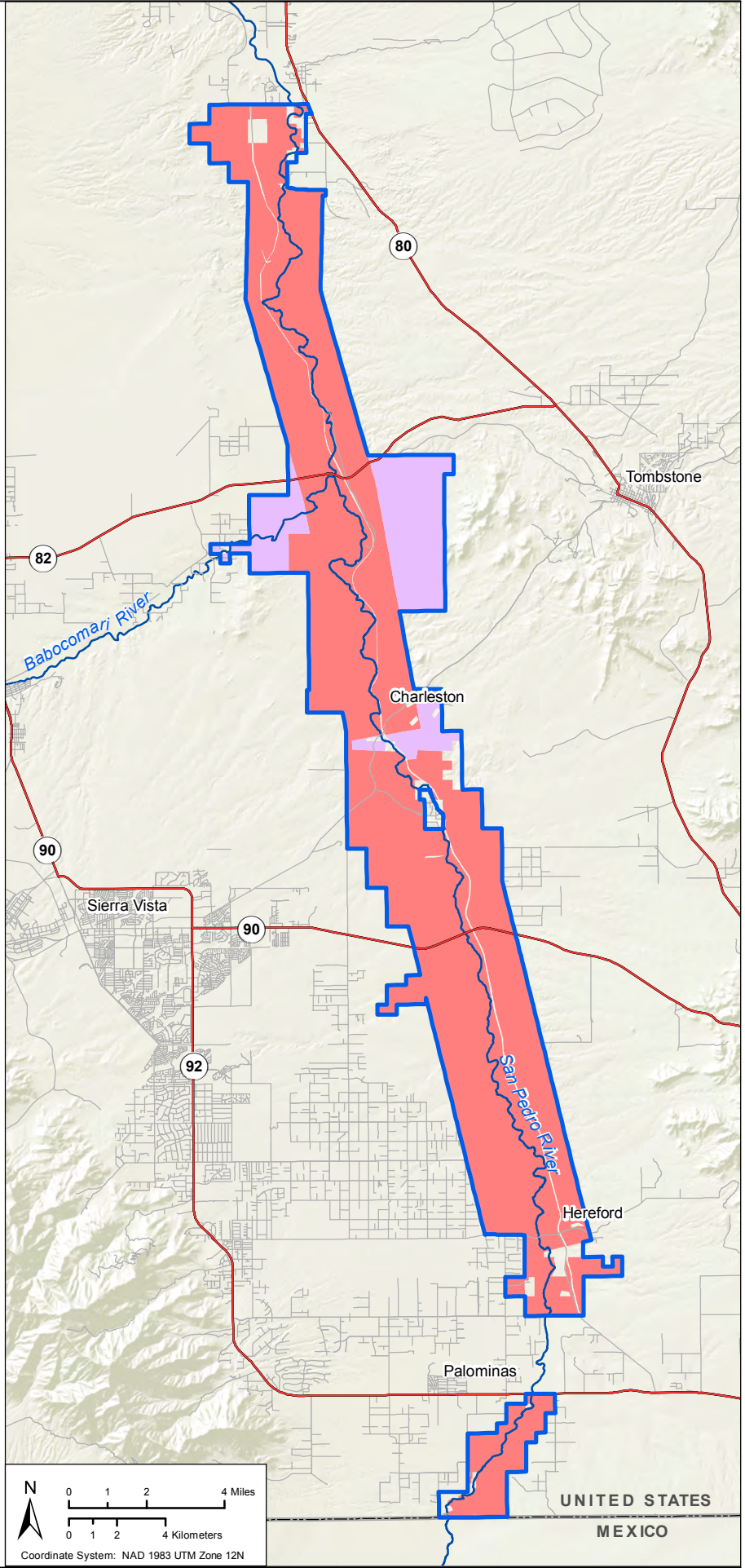
 Lands not available for grazing



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**Figure 2-18
Livestock Grazing:
Alternative D**

 SPRNCA Planning Area

Livestock Grazing

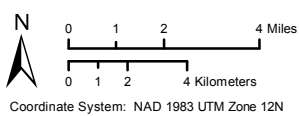
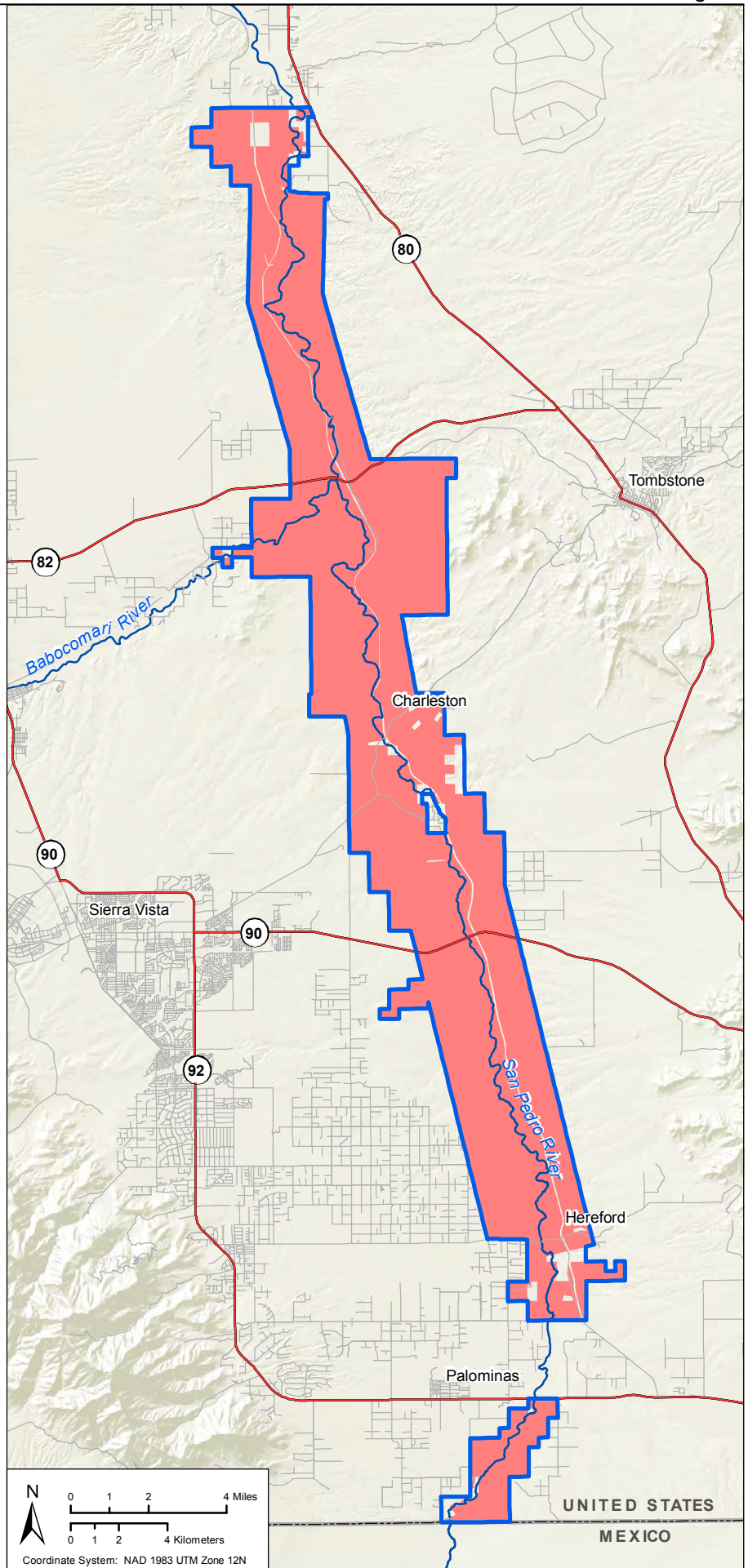
 Lands not available for grazing





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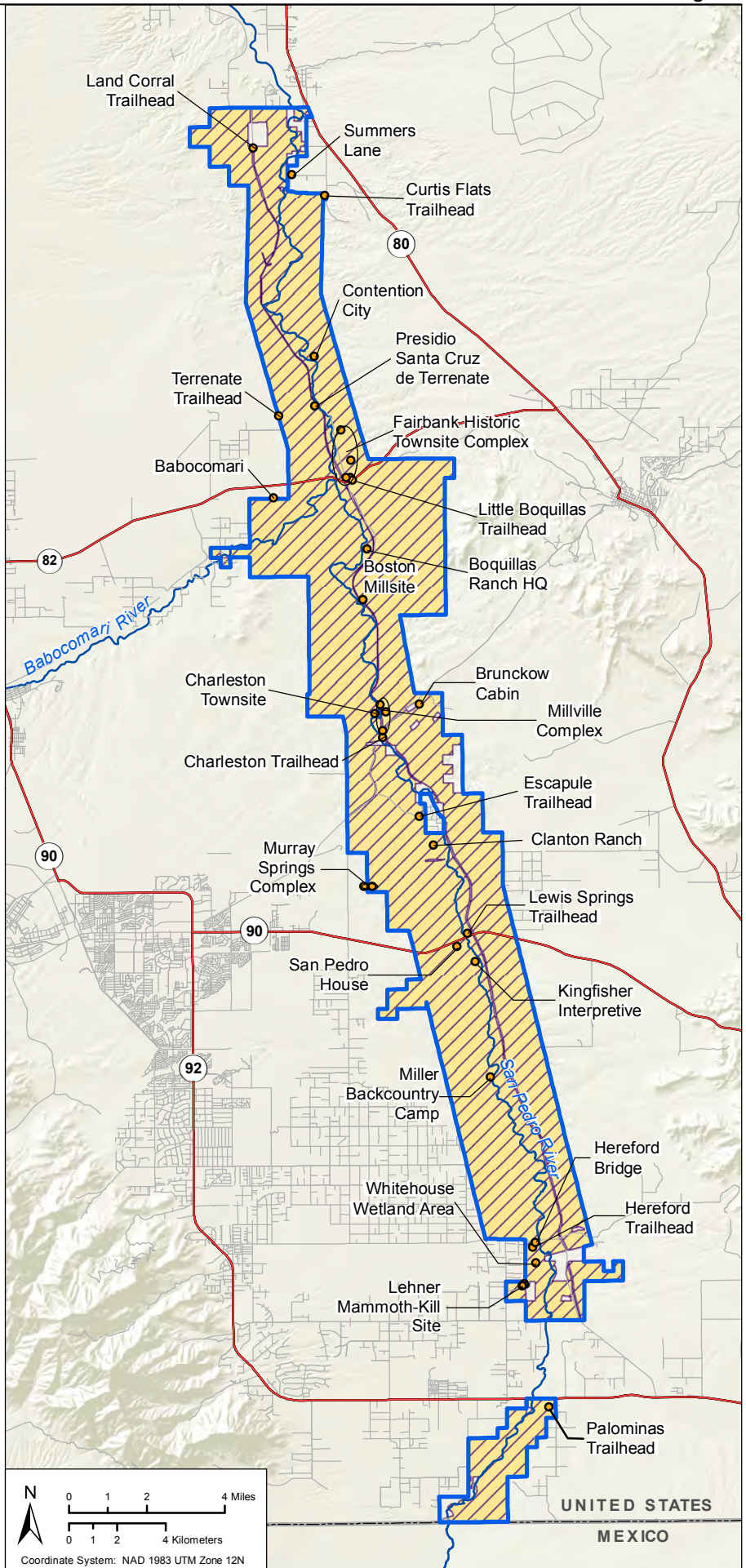


**Figure 2-19
Recreation:
Alternative A**

-  SPRNCA Planning Area
-  BLM-administered land

Special Recreation Management Area

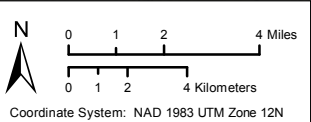
-  SRMA
-  Recreation facilities



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**Figure 2-20
Recreation:
Alternative B**

 SPRNCA Planning Area

Extensive Recreation Management Area

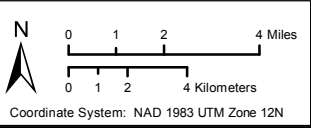
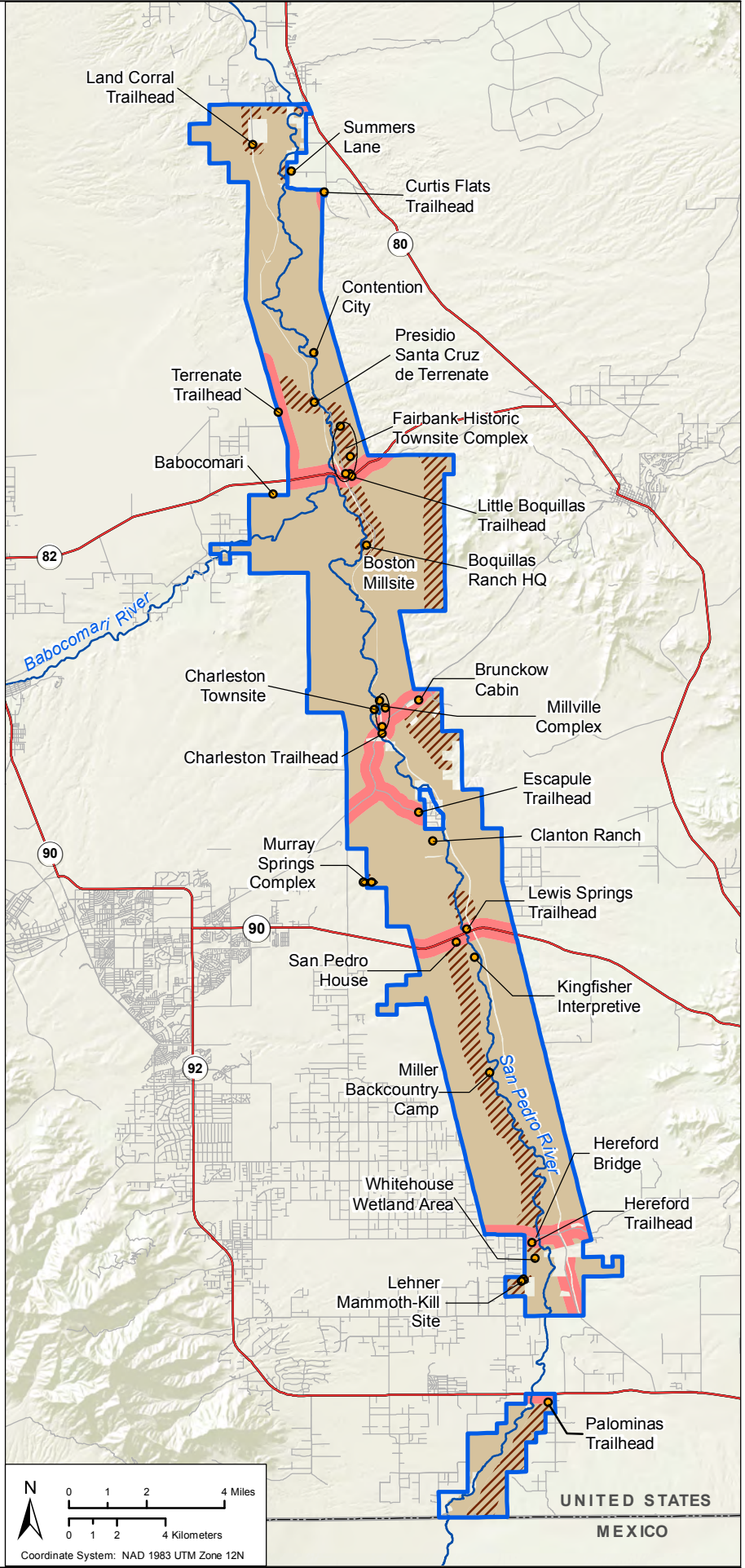
-  Back Country
-  Back Country (Motorized)
-  Rural
-  Recreation facilities



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**Figure 2-21
Recreation:
Alternative C and
the Proposed Plan**

 SPRNCA Planning Area

Extensive Recreation Management Area

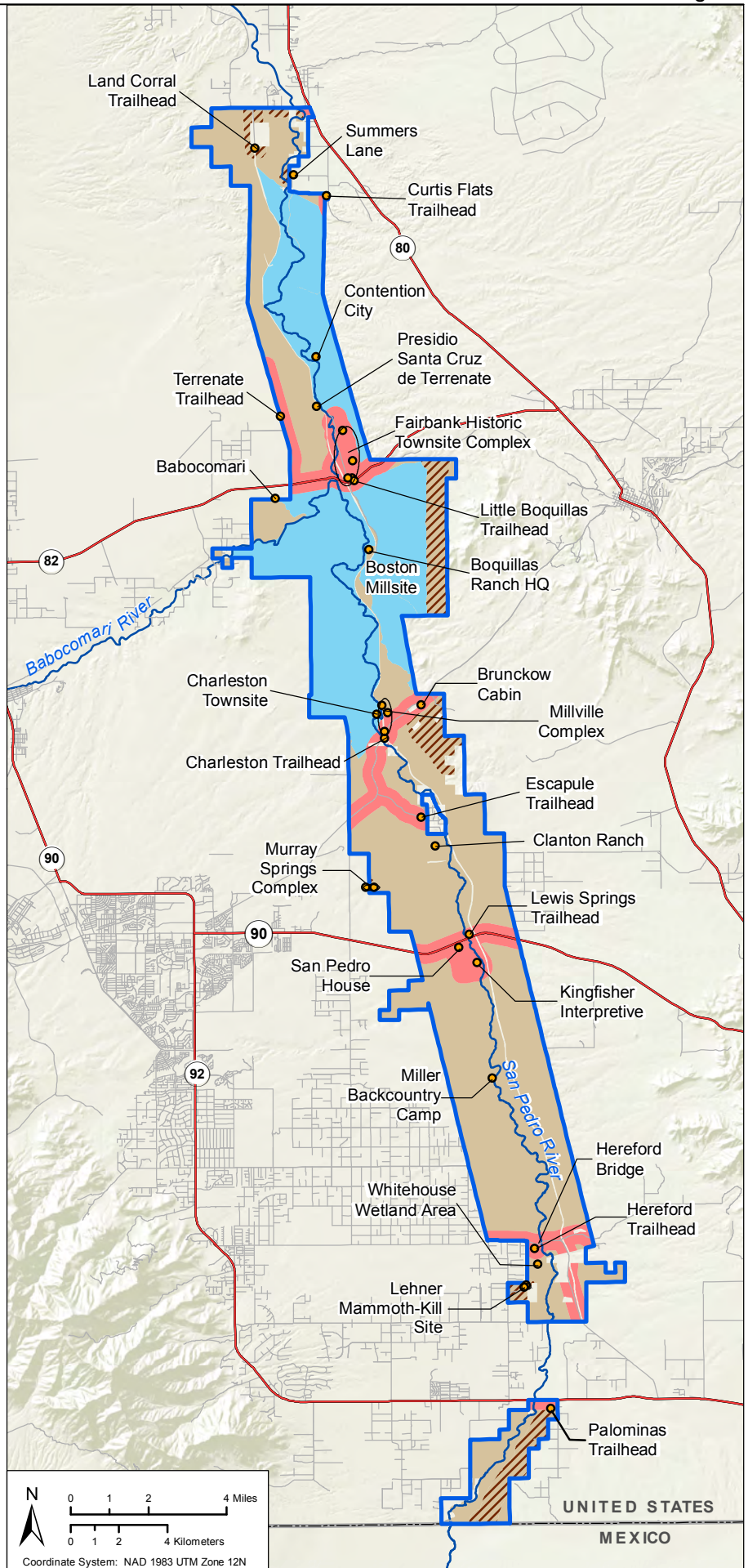
-  Back Country
-  Back Country (Motorized)
-  Primitive
-  Rural
-  Recreation facilities



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**Figure 2-22
Recreation:
Alternative D**

 SPRNCA Planning Area

Extensive Recreation Management Area

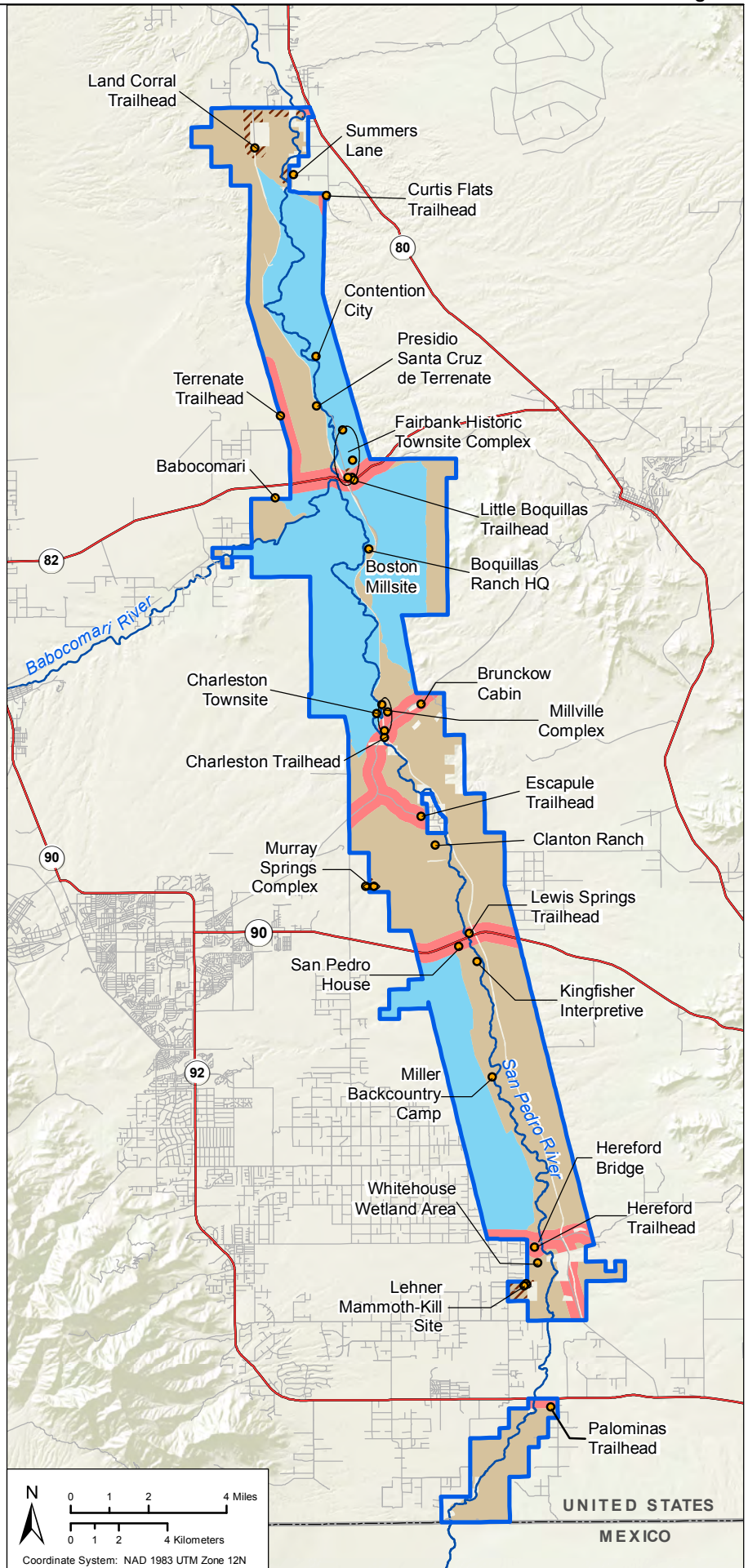
-  Back Country
-  Back Country (Motorized)
-  Primitive
-  Rural
-  Recreation facilities



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**Figure 2-23
Hunting with Firearms:
Alternative A**

 SPRNCA Planning Area

Hunting with Firearms

 Lands available for hunting with firearms

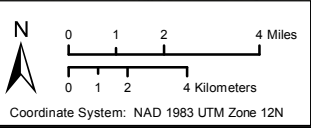
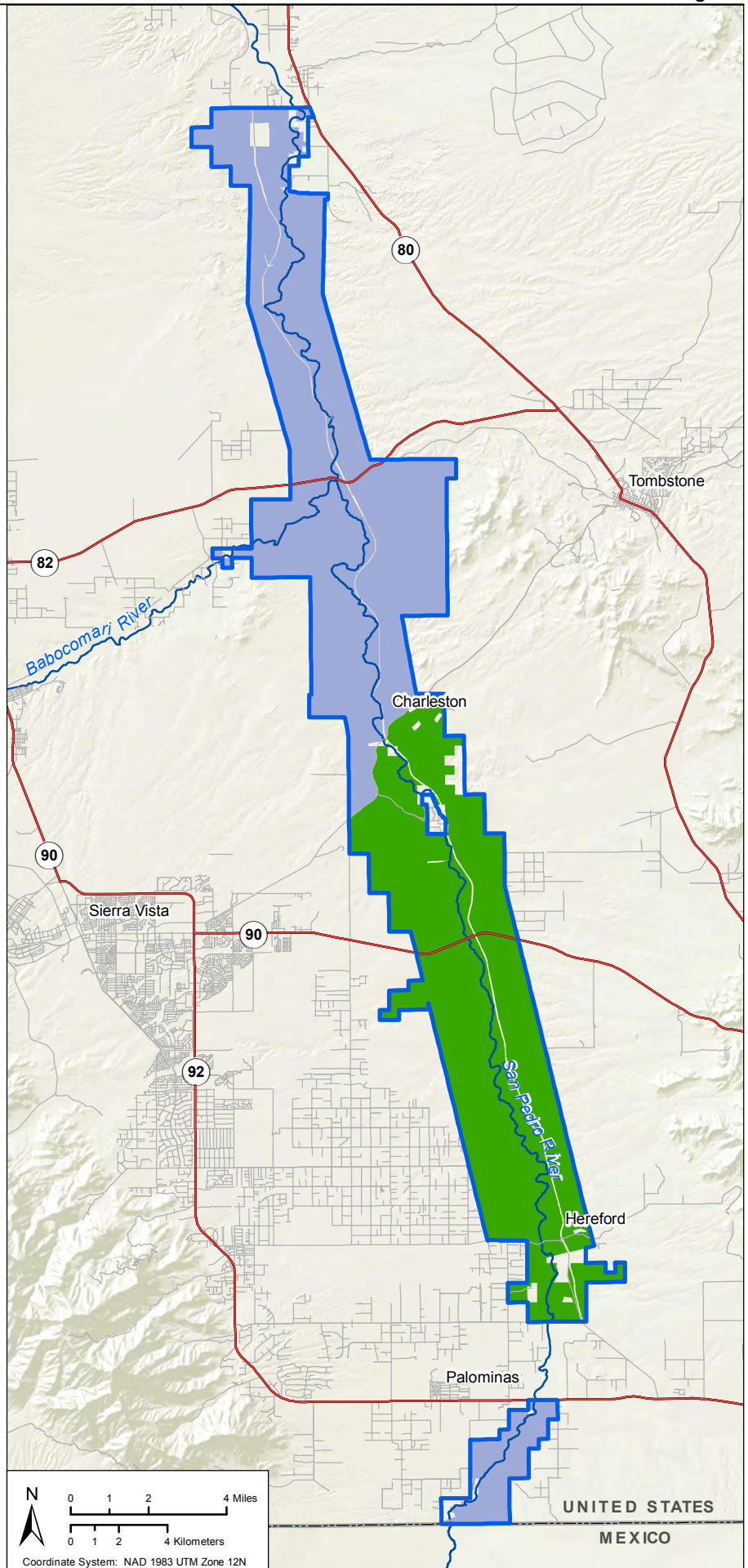
 Lands closed to hunting with firearms



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**Figure 2-24
Hunting with Firearms:
Alternative B**

 SPRNCA Planning Area

Hunting with Firearms

 Lands available for hunting with firearms

 Lands closed for hunting with firearms

In concordance with AZGFD hunting regulations, hunting with firearms is not allowed within 1/4 mile of developed facilities.



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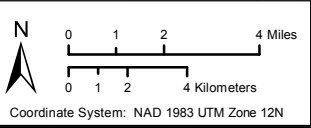
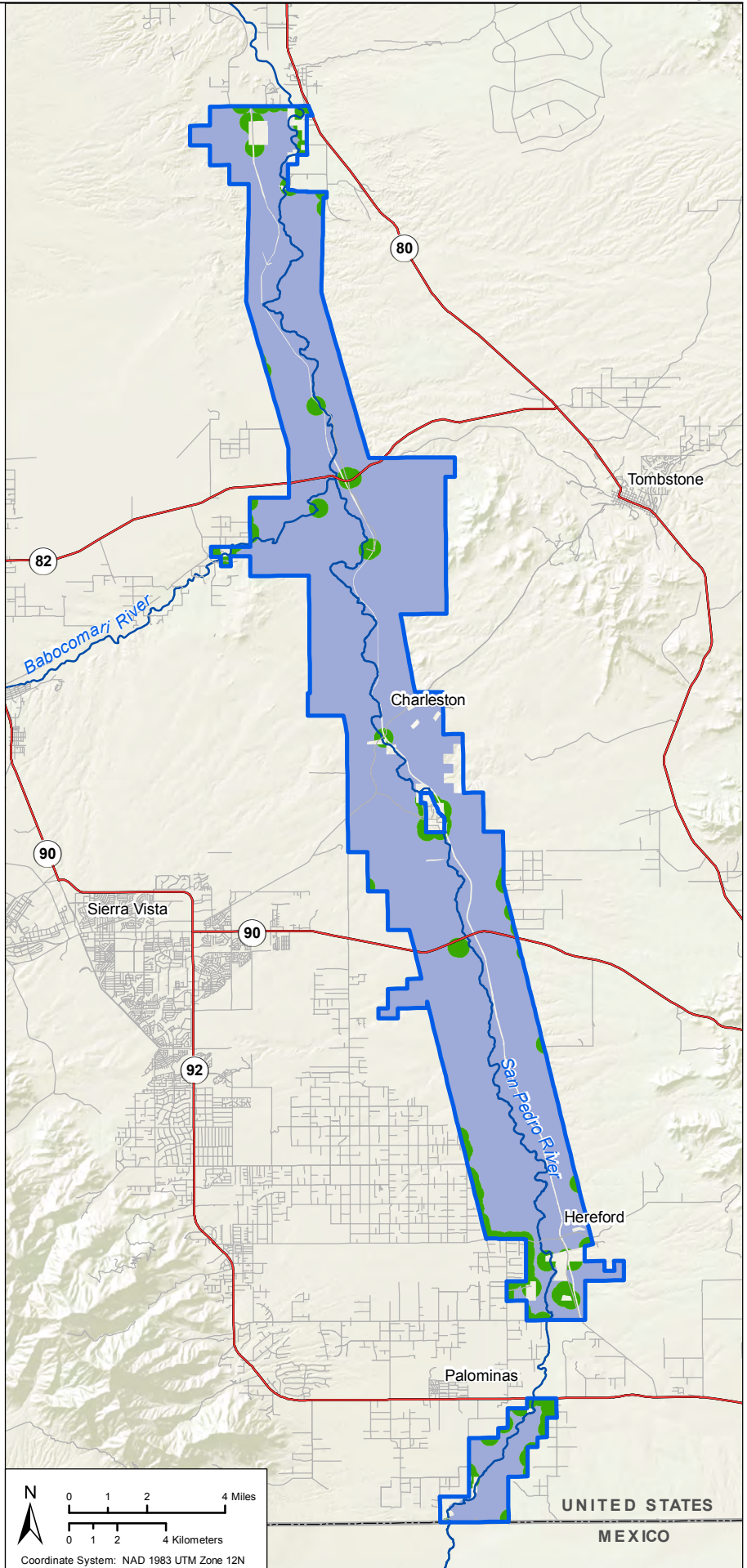





Figure 2-25
Hunting with Firearms:
Alternative C and
the Proposed Plan

-  SPRNCA Planning Area
- Hunting with Firearms**
-  Lands available for hunting with firearms
-  Lands closed for hunting with firearms

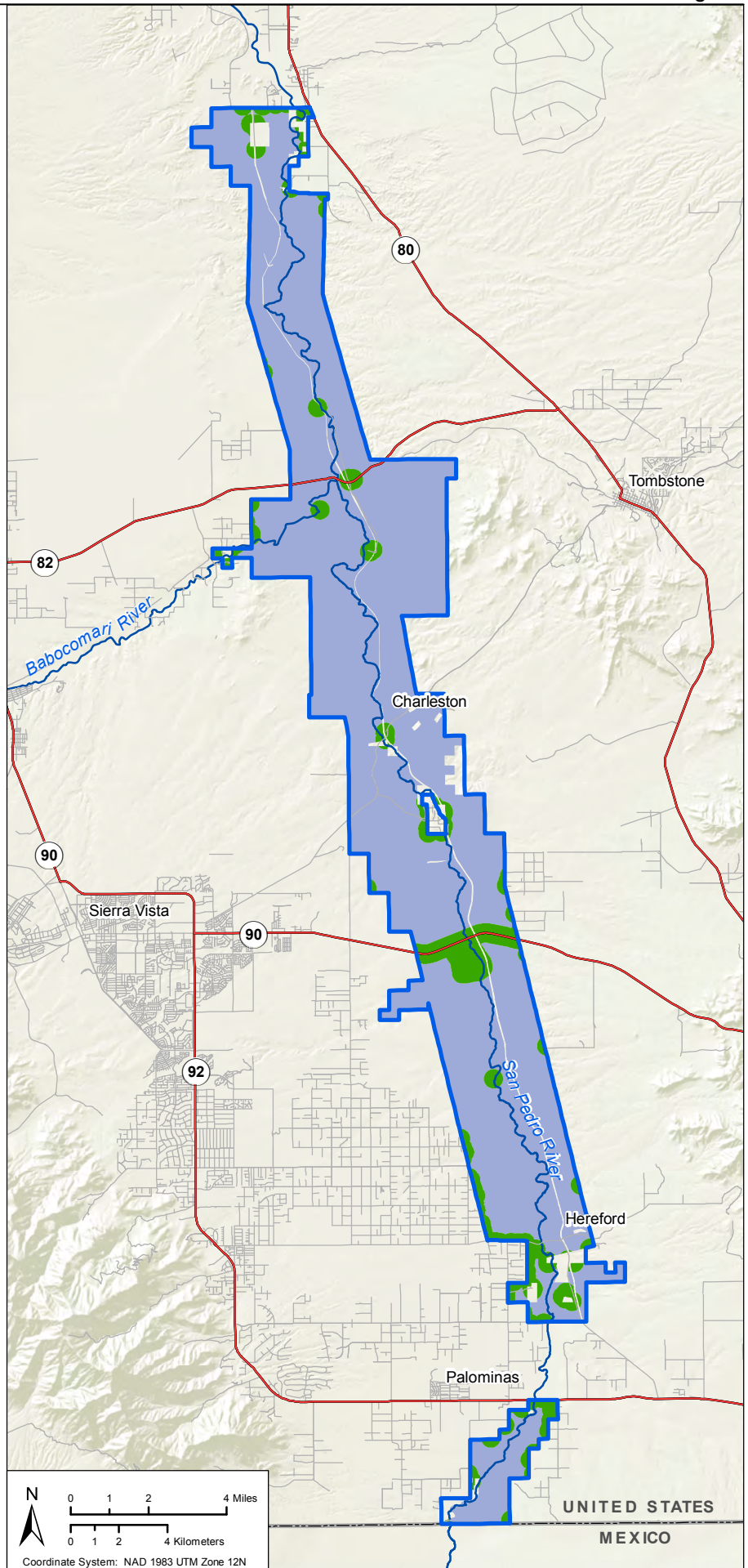
In concordance with AZGFD hunting regulations, hunting with firearms is not allowed within 1/4 mile of developed facilities.



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**Figure 2-26
Hunting with Firearms:
Alternative D**

 SPRNCA Planning Area

Hunting with Firearms

 Lands available for hunting with firearms

 Lands closed to hunting with firearms



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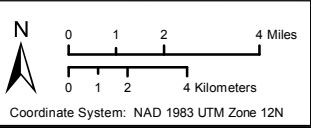
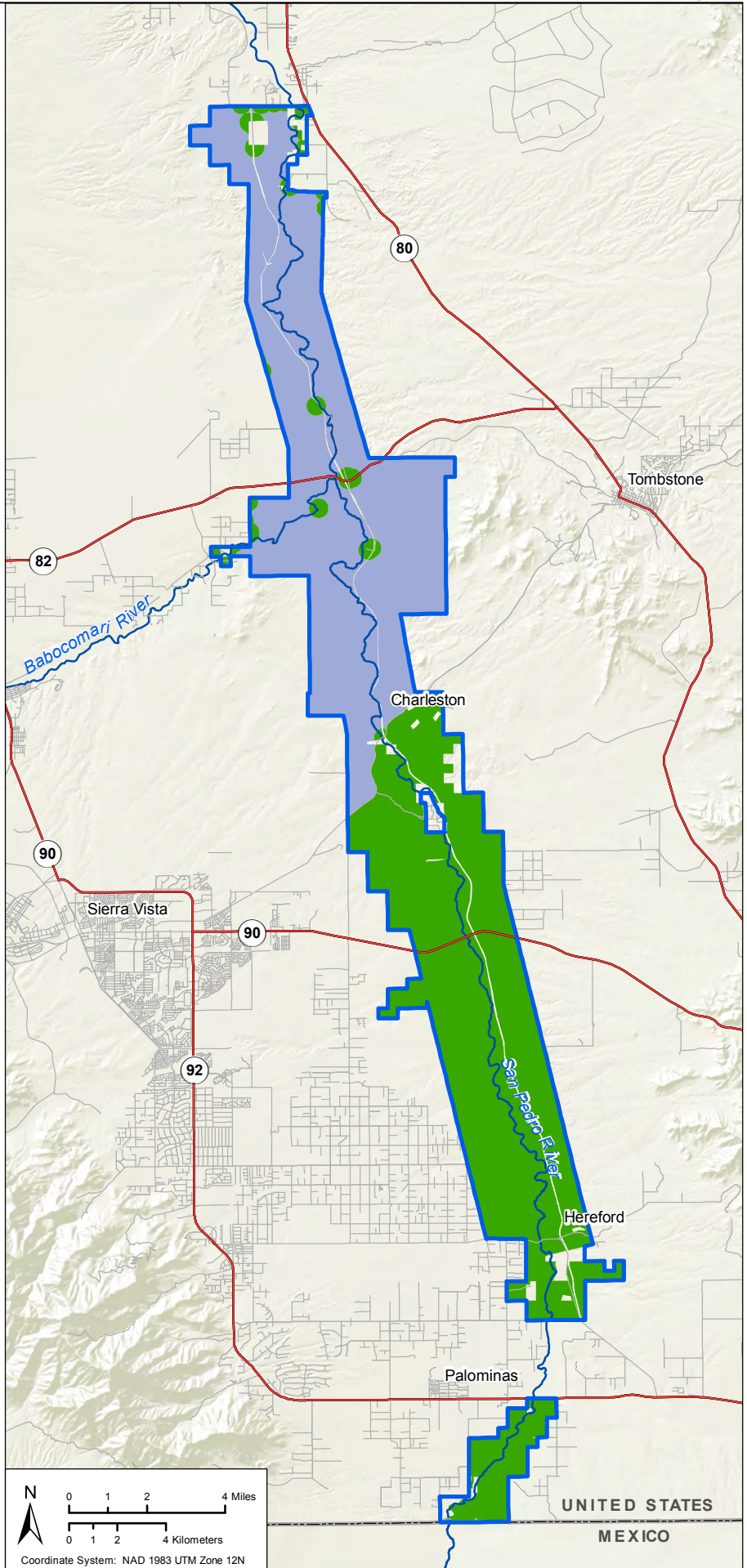


Figure 2-27
Travel:
Alternatives A, B, C,
and the Proposed Plan

 SPRNCA Planning Area

Travel Designation

 Limited to designated roads and trails



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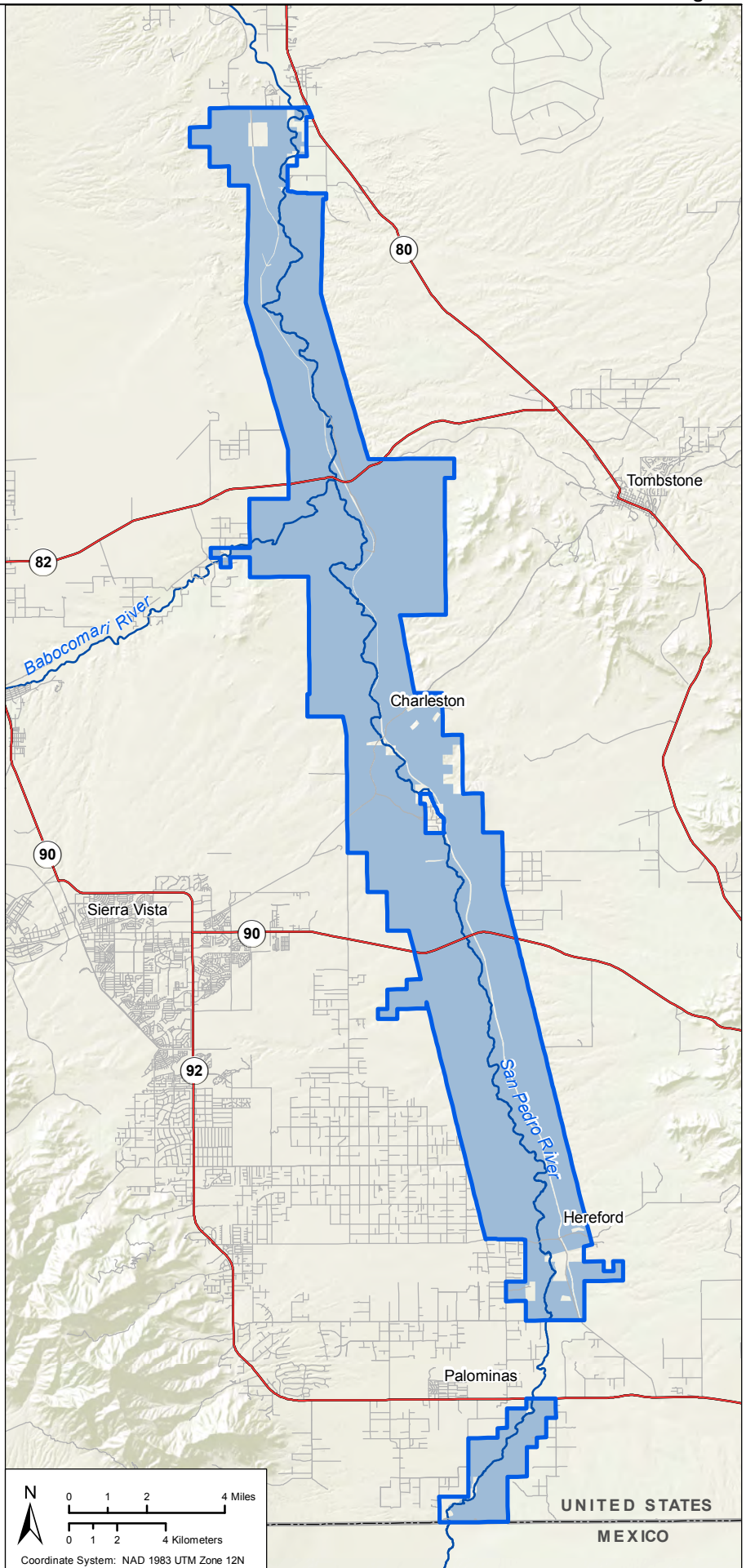




Figure 2-28
Travel:
Alternative D

 SPRNCA Planning Area

Travel Designation

 Limited to designated roads and trails

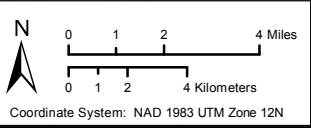
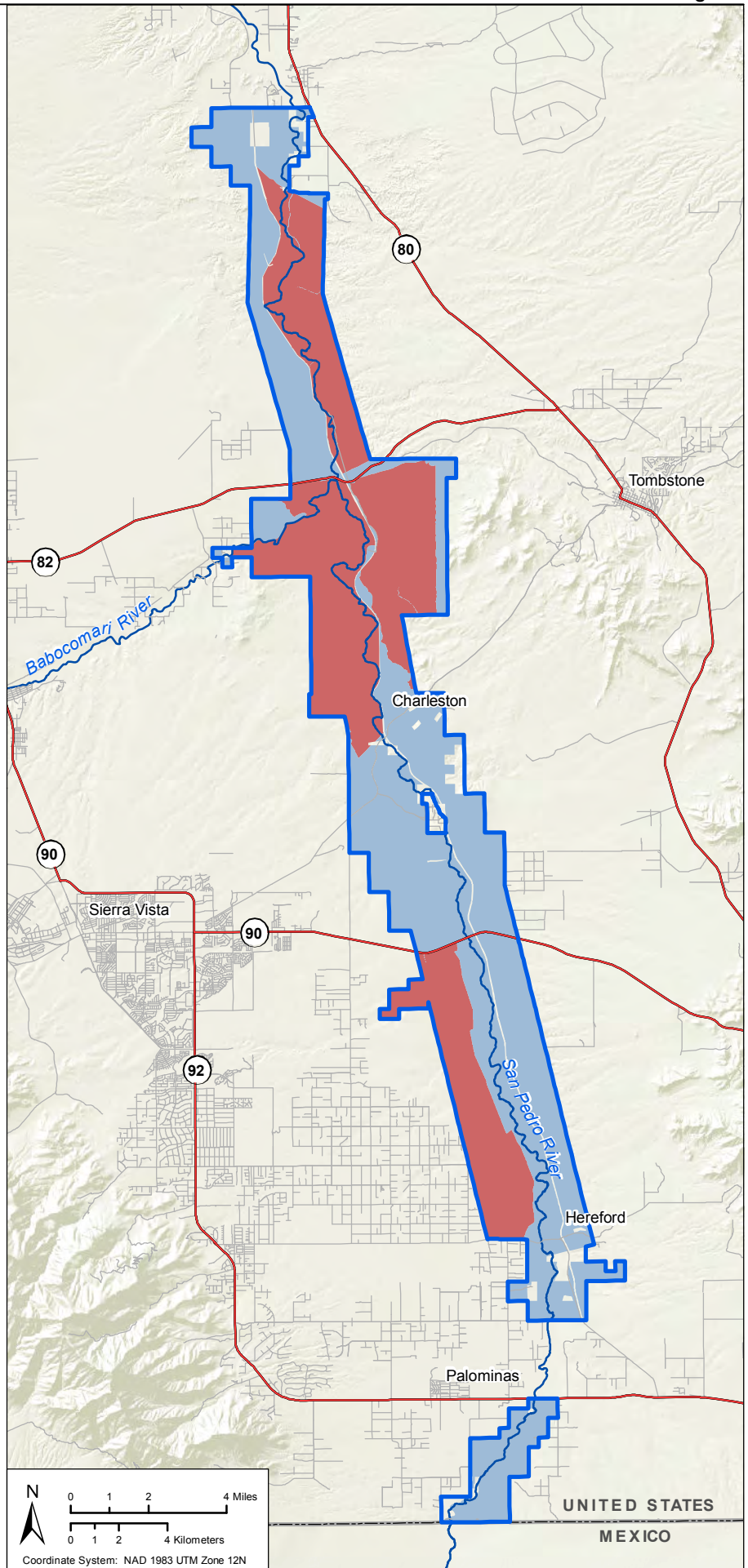
 Closed



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**Figure 2-29
Lands and Realty:
Alternative A**

 SPRNCA Planning Area

Right-of-way Limitations

 BLM-administered land open to rights-of-way

 Charleston Road ROW utility corridor



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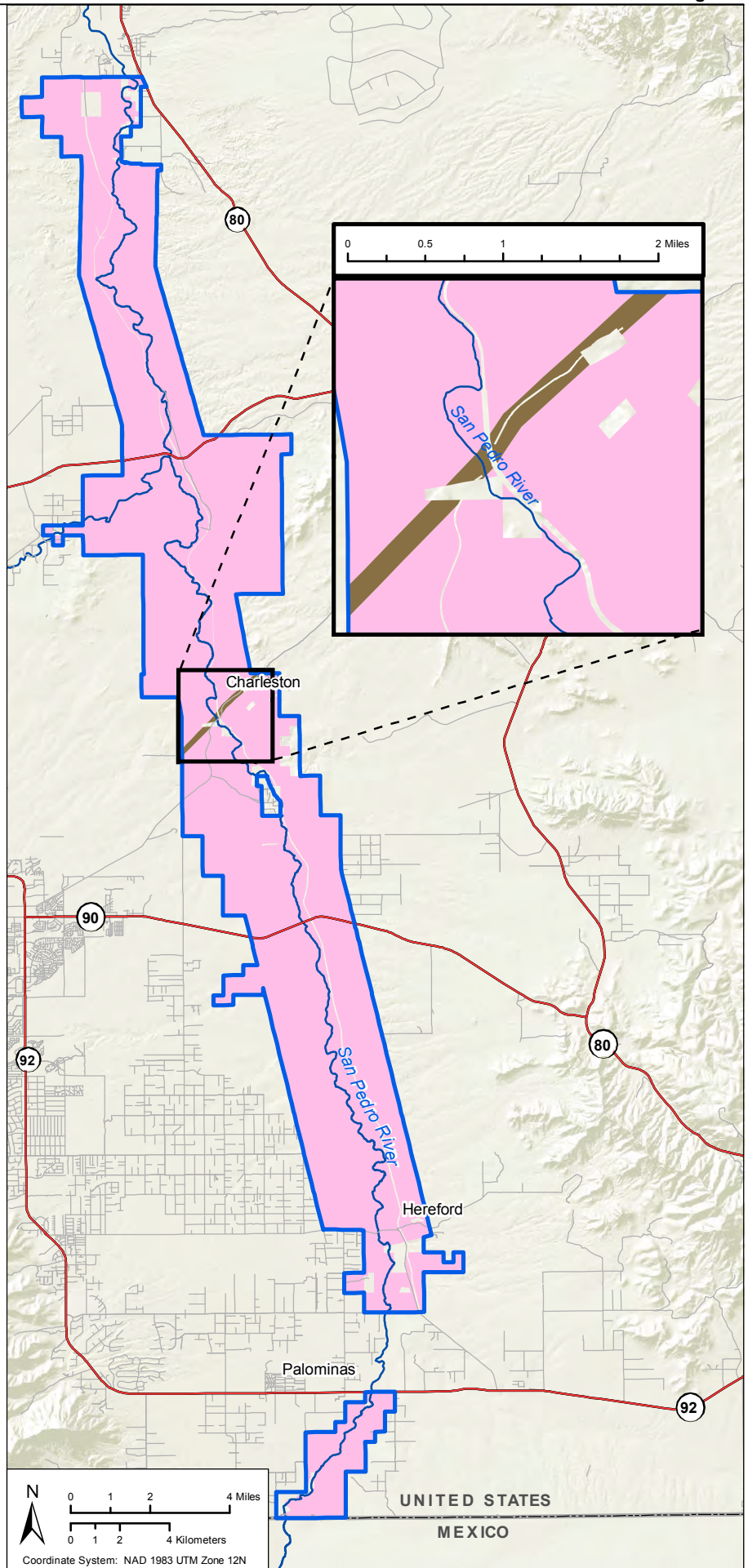




Figure 2-30
Lands and Realty:
Alternatives B, C, and
the Proposed Plan

 SPRNCA Planning Area

Right-of-Way Limitations

 Right-of-way avoidance area
 Charleston Road ROW utility corridor

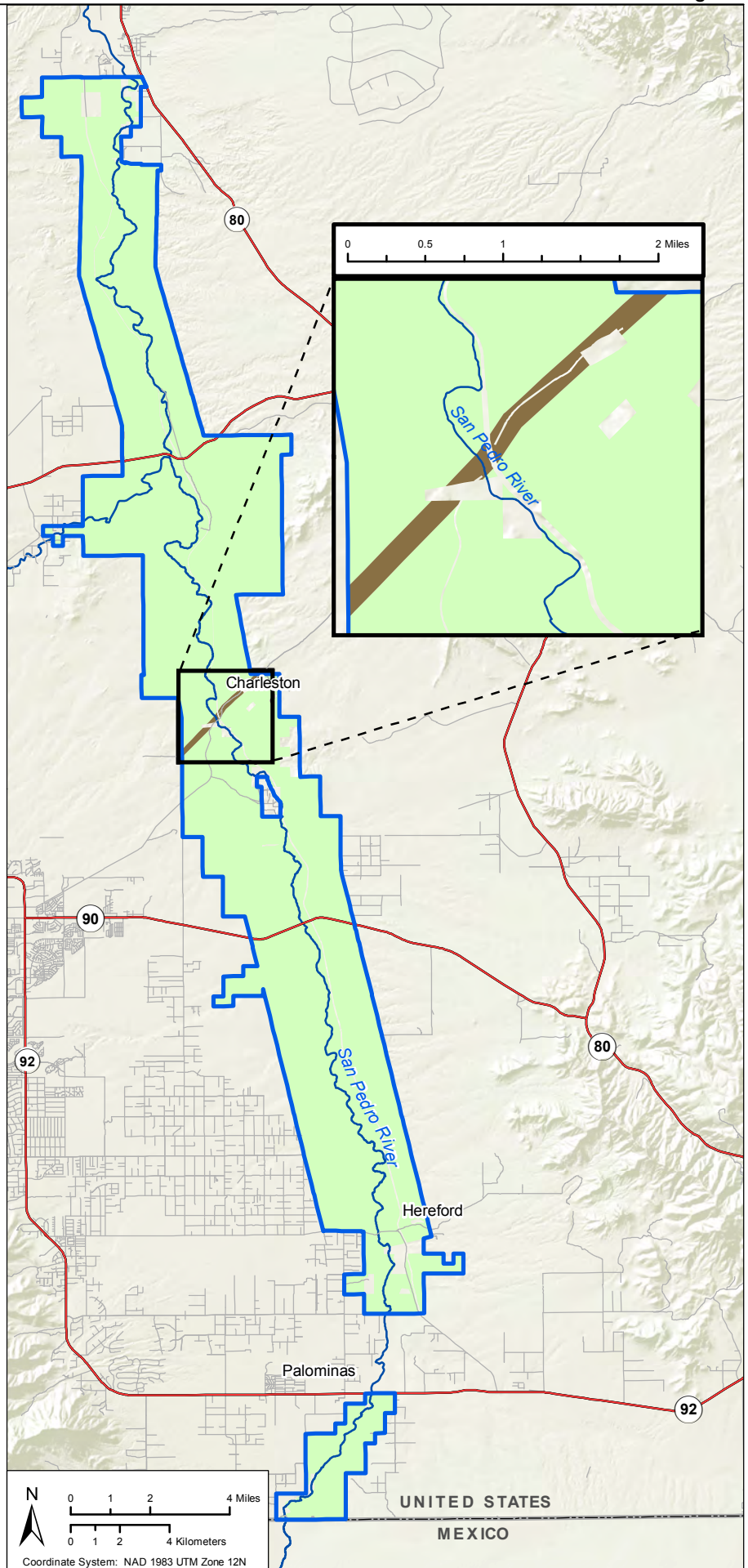
Avoidance area. An area identified through resource management planning to be avoided but that may be available for locating a right-of-way, with special stipulations.



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**Figure 2-31
Lands and Realty:
Alternative D**

 SPRNCA Planning Area

Right-of-way Limitations

 Right-of-way exclusion area

Exclusion area. An area identified through resource management planning that is not available for a right-of-way under any conditions.



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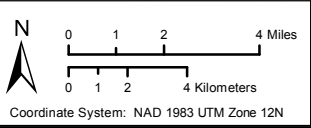
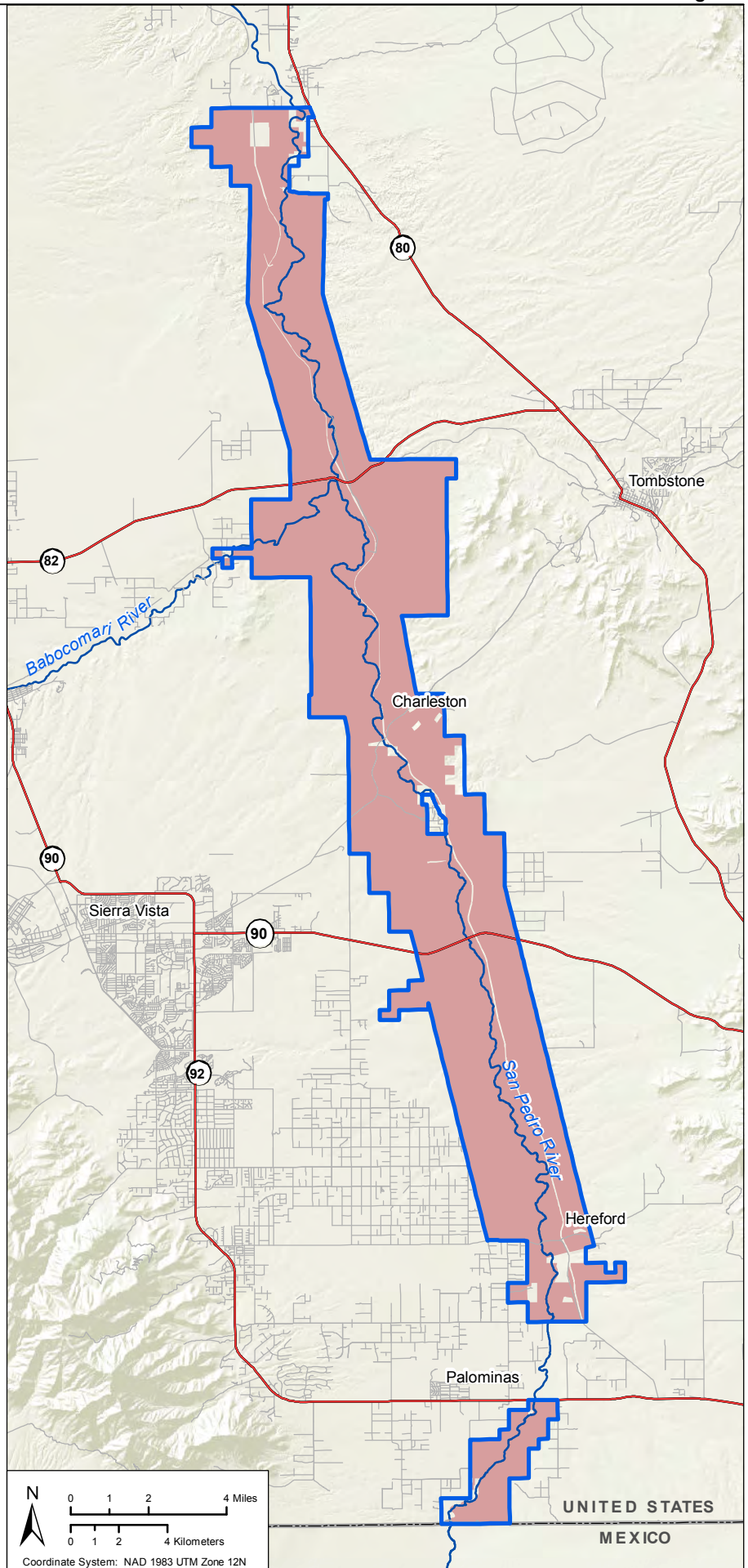




Figure 2-32
Areas of Critical
Environmental Concern (ACECs):
Alternative A

-  SPRNCA Planning Area
-  BLM-administered land

- Areas of Critical Environmental Concern**
-  ACEC



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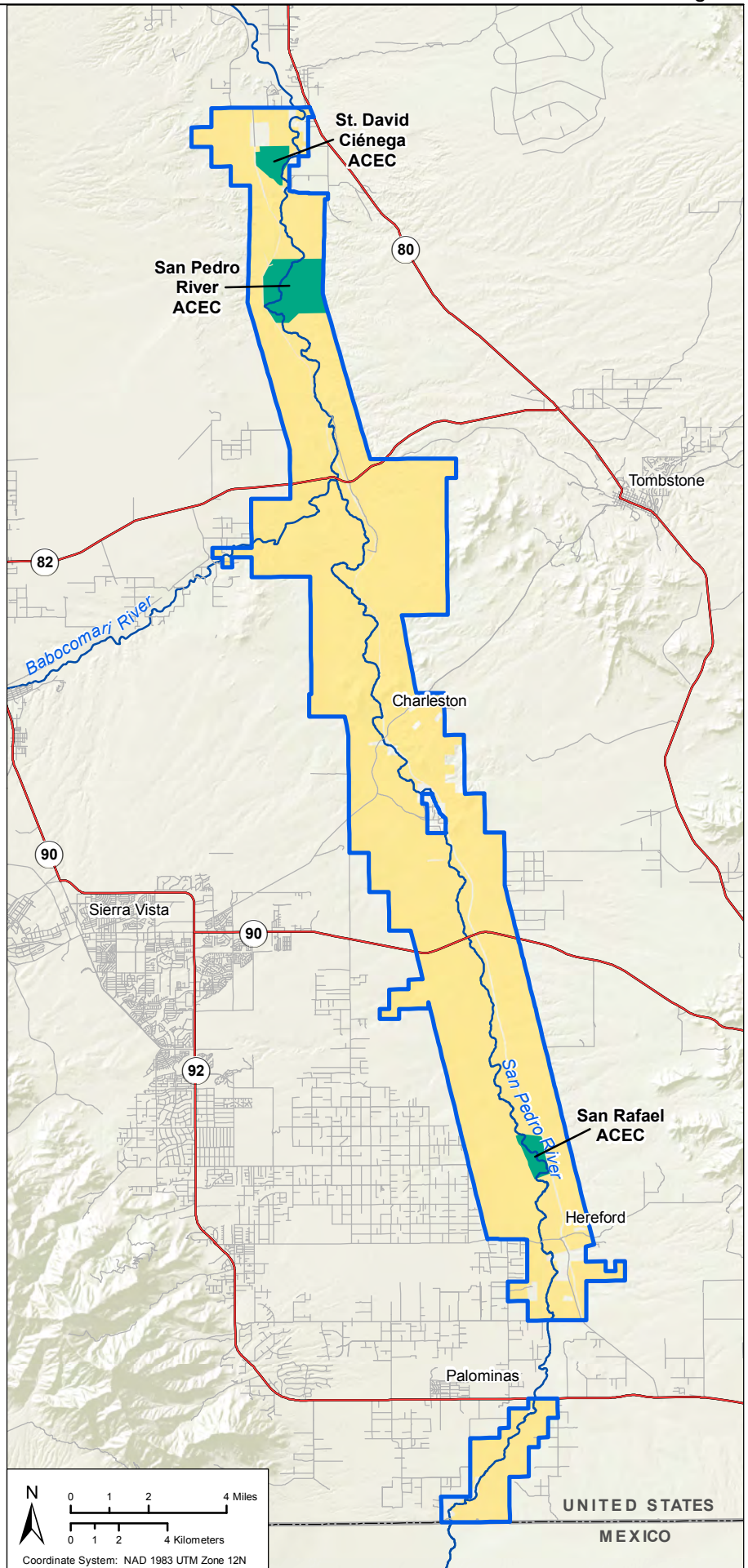




Figure 2-33 Areas of Critical Environmental Concern (ACECs): Alternative B, C and the Proposed Plan

-  SPRNCA Planning Area
-  BLM-administered land

The BLM would remove the existing designation of the St. David Ciénega, San Pedro, San Rafael, Curry-Horsethief, and Lehner Mammoth ACECs under these alternatives.



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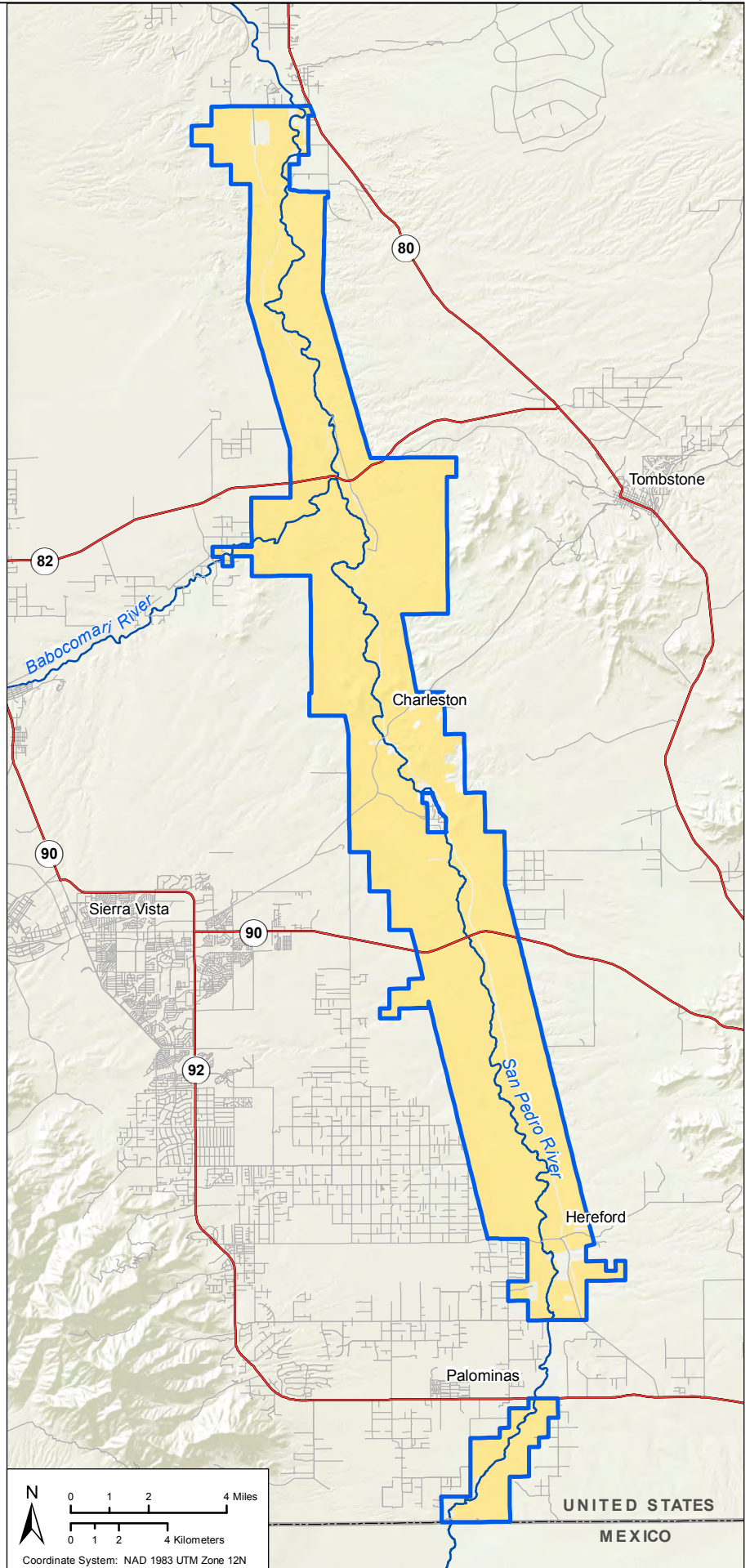


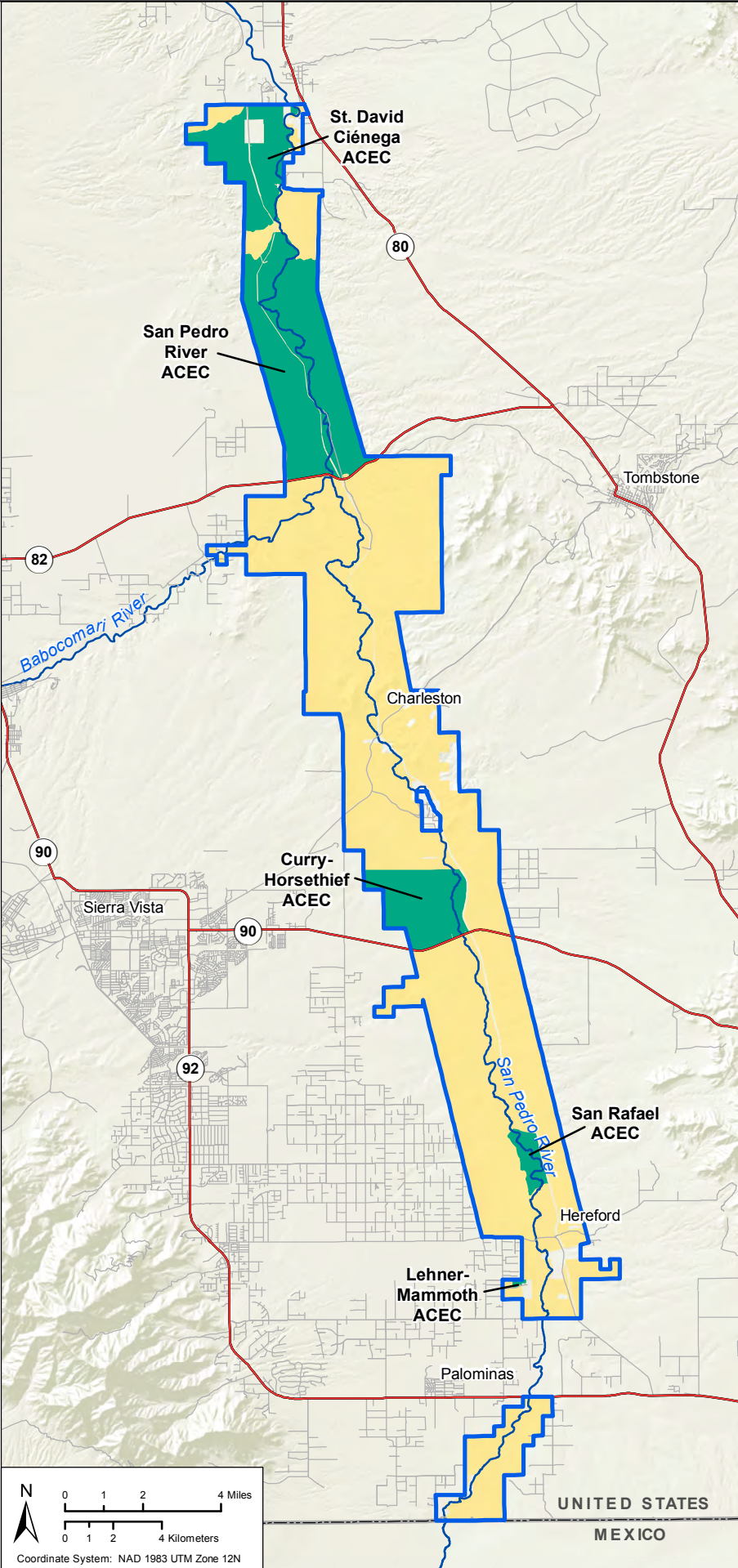


Figure 2-34
Areas of Critical Environmental Concern (ACECs):
Alternative D

-  SPRNCA Planning Area
-  BLM-administered land

Areas of Critical Environmental Concern
 ACEC



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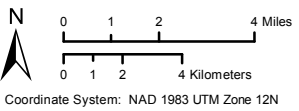




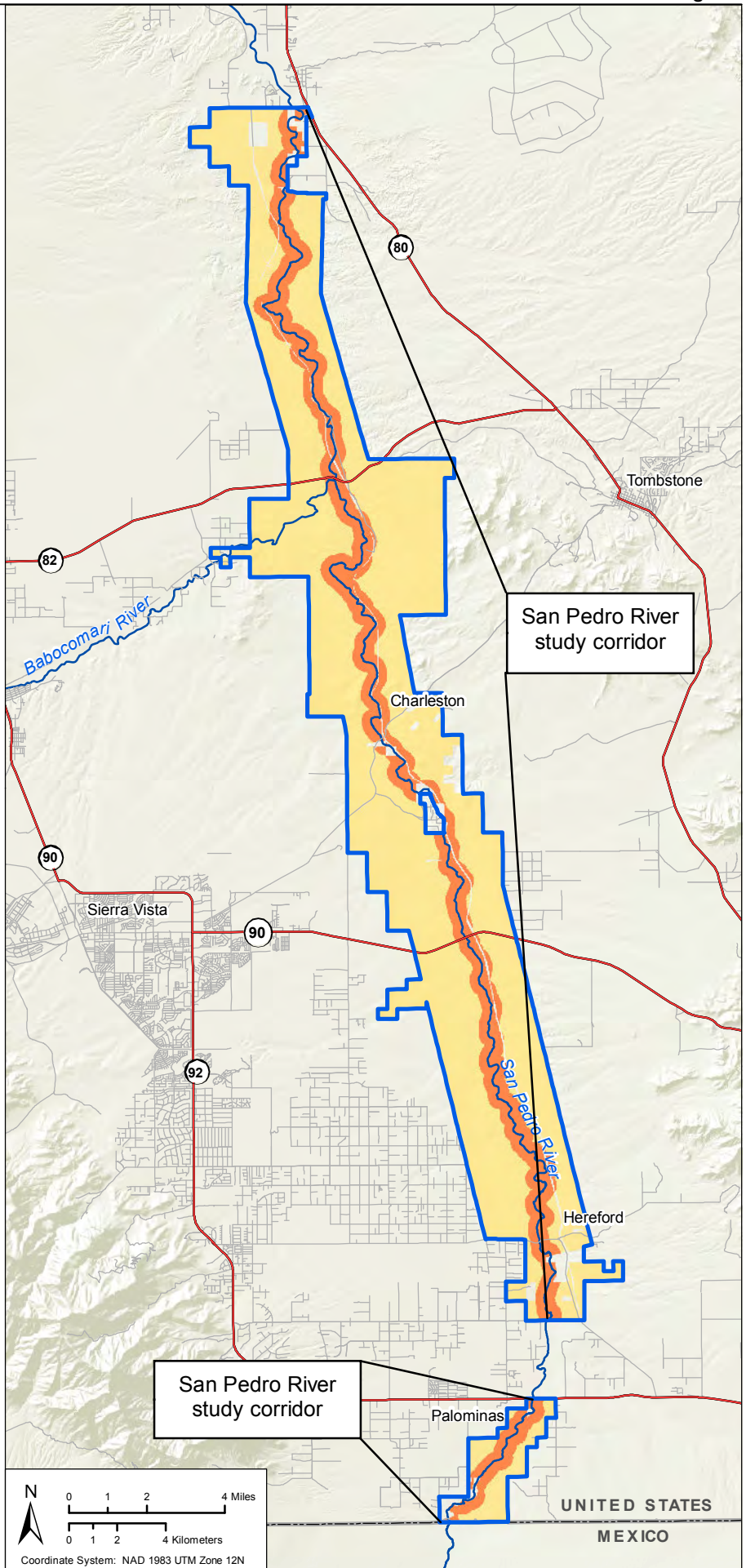
Figure 2-35
Wild and Scenic Rivers:
San Pedro River Alternatives A, B

 SPRNCA Planning Area

 BLM-administered land

Study Corridor Management

 Suitable as recreational






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Figure 2-36
Wild and Scenic Rivers:
San Pedro River Alternative C
and the Proposed Plan

-  SPRNCA Planning Area
-  BLM-administered land

- Study Corridor Management**
-  Suitable as recreational



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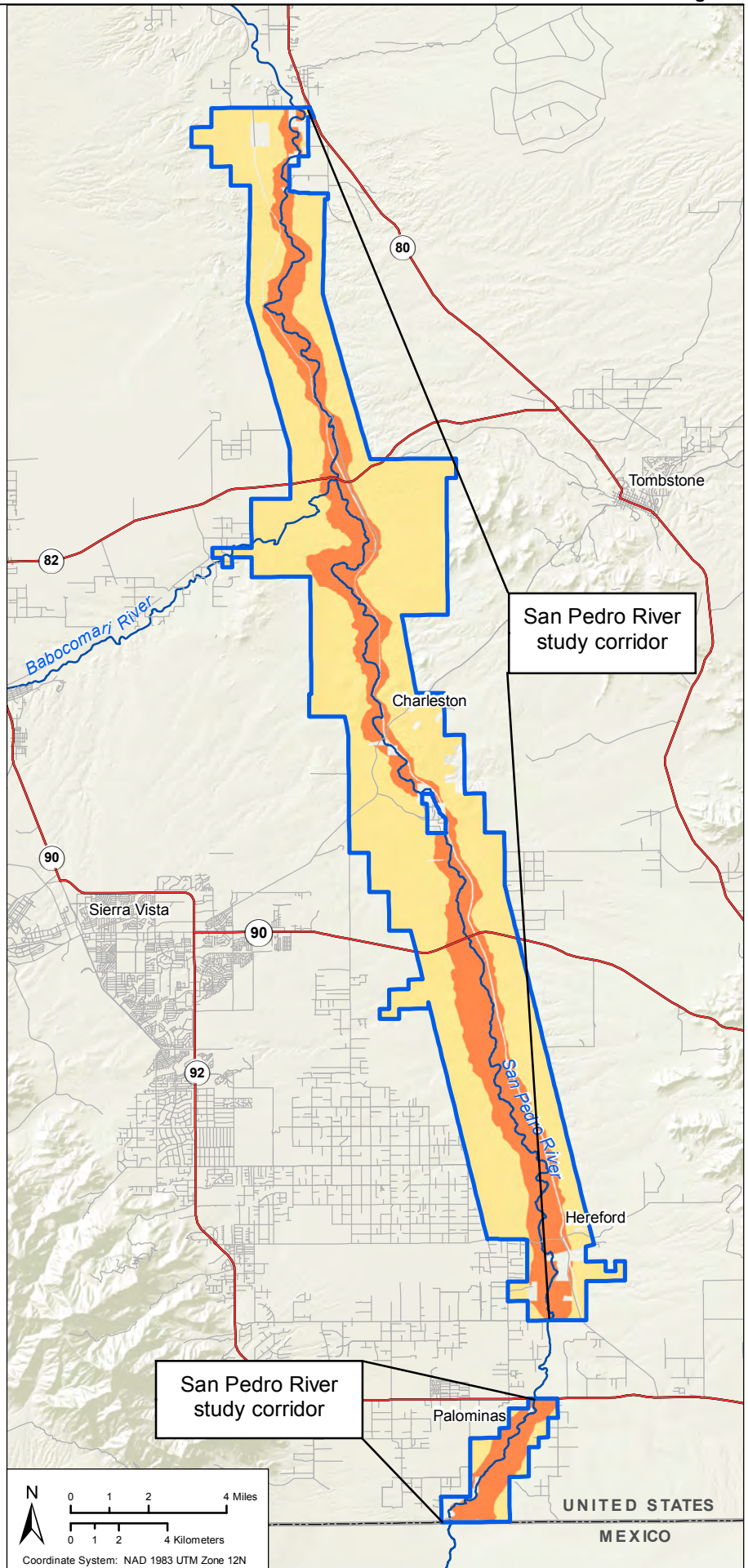





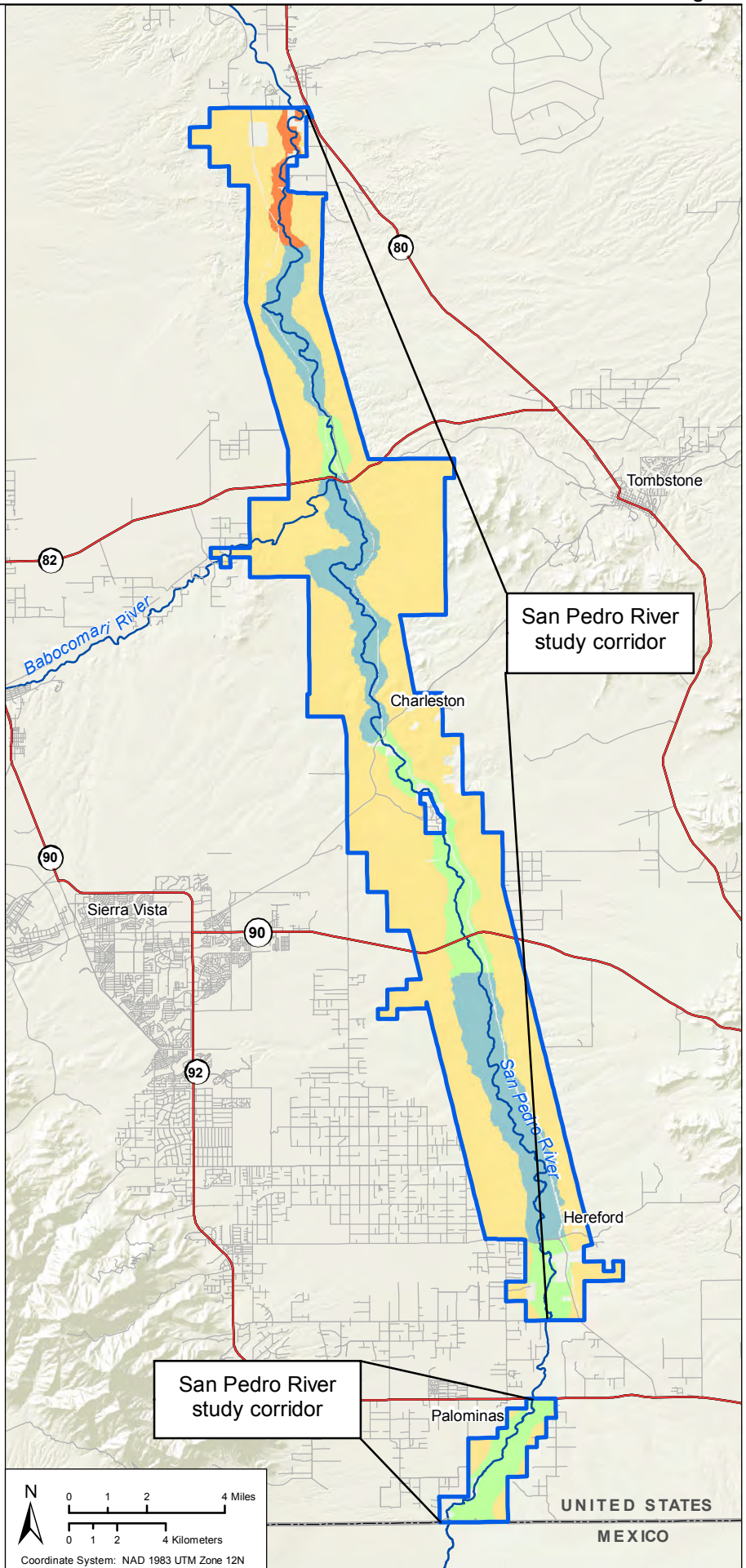


Figure 2-37
Wild and Scenic Rivers:
San Pedro River Alternative D

-  SPRNCA Planning Area
-  BLM-administered land

Study Corridor Management

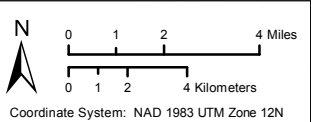
-  Suitable as recreational
-  Suitable as scenic
-  Suitable as wild





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**Figure 2-38
Wild and Scenic Rivers:
Babocomari River Alternative A**

-  SPRNCA Planning Area
-  BLM-administered land

- Study Corridor Management**
-  Eligible as scenic

The entire BLM-administered portion of the Babocomari River in the SPRNCA (4 miles) is eligible as scenic.



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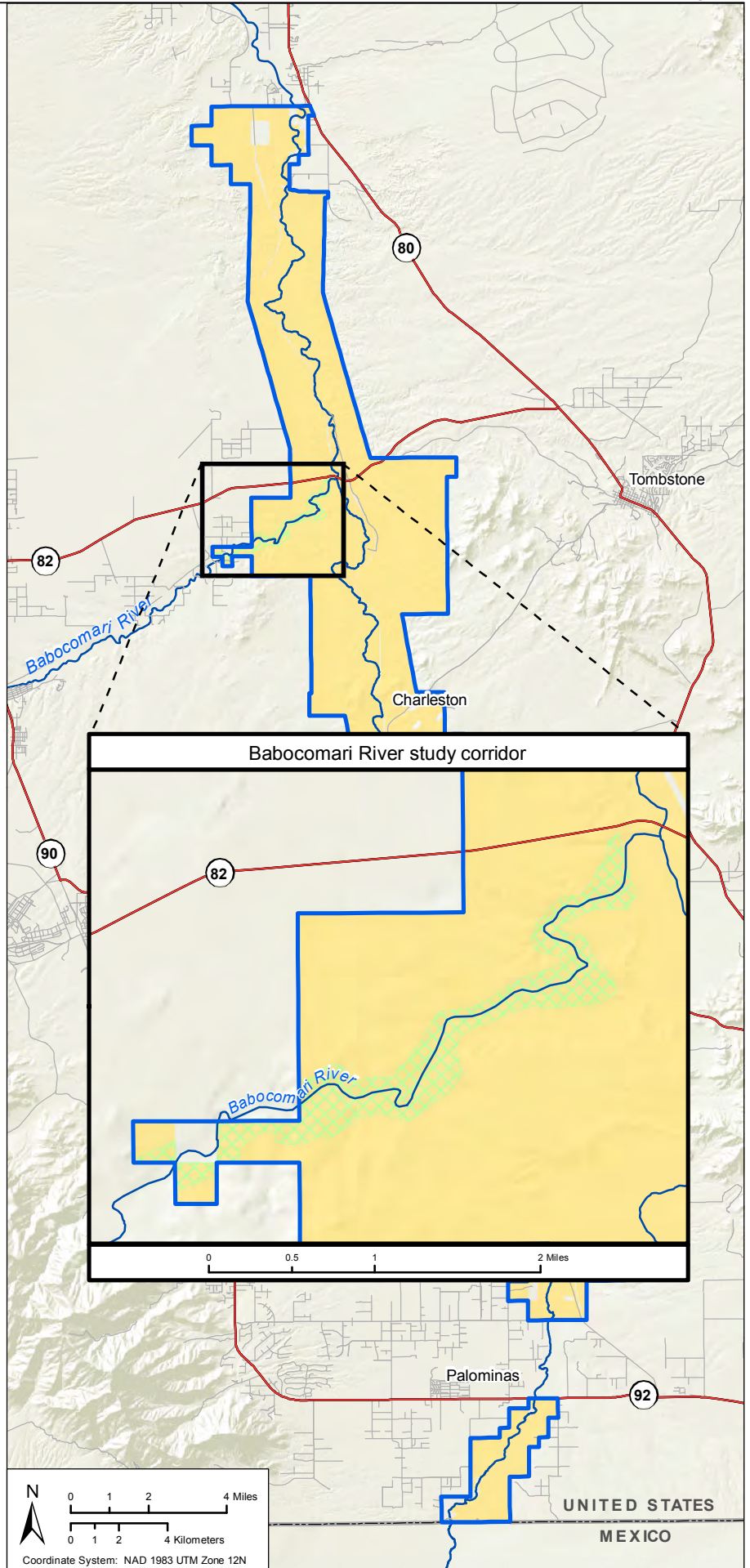




Figure 2-39
Wild and Scenic Rivers:
Babocomari River Alternative B

-  SPRNCA Planning Area
-  BLM-administered land

The Babocomari River study corridor is preliminarily non-suitable for designation.



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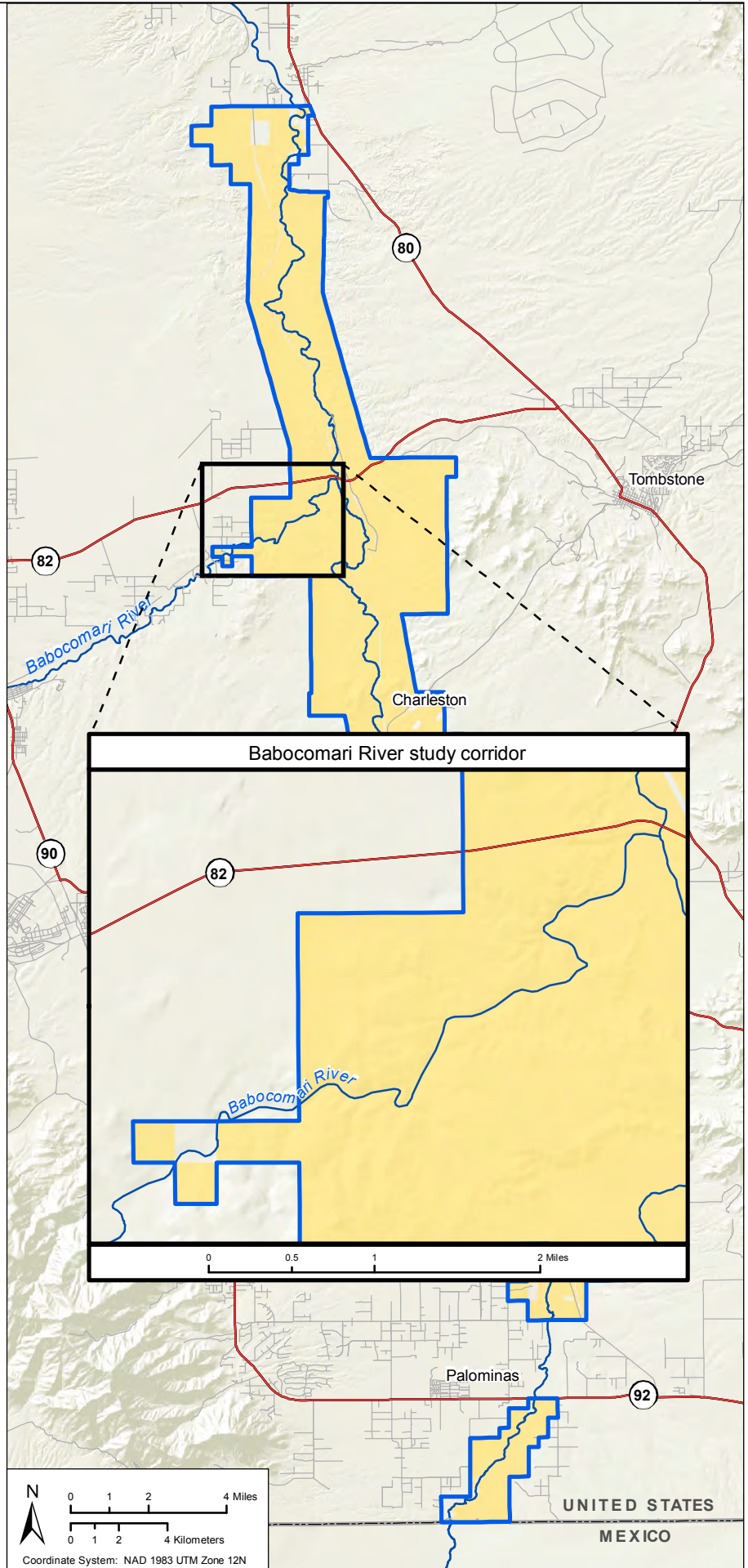





Figure 2-40
Wild and Scenic Rivers:
Babocomari River Alternative C
and the Proposed Plan

-  SPRNCA Planning Area
-  BLM-administered land

- Study Corridor Management**
-  Suitable as recreational



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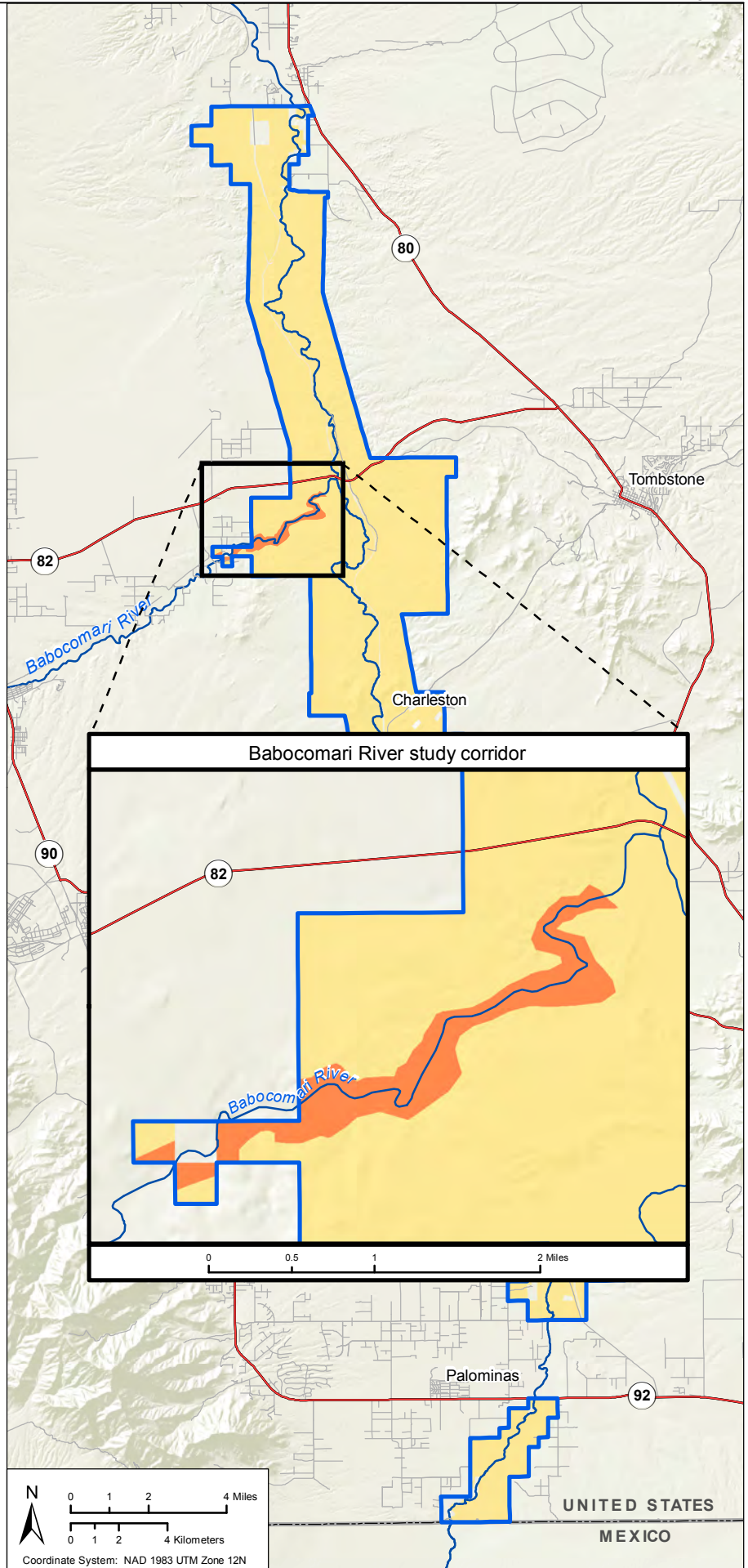



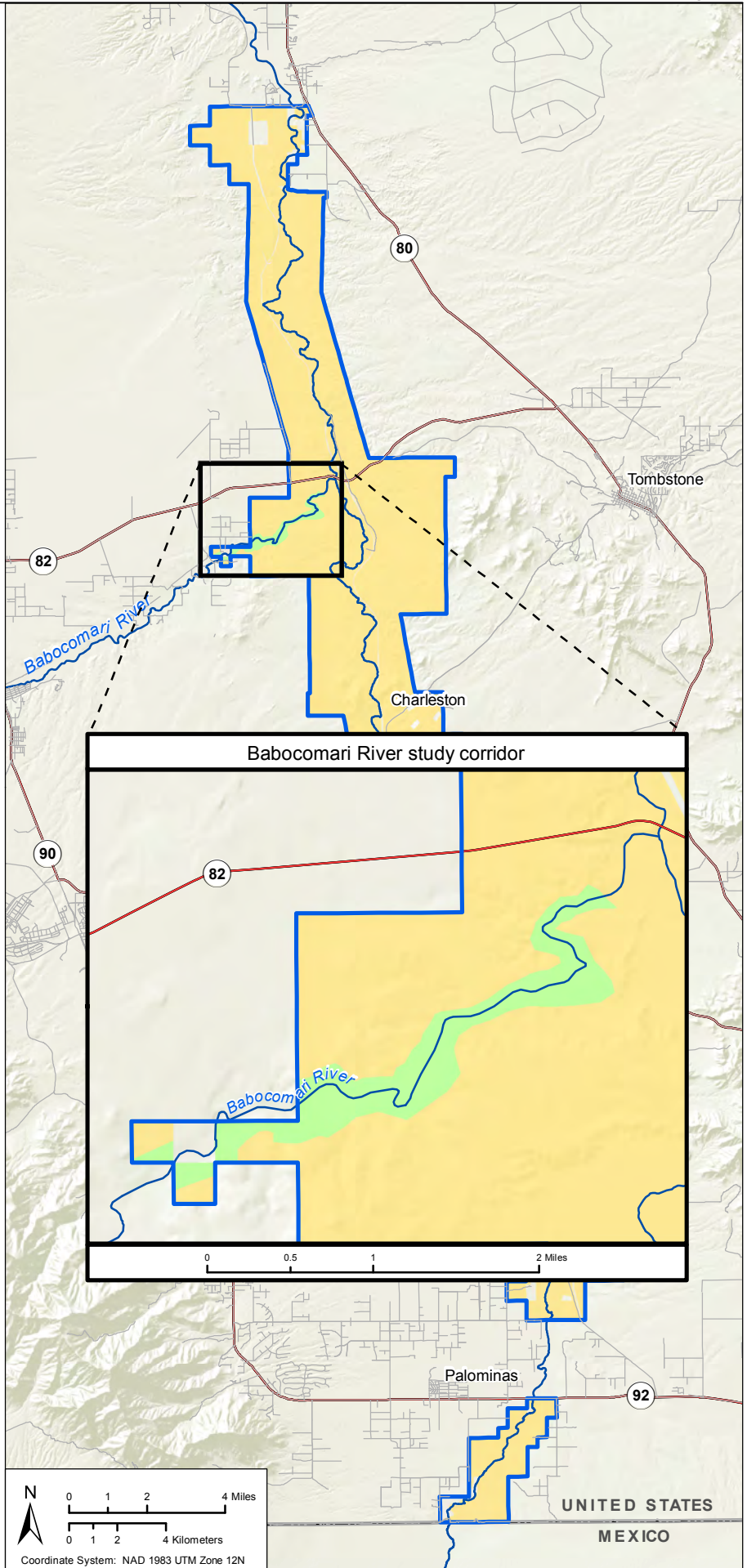


Figure 2-41
Wild and Scenic Rivers:
Babocomari River Alternative D

-  SPRNCA Planning Area
-  BLM-administered land

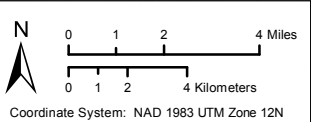
- WSR Inventory Class**
-  Suitable as scenic






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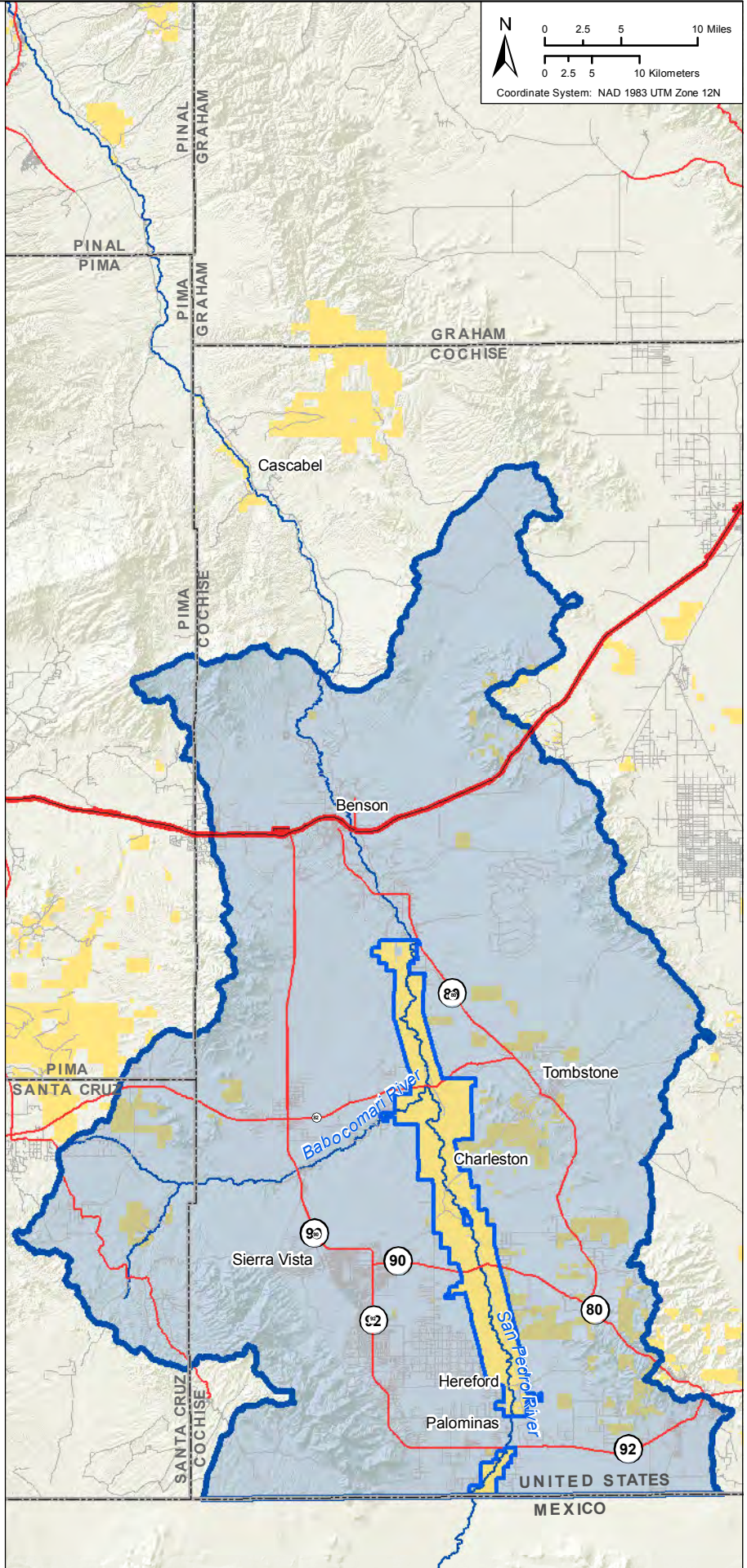
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**Figure 3-1
Upper San Pedro Watershed**

-  SPRNCA Planning Area
-  BLM-administered land
-  Upper San Pedro Watershed (U.S.)



Source: BLM GIS 2017, USGS GIS 2017



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 SPRNCA_AE_Cumu_watershed.pdf
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**Figure 3-2
Dominant Ecological Sites**

 SPRNCA Planning Area

Dominant Ecological Site

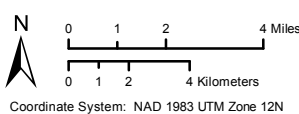
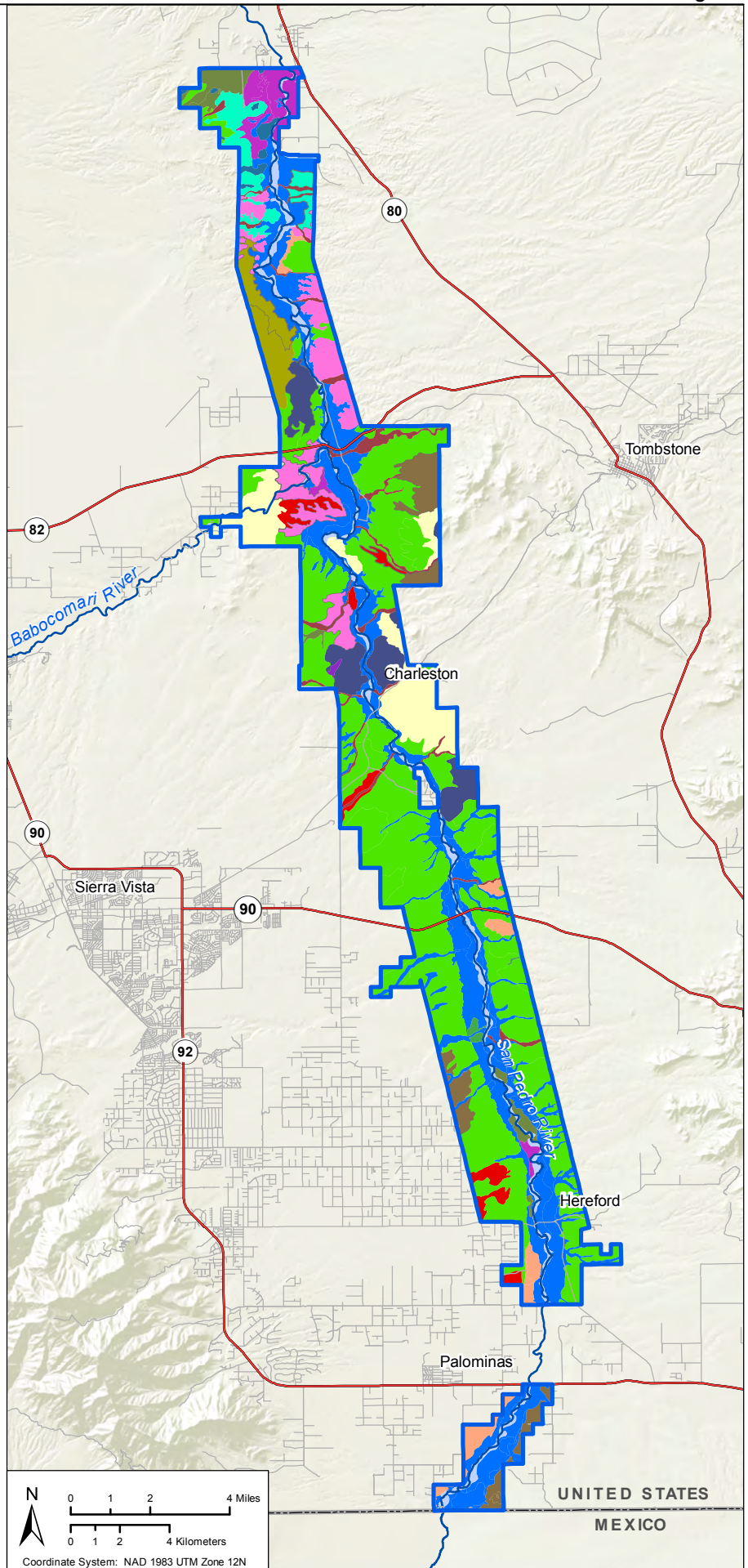
-  Clay loam upland
-  Clayey slopes
-  Clayey swale
-  Gypsum upland
-  Limy fan
-  Limy slopes
-  Limy upland
-  Loamy bottom
-  Loamy upland
-  Saline bottom
-  Sandy bottom
-  Sandy loam upland
-  Sandy loam, deep
-  Sandy wash
-  Sandy loam upland
-  Shallow hills
-  Shallow upland

Source: BLM 2017, NRCS GIS 2017



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**Figure 3-3
Vegetation Communities**




 SPRNCA Planning Area

Vegetation Communities



Upland Vegetation

-  Chihuahuan desert scrub
-  Semidesert grassland


Riparian Vegetation

-  Fremont cottonwood-Goodding's willow
-  Mesquite forest (bosque)
-  Big sacaton grassland

Wetlands

-  Interior marshland (ciénega)
-  Aquatic (open water)

Xeric Riparian

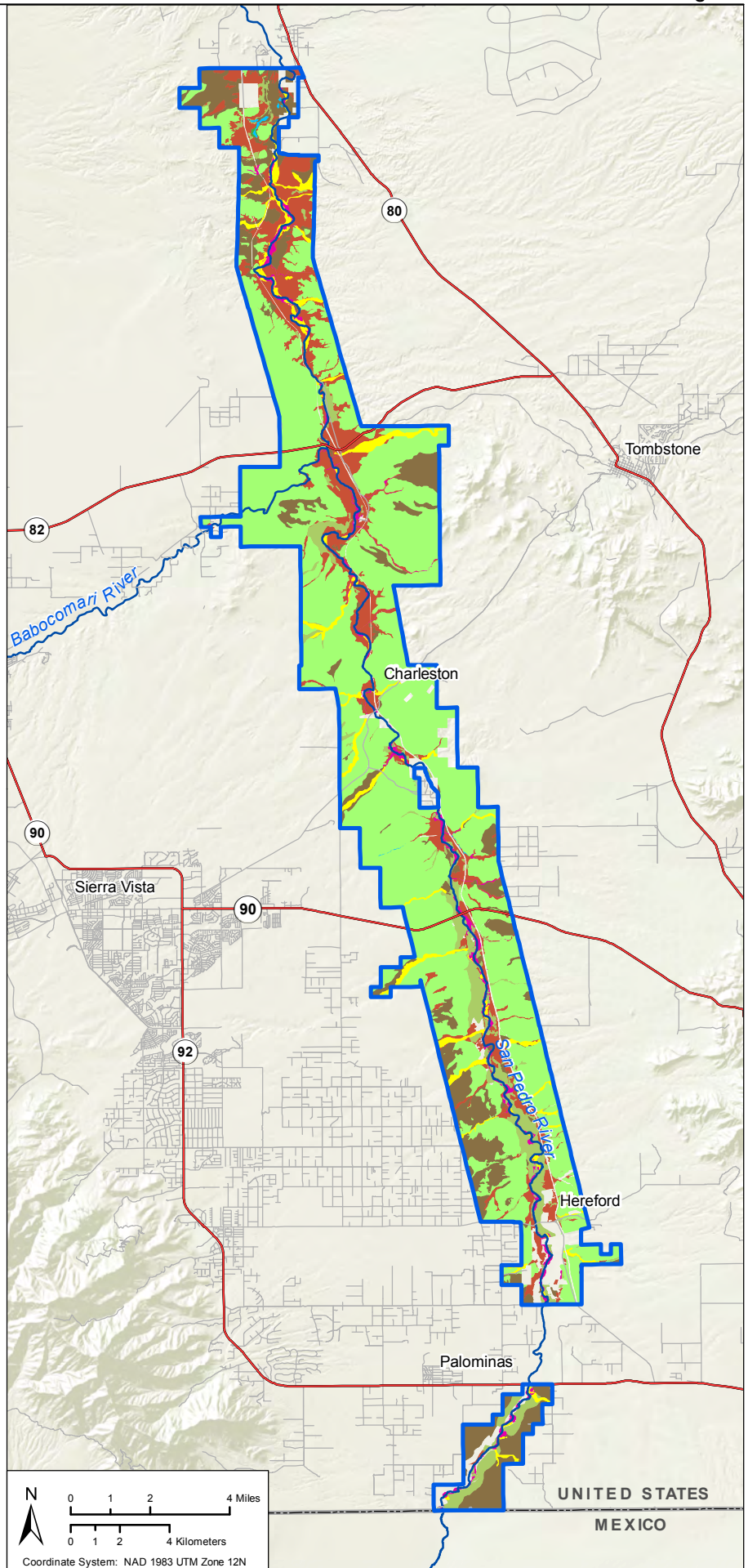
-  Sandy wash (xeric riparian)

Source: BLM GIS 2017






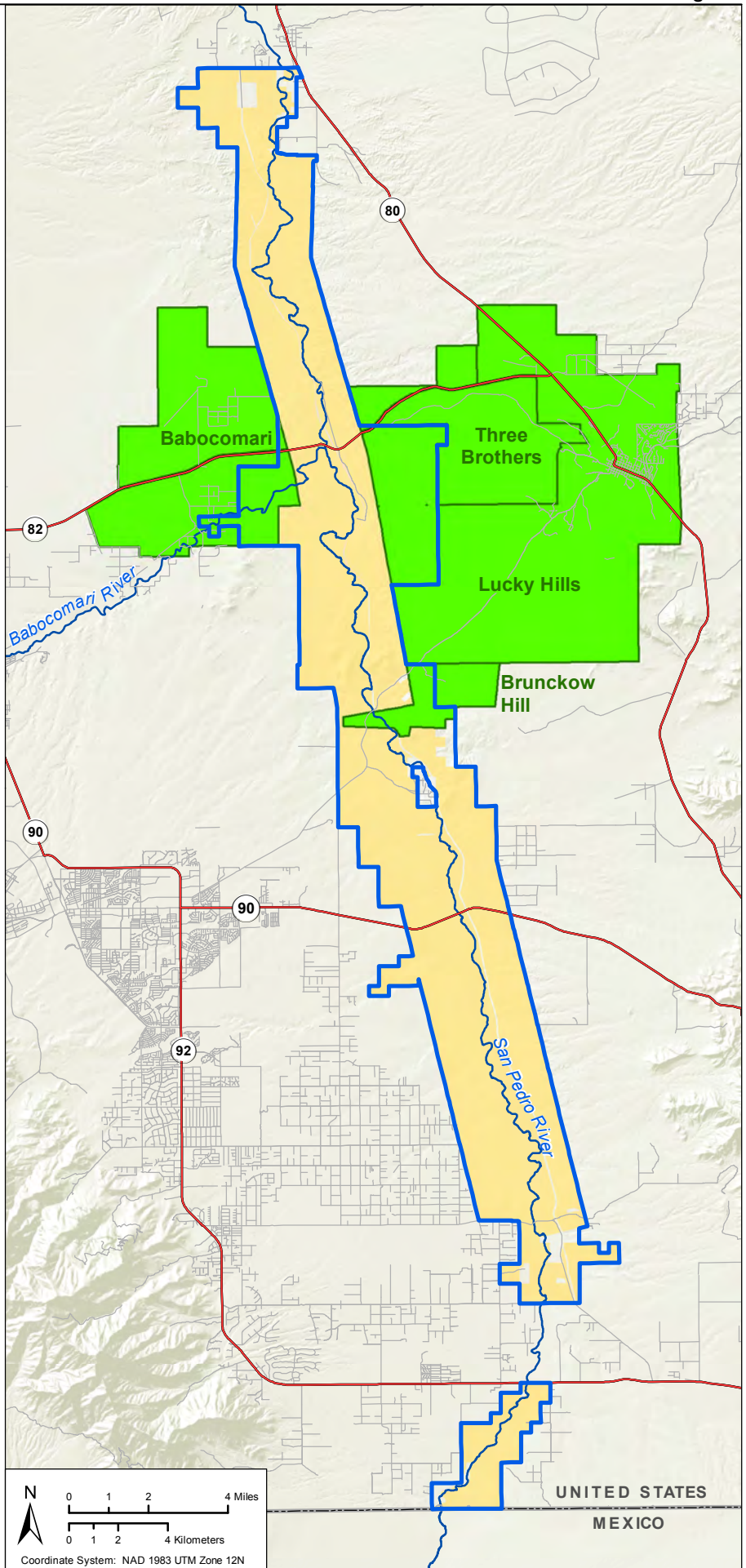
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**Figure 3-4
Grazing Allotments**

-  SPRNCA Planning Area
-  BLM-administered land
-  Grazing allotment

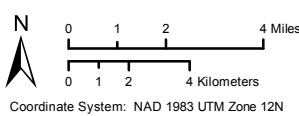


Source: BLM GIS 2017











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**Figure 3-5
Threatened and Endangered
Species Critical Habitat**

-  SPRNCA Planning Area
-  BLM-administered land

- Critical habitat inside planning area (status)
-  Yellow-billed Cuckoo (threatened, with proposed critical habitat)
 -  Northern Mexican gartersnake (threatened, with proposed critical habitat)
 -  Huachuca water-umbel (endangered)
- Critical habitat outside planning area (status)
-  Jaguar (endangered)
 -  Mexican spotted owl (threatened)
 -  Chiricahua leopard frog (threatened)

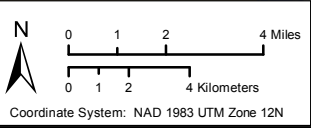
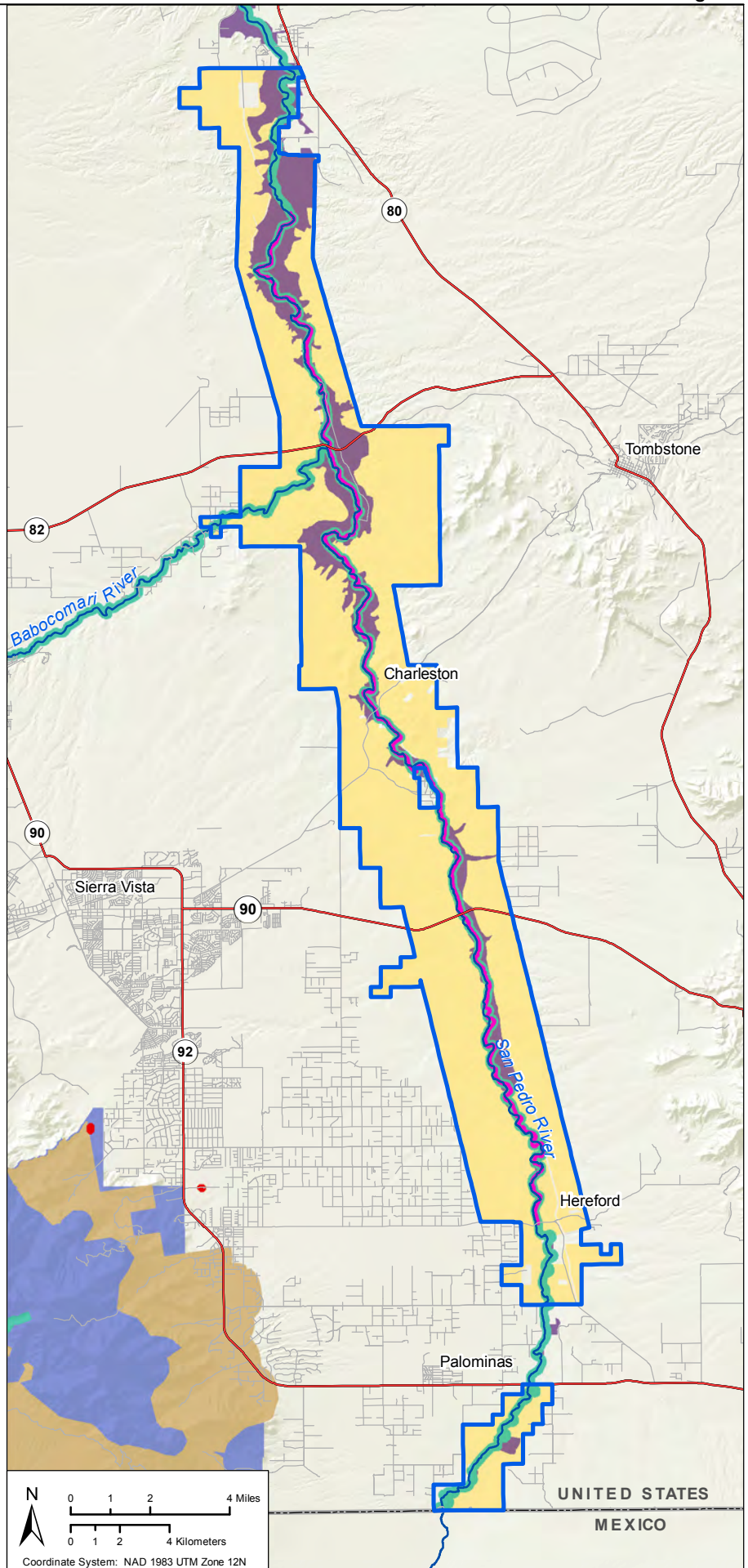
Critical habitat: A) designated by US Fish and Wildlife Service occupied by a threatened or endangered species “on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection;” or B) an area with physical and biological features essential to the conservation of a species that may require special management consideration.

Source: BLM GIS 2017, FWS GIS 2014





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**Figure 3-6
Livestock Grazing and
Critical Habitat:
Alternative C**

-  SPRNCA Planning Area
-  BLM-administered land

Critical Habitat

-  Huachuca water-umbel (endangered)
-  Northern Mexican gartersnake (threatened)
-  Yellow-billed Cuckoo (proposed threatened)

Livestock Grazing

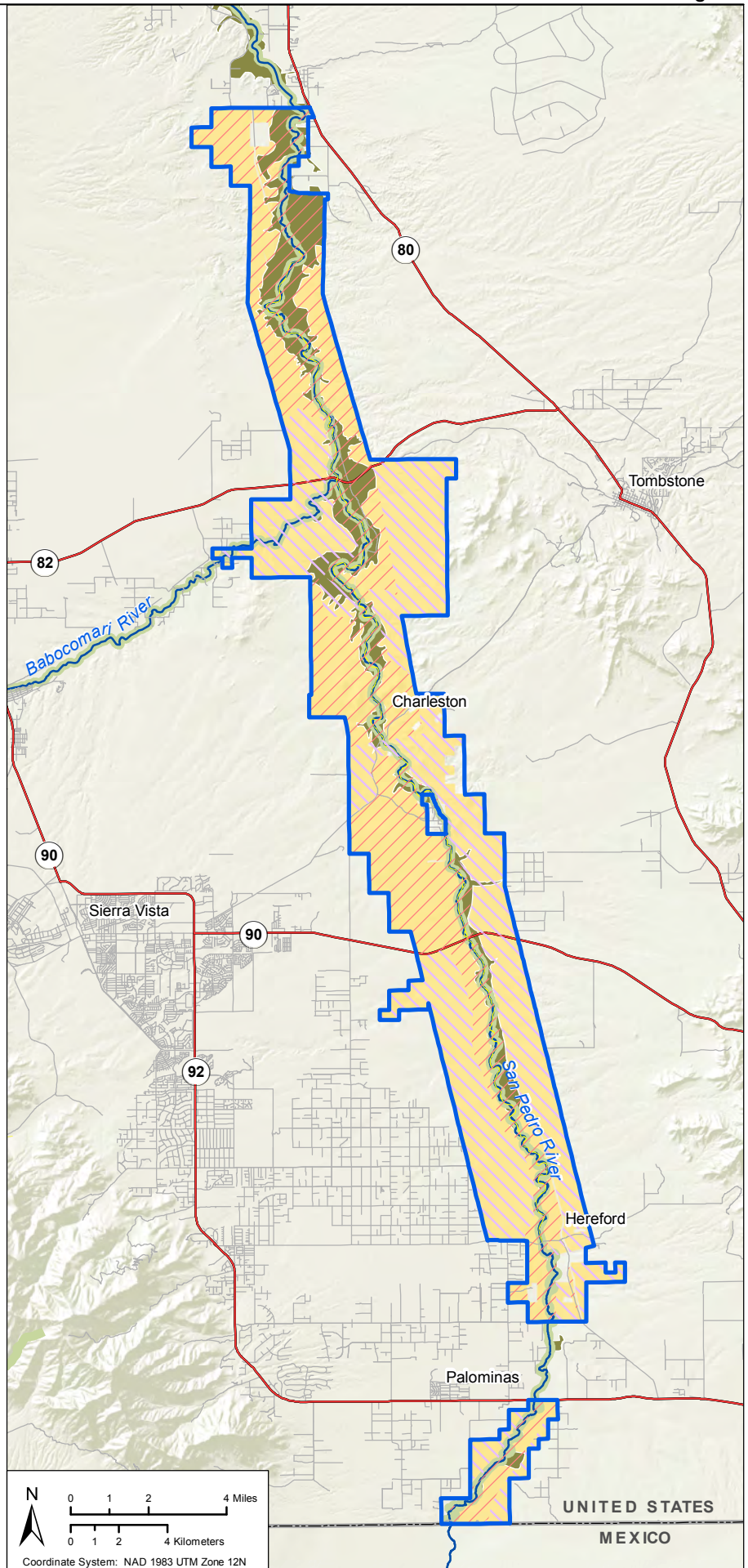
-  Lands open to grazing
-  Lands closed to grazing





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**Figure 3-7
Livestock Grazing and
Critical Habitat:
Proposed Plan**

-  SPRNCA Planning Area
-  BLM-administered land

Critical Habitat

-  Huachuca water-umbel (endangered)
-  Northern Mexican gartersnake (threatened)
-  Yellow-billed Cuckoo (proposed threatened)

Livestock Grazing

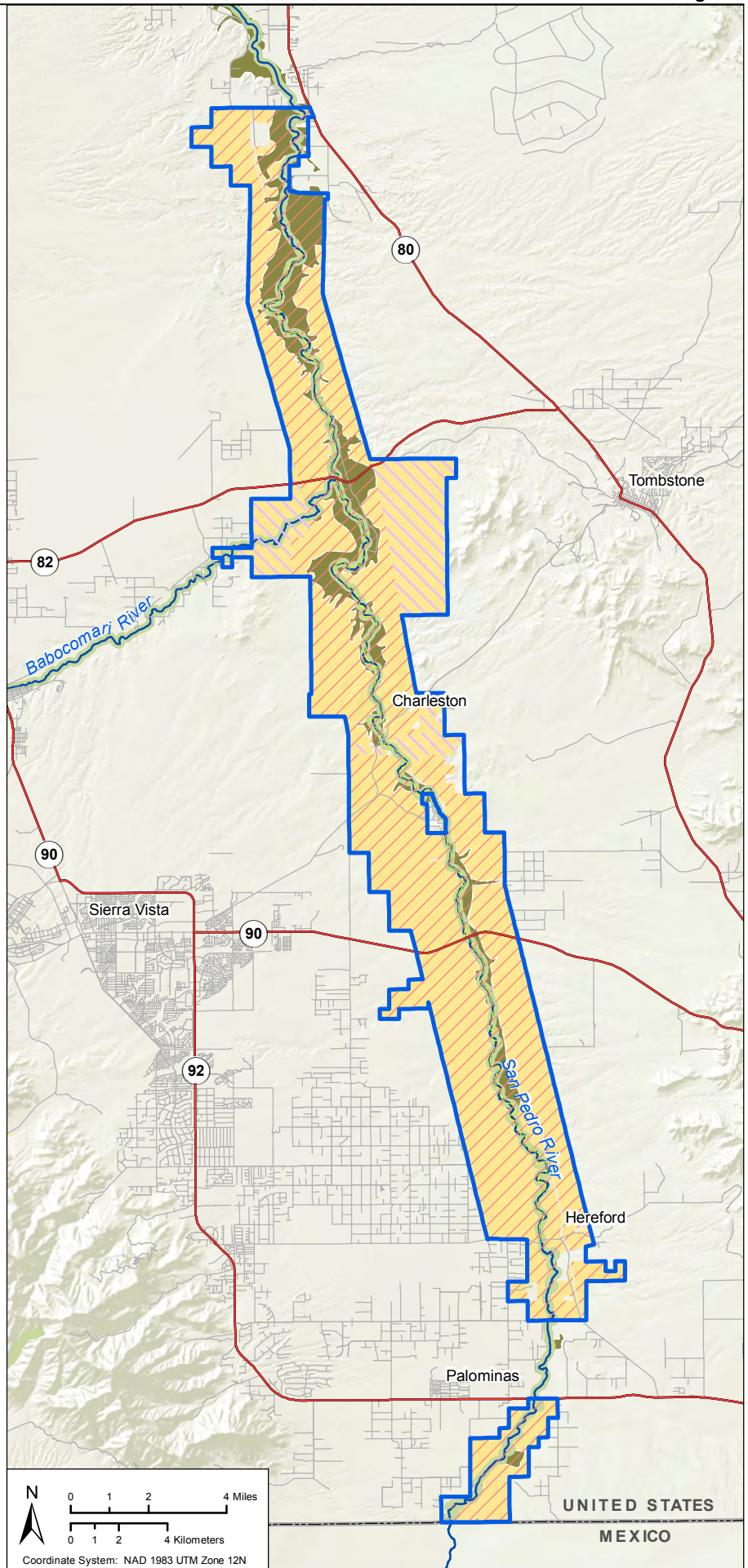
-  Lands available for grazing
-  Lands not available for grazing





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**Figure 3-8
Livestock Grazing and
Recreation Facilities:
Alternative C**

-  SPRNCA Planning Area
-  BLM-administered land

Recreation

-  Recreation facilities

Livestock Grazing

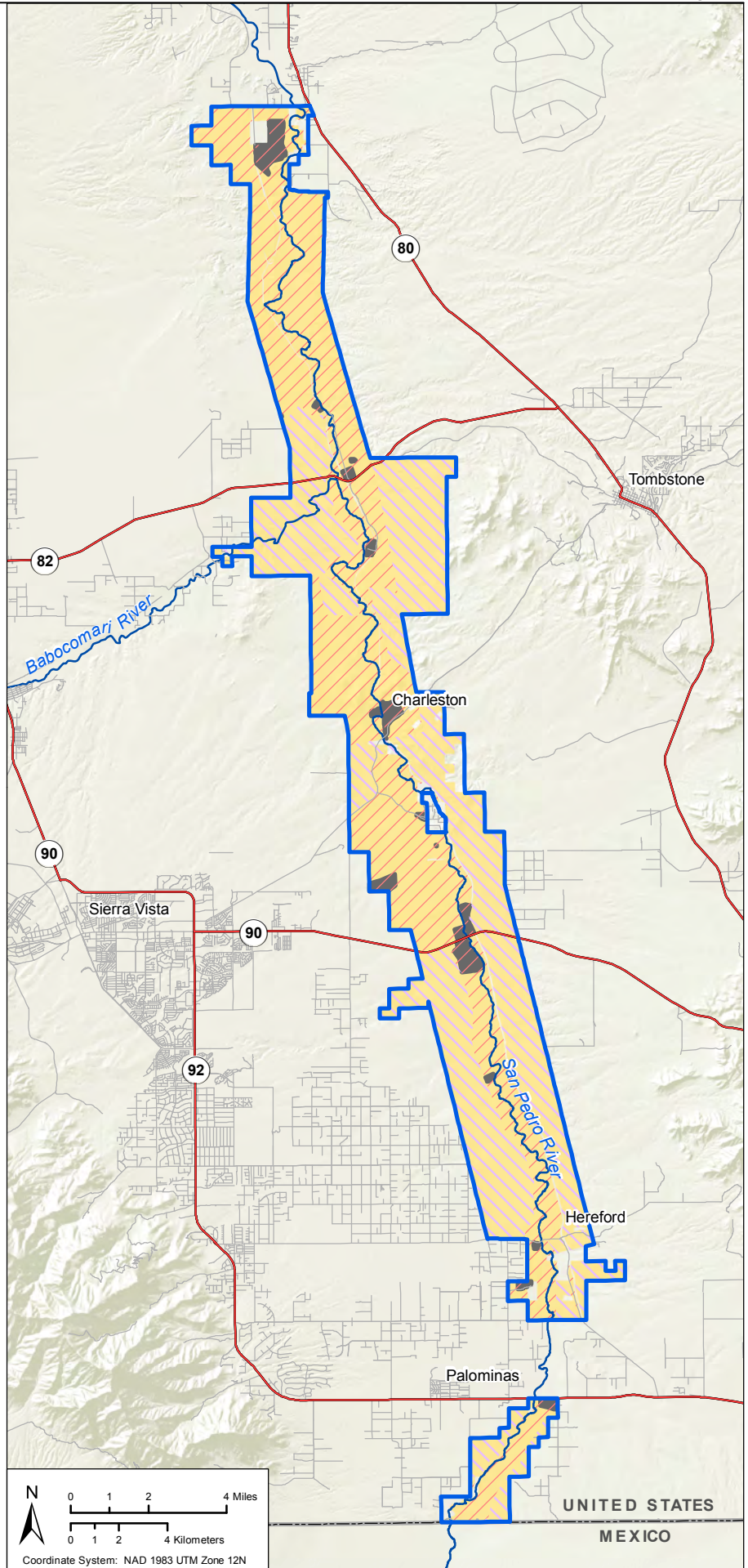
-  Lands open to grazing
-  Lands closed to grazing





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**Figure 3-9
Livestock Grazing and
Recreation Facilities:
Proposed Plan**

-  SPRNCA Planning Area
-  BLM-administered land

Recreation

-  Recreation facilities

Livestock Grazing

-  Lands available for grazing
-  Lands not available for grazing



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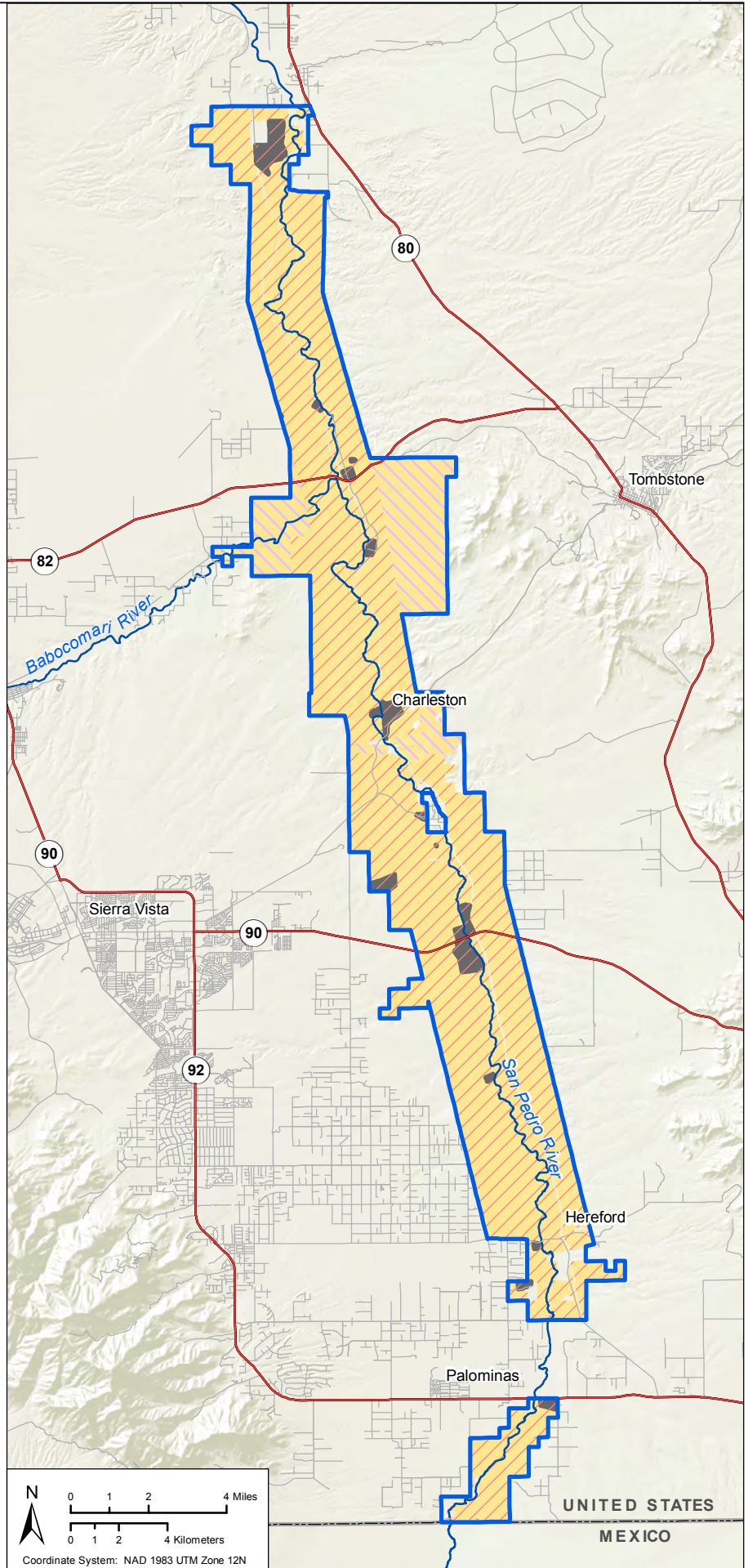





Figure 3-10
WUIs Within and Adjacent
to the Planning Area

-  SPRNCA Planning Area
-  BLM-administered land
-  Wildland-urban interface

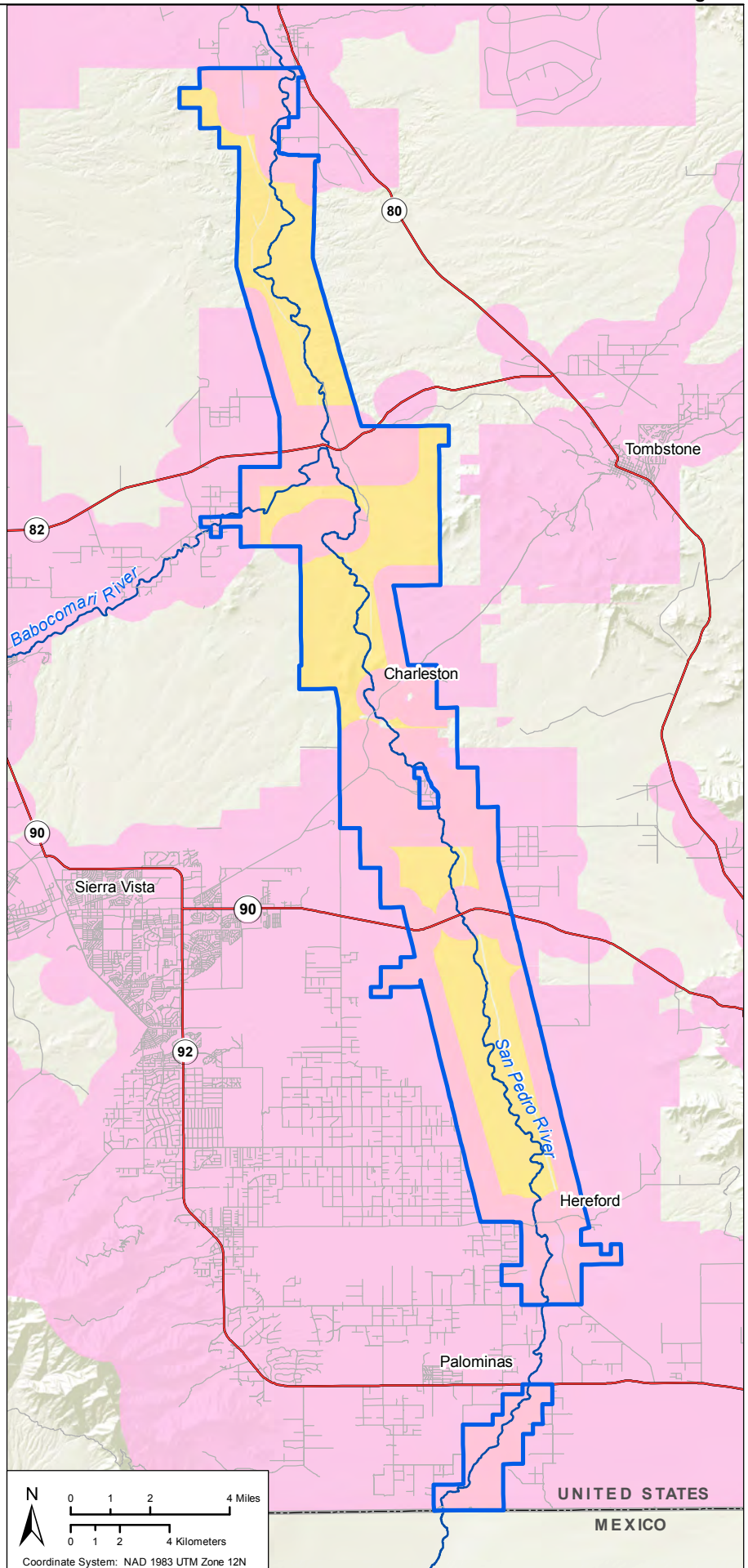
A wildland-urban interface (WUI) refers to the zone of transition between unoccupied land and human development. These lands and communities next to and surrounded by wildlands are often at increased risk for wildfire.

Source: BLM GIS 2017








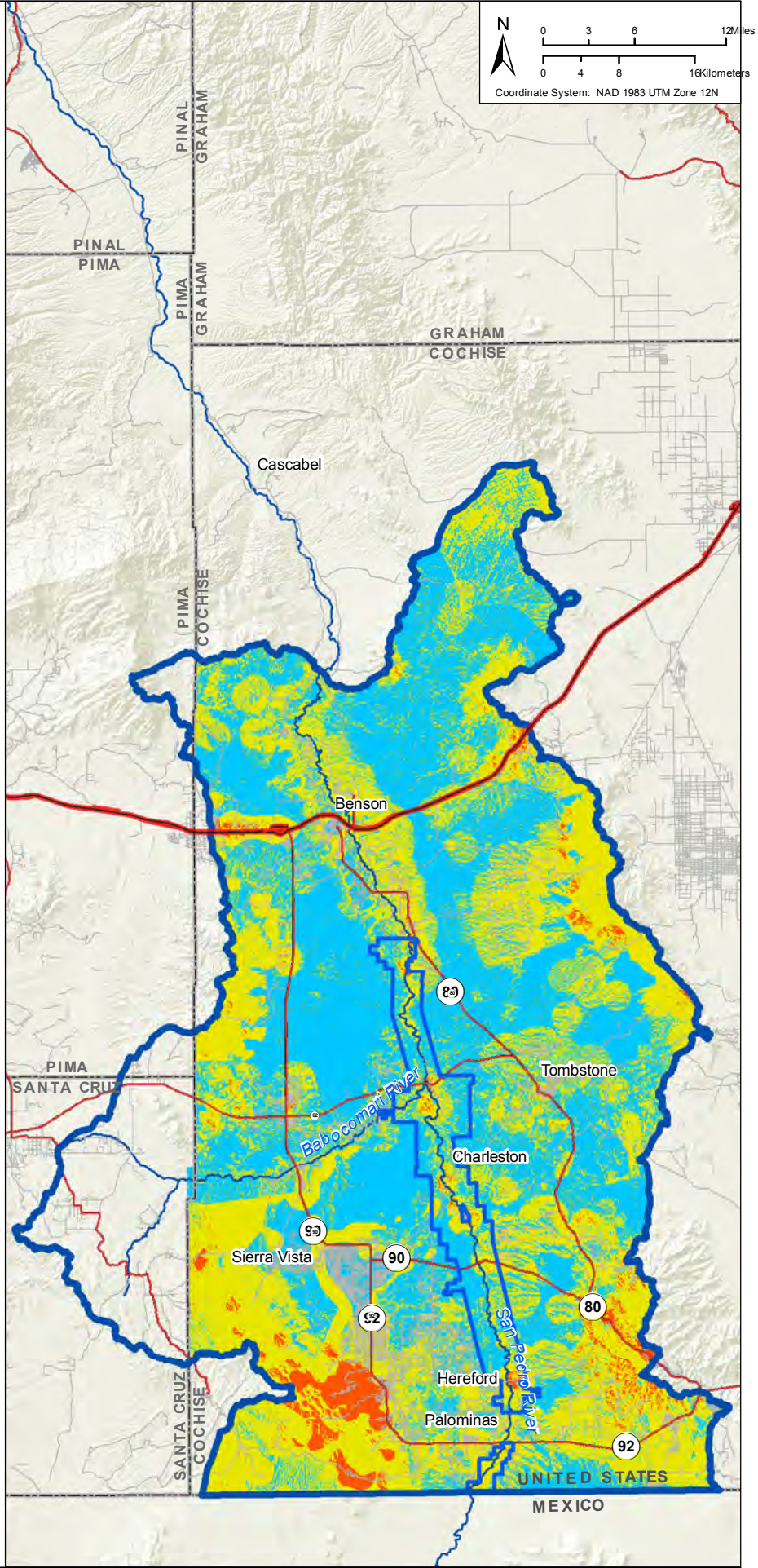
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**Figure 3-11
Wildfire Risk Analysis**

-  SPRNCA Planning Area
-  Upper San Pedro Watershed (U.S.)
- Cochise County Cumulative Risk**
-  High
-  Moderate
-  Low



Source: BLM GIS 2017, Cochise County CWPP 2014





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Figure 3-12
Formative-era Cultural Traditions
of Southern Arizona and
Northern Mexico

 SPRNCA Planning Area

 Casas Grandes

 Hohokam

 Mogollon

 Rio Sonora

 Salado

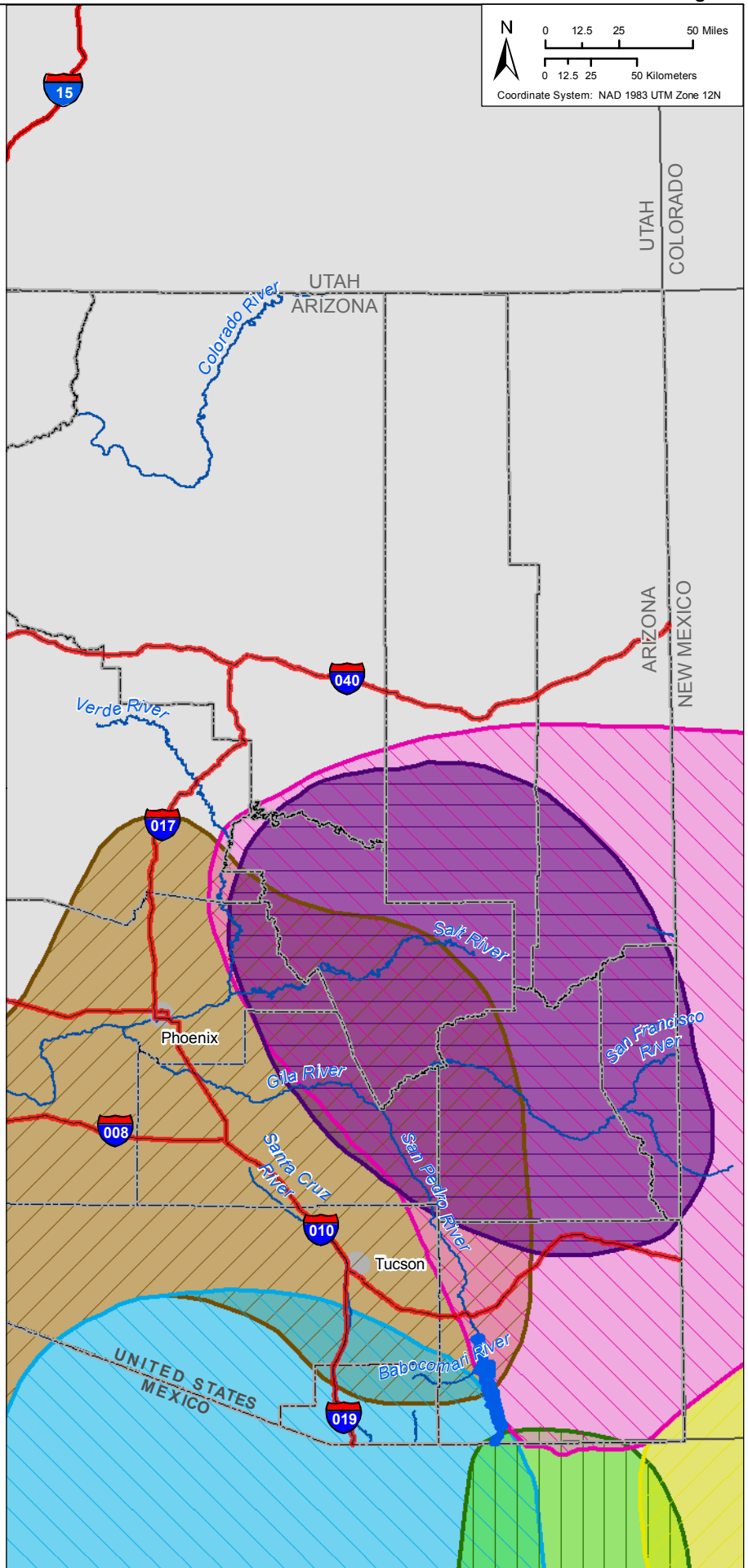
 Trincheras

Source: BLM GIS 2017, adapted from Gilman (2016) and Verde Valley Archaeology Center (2017)








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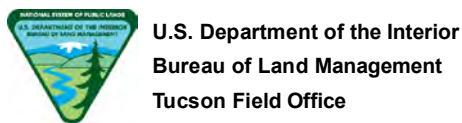


**Figure 3-13
Potential Fossil Yield
Classification**

-  SPRNCA Planning Area
-  1—Very low sensitivity
-  2—Low sensitivity
-  4—High sensitivity
-  U—Unknown sensitivity

The potential fossil yield classification (PFYC) scale consists of assigning a number to a geologic unit from PFYC 1—PFYC 5. A geologic unit assigned as PFYC 1 has a low probability of containing fossil resources; an example of this would be an igneous rock formation such as a granite or basalt. A geologic unit that is assigned as a PFYC 5 is a geologic unit that is known to contain numerous scientifically significant fossil resources. The PFYC map is determined by assigning the numbers to geologic units as they are represented on geologic maps.

Source: BLM GIS 2017



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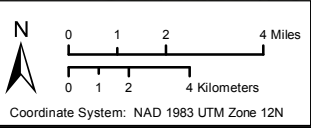
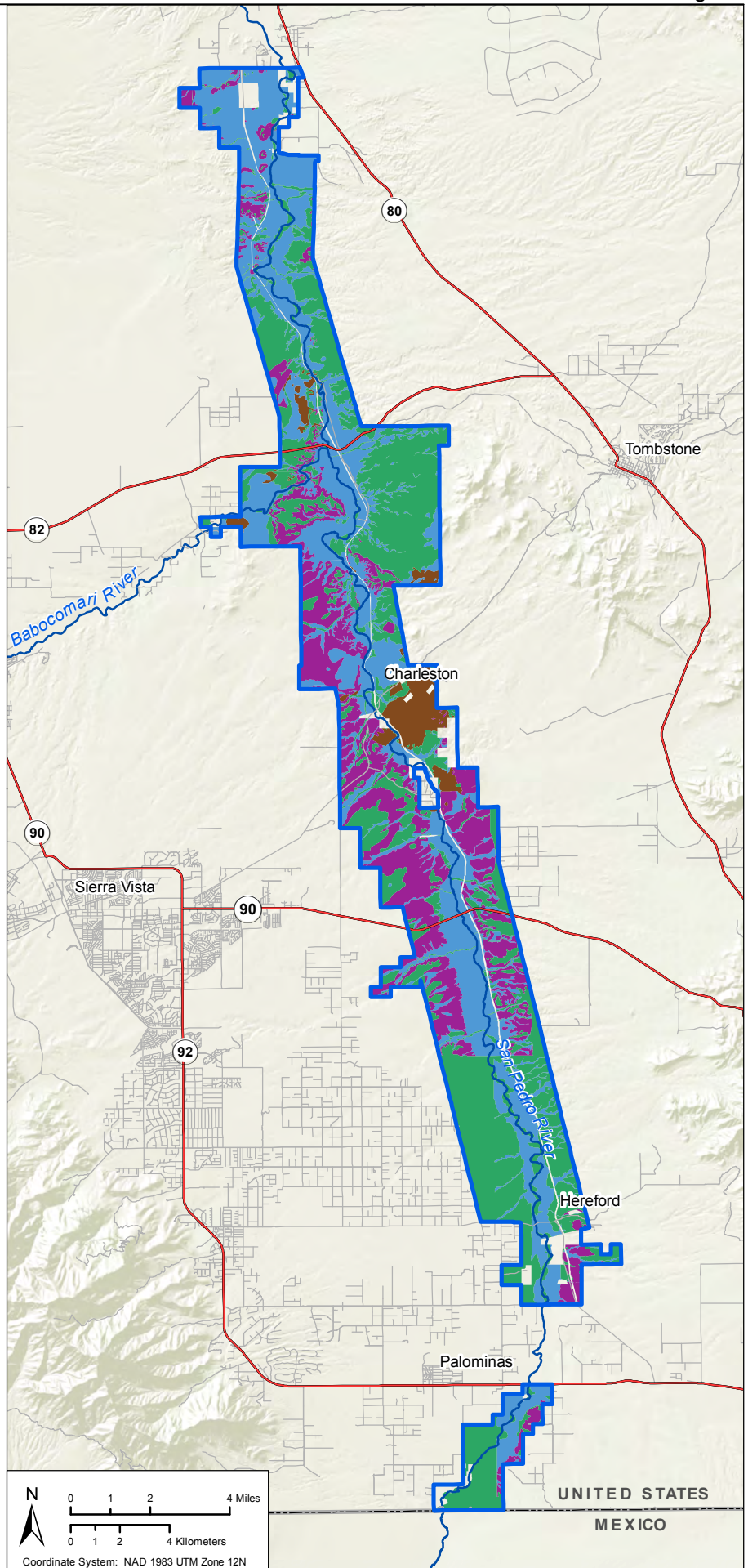




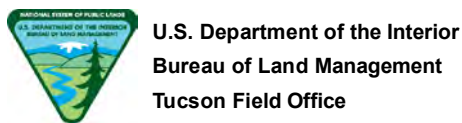


Figure 3-14
Visual Resource Inventory
Scenic Quality Ratings

-  SPRNCA Planning Area
-  A—18.5 or more total score for scenic quality
-  B—11.5 to 18 total score for scenic quality
-  C—11 or less total score for scenic quality

Scenic quality evaluation measures the visual appeal of a landscape. Lands are rated based on the apparent scenic quality. Scenic quality is determined by reviewing and rating lands using seven key factors: landform, vegetation, water, color, influence of adjacent scenery, and scarcity. The total score determines the scenic quality rating. Higher scores have a higher scenic quality.

Source: BLM GIS 2017, LSD GIS 2013



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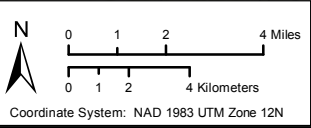
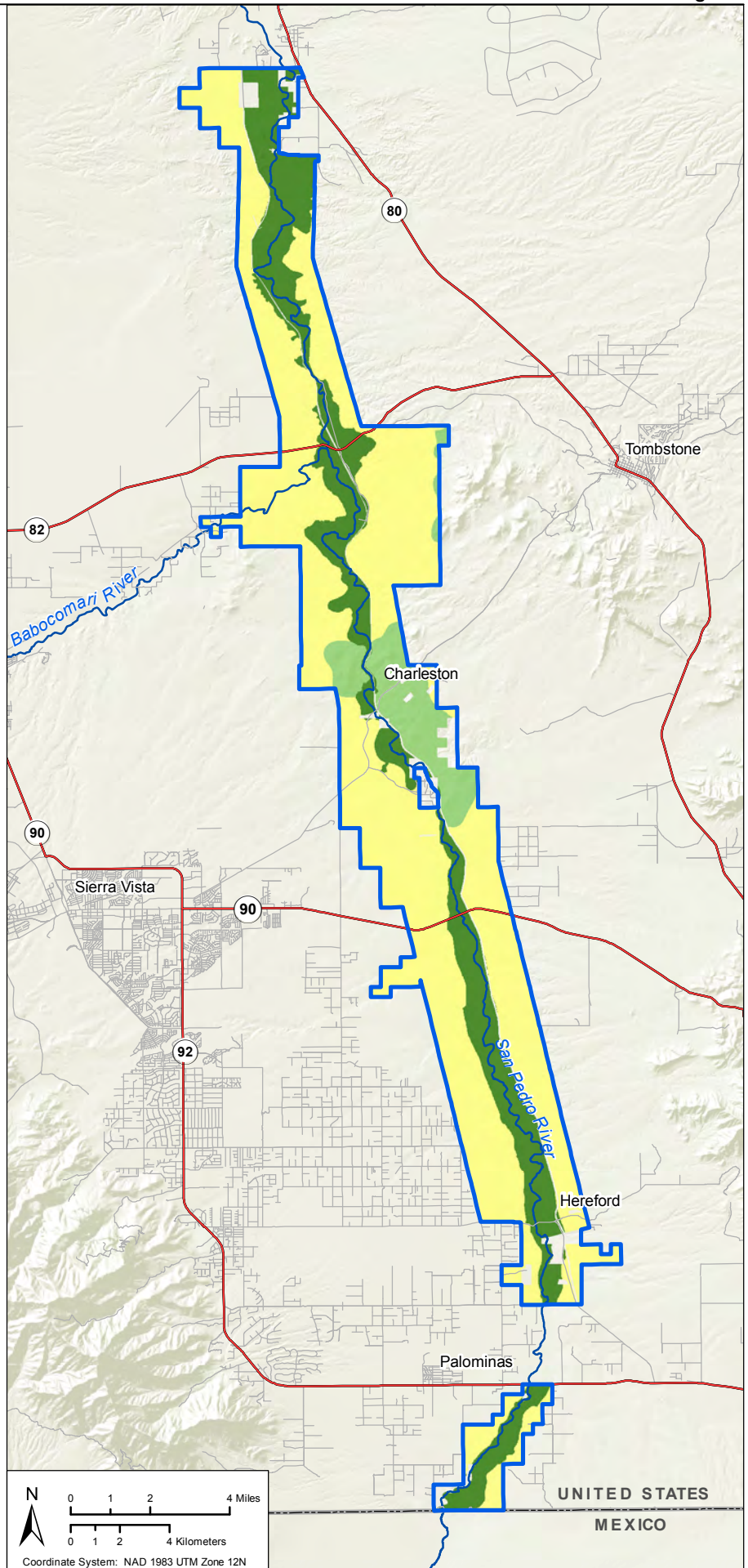





Figure 3-15
Visual Resource Inventory
Sensitivity Level Ratings

 SPRNCA Planning Area

-  Maintenance of visual quality has high value
-  Maintenance of visual quality has moderate value
-  Maintenance of visual quality has low value (none)

Sensitivity levels are a measure of public concern for scenic quality. Lands are assigned sensitivity levels based on consideration of the following: types of users, amount of use, public interest, adjacent land uses, special areas, and other. The overall rating is not quantified; instead, the evaluators make a professional judgment about how the overall ratings are valued.

Source: BLM GIS 2017, LSD GIS 2013



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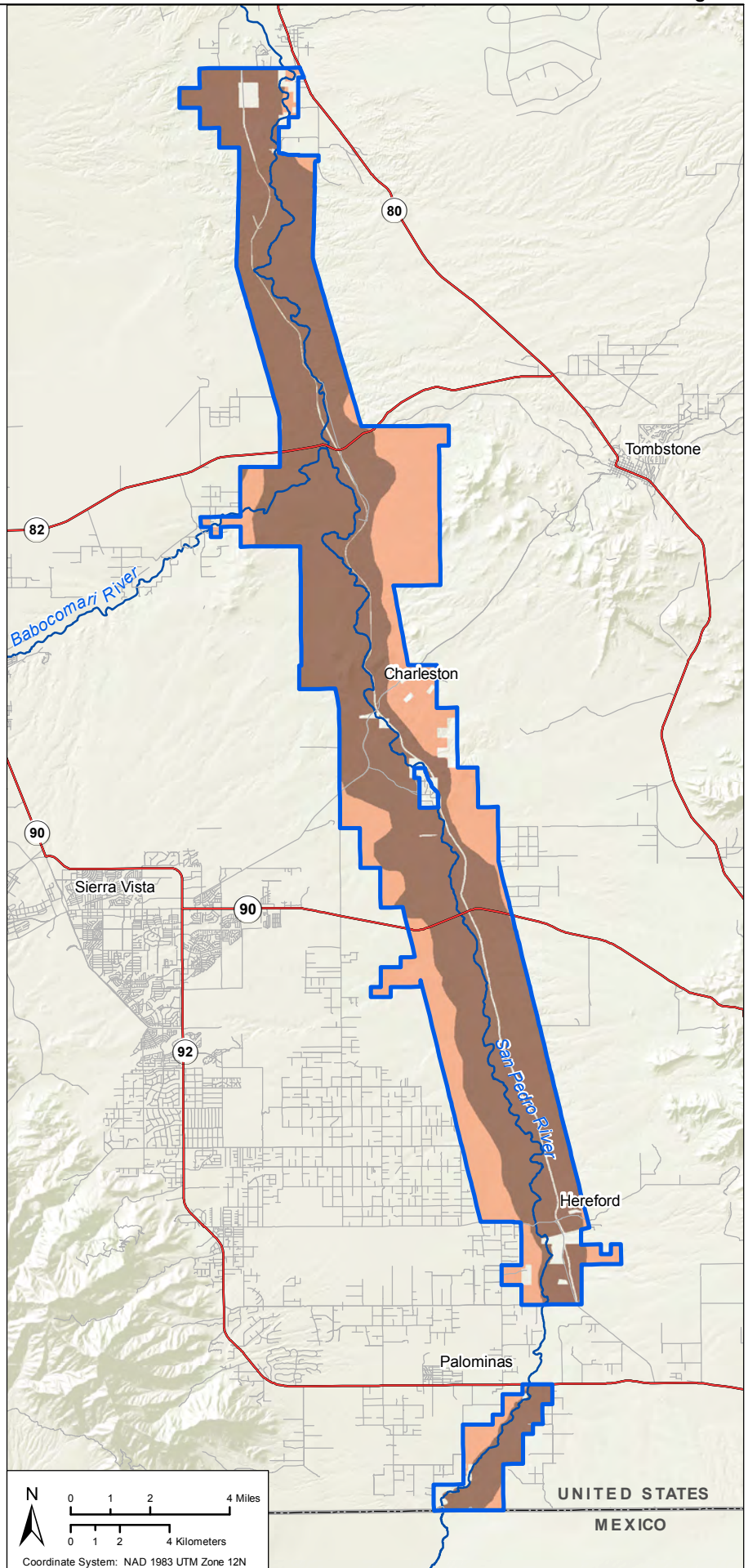






Figure 3-16
Visual Resource Inventory
Distance Zones

-  SPRNCA Planning Area
-  Foreground/midground, visibility generally up to 5 miles
-  Background visibility, generally from 5 to 15 miles
-  Seldom seen, hidden from view, or not in foreground/midground or background visibility zones

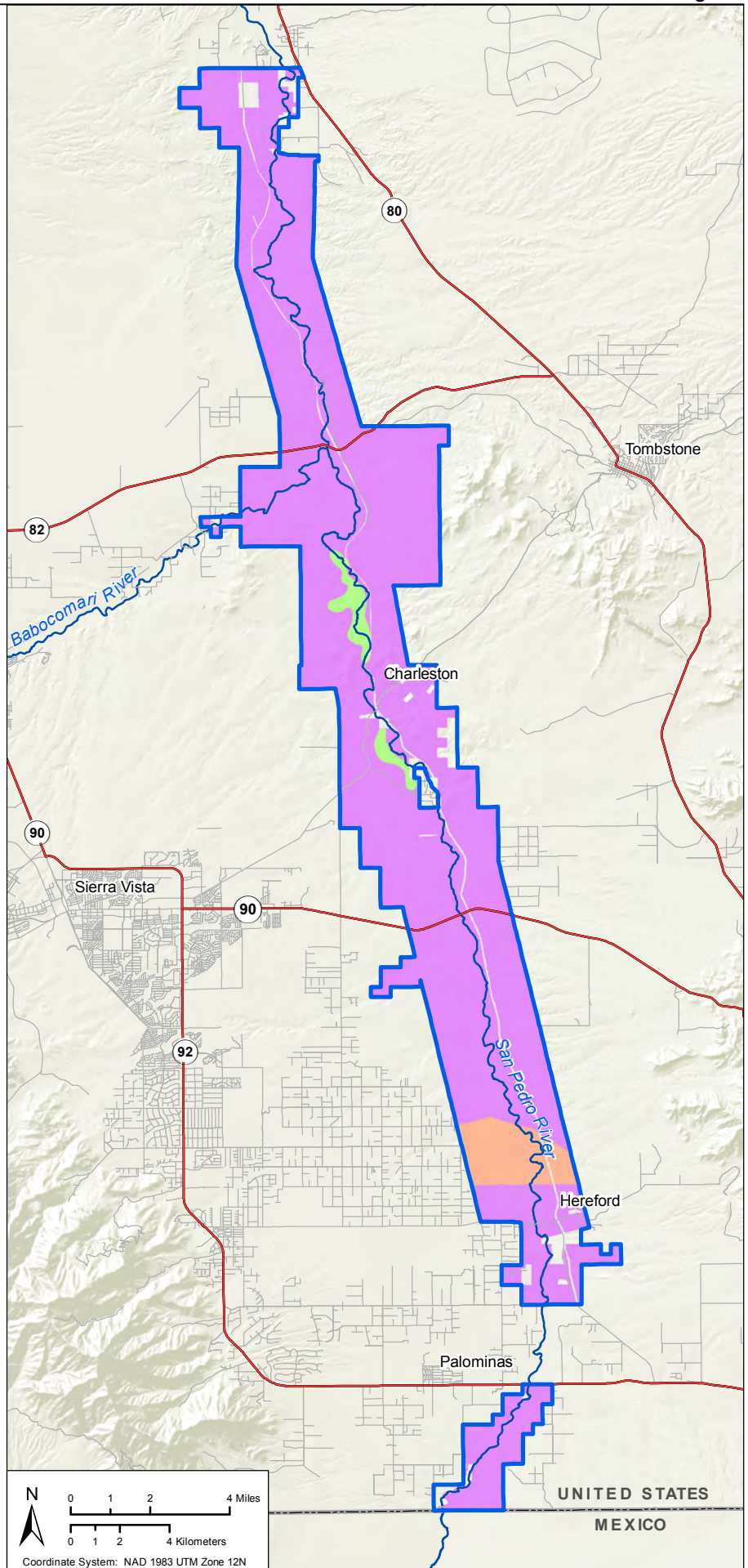
Distance zones are based on relative visibility from travel routes or observation points. Details are more visible to the viewer in the foreground-midground and are less visible in the seldom seen zone. Lands within the foreground/ midground may therefore be more sensitive to landscape changes.

Source: BLM GIS 2017, LSD GIS 2013



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**Figure 3-17
Visual Resource Inventory
Classes**

 SPRNCA Planning Area

VRI Class I (none)

 VRI Class II

 VRI Class III

 VRI Class IV

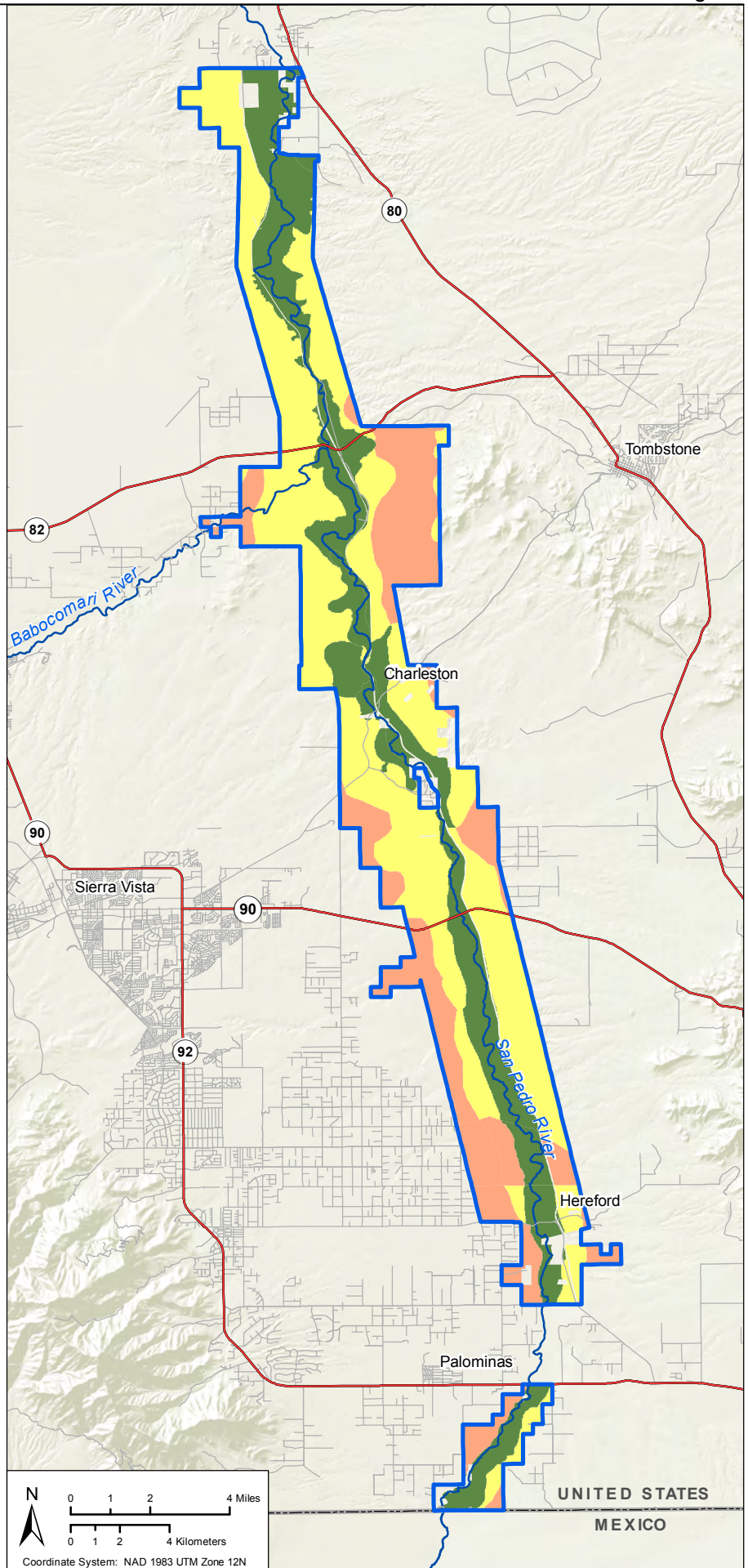
The SPRNCA conducted a visual resource inventory (VRI). Based on a scenic quality evaluation, sensitivity level analysis, and delineation of distance zones, BLM-administered lands were placed into one of four visual resource inventory classes, representing the relative visual quality of the landscape.

Source: BLM GIS 2017, LSD GIS 2013







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**Figure 3-18
Lands with Wilderness
Characteristics Inventory**

-  SPRNCA Planning Area
-  BLM-administered land
-  Lands with wilderness characteristics
-  Lands with wilderness characteristics on contiguous BLM-administered lands outside of the SPRNCA; this RMP does not make decisions on land outside of the SPRNCA

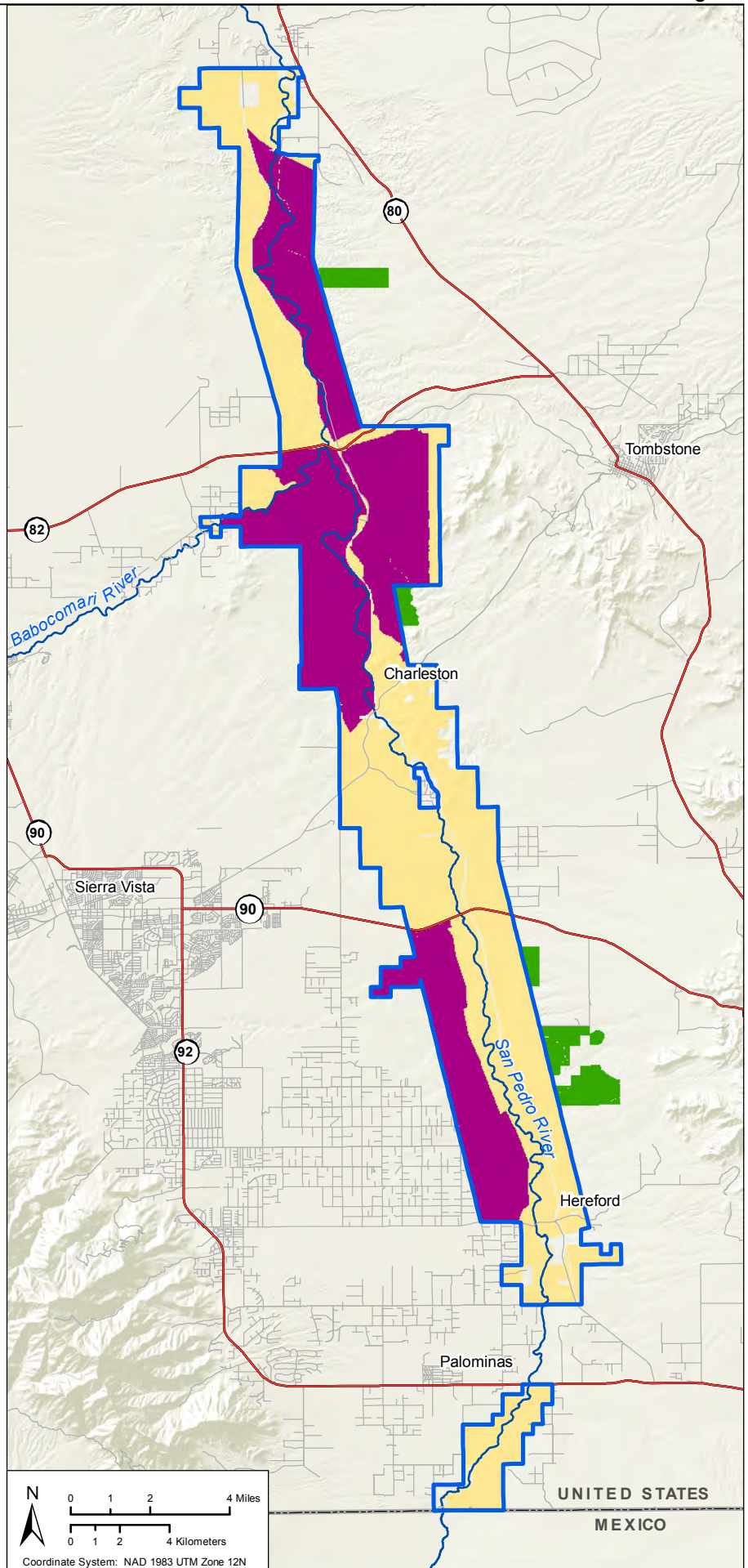
In compliance with BLM policy, the maintenance of a current inventory and ground checking of lands with wilderness characteristics was updated from 2013 to 2016 (BLM 2016). The 2013–2016 inventory (BLM 2016) area includes BLM-administered lands in the SPRNCA and adjacent BLM-administered lands outside the SPRNCA that form contiguous blocks of federal land. The inventory identified four units (23,810 acres) with wilderness characteristics (BLM 2016).

Source: BLM GIS 2017



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**Figure 3-19
Recreation Setting
Characteristics Inventory**

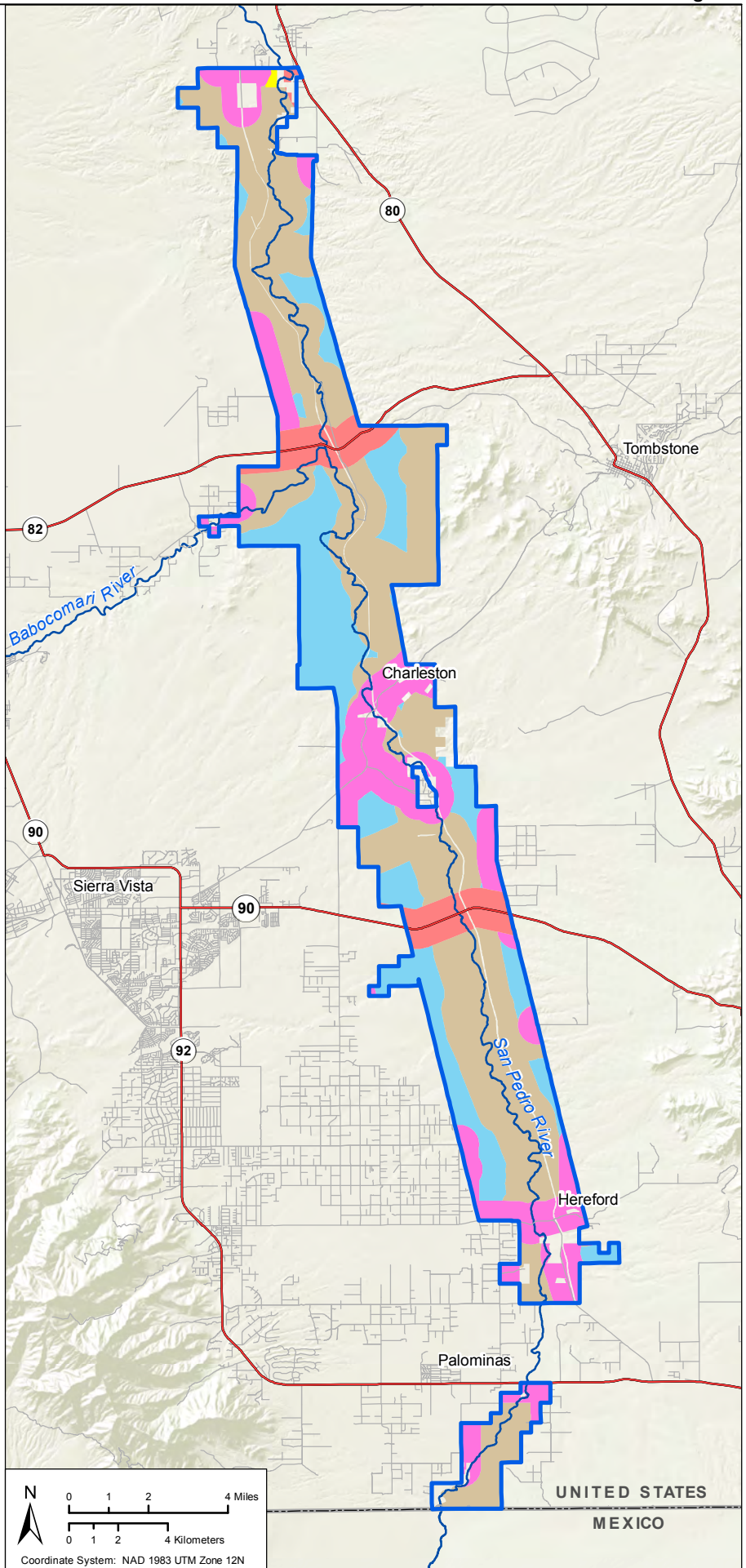
- SPRNCA Planning Area
- Primitive
- Back Country
- Middle Country
- Front Country
- Rural

Source: BLM GIS 2017



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**Figure 3-20
Hunting with Firearms:
Alternative A, C, and
the Proposed Plan**

- SPRNCA Planning Area
- Administrative site
- Occupied structure

Discharge of Firearms

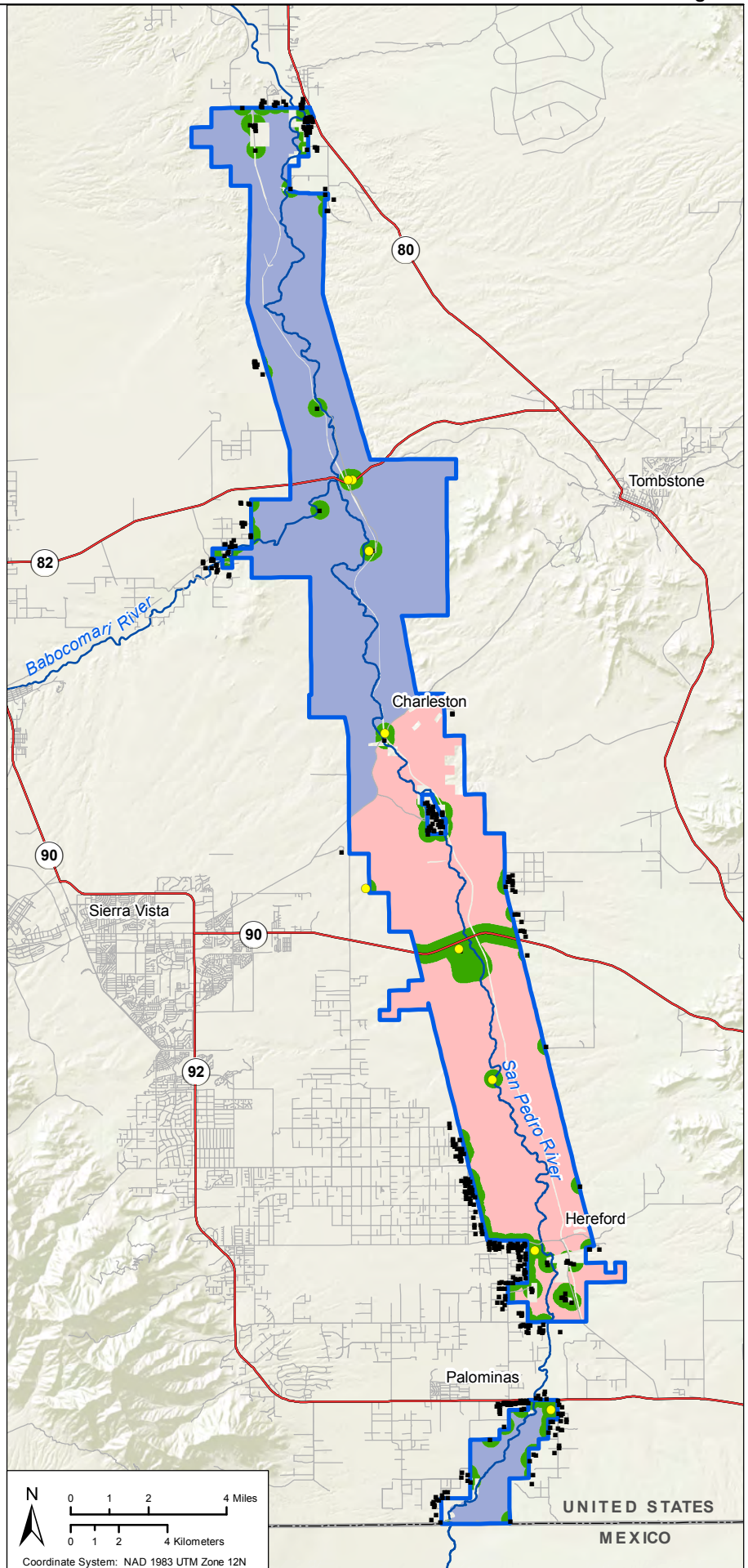
- Lands remaining open for hunting with firearms
- Lands newly opened for hunting with firearms
- Lands closed to hunting with firearms

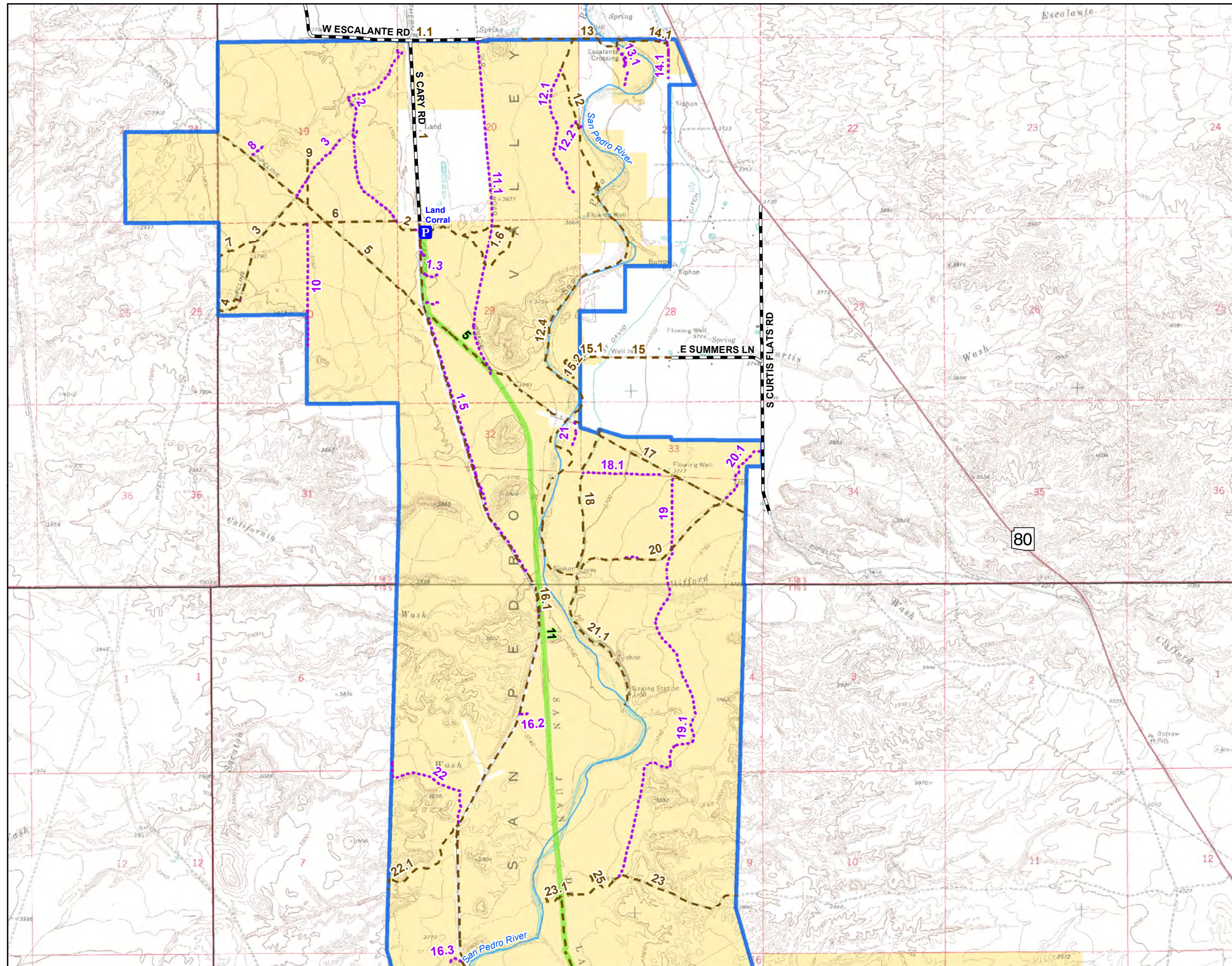


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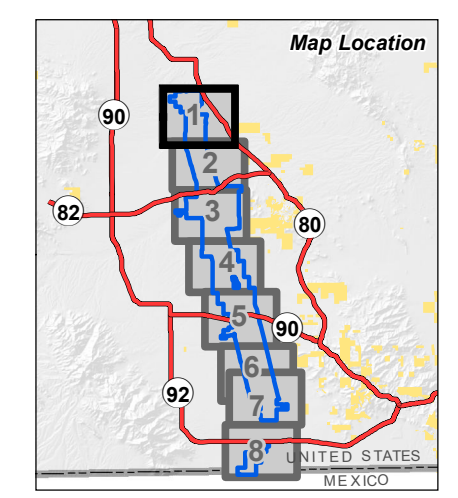
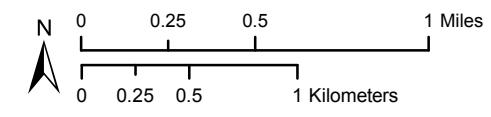
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**Figure 3-21, Extent 1
Travel Route Inventory**

- SPRNCA Planning Area
- BLM-administered land
- Trailheads, existing
- San Pedro trail system
- Administrative vehicle routes
- Other inventoried routes
- County road










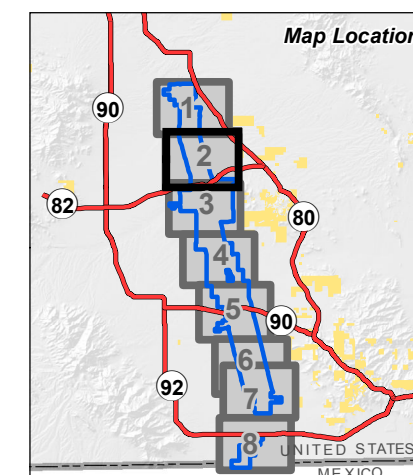
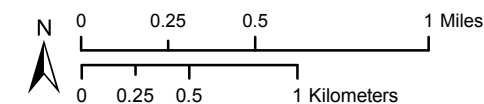
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Figure 3-21, Extent 2 Travel Route Inventory

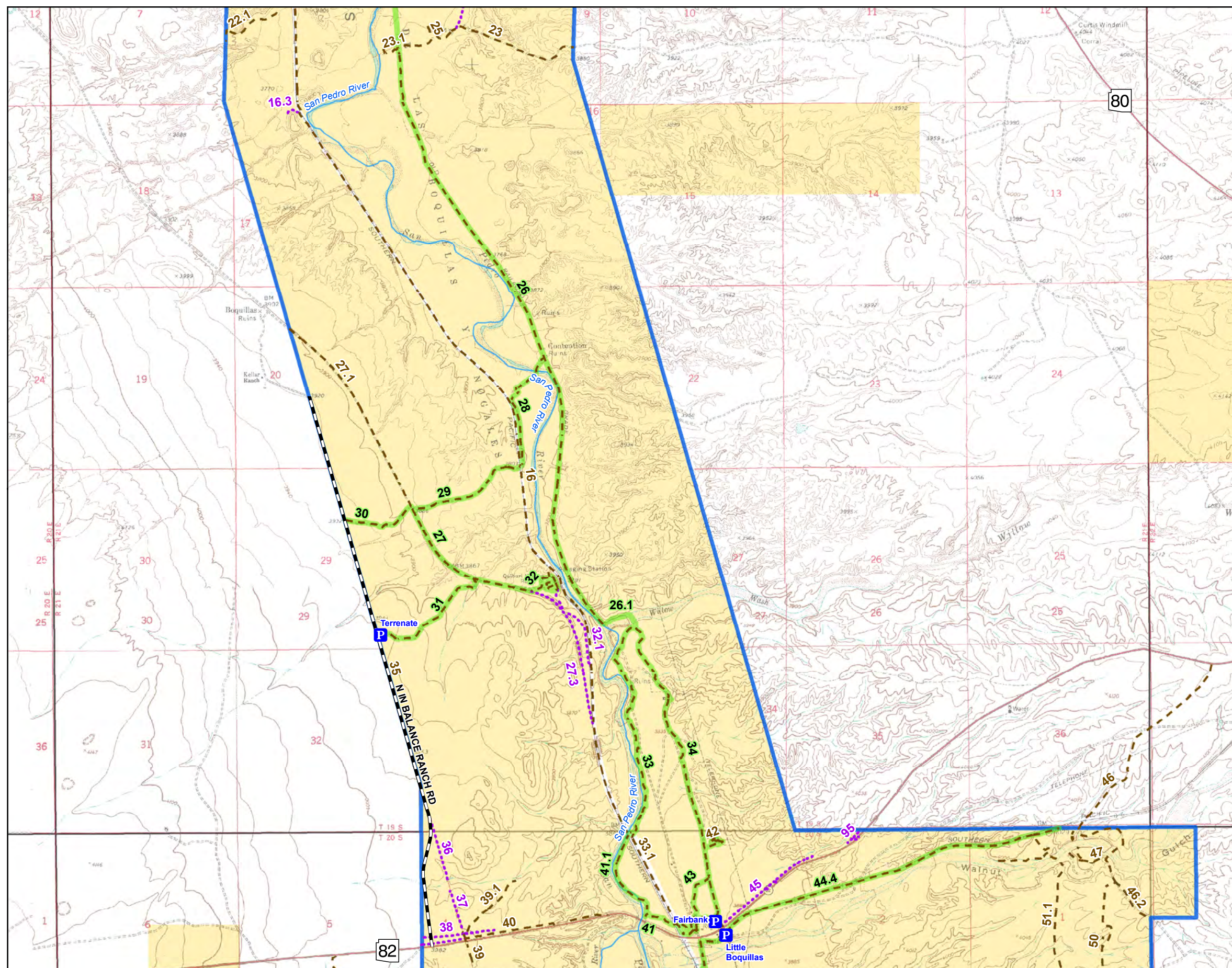
-  SPRNCA Planning Area
-  BLM-administered land
-  Trailheads, existing
-  San Pedro trail system
-  Administrative vehicle routes
-  Other inventoried routes
-  County road

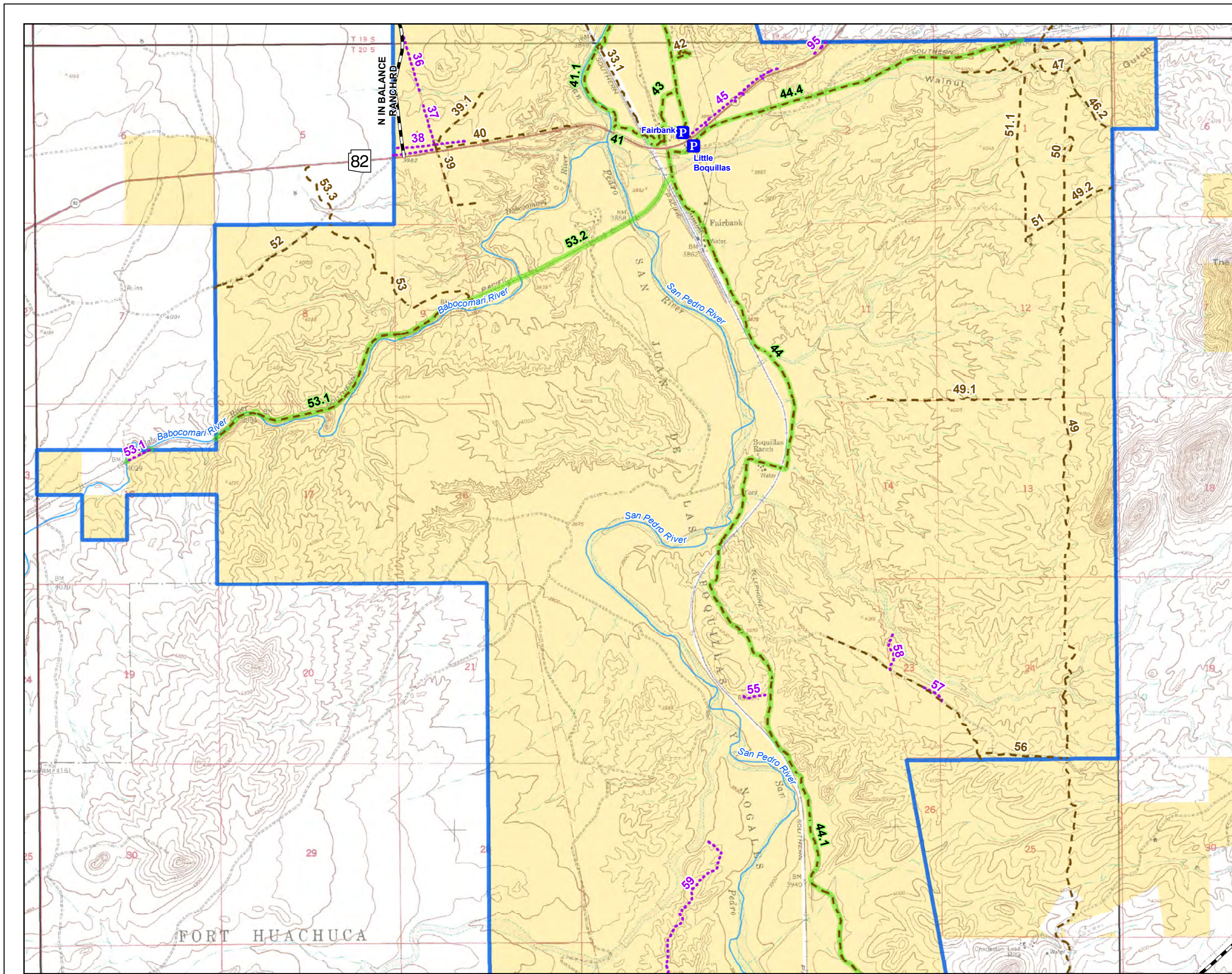


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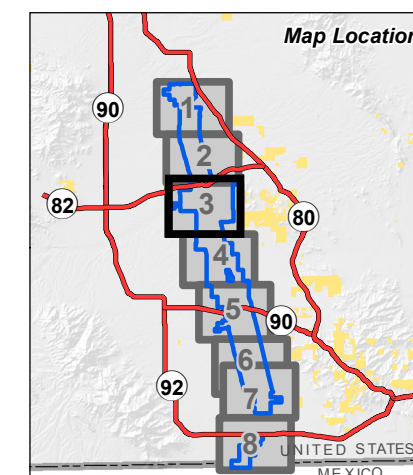
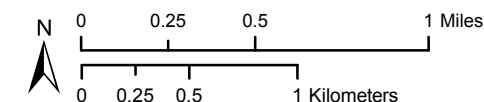
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**Figure 3-21, Extent 3
Travel Route Inventory**

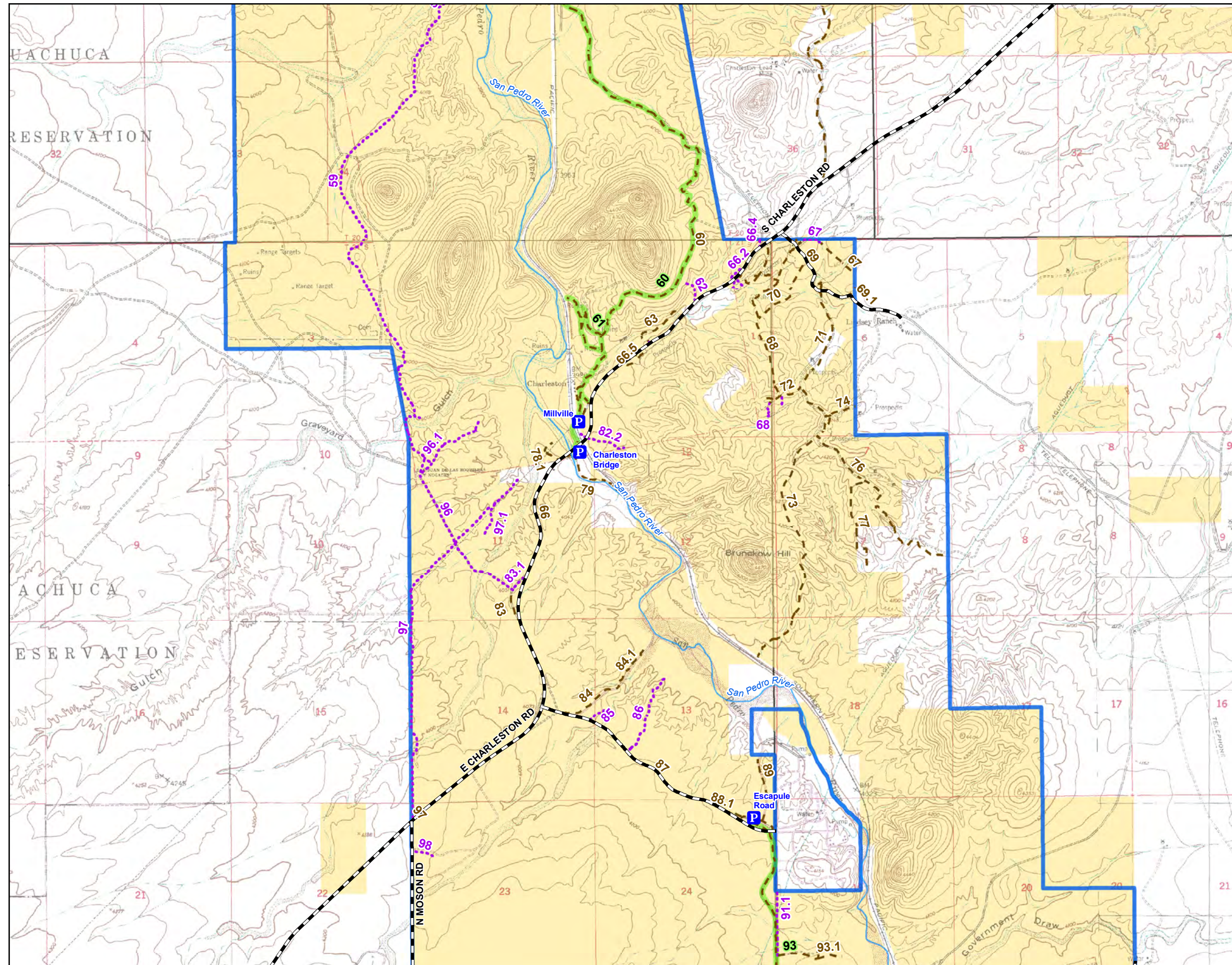
-  SPRNCA Planning Area
-  BLM-administered land
-  Trailheads, existing
-  San Pedro trail system
-  Administrative vehicle routes
-  Other inventoried routes
-  County road




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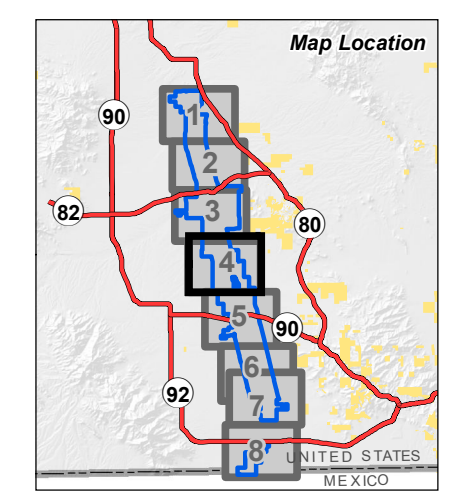
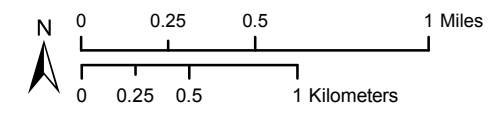
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**Figure 3-21, Extent 4
Travel Route Inventory**

-  SPRNCA Planning Area
-  BLM-administered land
-  Trailheads, existing
-  San Pedro trail system
-  Administrative vehicle routes
-  Other inventoried routes
-  County road










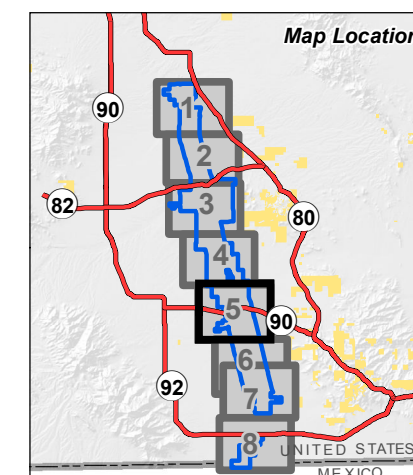
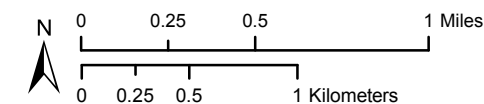
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Figure 3-21, Extent 5 Travel Route Inventory

-  SPRNCA Planning Area
-  BLM-administered land
-  Trailheads, existing
-  San Pedro trail system
-  Administrative vehicle routes
-  Other inventoried routes
-  County road



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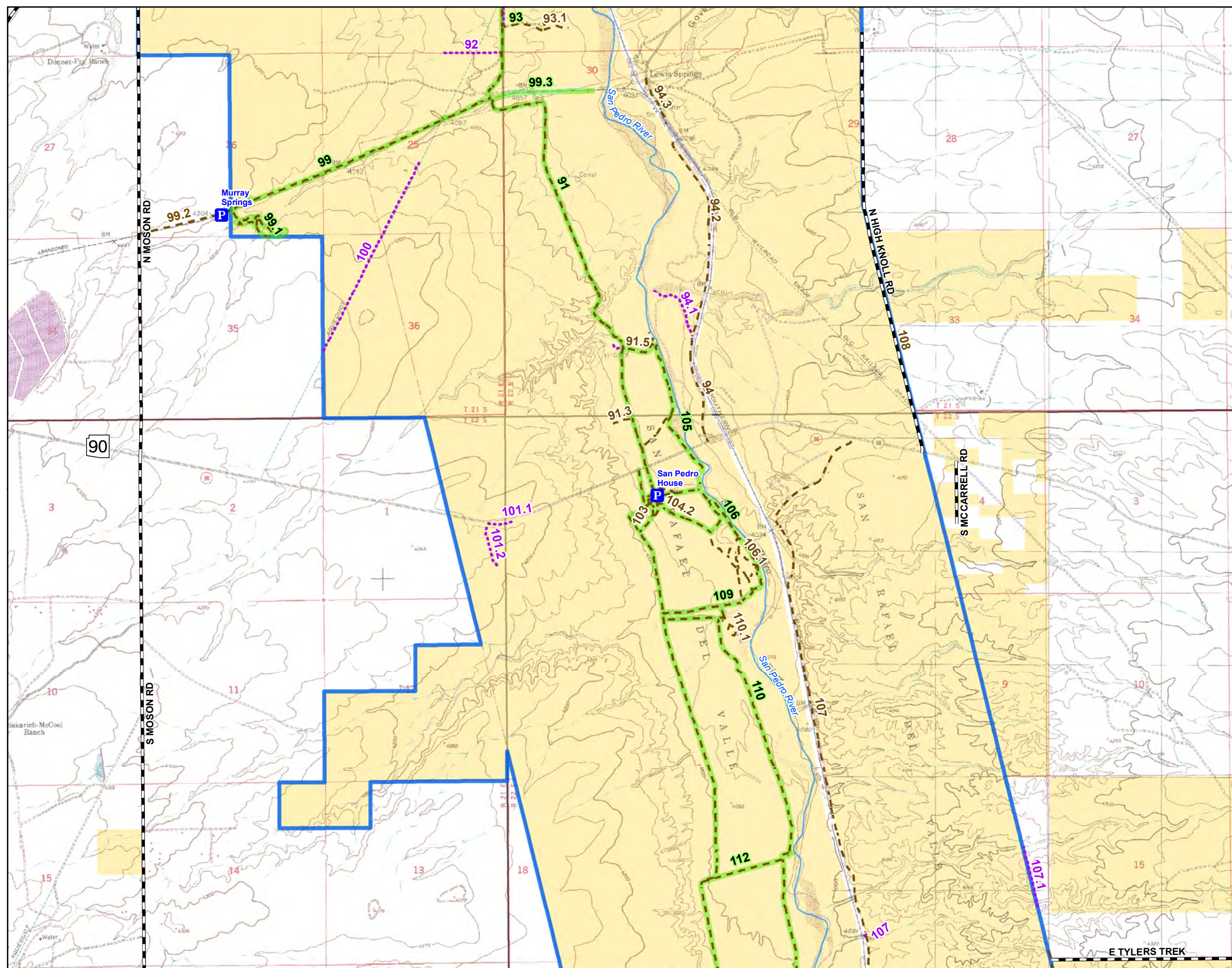







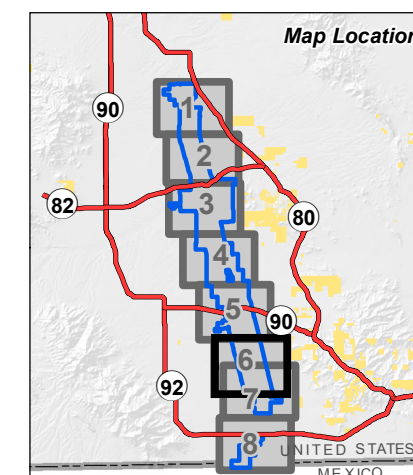
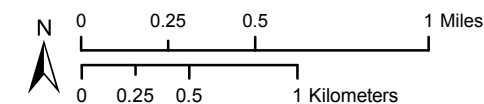


Figure 3-21, Extent 6 Travel Route Inventory

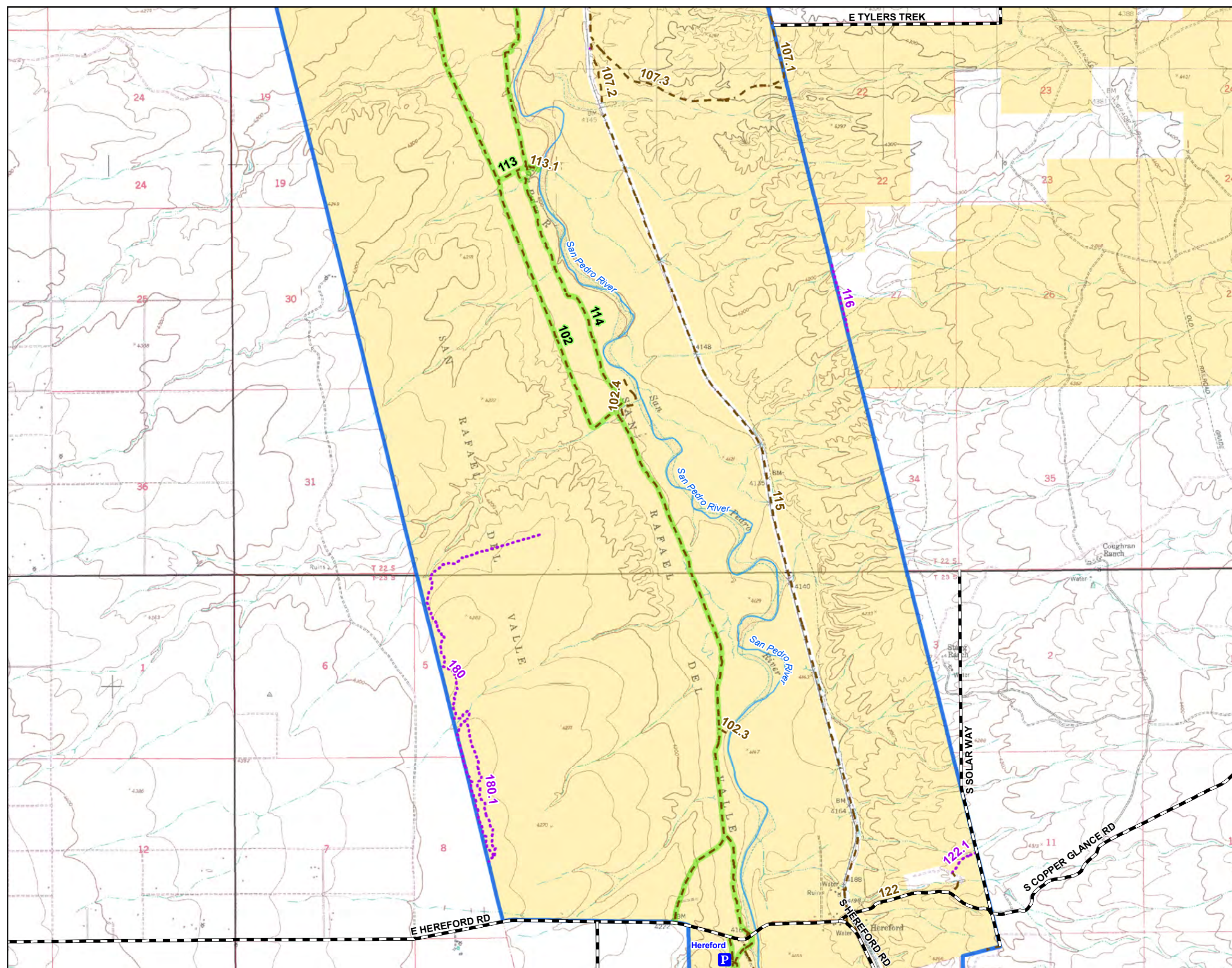
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-  BLM-administered land
-  Trailheads, existing
-  San Pedro trail system
-  Administrative vehicle routes
-  Other inventoried routes
-  County road










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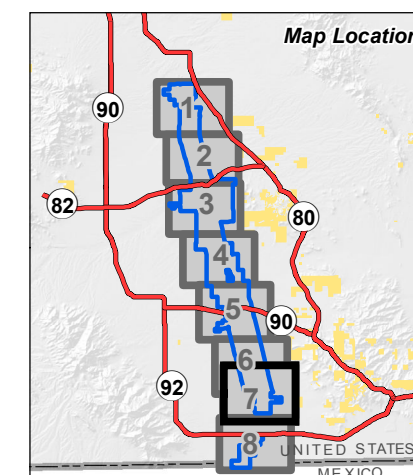
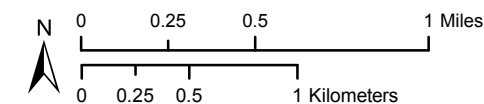
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**Figure 3-21, Extent 7
Travel Route Inventory**

-  SPRNCA Planning Area
-  BLM-administered land
-  Trailheads, existing
-  San Pedro trail system
-  Administrative vehicle routes
-  Other inventoried routes
-  County road



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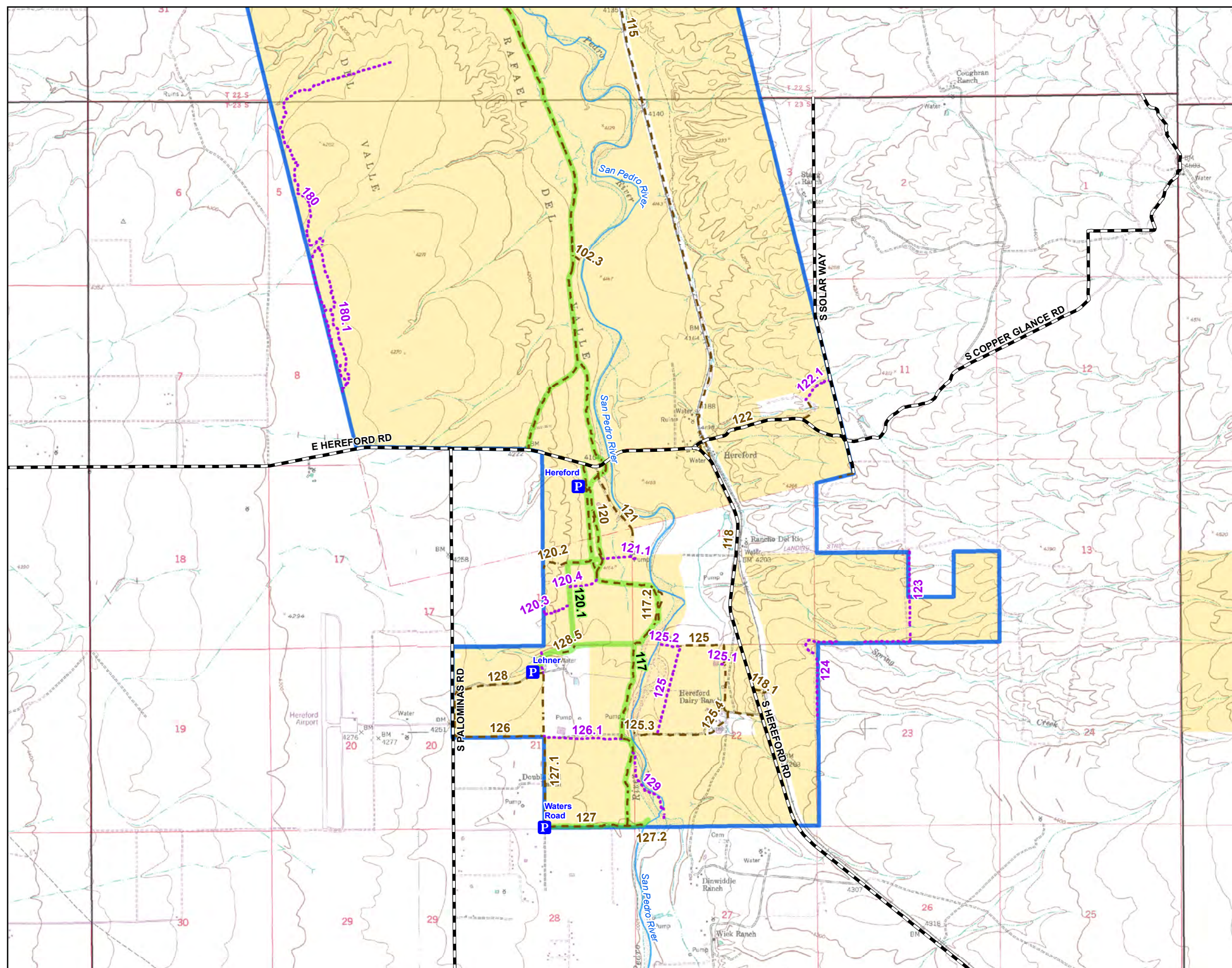







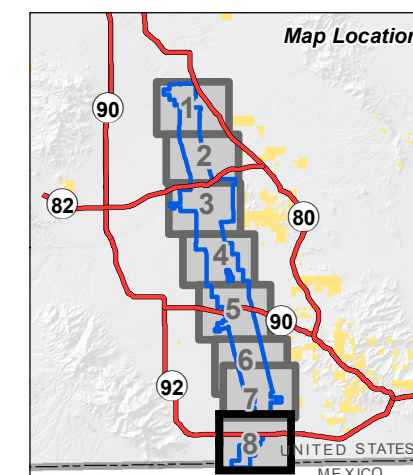
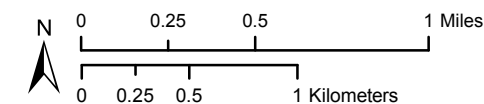


Figure 3-21, Extent 8 Travel Route Inventory

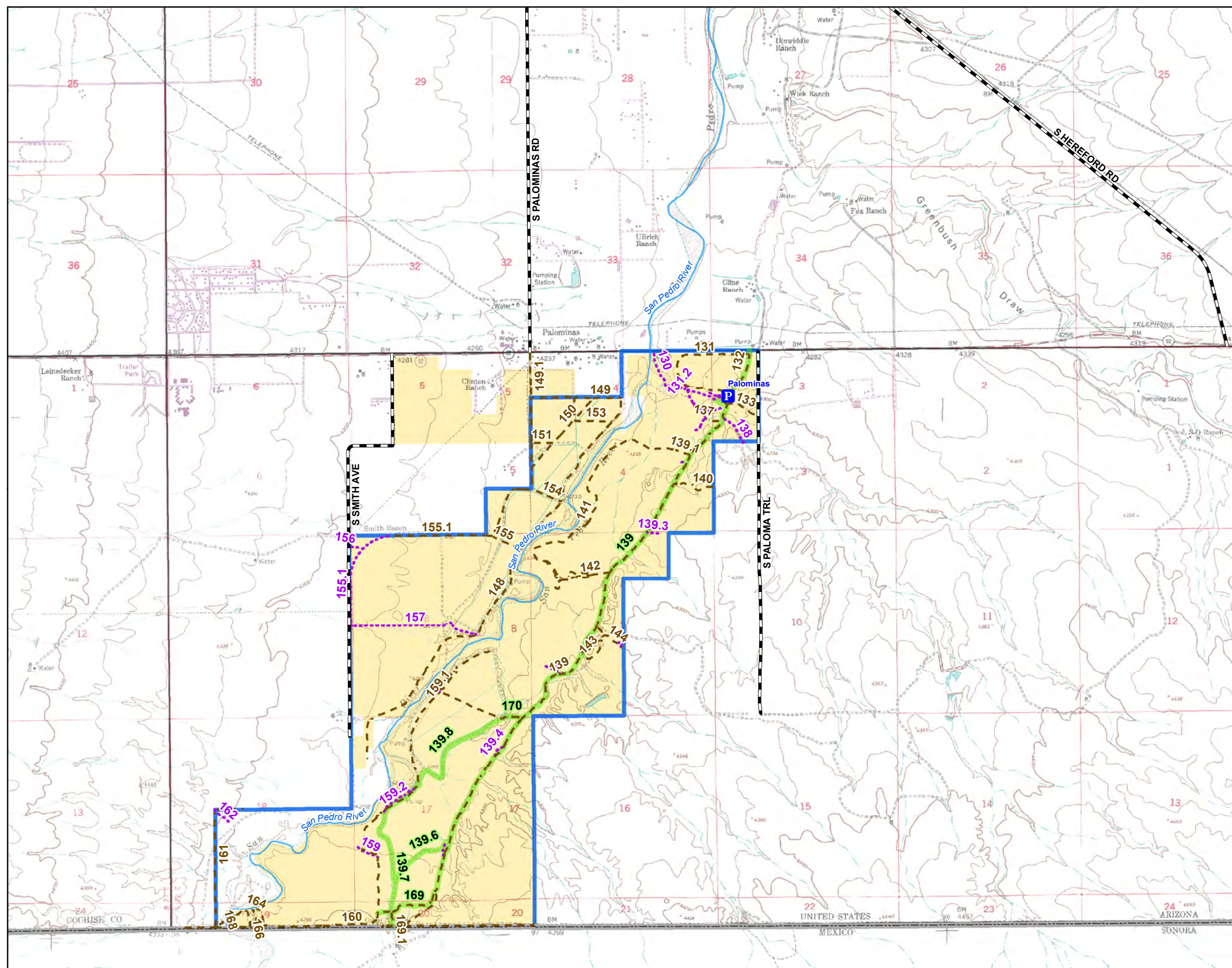
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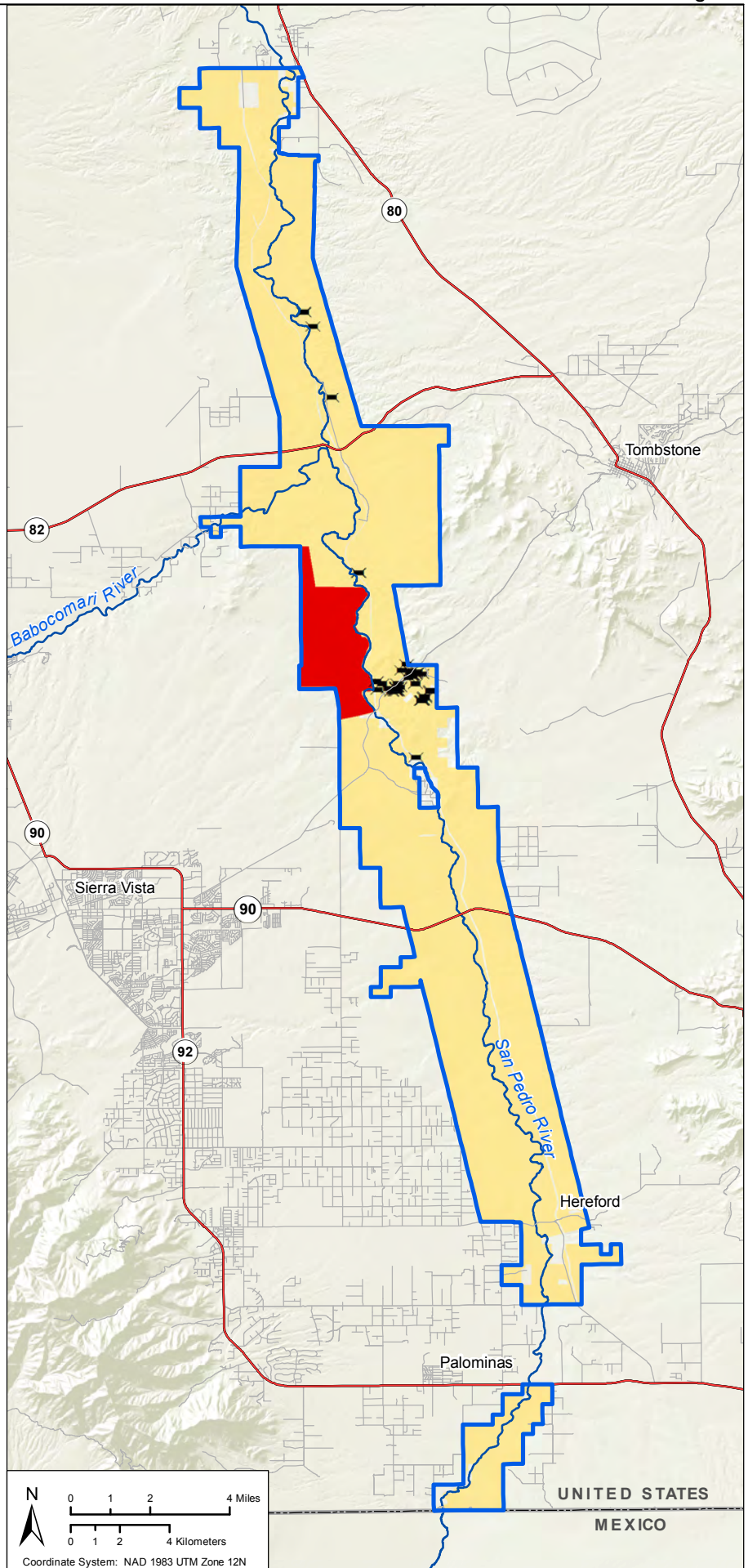
Date: 3/20/2019

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**Figure 3-22
Abandoned Mine Lands
and Unexploded Ordnance**

-  SPRNCA Planning Area
-  BLM-administered land
-  Abandoned mine lands
-  Unexploded ordnance area

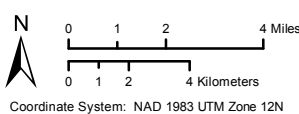


Source: BLM GIS 2017



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Appendix B

Applicable Laws, Regulations, and Policies

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Appendix B. Applicable Laws, Regulations, and Policies

The US Department of the Interior, Bureau of Land Management (BLM) must comply with the mandate and intent of many laws, executive orders (EOs), regulations, policies, and court cases that apply to BLM-administered land and resources in the San Pedro Riparian National Conservation Area (SPRNCA) Resource Management Plan (RMP) planning area. The BLM manages public lands in the SPRNCA planning area according to applicable regulations found at Title 43 of the Code of Federal Regulations (CFR) and according to applicable US Department of the Interior and BLM manuals, handbooks, and instruction memoranda (IMs).

Chapter I, Introduction, of the RMP describes the general planning criteria. They guide and direct the plan and determine how the planning team approaches the development of alternatives, and ultimately, the selection of a preferred alternative.

B.I GENERAL LAWS, REGULATIONS, AND POLICIES

B.I.1 Public Law 100-696

San Pedro Riparian Conservation Area

Sec. 460xx. Establishment

(a) In general

In order to protect the riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the public lands surrounding the San Pedro River in Cochise County, Arizona, there is hereby established the San Pedro Riparian National Conservation Area (hereafter in this subchapter referred to as the "conservation area").

(b) Area included

The conservation area shall consist of public lands as generally depicted on a map entitled "San Pedro Riparian National Conservation Area - Proposed" numbered AZ-040-OZ, dated January 1988, and consisting of approximately 56,431 acres.

(c) Map

As soon as is practicable after November 18, 1988, a map and legal description of the conservation area shall be filed by the Secretary of the Interior (hereafter in this subchapter referred to as the "Secretary") with the Committee on Interior and Insular Affairs of the House of Representatives and the Committee on Energy and Natural Resources of the United States Senate. Each such map shall have the same force and effect as if included in this subchapter. Such map shall be on file and available for public inspection in the Office of the Director of the Bureau of Land Management, Department of the Interior, and in the Bureau of Land Management offices of the State Director for Arizona, and the district office responsible for the management of the conservation area.

Sec. 460xx-1. Management

(a) General authorities

The Secretary shall manage the conservation area in a manner that conserves, protects, and enhances the riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the conservation area. Such management shall be guided by this subchapter and, where not inconsistent with this subchapter, by the provisions of the Federal Land Policy and Management Act of 1976 (43 United States Code [USC] 1701 et seq.) (hereinafter in this subchapter referred to as "FLPMA").

(b) Uses

The Secretary shall only allow such uses of the conservation area as he finds will further the primary purposes for which the conservation area is established. Except where needed for administrative or emergency purposes, the use of motorized vehicles in the conservation area shall only be allowed on roads specifically designated for such use as part of the management plan prepared pursuant to section 460xx-2 of this title. The Secretary shall have the power to implement such reasonable limits to visitation and use of the conservation area as he finds appropriate for the protection of the resources of the conservation area, including requiring permits for public use, or closing portions of the conservation area to public use.

(c) Withdrawals

Subject to valid existing rights, all Federal lands within the conservation area are hereby withdrawn from all forms of entry, appropriation, or disposal under the public land laws; from location, entry, and patent under the United States mining laws; and from disposition under all laws pertaining to mineral and geothermal leasing and all amendments thereto.

(d) Water rights

Congress reserves for the purposes of this reservation, a quantity of water sufficient to fulfill the purposes of the San Pedro Riparian National Conservation Area created by this subchapter. The priority date of such reserve rights shall be November 18, 1988. The Secretary shall file a claim for the quantification of such rights in an appropriate stream adjudication.

(e) Enforcement

Any person who violates any provision of this subchapter or any regulation promulgated by the Secretary to implement this subchapter shall be subject to a fine of up to \$10,000, or imprisonment for up to one year, or both.

Sec. 460xx-2. Management plan

(a) Development of plan

No later than 2 years after November 18, 1988, the Secretary shall develop a comprehensive plan for the long-range management and protection of the conservation area. The plan shall be developed with full opportunity for public participation and comment, and shall contain provisions designed to assure protection of the riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreation resources and values of the conservation area.

(b) Recommendations

The Secretary shall, in the comprehensive plan referred to in subsection (a) of this section, develop recommendations to Congress on whether additional lands should be included in the conservation area.

(c) Cooperative agreements

The Secretary may enter into cooperative agreements with appropriate State and local agencies, pursuant to section 1737(b) of title 43, to better implement the plan developed pursuant to subsection (a) of this section.

(d) Research

In order to assist in the development of appropriate management strategies for the conservation area, the Secretary may authorize research on matters including the environmental, biological, hydrological, and cultural resources of the conservation area, pursuant to section 1737(a) of title 43.

Sec. 460xx-3. Advisory Committee

(a) Establishment

The Secretary shall establish a San Pedro Riparian National Conservation Area Advisory Committee, whose purpose shall be to advise the Secretary with respect to the preparation and implementation of the comprehensive, long-range plan required pursuant to section 460xx-2 of this title.

(b) Representation

There shall be 7 members of the Committee, who shall be appointed by the Secretary. Members of the Committee shall be appointed for terms of three years, except that of the members first appointed 2 shall be appointed for terms of 1 year and 3 shall be appointed for terms of 2 years. The Secretary shall appoint one member from nominations supplied by the Governor of the State of Arizona, and one member from nominations supplied by the Supervisors of Cochise County, Arizona. The other members shall be persons with recognized backgrounds in wildlife conservation, riparian ecology, archeology, paleontology, or other disciplines directly related to the primary purposes for which the conservation area was created.

Sec. 460xx-4. Land acquisition

The Secretary may acquire lands or interests in lands within the boundaries of the conservation area by exchange, purchase, or donation, except that any lands or interests therein owned by the State or local government may be acquired by donation or exchange only. Any purchase or exchange of lands to be added to the conservation area shall require the consent of the owner of those lands or rights.

Sec. 460xx-5. Report to Congress

No later than five years after November 18, 1988, and every ten years thereafter, the Secretary shall report to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, on the implementation of this subchapter. Such report shall include a detailed statement on the condition of the resources within the conservation area and of the progress of the Bureau of Land Management in achieving the purposes of this subchapter.

Sec. 460xx-6. Authorization of appropriations

There are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this subchapter.

B.1.2 Archaeological Resources Protection Act of 1979, as amended

The Archaeological Resources Protection Act (16 USC 470aa-470mm) protects archaeological resources on federal and tribal trust lands. It provides both civil and criminal penalties for unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resources that are at least 100 years old. The Archaeological Resources Protection Act (ARPA) also fosters the cooperative use and exchange of archaeological information for the purpose of furthering knowledge and/or protection of archaeological resources in the public interest. The Archaeological Resources Protection Act implementing regulations entitled *Protection of Archaeological Resources* are found at 43 CFR 7.

B.1.3 BLM Land Use Planning Handbook

The BLM Land Use Planning Handbook (H-1601-1) provides detailed instructions on how to carry out policy and direction described in the manual sections. Handbooks are considered part of the BLM Manual and have the same force of authority as the manual sections. The Land Use Planning Handbook outlines specific techniques, procedures, practices, and processes used to create and organize RMPs and their component sections.

B.1.4 BLM Manuals and Handbooks

BLM manuals and handbooks contains BLM policy and program direction. They provides policy, procedures, and instructions to manage programs. Each handbook is controlled by a manual section, which sets out the basic authority for performing tasks and states who is responsible for seeing that these tasks are accomplished.

B.1.5 Clean Air Act of 1970 and Amendments of 1977 and 1990

The Clean Air Act (CAA) of 1970, as amended 1977 and 1990 (42 USC 7401 et seq.), is a recognition that air pollution endangers public health and welfare. To protect and enhance the quality of the nation's air resources, the CAA authorizes the Environmental Protection Agency (EPA) to set six national ambient air quality standards (NAAQS). These standards regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source and designates this responsibility to state and local governments. States are directed to use financial and technical assistance and leadership from the federal government to develop implementation plans to achieve NAAQS. The EPA officially designates geographic areas as attainment or nonattainment areas, based on their compliance with NAAQS. Geographic regions established for air quality planning are designated as air quality control regions; pollutant concentration levels are measured at designated monitoring stations in the air quality control regions. An area is designated as unclassifiable where insufficient monitoring data exist. Section 309 of the CAA authorizes the EPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action may have on NAAQS due to short-term increases in air pollution during project construction as well as long-term increases, i.e., those resulting from changes in traffic patterns. For actions in attainment areas, a federal agency may also be subject to the EPA's prevention of significant deterioration regulations. These regulations apply to major new stationary

sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from changes in traffic patterns or volume. Section 118 of the CAA states that all federal agencies will comply with federal and state requirements.

B.1.6 Clean Water Act of 1972 and Amendments of 1977 and 1987

The Clean Water Act (CWA) is the primary Federal statute regulating the protection of the nation's water. The CWA aims to prevent, reduce, and eliminate pollution in the nation's water in order to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters", as described in CWA section 101(a). A stated goal of the CWA is to eliminate discharge of pollutants into navigable waters, as that term is defined in CWA Section 502(7) and corresponding case law.

Section 303 requires each state to adopt water quality standards for protection of designated beneficial water uses for water bodies within the state. Section 303(d) of the CWA requires the State of Arizona to maintain a list of streams impaired because of failure to meet their designated beneficial uses. Section 303(d) also requires that each state develop a list of water bodies that fail to meet water quality standards and to delineate stream segments and listing criteria for all streams. The Section 303(d) list of impaired waters is updated biannually, and the state is required to develop a total maximum daily load allocation for each pollutant of concern.

Section 401 requires applicants for federal permits to obtain water quality certification from the state if the proposed activities would discharge pollutants into a navigable water body.

Section 402 establishes framework for regulating stormwater discharge into surface water and pretreatment standards for discharged water.

Section 404 establishes permitting for discharges of materials into waters. The CWA is intended to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters.

B.1.7 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and the Superfund Amendments and Reauthorization Act of 1986

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes the EPA to respond to spills and other releases of hazardous substances to the environment; it also authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA provides a federal "Superfund" to respond to emergencies immediately. Although the Superfund provides funds for site cleanup, where potentially responsible parties cannot be identified, the EPA is authorized to recover funds through damages collected from the responsible parties. This funding process places the economic burden for cleanup on polluters.

The Superfund Amendments and Reauthorization Act of 1986 mandates strong cleanup standards and authorizes the EPA to use a variety of incentives to encourage settlements. Title III of the Superfund Amendments and Reauthorization Act authorizes the Emergency Planning and Community Right-to-Know Act. It requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. EO 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, requires federal agencies to comply with the provisions Emergency Planning and Community Right-to-Know Act. If a

federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A federal agency also can incur liability if it leases a property, because the courts have found lessees liable as “owners”; however, if the agency exercises due diligence by conducting a phase I environmental site assessment, it may claim the “innocent purchaser” defense under CERCLA. To use this defense, the current owner/operator must show that it undertook “all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice” before buying the property, according to Title 42 USC 9601(35).

B.1.8 Endangered Species Act of 1973

The Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 et seq.) establishes a federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges federal agencies with using their authority to conserve threatened and endangered species. All federal agencies must ensure that no action they authorize, fund, or carry out is likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the US Fish and Wildlife Service (USFWS) maintains the list. (A list of endangered species may be obtained from the Endangered Species Division, USFWS at (703) 358-2171). Some species, such as the bald eagle, also have laws specifically for their protection, such as the Bald Eagle Protection Act.

B.1.9 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898, February 11, 1994)

EO 12898 directs federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address adverse human health and environmental impacts their activities have on minority and low-income populations and develop agency-wide environmental justice strategies. The strategy must list “programs, policies, planning, and public participation processes, enforcement, and rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations.” A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. The responsibility for compliance with this EO lies with each federal agency.

B.1.10 Federal Land Policy and Management Act of 1976

The FLPMA of 1976 (43 USC 1701) and the regulations contained in 43 CFR 1600 govern the BLM planning process. Land-use plans ensure that public lands are managed in accordance with the intent of Congress, as stated in FLPMA, under the principles of multiple use and sustained yield. As required by FLPMA, the public lands must be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; preserves and protects, where appropriate, certain public lands in their natural condition and provides food and habitat for fish and wildlife and domestic animals; and provides for outdoor recreation and human occupancy and use by encouraging collaboration and public participation throughout the planning process. In addition, the public lands must be managed in a manner that recognizes the nation’s need for domestic sources of minerals, food, timber, and fiber from the public lands.

B.1.11 National Historic Preservation Act of 1966, as amended

The National Historic Preservation Act (NHPA; 54 USC 300101 et seq.) sets national policy to identify and preserve properties of state, local, and national significance. The act establishes the Advisory Council on Historic Preservation, State Historic Preservation Offices (SHPOs), and the National Register of Historic Places. Section 106 of the NHPA, and its implementing regulations at 36 CFR 800, direct federal agencies to identify and evaluate historic properties, to assess the impacts of federal undertakings, and to consult with the SHPO, Native American tribes, and the public. Section 110 of the NHPA also requires federal agencies to fully integrate cultural resources management into ongoing programs and to identify, evaluate, nominate, and protect historic properties.

In 2012, the BLM entered into a National Programmatic Agreement (NPA) with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers regarding planning for and managing historic properties under the BLM's jurisdiction or control. For each state that was party to the NPA, state-specific protocols have since been updated, with the BLM Arizona State Protocol Agreement executed among the BLM and Arizona SHPO on December 14, 2014. The NPA and state-specific protocols provide alternative procedures for the BLM to implement 36 CFR 800, and substitutes for Sections 106, 110, 111(a), and 112(a) of the NHPA for most routine undertakings. Specifically, these procedures allow the BLM to identify and evaluate cultural resources that meet criteria for listing on the National Register of Historic Places in 36 CFR 60.4 and determine effects in accordance with 36 CFR 800.9 without consulting with the SHPO for each routine undertaking. The BLM Arizona State Protocol Agreement outlines how the BLM and SHPO will continue to interact, cooperate, and share information to ensure that the alternate procedures are consistent with the goals of the NHPA.

B.1.12 Sikes Act of 1960

The Sikes Act (16 USC 670 et seq.) authorizes the US Department of the Interior, in cooperation with state agencies responsible for administering fish and game laws, to plan, develop, maintain, and coordinate programs for conserving and rehabilitating wildlife, fish, and game on public lands within the Department of the Interior's jurisdiction. The plans must conform with overall land use and management plans for the lands involved. The plans could include habitat improvement projects and related activities and adequate protection for fish, wildlife, and plants considered endangered or threatened. The BLM also must coordinate with suitable state agencies in managing state-listed plant and animal species when the state has formally made such designations.

B.1.13 Taylor Grazing Act of 1934, as amended and supplemented

The Taylor Grazing Act (43 USC 315 et seq.) was the federal government's first effort to regulate grazing on federal public land. The act established grazing districts of vacant, unappropriated, and unreserved land from the public domain, excluding Alaska, which were not national forests, parks, or monuments, Indian reservations, railroad grant lands, re-vested Coos Bay Wagon Road grant lands, or land that was valuable chiefly for grazing and raising forage crops. Residents and stock owners pay an annual fee to obtain a grazing permit, which is used to manage livestock grazing in established districts. Grazing administration regulations (43 CFR 4100) provide for the development of state standards for rangeland health and guidelines for grazing management. These standards and guidelines are approved through the BLM planning and NEPA processes.

B.1.14 Wild and Scenic Rivers Act of 1968

By recognizing the remarkable values of specific rivers of the nation, the Wild and Scenic Rivers Act of 1968 (16 USC 1271–1287) provides for a wild and scenic river system. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for their enjoyment by present and future generations. Any river in a free-flowing condition is eligible for inclusion. A river can be authorized as such by an act of Congress, an act of a state legislature, or by the Secretary of Interior, on the recommendation of the governor or governors of the state or states that the river flows through.

B.2 PROGRAM SPECIFIC LAWS, REGULATIONS, AND POLICIES

B.2.1 Resources

Air Quality Management

The objective of the air resource program is to maintain or improve air quality as established by the NAAQS, achieve state implementation plan goals for nonattainment areas, and reduce emissions from point and nonpoint sources. Proposed decisions within the influence zone of the planning project that may affect nonattainment areas will be assessed for conformance with air quality standards.

Under the CAA, the BLM-administered lands were given a Class II air quality classification unless reclassified by the state. Wilderness areas and national monuments must be classified as Class I or Class II, which allow moderate deterioration associated with moderate, well-controlled industrial and population growth.

Climate Management

Climate and the Department of the Interior (Secretarial Order [SO] 3226, January 16, 2009)

Cultural Resources Management

The BLM views management of cultural resources as an integrated system of identifying and evaluating cultural resources, deciding on their appropriate uses, and administering them accordingly, both on public lands and other lands where BLM decisions could affect cultural resources. Management objectives are to comply with applicable laws in support of the BLM's multiple use and sustained yield directives, recognize and manage for potential public and scientific uses of cultural resources, and ensure that proposed land uses avoid inadvertent damage to cultural resources. Such laws and policies include:

American Indian Religious Freedom Act of 1978 (42 USC 1996)

Antiquities Act of 1906 (16 USC 431-433)

Archaeological and Historic Preservation Act of 1974, as amended (16 USC 469-469c)

Archaeological Resources Protection Act of 1979, as amended (16 USC 470aa-470mm)

BLM Manual 1780--Tribal Relations (BLM MS-1780)

BLM Manual 8100--The Foundation for Managing Cultural Resources (BLM MS-8100)

Consultation and Coordination with Indian Tribal Governments (EO 13175; November 6, 2000)

Historic Sites Act of 1935, as amended (16 USC 461-467)

Indian Sacred Sites (EO 13007; May 24, 1996)

National Historic Preservation Act of 1966, as amended (54 USC 300101 et seq.)

National Trails System Act of 1968, as amended (16 USC 1241 et seq.)

Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq.)

Preserve America (EO 13287; March 3, 2003)

Paleontological Resources Management

General Procedural Guidance for Paleontological Resource Management (BLM H-8270-1)

Issuance of Archaeological and Paleontological Permits (SO 3104, September 28, 1984)

Paleontological Resource Management Manual (BLM MS-8270)

Paleontological Resources Preservation Act of 2009 (16 USC 470aaa-470aaa l l)

Priority Wildlife Habitat and Special Status Species Management

Management decisions will be designed to enhance and maintain habitat for threatened and endangered species. Management actions that the BLM authorizes, funds, or implements will not jeopardize the continued existence of federally listed threatened or endangered plant or animal species or destroy or adversely modify critical habitat. Species proposed for federal listing and proposed critical habitat will be given the same consideration as listed species. BLM candidate and special status species and Arizona species of greatest conservation need will be managed so as not to contribute to the need to list them as threatened or endangered. The intent is to recover listed species and maintain healthy populations of all other species, thereby avoiding the need for further listing of any species as threatened or endangered. Terms and conditions and conservation measures from the biological opinion will be incorporated into the plans.

Relevant Laws, Policies, and Regulations

Special Status Species Manual (MS-6840)

Animal Damage Control Act (7 USC 426)

Soil Resource Management

Proposed decisions will be measured against the Arizona Standard for Rangeland Health Standard I; upland soils will exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and land form (ecological site) to ensure long-term soil productivity. Best management practices will be incorporated into programs to minimize soil erosion and compaction resulting from management actions.

Relevant Laws, Policies, and Regulations

Soil and Water Conservation Act of 1977 (16 USC 2001–2009)

Soil Conservation and Domestic Allotment Act of 1935 (16 USC 590)

Soil Resource Management (BLM MS-7100)

Soil, Water, and Air Management (BLM MS-7000)

Visual Resources Management

A visual resource management classification will be conducted to address the public's concerns about open space and natural vistas. Some areas may be subject to special measures to protect resources or reduce conflicts among uses.

The monument will be managed to protect the viewshed and other visual resources that are compatible with the purposes for which the monument was established.

Transportation Equity Act for the 21st Century (PL 105-178)

43 USC 1701, Section 102(a)(8)

Public Rangelands Improvement Act of 43 USC 4321, Section 101(b)

Visual Resource Inventory Handbook (BLM H-8410-1)

Vegetation Resource Management

Vegetation and Habitat Management

Proposed decisions will be measured against the Arizona Standard for Rangeland Health for desired plant communities that provide for biodiversity and protect and restore native species. Vegetation will be managed to achieve desired plant communities (considering the ecological site potential) that provide for biodiversity and protect and restore native species. The plant communities will be managed to protect, improve, and restore communities to provide wildlife habitat and non-consumptive uses, including plant protection, visual quality, watershed protection and stability, and water quality. Provisions may be made for hazardous fuels reduction and habitat restoration.

In the SPRNCA, desired plant community descriptions will be developed that emphasize the protection of the diversity natural communities specified in the PL 100-696. Monument plan decisions will prioritize achieving or maintaining these desired plant communities.

Invasive Species and Noxious Weed Control

The BLM will work with county, state, tribal, and federal agencies, individuals, and managers of weed management areas to monitor, manage, and control noxious weeds and invasive species. Invasive species and noxious weed control will be considered in the plans, in accordance with the integrated weed management guidelines and design features identified in national, state, and local BLM programs and policies. Invasive species and noxious weed infestations will be prevented, contained, or reduced on BLM-administered public land using an integrated pest management approach. Proposed decisions will be assessed to determine whether they would contribute to the introduction or spread of noxious weeds or invasive species, in accordance with the Federal Noxious Weed Act and EO 13112. Management practices that prevent and control invasive species will be emphasized.

Riparian Areas, Floodplains, and Wetlands

Proposed decisions will be measured against the Arizona Standard for Rangeland Health for riparian areas, floodplains, and wetlands that provide for biodiversity and protect and restore native species. Riparian areas, floodplains, and wetlands will be managed to protect, improve, and restore their natural functions to benefit water storage, groundwater recharge, water quality, and fish and wildlife values. All management practices will be designed to maintain or improve the integrity of these high priority values, in accordance with the Clean Water Act and Arizona's Standards for Rangeland Health. Management activities in floodplains will be consistent with EO 11988, and management activities for wetlands and riparian areas will be consistent with EO 11990.

Relevant Laws, Regulations, and Policies

Range Management Grazing Administration Regulations (43 CFR 4100)

Arizona Native Plant Law of 1993 (Arizona Revised Statutes 3-901 et seq.)

Arizona Standards, as developed from Standards and Guidelines for Grazing Administration (43 CFR 4180.2)

Chemical Pest Control (BLM MS-9011)

Federal Advisory Committee Act

Federal Noxious Weed Act of 1974 (7 USC 2801 et seq.)

Floodplain Management (EO 11988, May 24, 1977)

Invasive Species Control (EO 13112, February 3, 1999)

Noxious Plant Control Act (43 USC 1241-43)

Protection of Wetlands (EO 11990, May 24, 1977)

Public Rangelands Improvement Act of 1978

Rangeland Health Standards (BLM MS-4180-1)

Renewable Resource Improvements and Treatments (BLM MS-1740)

Special Status Species Management (BLM MS-6840)

Wildlife and Fisheries Management (BLM MS-6500)

Water Resources Management

Water Quality

Section 319 of the CWA obligates federal agencies to be consistent with state nonpoint source management program plans and relevant water-quality standards. Section 313 requires compliance with state water quality standards. The BLM will coordinate with the Arizona Department of Environmental Quality (ADEQ) regarding their total maximum daily load program and other relevant water quality programs. The BLM will incorporate into the RMP applicable best management practices or other conservation measures for specific programs and activities. Water quality will be maintained or improved in accordance with state and federal standards. Proposed decisions in the planning area will be made in compliance with the Clean Water Act, federal and state water quality standards, and BLM/ADEQ agreements.

Water Rights

Where the need for water rights is identified on public lands, the BLM will file for water rights in accordance with state law and with PL 100-696. The BLM will continue to quantify and notify the state of its federal reserved water rights.

Relevant Laws, Policies, and Regulations

Arizona Revised Statutes Title 45, Waters and Title 49, The Environment

Colorado River Basin Project Act (43 USC 1501–1556)

Colorado River Basin Salinity Control Act (43 USC 1571–1599)

Colorado River Floodway Protection Act (100 Stat. 1129)

Colorado River Storage Project Act (43 USC 620)

Federal Water Pollution Control Act (33 USC 1251 et seq.)

Flood Control Act (16 USC 460 et seq.)

Floodplain Management (EO 11988, May 24, 1977)

Safe Drinking Water Act (42 USC 300h)
Soil, Water, and Air Management (BLM MS-7000)
Water Quality Act (PL 100-4)
Water Resources Planning Act (42 USC 1962)
Water Rights Act (43 USC 666)
Fundamentals of Rangeland Health (43 CFR 4180.1)

Wildland Fire and Management

Fire decisions made in the Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Environmental Assessment will be incorporated into the Proposed RMP. Adjustments to the fire decisions, if required, will be consistent with the Federal Wildland Fire Policy, the National Fire Plan, and all other BLM policies, including current zone fire management plans.

Fires will be suppressed with the least amount of surface disturbance and to protect significant cultural or paleontological values. Public lands and resources affected by fire will be rehabilitated in accordance with the objectives identified for the affected area, subject to BLM policies and available funding.

Relevant Laws, Regulations, and Policies

BLM Burned Area Emergency Stabilization and Rehabilitation Handbook (BLM H-1742-1)
BLM Fire Business Management Manual (BLM MS-1111)
BLM Prescribed Fire Management Handbook (BLM H-9214-1)
Timber Protection Act (16 USC 594)

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Appendix C

Areas of Critical Environmental Concern Evaluation

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Appendix C. Areas of Critical Environmental Concern Evaluation

This appendix documents the Areas of Critical Environmental Concern (ACECs) evaluation process for the San Pedro Riparian National Conservation Area (SPRNCA) Resource Management Plan (RMP) planning area. An ACEC is defined in Federal Land Policy and Management Act (FLPMA), Section 103(a), as an area on Bureau of Land Management (BLM)-administered lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and ensure safety from natural hazards. BLM regulations for implementing the ACEC provisions of FLPMA are found in 43 CFR 1610.7-2(b). ACECs are an administrative designation made by the BLM during the land use planning process.

Special management attention refers to management prescriptions developed expressly to protect the important and relevant values of an area from the potential impacts of actions permitted by an RMP or RMP amendment, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP (BLM Manual 1613, Areas of Critical Environmental Concern [BLM 1988]). Such management measures would not be necessary or prescribed if the critical and important features were not present.

To be designated as an ACEC, the area must meet both the relevance and importance criteria found in 43 Code of Federal Regulations (CFR) 1610-7-2(a)(b) and as defined in BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988). An ACEC possesses significant historic, cultural, or scenic values; fish or wildlife resources including habitat, communities, or species; natural processes or systems; or natural hazards. In addition, the significance of these values and resources must be substantial to satisfy the importance criteria.

ACECs differ from some other special management designations in that designation by itself does not automatically prohibit or restrict other uses in the area. The special management attention is designed specifically for the relevant and important values and, therefore, varies from area to area. Restrictions that arise from an ACEC designation are determined at the time the designation is made and are designed to protect the values or serve the purposes for which the designation was made. The BLM identifies goals, standards, and objectives for each proposed ACEC, as well as general management practices and uses, including necessary constraints and mitigation measures. In addition, ACECs are protected by the provisions of 43 CFR 3809.1-4(b)(3), which requires an approved plan of operations for activities resulting in more than five acres of disturbance under the mining laws.

C.1 CURRENT ACECS

Three ACECs, totaling 2,170 acres of BLM-administered lands, are found in the SPRNCA (BLM GIS 2017) (**Figure 2-30**, Areas of Critical Environmental Concern: Alternative A [**Appendix A**] and **Table C-I**, ACECs in the SPRNCA). These ACECs were recommended in the San Pedro River Riparian Management Plan (BLM 1989) and were subsequently designated in the Safford RMP (BLM 1991).

**Table C-1
ACECs in the SPRNCA**

Name	Size (Acres)
St. David Ciénega Research Natural Area (RNA)	380
San Pedro River RNA	1,420
San Rafael RNA	370
Total	2,170

Source: BLM GIS 2017

All three are RNAs and are managed as right-of-way (ROW) exclusion areas (i.e., development and new ROWs are prohibited), to prohibit overnight camping and campfires, to encourage avoidance by recreational users, to preserve and enhance vegetation communities, to sign the boundary, to control exotic vegetation, to prohibit the introduction of nonnative species, and to preclude public vehicular access.

C.1.1 St. David Ciénega

The St. David Ciénega ACEC/RNA is a remnant of what much of the San Pedro River Valley used to look like. This marsh-like ciénega has a vegetation type dominated by sedges, rushes, and cattail. It also contains a small mesquite bosque, a grassland area seasonally impacted by water, and small areas of Chihuahuan Desert scrub vegetation (BLM 1989). The St. David Ciénega ACEC/RNA was designated to preserve a remnant ciénega for scientific research (BLM 1991). Examples of studies that have been completed at St. David Ciénega ACEC/RNA include a long-term butterfly study, complete plant inventory, endemic invertebrates inventory, mammal inventory, marsh bird surveys, and a spring assessment. Small numbers of trespassing livestock have grazed the area year-round, and fire has been suppressed.

C.1.2 San Pedro

The San Pedro ACEC/RNA contains cottonwood-willow riparian vegetation type. Bordering the riparian area is an extensive mesquite bosque. The eastern portions contain the Chihuahuan Desert Scrub vegetation type, characterized by creosote bush, tar brush, and cat claw (BLM 1989). This ACEC/RNA was designated to preserve a cottonwood-willow riparian area, mesquite bosques, and Chihuahuan Desert Scrub vegetation for scientific research (BLM 1991).

C.1.3 San Rafael

The San Rafael ACEC/RNA is dominated by grasslands, with alkali and giant sacaton grass being the most common. Running through this grassland area is the San Pedro River, with an excellent representation of the cottonwood-willow riparian vegetation type (BLM 1989). This ACEC/RNA was designated to preserve a giant sacaton grassland and a cottonwood-willow riparian area for scientific research (BLM 1991).

C.2 ACEC EVALUATION

As part of the land use planning process for the SPRNCA RMP, a BLM interdisciplinary team reviewed five ACEC proposals. The team analyzed the areas to determine if they are within the planning area and if they contain values that meet the relevance and importance criteria for consideration as potential ACECs.

C.2.1 Nomination

BLM staff, other agencies, or members of the public may nominate ACECs at any time, but ACECs are only designated during the BLM's land use planning process. Existing ACECs are also reconsidered at this time.

During the scoping period, the BLM solicited ACEC nominations from the public. BLM specialists submitted two nominations, and three are existing ACECs. External sources (including other agencies and the public) did not submit any nominations.

C.2.2 Relevance

Areas meeting the relevance criterion possess “significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.”

An area meets the relevance criterion if it contains *one or more* of the following:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).
2. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species or habitat essential for maintaining species diversity).
3. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features).
4. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

C.2.3 Importance

To meet the importance criterion, the value, resource, system, process or hazard resource must “have substantial significance and value.” This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource, or qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change. A natural hazard can be important if it is a significant threat to human life or property.

An area meets the importance criterion if *one or more* of the following characteristics are present:

1. Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
3. Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of the FLPMA.

4. Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare.
5. Poses a significant threat to human life and safety or to property.

C.2.4 Findings

The BLM found that all five areas meet the criteria (**Table C-2**, Existing and Nominated ACECs Meeting the Relevance and Importance Criteria). **Table C-3** through **Table C-7** present the evaluations of all existing and nominated ACECs, including the values assessed and whether the relevance and importance criteria were met. Areas found to meet the relevance and importance criteria are identified as potential ACECs and are fully considered for designation and management in RMP Chapter 2, Alternatives. The size and management prescriptions for each ACEC may vary by alternative to reflect a balance between the goals and objectives of the alternatives and the values being protected (BLM 1988).

**Table C-2
Existing and Nominated ACECs
Meeting the Relevance and
Importance Criteria**

ACEC	Acres
St. David Ciénega RNA	2,767
San Pedro River RNA	3,965
San Rafael RNA	557
Curry-Horsethief	2,551
Lehner Mammoth	35

St. David Ciénega

**Table C-3
St. David Ciénega RNA ACEC Expanded**

ACEC Proposal Evaluation Form	
Area Considered	St. David Ciénega
General Location	Portions of T18S, R20E, S21; T18S, R21E, S19, 20, 21, 29, 30 & 32
General Description	<p>An extensive ciénega maintained by several artesian springs. Ciénegas are maintained by both sheet flow and ground water.</p> <p>In the vicinity of Little Joe Spring, a small pond is maintained by a low dike. This spring-fed pond has served as an excellent reintroduction site for two federally listed endangered fish, Desert pupfish and Gila topminnow. Invasive bullfrogs undergo annual control, and a bullfrog proof fence has been constructed around the spring.</p> <p>In addition, other springheads exist in the main portion of the ciénega to the south of Little Joe Spring. The ciénega’s watershed includes the east slope of the Whetstone Mountains.</p> <p>The ciénega’s plant community supports a large population of monarch butterflies during annual migrations.</p>
Acres	2,767
Values Considered	Historic and cultural, fish and wildlife, rare plants, and natural processes

Identification Criteria		
To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet the criteria of relevance <u>and</u> importance, as established and defined in 43 CFR 1610.7-2.		
Relevance. An area meets the “relevance” criterion if it contains one or more of the following:		
Relevance Value	Yes/No	Rationale for Determination
A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).	Yes	The St. David Ciénega RNA ACEC includes 12+ documented cultural sites, with potential for additional sites.
A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).	Yes	The ciénega community represents a significant semi-natural system. The isolated perennial spring and adjacent small pond at Little Joe Spring was used for successful reintroduction of native endangered fish. In addition, the plant community surrounding the ciénega supports a large population of monarch butterflies annually. Neotropical migrants, such as Virginia rail, common yellowthroat, and song sparrow, utilize the marshy conditions for nesting.
A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).	Yes	The ciénega vegetation, at the outer edges of chairmaker’s bulrush occur on less saturated soils, where yerba mansa and sedges predominate. On drier sites, alkali sacaton and desert saltgrass are common. Ciénega plants with limited distribution in the state include false dandelion and alkali marsh aster. A historical record exists from “St. David” for Huachuca water umbel, a US Fish and Wildlife Service (USFWS) endangered species. An aquatic herb with a good probability of occurrence in the ciénega, this record has not been recently re-verified. A mesquite woodland surrounds the area to the north and west. Another woodland consisting of mesquite, buttonbush, and netleaf hackberry abuts the ciénega area along the south and west most extent of the ciénega near the spring and pond.
Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous it is determined through the resource management planning process that it has become part of a natural process).	No	-
Importance. The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the “importance” criterion. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:		

Importance Value	Yes/No	Rationale for Determination
Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.	Yes	Several cultural sites in the ACEC evidence Mormon migration and settlement in the area. Additional, related sites are likely to exist. The St. David Ciénega RNA ACEC is also significant globally as one of a few remaining ciénegas (of hundreds, historically) in the southwest. Ciénegas are extremely rare in southern Arizona and southern New Mexico. Once extensive in the Gila River basin, there are remaining examples, especially ciénegas of this size.
Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.	Yes	While once more extensive, these aquatic communities have diminished substantially in Arizona during the past century because of excessive livestock grazing, streambed modifications, ground water pumping, intentional draining, and climatic change. Livestock impacts have persisted since 1988, yet the ciénega community has retained much of its natural character.
Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.	No	-
Has qualities which warrant highlighting to satisfy public or management concerns about safety and public welfare.	No	-
Poses a significant threat to human life and safety or to property.	No	-

Special Management: Prohibit livestock grazing, fuelwood cutting, and off-highway vehicle (OHV) use. Due to the complete dependence of this system on perennial water, active management efforts by BLM should focus on ensuring maintenance of minimum perennial flows including federal water rights to protect it from ground water depletion. Additionally, conservations strategies should be employed using prescribed fire, watershed restoration, dike repair, treatments to remove invasive fishes, and deepening to reverse filling that has occurred.

San Pedro

**Table C-4
San Pedro RNA ACEC Expanded**

ACEC Proposal Evaluation Form	
Area Considered	San Pedro River
General Location	An area of the unplatted <i>San Juan de Las Boquillas y Nogales</i> land grant that corresponds with portions of T19S, R21E, S4, 5, 8, 9, 16, 17, 20, 21, 27, 28, 29, 32, 33 & 34; and T20S, R21E, S2, 3 & 4
General Description	A deeply incised intermittent stream whose lower floodplain terraces have previously supported a gallery riparian forest association dominated by Fremont cottonwood and Goodding’s willow. High terraces above the level of recent entrenchment border the gallery forest and support an extensive mesquite woodland dominated by velvet mesquite and giant sacaton.
Acres	3,965
Values Considered	Historic and cultural, fish and wildlife, and natural processes

Identification Criteria		
To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet the criteria of relevance <u>and</u> importance, as established and defined in 43 CFR 1610.7-2.		
Relevance. An area meets the “relevance” criterion if it contains one or more of the following:		
Relevance Value	Yes/No	Rationale for Determination
A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).	Yes	The San Pedro River RNA ACEC contains 70+ documented cultural sites that, collectively, span the past 2,000+ years of human occupation in the region.
A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).	Yes	The San Pedro River RNA ACEC contains proposed critical habitat for the threatened yellow-billed cuckoo and Mexican gartersnake. Several bird species of limited occurrence in the state breed in these riparian habitats and include yellow-billed cuckoo, a federally threatened species, gray hawk, Mississippi kite, and northern beardless-tyrannulet. This ACEC contains major xeric-riparian washes coming from the nearby Dragoon Mountains to the east and Whetstone Mountains to the west, which provides important genetic connectivity for many wildlife species.
A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).	Yes	The San Pedro River RNA ACEC contains designated critical habitat for the federally endangered Huachuca water umbel, a rare, endemic, and aquatic plant. This ACEC also contains aquatic and riparian habitat which is rare in the southwest. Perennial surface water remains in most sections of this ACEC throughout the year, although upstream and downstream sections of the San Pedro River are intermittent or ephemeral. Thus, perennial water is available within this ACEC for many wildlife species and for migratory birds. The floodplain terrace both the east and west sides of the river contain significant areas of both young and fully mature mesquite bosque, a rare plant community in the southwest. Upland areas on the west side of the river within this ACEC contain documented occurrences of the BLM sensitive species San Pedro River wild buckwheat. This rare plant species occurs only within the unusual geological feature of the St. David Formation, and may also occur on the east side of the river. However, the east side has not been surveyed for this plant. This plant occurs only within the SPRNCA and near Vail, Arizona.
Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous it is determined through the resource management planning process that it has become part of a natural process).	No	-
Importance. The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the “importance” criterion. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:		

Importance Value	Yes/No	Rationale for Determination
Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.	Yes	<p>The overall density and diversity of cultural site types (use values, and cultural/temporal affiliations) demonstrates historic and cultural significance within the ACEC as evidenced by repeated use and occupation across time.</p> <p>The San Pedro River RNA ACEC is also significant globally as an important migratory and nesting habitat for neotropical migrant birds. The only occurrences of San Pedro River wild buckwheat on public land is found within this ACEC on SPRNCA.</p>
Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.	Yes	<p>The National Register of Historic Places (NRHP)-listed <i>Presidio de Santa Cruz de Terrenate</i> is in the ACEC along with many other sites related to early Spanish conquest and colonization of the region. Likewise, the ACEC contains a significant concentration of Sobaípurí sites that, in addition to being important ancestrally to contemporary O’odham people, may provide additional information regarding interactions among ethnohistoric Native American groups and the Spanish.</p> <p>Both Fremont cottonwood-Goodding’s willow and velvet mesquite–giant sacaton riparian forest and woodland associations are extremely rare in the Southwest. The San Pedro River riparian corridor represents the most extensive, well-developed occurrence of these rare community types on public lands. The site described here includes one of the best developed stands of continuous deciduous broadleaf gallery forest and mesquite woodland on the upper river system. The occurrence of these two types together provide an excellent example of low elevation riparian forest systems which are associated with the larger, perennial desert river systems in the Southwest. Past and present geomorphological changes in this riverine/palustrine ecosystem provide an excellent opportunity to study riparian plant community dynamics in relation to fluvial dynamics.</p>
Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.	No	-
Has qualities which warrant highlighting to satisfy public or management concerns about safety and public welfare.	No	-
Poses a significant threat to human life and safety or to property.	No	-

Special Management: Non-manipulative research and education in this area. Prohibit livestock grazing, fuelwood cutting, and OHV use. Because several cultural sites in the ACEC are currently open for public use and interpretation (e.g., the *Presidio de Santa Cruz de Terrenate* and the Fairbank Townsite, among others), updated site management and interpretive plans are recommended to address future research and/or preservation. Broadcast herbicide treatments for dicots should be prohibited within areas containing San Pedro River wild buckwheat.

San Rafael

**Table C-5
San Rafael RNA ACEC Expanded**

ACEC Proposal Evaluation Form		
Area Considered	San Rafael	
General Location	An area of the unplatted <i>San Rafael del Valle</i> land grant that corresponds with portions of T22S, R22E, S33 & 34; and T23S, R22E, S3 & 4.	
General Description	The San Rafael RNA ACEC contains a perennial reach of the San Pedro River that includes cottonwood-willow gallery forest, giant sacaton grassland, and mesquite bosque habitats. Beaver consistently use this aquatic habitat and riparian area.	
Acres	557	
Values Considered	Fish and wildlife, rare plants, and natural processes	
Identification Criteria		
To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet the criteria of relevance <u>and</u> importance, as established and defined in 43 CFR 1610.7-2.		
Relevance. An area meets the “relevance” criterion if it contains one or more of the following:		
Relevance Value	Yes/No	Rationale for Determination
A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).	Yes	A few significant cultural resources are known to exist in the San Rafael RNA ACEC; however, these do not meet importance criteria because these resources do not have more than locally significant qualities.
A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).	Yes	The San Rafael RNA ACEC contains proposed critical habitat for the threatened yellow-billed cuckoo and Mexican gartersnake. This ACEC contains important habitat for neotropical migratory birds, and is consistently used by beaver because of the perennial water and associated riparian habitat.
A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).	Yes	The San Rafael RNA ACEC contains designated critical habitat for the federally endangered Huachuca water umbel, a rare, endemic, and aquatic plant. This ACEC also contains aquatic and riparian habitat which is rare in the southwest. This ACEC contains the most undisturbed, extensive, contiguous, and dense stands of giant sacaton remaining within the SPRNCA and possibly within the southwest after conversion to agricultural fields. Giant sacaton is a plant community that has undergone significant declines in the southwest and is threatened by groundwater depletion.
Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous it is determined through the resource management planning process that it has become part of a natural process).	No	-
Importance. The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the “importance” criterion. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:		

Importance Value	Yes/No	Rationale for Determination
Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.	Yes	The San Rafael RNA ACEC is globally significant as an important migratory and nesting habitat for neotropical birds.
Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.	Yes	The San Rafael RNA ACEC has fragile, sensitive, rare, irreplaceable, endangered, and vulnerable qualities because it contains a perennial reach of the San Pedro River which is threatened by groundwater depletion.
Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.	No	-
Has qualities which warrant highlighting to satisfy public or management concerns about safety and public welfare.	No	-
Poses a significant threat to human life and safety or to property.	No	-

Special Management: Prohibit livestock grazing, fuelwood cutting, and ORV use. Due to the complete dependence of this system on perennial water, active management efforts by BLM should focus on ensuring maintenance of minimum perennial flows.

Curry-Horsethief

**Table C-6
Curry-Horsethief ACEC**

ACEC Proposal Evaluation Form		
Area Considered	Curry-Horsethief	
General Location	Portions of T21S, R21E S25, 26 & 36, and an area of the unplatted San Rafael del Valle land grant that corresponds with portions of T21S, R22E, S30 & 31; T22S, R21E, S1; and T22S, R22E, S6	
General Description	The Curry-Horsethief ACEC consists of an area along the west bank of the San Pedro River, along the upper terrace and associated draws (i.e., Curry and Horsethief), as buffered by the limits of the BLM's surface jurisdiction to the west and State Route 90 to the south.	
Acres	2,551	
Values Considered	Historic and cultural (including paleontological)	
Identification Criteria		
To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet the criteria of relevance <u>and</u> importance, as established and defined in 43 CFR 1610.7-2.		
Relevance. An area meets the "relevance" criterion if it contains one or more of the following:		
Relevance Value	Yes/No	Rationale for Determination
A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).	Yes	The Curry-Horsethief ACEC contains 20+ documented cultural sites and paleontological localities, of which more than half represent Paleoindian (Clovis) and Archaic (Cochise/San Pedro) occupation of the region. The potential for additional, related sites is high.

Relevance Value	Yes/No	Rationale for Determination
A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).	No	-
A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).	No	-
Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous it is determined through the resource management planning process that it has become part of a natural process).	No	-
Importance. <i>The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the "importance" criterion. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:</i>		
Importance Value	Yes/No	Rationale for Determination
Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.	Yes	The significant concentration of Paleoindian and Archaic cultural site types provides a unique opportunity to study and interpret the history and lifeway(s) of early humans (i.e., Paleoindians and Archaic peoples), megafauna, and the Pleistocene-Holocene transition.
Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.	Yes	The NRHP-listed Murray Springs Clovis Site National Historic Landmark (NHL) is in the ACEC along with many other sites related to the region's first human inhabitants. Cultural and paleontological remains in and around the Murray Springs Clovis Site are regarded as some of the most significant finds on the continent. Likewise, the ACEC contains a significant concentration of paleontological localities. The ACEC likely contains additional intact deposits that could further inform the historical record.
Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.	No	-
Has qualities which warrant highlighting to satisfy public or management concerns about safety and public welfare.	No	-
Poses a significant threat to human life and safety or to property.	No	-

Special Management: Prohibit livestock grazing, fuelwood cutting, and OHV use. Because the Murray Springs Clovis Site NHL is currently open for public use and interpretation, updated site management and interpretive plans are recommended to address future research and/or preservation.

Lehner Mammoth

**Table C-7
Lehner Mammoth ACEC**

ACEC Proposal Evaluation Form		
Area Considered	Lehner Mammoth	
General Location	A portion of T23S, R22E, S21	
General Description	The Lehner Mammoth ACEC consists of the existing public use and interpretive area of the NHRP-Listed Lehner Mammoth Kill Site NHL, buffered to the south west by the existing access road and the limits of the BLM's surface jurisdiction, respectively.	
Acres	35	
Values Considered	Historic and cultural (including paleontological)	
Identification Criteria		
To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet the criteria of relevance <u>and</u> importance, as established and defined in 43 CFR 1610.7-2.		
Relevance. An area meets the "relevance" criterion if it contains one or more of the following:		
Relevance Value	Yes/No	Rationale for Determination
A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).	Yes	The Lehner Mammoth ACEC consists of the existing, NRHP-listed Lehner-Mammoth Kill Site NHL, with an administrative buffer applied to account for the adjacent area where similar cultural and/or paleontological deposits may exist.
A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).	No	-
A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).	No	-
Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous it is determined through the resource management planning process that it has become part of a natural process).	No	-
Importance. The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the "importance" criterion. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:		

Importance Value	Yes/No	Rationale for Determination
Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.	Yes	The Lehner Mammoth Kill Site NHL is regarded as nationally significant (as evidenced by its NRHP-listing and status as an NHL); however, the site and associated cultural and paleontological remains have global significance in the interdisciplinary study of early humans (i.e., Paleoindians and Clovis culture), megafauna, and the Pleistocene-Holocene transition, with specific interest in exposed localities of Younger-Dryas “black mats.”
Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.	Yes	<p>The cultural and paleontological remains in and around the Lehner Mammoth Kill Site NHL are regarded as some of the most significant finds on the continent. Lehner Mammoth presented a number of firsts: it was the first Clovis site to yield viable radiocarbon dates, demonstrated the first Clovis association with small animals, and also first exhibited butchering tools in direct association with animal remains.</p> <p>The site and vicinity likely contain additional intact deposits that could further inform the historical record.</p>
Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.	No	-
Has qualities which warrant highlighting to satisfy public or management concerns about safety and public welfare.	No	-
Poses a significant threat to human life and safety or to property.	No	-

Special Management: Prohibit livestock grazing, fuelwood cutting, and OHV use. Because the site is currently open for public use and interpretation, updated site management and interpretive plans are recommended to address future research and/or preservation.

C.3 REFERENCES

BLM (US Department of Interior, Bureau of Land Management). 1988. BLM Manual 1613 -- Areas of Critical Environmental Concern. Washington, DC. September 29, 1988.

_____. 1989. Final San Pedro River Riparian Management Plan and Environmental Impact Statement. Safford District, Safford, Arizona. June 1989.

_____. 1991. Final Safford District Resource Management Plan and Environmental Impact Statement. Safford District, Safford, Arizona. August 1991.

BLM GIS. 2017. Data from the BLM's internal eGIS server used to describe landownership, VRM, vegetation, and other datasets. US Department of the Interior, Bureau of Land Management, Arizona, Tucson Field Office, San Pedro Riparian National Conservation Area.

Appendix D

Tribal Consultation and Coordination

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Appendix D. Tribal Consultation and Coordination

Date	Consultation Method	Tribes Contacted	Responses and Comments
December 17, 2012	Letter (Bellew [BLM] to tribal officials)	Eight: Ak-Chin Indian Community (ACIC), Gila River Indian Community (GRIC), Hopi Tribe (Hopi), Pueblo of Zuni (Zuni), Salt River Pima-Maricopa Indian Community (SRPMIC), San Carlos Apache Tribe (SCAT), Tohono O’odham Nation (TON), and White Mountain Apache Tribe (WMAT).	N/A
April 20, 2013 – September 27, 2013	Letters regarding NEPA public scoping, Notice of Intent published in Federal Register, and project website.	Eight: ACIC, GRIC, Hopi, Zuni, SRPMIC, SCAT, TON, and WMAT.	Steere (TON) to Markstein (BLM) email, dated September 23, 2013: “[TON] regards the lands of the [SPRNCA] as part of the Traditional-Use Lands of the [TON]. The [TON] considers the preservation and protection of cultural sites in the [SPRNCA] of utmost importance... [and] considers the preservation and protection of the traditional cultural and natural landscapes of high importance...”
June 25, 2013	Four Southern Tribes Cultural Working Group Meeting	Four: ACIC, GRIC, SRPMIC, and TON.	N/A
April 29, 2014	Four Southern Tribes Cultural Working Group Meeting	Four: ACIC, GRIC, SRPMIC, and TON.	N/A
May 22, 2015	Four Southern Tribes Cultural Working Group Meeting	Four: ACIC, GRIC, SRPMIC, and TON.	N/A
April 22, 2016	Four Southern Tribes Cultural Working Group Meeting	Four: ACIC, GRIC, SRPMIC, and TON.	N/A
May 7, 2016	Letter (Warren [BLM] to tribal officials)	Eight: ACIC, GRIC, Hopi, Zuni, SRPMIC, SCAT, TON, and WMAT.	N/A

Date	Consultation Method	Tribes Contacted	Responses and Comments
November 21, 2017	Letter (Lopez [BLM] to tribal officials)	Fourteen: ACIC, Fort McDowell Yavapai Nation (FMYN), Fort Sill Apache Tribe (FSAT), GRIC, Hopi, Mescalero Apache Tribe (MAT), Pascua Yaqui Tribe (PYT), Zuni, SRPMIC, SCAT, TON, Tonto Apache Tribe (TAT), WMAT, and Yavapai-Apache Nation (YAN).	Koyiyumtewa for Kuwanwisiwma (Hopi) to Lopez (BLM) letter, dated November 29, 2017: “[W]e strongly support the alternative that ‘places the greatest emphasis on minimizing human use and influence... [W]e reiterate our recommendation that the Tribal Historic Preservation Offices be provided the same opportunities for involvement in BLM management processes as the State Historic Preservation Offices...”
May 25, 2018	Letter (Lopez [BLM] to tribal officials)	Fourteen: ACIC, FMYN, FSAT, GRIC, Hopi, MAT, PYT, Zuni, SRPMIC, SCAT, TON TAT, WMAT, and YAN.	<p>Steere (TON) to Ryan (BLM) email, dated May 29, 2018: Suggestion to “present this project to the Four Southern Tribes Cultural Resource Working Group Meeting,” and “contact the [TON’s] Executive Office and Legislative Office to arrange to make a presentation.” Also requested hard copies of the Draft RMP/EIS when available.</p> <p>Steere (TON) to Ryan (BLM) email, dated June 28, 2018: Follow-up request for hard copies of the Draft RMP/EIS and continuing consultation.</p>
June 14, 2018	Email request to schedule G2G consultation and Draft RMP/EIS presentation (Ryan [BLM] to Kinsley [TON])	One: TON	Kinsley (TON) to Ryan (BLM) phone call follow-up regarding BLM’s request to schedule with TON Executive Branch.
June 14, 2018	Email request to schedule Draft RMP/EIS presentation w/Four Southern Tribes (Ryan [BLM] to Garcia-Lewis and Anton [SRPMIC])	One: SRPMIC (on behalf of Four Southern Tribes Cultural Working Group)	Anton (SRPMIC) to Ryan (BLM) email, dated June 19, 2018: scheduling confirmed for July 20, 2018 meeting and presentation.

Date	Consultation Method	Tribes Contacted	Responses and Comments
June 15, 2018	Phone call/voicemail offering G2G consultation and/or workshop (Ryan [BLM] to Morgart [Hopi])	One: Hopi	N/A
June 29, 2018	Letter of Transmittal (Markstein [BLM] to Steere [TON])	One: TON	N/A
June 29, 2018	Email Notification of Draft RMP/EIS Posting and Request for Review/ Continuing Consultation (Ryan [BLM] to tribal cultural specialists)	Fourteen: ACIC, FMYN, FSAT, GRIC, Hopi, MAT, PYT, Zuni, SRPMIC, SCAT, TON TAT, WMAT, and YAN.	Email requests from Altaha (WMAT) and Grant (SCAT), dated June 29, 2018, to Ryan (BLM) to schedule a consultation meeting.
June 29, 2018 – September 27, 2018	NEPA Draft RMP/EIS Comment Period: Notice published on project website and in media	N/A (<i>Widespread public notice; tribes notified via email</i>)	Valencia (PYT) to BLM comment-letter, dated September 26, 2018: “ <i>The tribe asserts a cultural, historic relationship and affiliation to the [SPRNCA]. The tribe would disagree with the report that there are ‘no specific impacts on tribal interests have been identified within the planning area’...It is therefore requested that the plan outline an ongoing procedure for regularly meeting and consulting with affiliated tribes... The tribe...objects to the adoption of Alternative C.</i> ”
July 2, 2018	Letter re: meeting invitation (Lopez [BLM] to Grant [SCAT] and Altaha [WMAT])	Two: SCAT and WMAT	Grant (SCAT) to Ryan (BLM) email, dated July 13, 2018: Confirmation of in-person meeting schedule.
July 20, 2018	Four Southern Tribes Cultural Working Group Meeting and Draft RMP/EIS presentation	Four: ACIC, GRIC, SRPMIC, and TON	Meeting notes on file with the BLM. Tenario (TON) to Markstein (BLM) email, dated July 24, 2018: Request for hard copies of the Draft RMP/EIS for review and scheduling for a follow-up presentation for the San Xavier District (SXD) Cultural Committee.
August 3, 2018	Meeting with SCAT and WMAT at BLM Tucson Field Office	Two: SCAT and WMAT	Meeting notes on file with the BLM.

Date	Consultation Method	Tribes Contacted	Responses and Comments
August 7, 2018	Follow-up email regarding verbal request for G2G meeting (Ryan [BLM] to Anton and Garcia-Lewis [SRPMIC]).	One: SRPMIC	N/A
August 16, 2018	Meeting with TON-SXD Cultural Committee at SXD Offices	One: TON-SXD	Meeting notes on file with the BLM. Carlyle (TON) and Tenario (TON) to Ryan (BLM), emails dated August 20 and 21, 2018: Thanking BLM staff for presentation and meeting.
September 10, 2018	Email Reminder of Draft RMP/EIS Comment Period Closing Date and Request for Input (Ryan [BLM] to tribal cultural specialists)	Fourteen: ACIC, FMYN, FSAT, GRIC, Hopi, MAT, PYT, Zuni, SRPMIC, SCAT, TON TAT, WMAT, and YAN.	Steere (TON) to Ryan (BLM) email, dated September 25, 2018: <i>“Public comment period may end of September 27. Tribal consultation will continue.”</i> Steere (TON) to Markstein (BLM) email, dated October 15, 2018: <i>“The [TON] recommends...[selection of] Alternative D or a related conservation oriented alternative. Alternative D is the only management alternative that is consistent with the Arizona-Idaho Conservation Act...The BLM should put tribal perspectives and management preferences as a first priority. Consultation meetings should continue on a regular basis with all interested tribes, at least twice a year. Continued livestock grazing represents a significant threat to the protection and preservation of Sopaipuri and Apaches sites.”</i> Additional comments on file with the BLM.
December 12, 2018	Letter (Lopez [BLM] to tribal officials) acknowledging comments received and inviting future coordination	Fourteen: ACIC, FMYN, FSAT, GRIC, Hopi, MAT, PYT, Zuni, SRPMIC, SCAT, TON TAT, WMAT, and YAN.	N/A

Appendix E

State, County, Local, and Other Related
Agency Plans

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Appendix E. State, County, Local, and Other Related Agency Plans

The Bureau of Land Management (BLM) consulted the plans listed below while preparing the San Pedro Riparian Area National Conservation Area (SPRNCA) Proposed Resource Management Plan (RMP).

E.1 STATE PLANS

- Statewide Wildlife Action Plan 2012–2022
- Management Plan for the Sonoran Desert Population of the Desert Tortoise in Arizona
- The Arizona Game and Fish Department’s Strategic Plan for the Years 2007–2012
- Arizona’s State Wildlife Action Plan
- Arizona Trails 2015: A State Motorized and Non-Motorized Trails Plan (AZ State Parks)
- Statewide Comprehensive Outdoor Recreation Plan (AZ State Parks)
- Arizona’s Wildlife Linkages Assessment (Arizona Wildlife Linkages Workgroup 2006)

E.2 COUNTY

- Cochise County Comprehensive Master Plan (1984, as amended in 2011)
- Cochise County Community Wildfire Protection Plan (2014)

E.3 CITY

- Vista 2030: Sierra Vista General Plan (ratified 2014)

E.4 OTHER FEDERAL PLANS

- Coronado National Forest Land and Resource Management Plan, Revised 2012
- Coronado National Forest Travel Management Plan (in progress; begun November 2011)
- Coronado National Forest Miller Peak Wilderness Implementation Schedule (1993)
- Coronado National Memorial Arizona General Management Plan, 2004
- Fort Huachuca Integrated Natural Resources Management Plan, 2001

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Appendix F

Other Relevant Plans, Agreements, or Memoranda
of Understanding

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Appendix F. Other Relevant Plans, Agreements, or Memoranda of Understanding

Master memorandum of understanding (MOU) (AZ-930-0703) between the BLM Arizona and Arizona Game and Fish Commission establishing coordination and cooperation between Agencies—The commission sets policy for managing, preserving, and harvesting wildlife and fish. The BLM and AZGFD have agreed to cooperatively manage wildlife resources on public lands throughout Arizona. The master MOU establishes the BLM’s responsibility for managing wildlife habitat on public lands and the AZGFD’s responsibility to manage fish and wildlife through the authority of the commission. As stated in the MOU, the BLM and the AZGFD “consider the management of fish and wildlife resources as a high priority and agree to work cooperatively to achieve a shared goal to actively manage, sustain, and enhance those resources.”

- MOU on the Federal Lands Hunting, Fishing, and Shooting Sports Roundtable
- MOUs pursuant to Executive Order (EO) 13186 to promote the conservation of migratory birds
- MOU between the BLM and US Fish and Wildlife Service (USFWS)
- MOU between the BLM and the Upper San Pedro Partnership
- Interagency agreement between the Bureau of Reclamation and the BLM, December 1982
- North American Waterbird Conservation Plan (US Geological Survey [USGS] and partners 2002)
- North American Waterfowl Management Plan (USFWS and partners 2012)
- US Shorebird Conservation Plan (USFWS and partners 2001)
- USFWS Birds of Conservation Concern—2008
- USFWS Game Birds Below Desired Condition
- San Pedro River Targeted Watershed *E. coli* Reduction Improvement Plan (Coronado Resource Conservation & Development 2013)
- State protocol agreement between the BLM, Arizona, and the Arizona SHPO regarding the manner in which the BLM, Arizona, will meet its responsibilities under the National Historic Preservation Act (NHPA) and the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (executed December 14, 2014) (BLM 2014b).

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Appendix G

Administrative Actions

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Appendix G. Administrative Actions

**Table G-1
Water Management Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. The existing water quality testing program would continue. This includes drinking water quality at San Pedro House and Fairbank and testing for E. coli, sediment, temperature, pH, electrical conductivity, and dissolved oxygen among others in the San Pedro River.			
2. Initiate data collection where there is a suspected or known pollution threat or hazard to water quality.	2. Prioritize data collection for surface waters where there is a suspected or known pollution threat or hazard to water quality.		
3. Inspect and maintain water systems to prevent unnecessary loss of water.	3. Assess existing potable water systems to determine if any systems should be decommissioned or modified to conserve water. Continue to inspect, test, and maintain existing systems to prevent unnecessary loss of water.		
4. N/A	4. Collaborate with partners to develop a web-based information portal for sharing and interpreting scientific data on resources in the San Pedro watershed.		
5. Cover and seal unusable or unsuitable wells to prevent contamination of aquifers and vadose zones, and to contain highly saline water.			

**Table G-2
Cultural Resources**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. Complete a Class III Intensive Field Inventory of the entire SPRNCA and record all cultural resources.	1. Prepare a comprehensive Class I overview and updated cultural context for the entire SPRNCA planning area.		
2. N/A	2. Identify data gaps to prioritize Class III inventory and scientific investigation of areas known or likely to contain unique and threatened, or both, cultural resource types, such as rock art and Archaic, Sobaipuri, and Apachean sites.		

**Table G-3
Paleontological Resources Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. Monitor high potential areas periodically.	1. Work to inventory potential fossil yield classification (PFYC) Class 3, Class 4, or Class 5 areas for any new vertebrate fossil localities that may be exposed due to naturally occurring erosion or surface-disturbing activities.		
2. Check high potential areas periodically.	2. Work to survey all PFYC Unknown (Class U) areas to accurately reflect the presence of paleontological resources and assign an accurate PFYC value.		
3. N/A	3. Develop and maintain a Geographic Information System (GIS) database of known fossil localities within the San Pedro Riparian National Conservation Area (SPRNCA).		
4. Monitor known sites periodically (every 3-5 years) and collect exposed fossils.	4. Monitor for and collect scientifically significant fossil resources that are exposed within livestock concentration areas and range improvements.		4. Livestock grazing would not be authorized in the SPRNCA.
5. Collected fossils would be housed in a qualified repository.			

**Table G-4
Wildland Fire and Management Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. N/A	1. Review Fire Management Plan and Wildland Fire Decision Support System and amend Fire Management Plan if there are any new SOPs or other restrictions.		

**Table G-5
Fish, Wildlife, and Special Status Species Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. N/A	1. Survey for nonnative, invasive aquatic species periodically and control as necessary.		
2. N/A	2. Northern Mexican garter snake: Evaluate opportunities to advance recovery objectives.		
3. N/A	3. Revise/update the SPRNCA Habitat Management Plan (BLM 1993)		
4. N/A	4. Survey previously unsurveyed riparian habitat and arid ephemeral drainages that contain one or more of the following tree species: hackberry, mesquite, oak, sycamore, walnut, soapberry, ash, desert willow, elderberry, willow, cottonwood.		

**Table G-6
Cultural Resources**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
I. ARCHAEOLOGICAL AND HISTORIC RESOURCES			
1. Prepare a Cultural Resource Management Plan (CRMP) for the SPRNCA.	1. Prepare integrated resource site management plans for sites allocated to public use. Prioritize National Historic Landmarks planning, stabilization, and research to accommodate continued public use.		
2. Maximize the efficiency and quality of site management through the development of cooperative management agreements and the use of volunteers.	2. Develop cooperative cultural resources management and/or research agreements with local nonprofit groups, volunteer organizations, and academic institutions.		
3. N/A	3. In accordance with the Bureau of Land Management (BLM)-Arizona Protocol (BLM 2014), participate in the Arizona Site Steward Program to supplement staff monitoring and increase site protection.		
4. Identify scientific research objectives by historic context for the SPRNCA. Promote study to fulfill research objectives and fill regional data gaps.	4. Develop an updated cultural history for the SPRNCA; frame local histories and sites within the context of the surrounding landscape.		
5. N/A	5. Develop research themes, questions, and plans for specific sites and/or site types as well as promote and encourage research that targets data gaps.		
6. Provide data and display items for public interpretation, and support the planning, designing, and development of interpretive sites. Promote public interpretation and education.	6. Develop a SPRNCA cultural resources summary, and interpretive and educational programs for public-use sites.		
7. N/A	7. Perform public outreach and engagement on the value of cultural resources.		
8. Protect sites potentially eligible for allocation to conservation for future use to preserve their scientific and public values.	8. Use administrative and physical measures, such as signs, access barriers, patrols, fire control, stabilization, detailed recording, and public education, to protect cultural resource values.		
9. N/A	9. Cultural resources databases, maps, site, and inventory records would be updated and maintained to current professional standards for acceptable use in research, compliance, and monitoring activities.		

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
10. Do not allow conflicting land and resource uses on allocated sites.	10. Work with lessees and applicants to design projects and activities to achieve cultural resources preservation and/or use objectives.		10. Preserve or enhance cultural resource values through management actions and the control of land uses.
II. NATIVE AMERICAN CONCERNS			
1. Identify socio-cultural values and give full consideration to these values in the management of associated sites and areas.	1. Identify and manage TCPs, sacred sites, traditional use sites, and cultural landscapes in consultation with Native American tribes.		
2. N/A	2. Work with Native American tribes to identify suitable harvesting areas for noncommercial, personal use quantities of herbals, medicines, and traditional use items.		
3. N/A	3. Consult with Native American tribes with cultural and historic ties to the SPRNCA in accordance with <i>BLM Manual 1780</i> (BLM 2016) and as consistent with applicable laws, regulations, and authorities.		

Table G-7
Visual Resources Management Administrative Actions

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. Visual contrast ratings, design, and mitigation measures are required to meet Visual Resource Management (VRM) objectives.	1. Visual contrast ratings would be completed on proposed projects to assess potential visual impacts, and identify visual design guidelines to ensure VRM objectives are achieved. Mitigation measures to reduce potential visual impacts would include, but not be limited to, site selection, material selection, screening, rehabilitation, and color treatment of structures.		
2. N/A	2. BLM-initiated projects (vegetation treatments, earthwork, ground surface-disturbing activities, and construction of roads or structures) would incorporate visual design techniques to ensure VRM objectives are met.		
3. N/A	3. Mitigation measures would be identified during National Environmental Policy Act (NEPA) review of external project proposals with potential visual impacts, and implemented through special stipulations to ensure VRM objectives are met.		
4. N/A	4. Field analysis would be conducted to ensure that project elements are designed appropriately to sufficiently fit the existing natural landscape.		
5. N/A	5. Visual simulations would be produced as determined by the BLM to assist in developing project design features and mitigation measures to reduce impacts to visual resources. These simulations would also be used to complete contrast ratings.		
6. N/A	6. Monitor visual resource conditions for impacts from land use activities and for effectiveness of design requirements.		
7. N/A	7. Night lighting required for any purpose would incorporate measures to protect night skies.		

**Table G-8
Lands with Wilderness Characteristics Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. N/A	1. No areas would be managed to protect wilderness characteristics as a priority.		1. Prepare a monitoring and patrol plan to monitor conditions and use in wilderness characteristics areas.

**Table G-9
Energy and Lands and Realty Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. N/A	1. A review of existing ROWs for historic reclaiming railroad grades across the SPRNCA would be completed to determine if they have been abandoned according to Surface Transportation Board (STB) procedures (PHX-014180, PHX-016320, PHX-018518, PHX-058765, PHX-059615, PHX-059620, PHX-086526, PHX-086569, PHX-086622, and PHX-086647).		
2. N/A	2. If the ROWs for historic reclaiming railroads (tracks have been removed and vegetation is growing on the railroad bed) have not been abandoned according to STB procedures, abandonment procedures would be pursued, or permission would be obtained for use of the ROWs for San Pedro Trail system purposes.		

**Table G-10
Livestock Grazing Administrative Actions**

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. Grazing lessees would not be permitted to manage livestock via motorized vehicles off designated routes. One-time travel by grazing lessees off designated routes could be approved with written authorization from the BLM Authorized Officer to access sick, injured, or dead livestock.			1. Livestock grazing would not be authorized in the SPRNCA.
2. Ensure Lessees monitor, maintain, and repair fences as appropriate.			

Table G-11
Recreation Resources Administrative Actions

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. Prepare project plans for all proposed facilities.	1. Prepare site management plans to identify maintenance, improvements, and operations for all public use sites, provided to accommodate recreational and educational uses, access to the San Pedro Trail system, trails, and administrative functions.		
2. N/A	2. Develop interpretive plans for recreational and educational sites with themes based on the resources available at the site.		
3. Assure the preservation of scientific and other cultural resource values and achieve cultural resource objectives in the development and use of interpretive sites.	3. Coordinate site planning and interpretive planning with scientific research and other resource management programs to assure the preservation of scientific values and achievement of other resource management objectives.		
4. Provide data and display items for public.	4. Complete research and gather information to inform interpretive and educational materials. Develop interpretive and educational materials based on current data and science, and illustrate themes using items connected to the SPRNCA.		
5. Provide support in the planning, designing, and development of interpretive sites.	5. Implement interpretive and educational plans, including site improvements, through a variety of funding sources, including appropriated funds, partnerships, permits, agreements, grants, and volunteers.		
6. N/A	6. Develop interpretative, educational, and outreach programs through partnerships with organizations, schools, and others to build emotional, intellectual, and recreational ties with the area and its cultural and natural heritage.		

Table G-12
Travel Management Administrative Actions

Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
1. Off-highway vehicle (OHV) designations and Supplementary regulations for the SPRNCA were established in 1989 following completion of the Safford RMP. ¹		1. Legal notices would be published to implement changes in designations and/or use restrictions.	
2. N/A		2. Maps and signs with information on use restrictions and allowable uses would be posted.	
3. N/A		3. Law enforcement and visitor compliance patrols would be conducted.	
4. N/A		4. Visitor contact, education, and maintenance patrols by Park Ranger staff would be conducted.	
5. Road improvements and maintenance have been largely implemented, with damage found on multiple routes.		5. Road and trail maintenance would be completed according to the appropriate intensity and frequency, and according to the standards/guidelines appropriate for the route's purpose or type of access.	
6. N/A		6. Project plans for transportation maintenance and improvement projects would be prepared as needed.	
7. Vehicle barriers constructed at ingress point as part of road maintenance and boundary fencing. A locked gate system is in place to control vehicle access.		7. Vehicle barriers and gates would be provided, monitored, and maintained as needed.	
8. Identify the transportation system in the BLM's Facility Asset Management System.			
9. Permittees and lessees (e.g., outfitters/guides and livestock operators) are subject to the travel management and route designations, including transportation system restrictions and closures. Administrative access would be accommodated on a case-by-case basis subject to the terms and conditions of the applicable authorizing instrument (right-of-way [ROW], permit, lease, maintenance agreement, etc.).			
10. Designated travel routes would be monitored, condition surveys completed, and routes would be maintained to accommodate their intended access purposes.		10. Designated travel routes would be monitored for conditions, use, and impacts, at appropriate intervals depending on the route.	
11. Do not develop, endorse, or publish road or trail ratings. Could describe physical characteristics of a route.			

¹Federal Register Notice: Off-Road Vehicle Designation, Livestock Grazing Notice, and Establishment of Supplementary Rules for the San Pedro Riparian National Conservation Area, Arizona. *Federal Register* Notice / Vol. 54, No. 168, August 31, 1989.

G.I REFERENCES

BLM (US Department of Interior, Bureau of Land Management). 1993. San Pedro River Riparian National Conservation Area Habitat Management Plan. Safford District, Safford, Arizona. November 1993.

_____. 2014. State protocol agreement between the Bureau of Land Management, Arizona, and the Arizona State Historic Preservation Office regarding the manner in which the Bureau of Land Management, Arizona, will meet its responsibilities under the National Historic Preservation Act and the National Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, Phoenix, Arizona. December 12, 2014. Internet website: http://www.achp.gov/blm/AZ%20State%20Protocol%20Agreement_signed%2012-Dec-2014.pdf.

_____. 2016. BLM Manual 1780 -- Tribal Relations. December 15, 2016.

STB (Surface Transportation Board). Procedures (PHX-014180, PHX-016320, PHX-018518, PHX-058765, PHX-059615, PHX-059620, PHX-086526, PHX-086569, PHX-086622, and PHX-086647).

Appendix H

Standard Operating Procedures and
Best Management Practices

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Appendix H. Standard Operating Procedures and Best Management Practices

H.1 STANDARD OPERATING PROCEDURES

Standard operating procedures (SOPs) are procedures carried out daily during proposal implementation that are based on laws; regulations; executive orders; US Department of the Interior, Bureau of Land Management (BLM) manuals, policies, and instruction memorandums (IMs); and other applicable documents. SOPs describe the flow of actions and identify roles and responsibilities. Policy and planning procedures either already exist or have been identified through collaborative processes that are used as a guide during the implementation of management decisions. It is the goal of SOPs to maintain operational efficiency and consistency during the planning and implementation processes.

H.2 BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are land and resource management techniques determined to be the most effective and practical means of maximizing beneficial results and minimizing conflicts and negative environmental impacts from management actions. BMPs can include structural and nonstructural controls, specific operations, and maintenance procedures. BMPs can be applied before, during, and after activities to reduce or eliminate negative environmental impacts.

BMPs are not one-size-fits-all solutions. BMPs should be selected and adapted through interdisciplinary analysis to determine which management practices are necessary to meet the goals and objectives of the resource management plan (RMP). The best practices and mitigation measures for a particular site are evaluated by considering site-specific conditions, local resource conditions, and a suite of techniques that guide or may be applied to management actions to aid in achieving desired outcomes.

H.2.1 Soil, Water, and Air Resources

Standard Operating Procedures

- Comply with all federal and state statutes pertaining to air quality and cooperate with the State of Arizona in carrying out the State Implementation Plan.

Best Management Practices

- When implementing BLM-approved activities where dust from surface disturbance may occur, enforce stipulations to mitigate impacts on air quality.
- Minimize disturbance to surface resources when constructing new developments or reconstructing existing facilities. Develop mitigation plans, restore disturbed surfaces, and stabilize soils in accordance with restoration objectives.
- Use structural (in the tributaries only) and nonstructural controls and vegetation to reduce erosion and capture sediments.
- For heavy metals, remediate heavy metal contaminated soils or fill materials (i.e., railroad grade; <http://www.hindawi.com/journals/isrn/2011/402647/>) by reducing the mobility of the metals in the soil or removing the metals.

- Correct and prevent erosion where needed using cross-logs and rock stair steps, and rerouting unsustainable trail segments.
- Abandon and remediate trail segments that are not in stable locations on banks.

Enhancement of Riverine Geomorphology

- Stream restoration structures would preferably be comprised of soft structures such as wooden post and rock and/or vegetation (tree poles or saplings).
- Restoration would occur with incremental implementation based on monitoring of design performance following floods and adaptive management to improve design before full implementation in a specified reach.
- Haul roads across flood plains to individual sites where structures/planting will occur will be located and designed to minimize erosion and ease of rehabilitation.

Watershed Improvements

- Use hand tools before mechanical tools.
- Use natural materials as much as possible.
- Use plantings before structures. If structures are used, loose and irregular components would be preferred (usually rock, wood, and earth) instead of flexible or rigid structures.
- A few smaller features will be preferred over using a large structure/feature.
- Prioritize watershed improvements for the stabilization and protection of natural and cultural resources.
- Use a reanalysis of overbank flood frequency, channel dimensions, and the profile pattern, and an evaluation of sediment supply and pulse flows to the San Pedro River to help design projects.

H.2.2 Paleontological Resources

Standard Operating Procedures

- Paleontological resources are managed according to the Paleontological Resources Preservation Act of 2009 (16 United States Code [USC] 470aaa-470aaa11) and the general guidance of Federal Land Policy and Management Act of 1976 and National Environmental Policy Act of 1969 (NEPA). Agency-level guidance is provided through the BLM Manual 8270, Paleontological Resource Management and the BLM Handbook 8270, General Procedural Guidance for Paleontological Resource Management.
- A proposed rule would amend title 43 of the Code of Federal Regulations (CFR) by adding a new part 49, entitled Paleontological Resources Preservation. In accordance with 16 USC 470aaa-1, the proposed rule would further outline how the BLM would manage, protect, and preserve paleontological resources on federal land using scientific principles and expertise (Federal Register 2016 - <https://www.fws.gov/policy/library/2016/2016-29244.html>).
- A qualified professional paleontologist will accomplish a paleontological inventory of project areas prior to authorizing surface-disturbing activities to protect vertebrate or noteworthy occurrences of invertebrate, plant, or trace fossils.
- Assign survey priorities to those areas that are most likely to include significant paleontological resources, are known to contain paleontological localities, are relatively accessible to the public, and/or are vulnerable to damage or loss from land-use activities.

- Include standard discovery stipulations in any permit approval that is likely to affect significant paleontological resources.
- The following stipulations may be applied:
 - User/operator shall be responsible for informing all persons associated with a project that they shall be subject to prosecution for damaging, altering, excavating, or removing any vertebrate or noteworthy occurrences of invertebrate or plant fossils on-site.
 - If vertebrate or noteworthy occurrences of invertebrate or plant fossils are discovered, the user/operator shall suspend all operations that further disturb such materials and immediately contact the BLM Authorized Officer (AO).
 - User/operator shall not resume until the AO issues a written authorization to proceed.
 - Within 5 working days, the AO will evaluate the discovery and inform the operator of actions that will be necessary to prevent loss of significant scientific values.
 - The user/operator shall be responsible for the cost of any mitigation required by the AO.
 - Upon verification from the AO that the required mitigation has been completed, the operator shall be allowed to resume operations.

H.2.3 Vegetation Resources

Standard Operating Procedures

- Plant collection may occur under limited circumstances.
 - Plant collection or manipulation may be authorized under certain circumstances through a scientific permit issued by the AO.
 - When plants are to be removed from the San Pedro Riparian National Conservation Area (SPRNCA), the Arizona Department of Agriculture must be contacted for appropriate permitting.

Best Management Practices

- Avoid or minimize ground-disturbing activities in riparian areas and other habitats with sensitive plant communities located on fragile soils.
- Do not broadcast spray herbicides in riparian areas that provide habitat for threatened, endangered, and proposed aquatic species. Appropriate buffer distances will be determined on a project-by-project basis to ensure that vegetation that provides habitat for threatened, endangered, and proposed species is not removed from the site.
- Avoid mechanical removal of trees and shrubs within riparian areas. Where heavy or specialized equipment is required for a riparian vegetation treatment, such as grubbing, mulching, chipping, mowing, grinding, and thinning by heavy equipment, limit access to areas with dry soil and those where bank soil compaction is likely to be minimal. Avoid to the extent possible mechanical removal of trees and shrubs within riparian areas.
- Utilize chemical (herbicide) treatments where ground-disturbing activities such as heavy equipment are not permitted, and where the control of resprouting and new vegetation is desired. To limit impacts on adjacent plants, use the cut stump method, spot treatments, or the basal bark method where small amounts of herbicide are applied directly to freshly cut stumps, canopy, or the basal area of trees and shrubs.

- Develop a pesticide use proposal for areas where herbicide treatments are utilized. A certified pesticide applicator will supervise herbicide treatments, which will adhere to the product label or be applied at BLM-approved application rates if less than label authorized rates.
- Implement biomass utilization immediately following mechanical treatments and prior to any rehabilitation treatments that may be needed.
- Utilize some portion of the slash generated from vegetation treatments to enhance cover in adjacent downstream areas where cover has been determined to be limiting for reptiles and amphibians. Take measures to avoid fluid leaks from equipment used to treat vegetation.
- When protecting riparian resources with firebreaks, protect bank cover by moving larger fuel elements removed from the break to downstream locations in the stream reach to aid in bank protection.
- Restrict motorized vehicles for vegetation treatment or other activities, to the extent feasible, to existing roads, trails, washes, and temporary firebreak or site-access routes. When off-road travel is deemed necessary, any cross-country travel paths will be surveyed for sensitive plants and soil conditions prior to use and will be closed and rehabilitated after the project is completed.
- Use seed from regionally native species of grasses and herbaceous vegetation in areas where reseeding is necessary following ground disturbance to revegetate bare areas, stabilize soils, and prevent erosion.
- In designing vegetation treatments, use ecological site descriptions to determine where vegetation treatments would be appropriate.
- Avoid impacts on protected plants or their habitats by developing, modifying, redesigning, mitigating, or abandoning projects.

Southwestern Willow Flycatcher and Yellow Billed Cuckoo:

- Conduct surveys prior to vegetation treatments within potential or suitable habitat.
- Where surveys detect birds, do not broadcast spray herbicides.
- Do not conduct vegetation treatments within ½ mile of known nest sites or unsurveyed suitable habitat during the breeding season (as determined by a qualified wildlife biologist).
- Adjust spatial and temporal scales of treatments so that not all suitable habitat is affected in any given year.
- Following treatments, replant or reseed treated areas with native species, if needed.
- Closely follow all application instructions and use restrictions on herbicide labels (including aquatic and wetland habitat use restrictions).

Lesser and Mexican Long-nosed Bat:

- Prior to treatments, survey all potentially suitable habitat for the presence of bats or their nectar plants.
- At the local level, incorporate protection of lesser and Mexican long-nosed bats into management plans developed for proposed treatment programs.

- Instruct all field personnel on the identification of bat nectar plants and the importance of their protection.
- Protect nectar plants from modification by treatment activities to the greatest extent possible. Do not remove nectar plants during treatments. Avoid driving over plants
- To protect nectar plants and roost trees from herbicide treatments, follow recommended buffer zones for the herbicides, and other conservation measures for TEP plant species in areas where populations of nectar plants and roost trees occur.
- If conducting spot treatments of herbicides in lesser or Mexican long-nosed bat habitats, avoid potential roost sites.

H.2.4 Fire Management

Standard Operating Procedures

- Carry out fire suppression in a manner consistent with Interagency Standards for Fire and Aviation Operations (BLM 2018b), which is updated on an annual basis by the National Interagency Fire Center. Logistical support, operation and coordination, and policies and procedures for mobilization of firefighting resources are outlined in the Southwest Area Mobilization Guide (BLM 2018a).
- Fire management activities will continue to avoid disturbing known archaeological sites or sites found during such activities. Fires will not be intentionally started at known sites. Archaeologists will serve as resource advisors for fire management and help develop and implement fire and fuels management tactics and treatments to minimize or avoid effects on cultural resources. Fire crews will be briefed about the need to protect cultural resources.
- In areas suitable for fire, the BLM will monitor existing air quality levels and weather conditions to determine which prescribed fires can be ignited and which, if any, must be delayed to ensure that air quality meets federal and state standards. If air quality approaches unhealthy levels, the BLM will delay igniting prescribed fires.
- Use suppression tactics that limit damage or disturbance to the habitat and landscape. Heavy equipment (such as dozers) must be approved.
- Use fire retardants or chemicals next to waterways in accordance with the Interagency Policy for Aerial and Ground Delivery of Wildland Fire Chemicals Near Waterways and Other Avoidance Areas (2017 Interagency Standards for Fire and Aviation Operations).

Best Management Practices

- Use Minimum Impact Suppression Tactics to the extent possible (see Minimum Impact Suppression Tactics, below).
- Follow existing conservation measures to the extent possible to minimize harm to federally listed, proposed, or candidate species within the action area.

Minimum Impact Suppression Tactics

Safety

- Safety is of utmost importance.
- Constantly review and apply the “Watch Out Situation” and “Fire Orders.”
- Be particularly cautious with:

- Unburned fuel between you and the fire.
- Burning snags allowed to burn.
- Burning or partially burned live and dead trees.
- Be constantly aware of surroundings; expect fire behavior, and possible fire perimeter 1 or 2 days hence.

Fire Line Phase

- Select procedures, tools, equipment that least impact the environment.
- Seriously consider using water as a fireline tactic. Fireline constructed with nozzle pressure, wetlining.
- In light fuels, consider:
 - Cold trail line.
 - Allowing fire to burn to natural barrier.
 - Burning out and use of “gunny” sack or swatter.
 - Constantly rechecking cold trailed fireline.
 - If constructed fireline is necessary, using minimum width and depth to check fire spread.
- In medium/heavy fuels, consider:
 - Using natural barriers and cold trailing.
 - Cooling with dirt and water, and cold trailing.
 - If constructed fireline is necessary, using minimum width and depth to check fire spread.
- Minimizing bucking to establish fireline. Preferably move or roll downed material out of the intended constructed fireline area. If moving or rolling out is not possible, or the downed bole is already on fire, build line around and let material be consumed.
- Aerial fuels—brush, trees, snags:
 - Adjacent to fireline: Limb only enough to prevent additional fire spread.
 - Inside fireline: Remove or limb only those that if ignited would have potential to spread fire outside the fireline.
 - Brush or small trees that are necessary to cut during fireline construction will be cut flush with the ground.
- Trees, burned trees, and snags:
 - Minimize cutting of trees, burned trees and snags.
 - Live trees will not be cut, unless determined they will cause fire spread across the fireline or endanger workers. If tree cutting occurs, cut the stumps flush with the ground.
 - Scrape around tree bases near fireline if hot and likely to cause fire spread.
 - Identify hazardous trees with either an observer, flagging, and/or glow sticks.
- When using indirect attack:
 - Do not fall snags on the intended unburned side of the constructed fireline, unless they are safety hazard to crews.

- On the unintended burn-out side of the line, fall only those snags that would reach the fireline should they burn and fall over.
- Consider alternative means to falling, i.e., fireline explosives, bucket drops.
- Review items listed above (aerial fuels, brush, trees, and snags).

Mop-up Phase

- Consider using “hot-spot” detection devices along perimeter (aerial or handheld).
- Light fuels:
 - Cold trail areas adjacent to unburned fuels.
 - Do minimal spading; restrict spading to hot areas near fireline.
 - Use extensive cold trailing to detect hot areas.
- Medium and heavy fuels:
 - Cold trail charred logs near fireline; do minimal scraping or tool scarring.
 - Minimize bucking of logs to check for hot spots or extinguish the fire.
 - Return logs to original position after checking or ground is cool.
 - Refrain from making boneyards; burned/partially burned fuels that were moved should be arranged in natural position as much as possible.
 - Consider allowing larger logs near the fireline to burnout instead of bucking into manageable lengths. Use lever, etc., to move large logs.
- Aerial fuels- brush, small trees, and limbs:
 - Remove or limb only those fuels that if ignited, have potential to spread outside the fireline.

H.2.5 Fish and Wildlife Management

Standard Operating Procedures

- The BLM will comply with the BLM Migratory Bird Treaty Act- Interim Management Guidance (BLM IM 2008-050).

Best Management Practices

- Emphasize use of new technologies, products, and construction designs that provide for the lowest degree of maintenance and a visually obscure wildlife water development that is compatible with the surrounding terrain.
- Fences constructed will comply with applicable wildlife fence standards (BLM Handbook H-1741-1). Existing fences that impede big game movement or that otherwise conflict with wildlife may be modified to comply with applicable wildlife fence standards on a case-by-case basis.
- The BLM will consult agency species management plans and other conservation plans as appropriate to guide management and devise mitigation measures when needed. Examples of these plans include, but are not limited to, the North American Landbird Conservation Plan (Rich et al. 2004), National and Arizona Partners in Flight Bird Conservation Plans (Rosenberg et al. 2016, Latta et al. 1999), the Arizona Bat Conservation Plan (Hinman and Snow 2003), and the Arizona State Wildlife Action Plan (AZGFD 2012).

- Work with other agencies to control nonnative, invasive species in the San Pedro River as new methods of eradication are developed.
- Encourage adjacent landowners to control nonnative, invasive species to reduce the threat in the basin.

H.2.6 Cultural Resources

Standard Operating Procedures

- The BLM applies the following standard discovery stipulations to all permits, grants, and work authorizations; project-specific cultural resources stipulations also may be applied as necessary:
 - The operator is responsible for informing all persons who are associated with the authorized operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. Any cultural (historic/prehistoric site or object) or paleontological (fossil remains of plants or animals) resource discovered during operations shall be immediately reported to the AO or his/her designee. All operations in the immediate area of the discovery shall be suspended until written authorization to proceed is issued. A qualified archaeologist or paleontologist shall make an evaluation of the discovery to determine appropriate actions to prevent the loss of significant cultural or scientifically important values.
 - If in connection with this work any human remains, funerary objects, sacred objects, or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (Public Law [PL] 101-601; 104 Stat. 3048; 25 United States Code [USC] 3001) are discovered, operations in the immediate area of the discovery shall cease, the remains and objects shall be protected, and the operator shall immediately notify the AO. The immediate area of the discovery shall be protected until notified by the AO that operations may resume.
- BLM authorizations are considered undertakings subject to compliance with Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108 et seq.) and its implementing regulations found at 36 CFR 800, wherein the BLM has the legal responsibility to consider the effects of its actions on *historic properties*. The BLM Manual 8100 Series and the BLM Arizona State Protocol provide applicable Section 106 compliance procedures to meet appropriate cultural resources management standards. Section 106 of the NHPA requires federal agencies to 1) identify historic properties within areas of potential effects (APEs) for a federal undertaking; 2) evaluate the significance of cultural resources by determining National Register of Historic Places (NRHP) eligibility; and 3) consult with applicable federal, state, and tribal entities regarding assessment results, NRHP eligibility determinations, and proposed methods to avoid or mitigate potential impacts on historic properties.
- In Arizona, the BLM's routine NHPA responsibilities are carried out in accordance with the BLM Arizona State Protocol—a Programmatic Agreement among the BLM and the Arizona State Historic Preservation Officer (SHPO; agreement executed December 14, 2014). Should the BLM determine that an undertaking would result in no historic properties affected or no adverse effect, as advised by a qualified cultural resources specialist, the undertaking may proceed under the terms and conditions of the BLM Arizona State Protocol. If the undertaking is determined to have an adverse effect, or otherwise meets stipulated consultation thresholds, project-specific consultation is then initiated with the SHPO.

- Native American traditional and religious concerns are legislatively considered under several acts and executive orders, including the American Indian Religious Freedom Act (AIRFA; 42 USC 1996), the Native American Graves Protection and Repatriation Act (NAGPRA; 25 USC 3001), and Executive Order 13007 (Indian Sacred Sites). In sum and in concert with other provisions such as those found in the NHPA and Archaeological Resources Protection Act (ARPA; 16 USC 470aa-470mm), these acts and orders require the federal government to carefully and proactively consider the traditional and religious values of Native American culture and lifeways to ensure, to the greatest degree possible, that access to sacred sites, treatment of human remains, the possession of sacred items, conduct of traditional religious practices, and the preservation of important cultural properties are not unduly infringed upon. In some cases, these concerns are directly related to historic properties and/or archaeological resources, such as those considered under Section 106 of the NHPA. Likewise, elements of the landscape without archaeological or human material remains also may be involved.
- Project-specific assessments and consultations will occur during the BLM's review of any future proposed action on BLM-administered lands. Should the BLM identify adverse impacts, additional consideration for potentially significant sites and possible protection or mitigation strategies would be warranted.
- The BLM's primary and preferred measure used to protect cultural resources is avoidance of impacts through appropriate design and/or relocation of activities and facilities. Avoidance measures are best accomplished through early planning and consultation, and use of adequate identification and assessment strategies. For undertakings where avoidance is not practicable, the BLM may apply measures to minimize potential impacts (e.g., through project redesign or construction and archaeological monitoring) or develop plans to mitigate potential adverse effects on specific sites through consultation with interested and affected parties.
- Mitigation strategies depend on the nature of an undertaking and, where present, the nature and NRHP eligibility criteria of any historic property. For example, sites eligible under Criterion D (i.e., having the potential to provide significant information about the past) are often mitigated through data recovery. Data recovery procedures could include archaeological excavation, mapping, collection of artifacts and other archaeological materials, archival research, or ethnographic research and collection of oral histories. Final reports will be required to document the results of analysis, with collections and data preserved for long-term research in a museum or other federally approved repository.
- Potential visual impacts on a historic property (or its associated setting) may be mitigated by reducing the contrast of developed facilities within the surrounding terrain and viewshed. Auditory intrusions could be mitigated by scheduling activities to avoid sensitive times of the year. Reclamation can restore aspects of a historic property's setting after the conclusion of construction activities and/or use. However, it may not be possible to reduce or fully mitigate all potential adverse effects in the long term and, in such cases, compensatory mitigation strategies could be developed.

Best Management Practices

- As with the application of cultural resources mitigation strategies, application of BMPs depends on the nature of an undertaking and any potentially affected historic property. In situations where a proposed undertaking—or a series of undertakings—poses potential direct (alteration

of the physical integrity) or indirect (visual, auditory, or atmospheric) impacts on a historic property, the following BMPs shall be considered through analysis and consultation:

- Avoidance by design or relocation
 - Consolidating project facilities and the construction footprint
 - Using low-profile facilities
 - Using sighting and location to maximize the use of topography and vegetation to screen development and potential visual and/or auditory intrusions
 - Using environmental coloration or advance camouflage techniques to minimize visual intrusions
 - Using fencing with low-visibility fiberglass posts, environmentally coordinated colors, or other setting-appropriate designs
 - Designing linear facilities to run parallel to key observation points rather than perpendicular
 - Modifying the orientation of facilities to present less of a direct, visual, and/or auditory impact
- Where the BLM identifies existing or actively occurring impacts on historic properties, protective and restorative measures may be used to protect the remaining integrity of at-risk sites. As provided in BLM Manual 8140, these measures may include installation of signs, fencing, or other barriers; administratively closing the area to public access and use; installation of erosion control features; and site or structural stabilization using backfilling and structural repair or shoring. Although this list is not exhaustive, the BLM is committed to considering avoidance and protective measures as cultural resources BMPs prior to pursuing mitigation or demolition of any historic property.

H.2.7 Visual Resources

Standard Operating Procedures

- Complete visual contrast ratings on proposed projects to assess potential visual impacts and to identify visual design guidelines to ensure visual resource management (VRM) objectives are achieved. Mitigation measures to reduce potential visual impacts will include, but not be limited to, site selection, material selection, screening, rehabilitation, and color treatment of structures.
- Identify design features and/or mitigation measures for proposed projects with a potential for visual impacts on the SPRNCA to ensure VRM class objectives can be met, and to “take any action necessary to prevent unnecessary or undue degradation” to public lands (FLPMA Sec 302 F). Analyze design features and mitigation measures through the National Environmental Policy Act of 1969 (NEPA) process and required as part of the decision.
- Conduct field analysis to ensure that project elements are designed appropriately to sufficiently fit the existing natural landscape.
- Produce visual simulations as determined by the BLM to assist in developing project design features and mitigation measures to reduce impacts on visual resources. These simulations will also be used to complete contrast ratings.
- Monitor visual resource conditions for impacts from land use activities, and effectiveness of design requirements.
- Night lighting required for any purpose will incorporate measures to protect night skies.

Best Management Practices

- Screen project elements through proper siting and location.
 - Site and locate project elements to reduce visual impacts, especially where viewsheds are highly sensitive to the public. This includes siting projects in a way that allows the natural topography and vegetation to obstruct the view of project elements as much as possible while allowing the function of the project to be maintained. If the natural topography and vegetation are not sufficient to screen a project, analyze relocating or redesigning the project. If natural topography and vegetation does not sufficiently reduce impacts to meet VRM objectives, properly designing and constructing an artificial landscape visual screen will be used. Avoid skylining project elements (structure elements being visible above the landscape in sky view) where practicable to reduce visibility of project elements.
- Minimize the disturbance footprint of land-disturbing activities.
 - Design land-disturbing activities to reduce the overall footprint on the landscape. Where possible, use avoidance or drive and crush method for site clearing and access to promote vegetation preservation and regrowth. Use blading or clearing and grubbing activities only when there is no other option to achieve the result.
- Color treat project elements to reduce visual contrast.
 - Complete color treating project structures to reduce visual contrast. Conduct color analysis to determine the most appropriate color for the specific landscape condition. The BLM Standard Color Chart will be the basis of the color analysis and selection, but other colors could be used if the resulting condition would be a reduction of visual contrast. Color treatment techniques, such as liquid paint application and powder coating, will be considered on a case-by-case basis and will be selected to ensure the most durable and best performing surface possible.
- Use natural materials to allow project elements to blend with the natural surroundings.
 - Design elements of a project will incorporate natural materials where practicable. Natural materials have an innate quality that help to reduce contrast, creating structures that mimic the natural character of the landscape. These materials will be used at the discretion of the BLM to ensure natural resources are not collected to the detriment of the natural landscape.
- Utilize reclamation and revegetation.
 - Reclaim land-disturbing activities to return the landscape to a natural condition. This includes activities such as recontouring, soil preparation through tilling and adding soil amendments such as compost and fertilizer, revegetation through nursery stock planting and reseeding, and an overall returning of disturbed land to a natural condition. Vegetation and seeding species would be native and site specific and would be appropriate species for the ecoregion and local habitat.

H.2.8 Lands with Wilderness Characteristics

Standard Operating Procedures

- Patrol by law enforcement and resource specialists will be completed to monitor public use and to ensure compliance with use restrictions.

- Supplementary rules would be amended to provide for enforcement of use restrictions.

Best Management Practices

- Post visitor information and regulatory signs at access points.
- Install physical barriers at ingress/egress points to prevent vehicle access.

H.2.9 Lands and Realty

Standard Operating Procedures

- Obtain reasonable public and administrative access to BLM-administered land in the following ways:
 1. Require reciprocal access easements to meet specific program needs.
 2. Consider and manage the use of BLM-administered land for rights-of-way (ROW), ROW reservations, easements, permits, leases, licenses, and agreements, except for those areas identified as exclusion areas.
 3. Secure access easements as needed to prevent closing of access to BLM-administered land.
- The BLM will strive to coordinate applicable transportation-related planning efforts for the SPRNCA with the Arizona Department of Transportation (AZDOT) and Cochise County.
- In February 2003, the Department of Homeland Security (DHS) issued the National Strategy for the Physical Protection of Critical Infrastructures and Key Assets (DHS 2003), which summarized the initial assessment of and planning to protect against vulnerabilities to the terrorist threat. The designation of utility and transportation corridor locations and the planning and maintenance of utilities; railroads; and federal, state, and interstate highways that cross BLM-administered lands will be consistent with all directives, policies, and procedures that DHS may institute to minimize vulnerabilities to the energy grid.
- Whenever possible, design or route utility transmission lines to minimize adverse visual impacts on the surrounding land and vistas.
- New ROWs will make maximum use of existing routes and will share facilities whenever possible, including joint use by different types of utilities, such as transmission line towers and communication sites.
- Coordinate communications-related planning efforts with the Federal Communications Commission, as needed.
- The BLM may require that a licensed surveyor provide a cadastral survey (to be reviewed by a BLM cadastral surveyor) of a ROW route prior to issuance of the authorization to an outside entity.

Best Management Practices

- In designated corridors (e.g., utility, roads, trails, and bridges) through riparian areas, perform needed maintenance with the least possible habitat disturbance.
- Provide interpretive signs at sites with visible features to promote appreciation of the site features and promote protection of the sites.

H.2.10 Livestock Grazing

Standard Operating Procedures

- Make any compensation for a loss of range improvements in accordance with 43 CFR 4120.3-6.
- Livestock management changes may be made when sufficient assessment, inventory, or monitoring data are available.
- Fence construction and maintenance will follow guidance provided in BLM Handbook H-1741-1.
- Authorized pasture use of livestock is temporary and limited to transportation purposes, and will not establish a priority for future use of the range. Rangeland grazing may be restricted and feed may be required to be packed in. The permittee shall prevent localized over grazing and damage to vegetation by permitted transportation livestock.
- Construction of permanent fences or corrals is not permitted. Temporary livestock control structures may be erected, including corrals and hitching racks, provided they are dismantled after the use season.
- The permittee may be required to pay additional fees for rangeland forage consumed by livestock during the permitted operations.
- Livestock shall not be tied to trees for other than short term, temporary stops. Hobbles, pickets, high-lines or corrals shall be used to control livestock.
- E. Livestock control structures (corrals, hitching racks, pickets, high-lines) must be at least 200 ft from springs, streams, lakes, reservoirs or other water sources.

Best Management Practices

- Consider deferment of livestock, where possible in cooperation with leaseholders, to allow for the use of prescribed fire or other vegetation treatments, or to allow for rest in other grazing allotments.
- Intensity, season and frequency, and distribution of grazing use shall provide for growth and reproduction of the plant species needed to reach desired plant community objectives.
- Rest rotation, deferred rotation, seasonal or short-duration use, or other grazing management systems may be implemented where the need has been identified through monitoring. Use monitoring to assess the effectiveness of changes brought about by new management practices.
- Only allow salt/nutrient blocks in upland areas.

H.2.11 Recreation Resources

Standard Operating Procedures

- Make information available on allowable uses and use restrictions/regulations.
- Establish supplementary regulations to implement RMP decisions on allowable uses and restrictions in accordance with 43 CFR 8365.1-6.
- Issue temporary orders of closure or restriction to protect public safety or resources in accordance with 43 CFR 8364.1.
- Provide enforcement of public land recreation program regulations and rules of conduct, and supplementary regulations.
- Encourage Leave No Trace travel and camping techniques.

- Promote use of designated campsites for backcountry camping. Educate visitors on campfire etiquette to reduce proliferation of campfire rings, and dead and down firewood gathering.
- Systematically monitor public use sites developed or designated. Take action to prevent safety problems and resource damage.
- Conduct comprehensive site assessments where existing physical and social impacts of recreational use and activities may be inconsistent with management objectives, and to define corrective actions.
- Develop and maintain partnerships with authorized users, local clubs, and organizations to provide visitor services and educational opportunities consistent with management objectives.
- Install cultural and natural resource interpretation signs at ingress/egress points to promote visitor awareness, enjoyment, and appreciation, and resource protection consistent with recreation, interpretation, and educational objectives for the area.
- Pursue interpretation and environmental educational opportunities, outreach development, and implementation of on-site and off-site programs for adults, children, and special populations.
- Work with partners to develop and distribute visitor information materials for websites, brochures, maps, access guides, and information sheets about the area, resource values, recreational opportunities, use restrictions, and visitor ethics.
- Design, construct, or alter public use facilities to comply with the Americans with Disabilities Act and the regulations in the Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas (36 CFR 1191). Implement project plans for accessibility guidelines consistent with the recreational setting of the facility. Give priority to the most heavily used sites at the San Pedro House and Fairbank Townsite.
- Enforce current state and BLM regulations that restrict use of firearms within ¼ mile of occupied structures, and within developed areas and sites.

Special Recreation Permits

- Make information available on activities that require a Special Recreation Permit (SRP) according to 43 CFR 2930.
- Special stipulations may be identified and added to the SRP to mitigate safety concerns, avoid use conflicts, or protect sensitive resources.
- Permits for specified uses and activities may be issued for a single event, a year, or multiple years in the identified use areas, for the specified term, and subject to the approved operating plan and permit stipulations.
- Compliance checks on permitted activities are completed as needed to ensure compliance with permit requirements.
- Permit audits may be conducted to ensure program and regulatory requirements are being implemented properly.
- Require accurate and up-to-date operating plans.
- Require liability insurance coverage with liability limits depending on the nature of the activity and associated risks.
- Require use reports at designated intervals or after the permitted use.
- Collect permit fees in advance, and after the permitted activity based on actual use.

Best Management Practices

- Post signs, provide information kiosks, and make area guides available through a variety of media to ensure public awareness of allowable uses and restrictions and to promote compliance.
- Employ staff and volunteers to provide visitor services and information on allowable uses and restrictions.
- Schedule law enforcement patrols to provide a visible presence when and where public visitation is heaviest, and in response to incidents and reports of violations.
- Post signs to make users aware of camping restrictions within 1/4 mile of a natural water hole containing water or a man-made watering facility containing water in such a place that wildlife or domestic stock will be denied access to the only reasonably available water (Arizona Revised Statutes [ARS] 17-308, unlawful camping).

H.2.12 Education and Interpretation

Best Management Practices

- Involve non-BLM partners in developing and delivering educational and interpretive programs and services.

H.2.13 Travel Management

Standard Operating Procedures

- Consider new routes, including additions to the designated route system, to ensure connectivity, accommodate emerging access needs, resolve conflicts, protect resources, protect public safety, mitigate impacts of existing routes, or in response to internal or external proposals.
- Complete a comprehensive review of the designated route system every 5 years as provided in the BLM Land Use Planning Handbook, H-1601-1, section V.B, on pages 33-36. The review will analyze the system's implementation status and its effectiveness, and identify any needed adjustments or changes.
- Proposed route additions (roads or trails) will require:
 1. Accurate route location information using global positioning system devices.
 2. Route description (access purpose and need, type of use to be accommodated, and design criteria including design vehicle, width, vegetation clearance, traffic volume, and grades).
 3. Centerline staking or flagging on the ground for review and analysis.
 4. Route analysis that will address conformance with the land use plan and resource management objectives, alternatives, safety, potential conflicts with other uses, and mitigation.
 5. Compliance with NEPA documented according to established procedures, including compliance with a cultural resources and biological resources survey, and clearance and consultation requirements.
 6. Route additions as a basis for updating the comprehensive route inventory and Transportation Plan, and the BLM Facility Asset Management System, as appropriate.

Best Management Practices

- Identify access needs for administrative purposes for the various resource management programs and activities, including emergency and fire suppression. Designate administrative vehicle access routes and allowable uses.
- Identify access needs for achieving recreation and visitor management objectives. Designate public use routes and allowable uses. Limit use of routes to avoid or prevent user conflicts.
- Designate the transportation system (motorized and nonmotorized) to accommodate administrative and public access needs. Identify the type of access a route is intended to provide or accommodate in route management objectives.
- Identify route maintenance intensities, and establish guidelines for maintenance and improvement of the route system to facilitate analysis and maintenance activities, including travel way width, grade, vegetation clearance, surface, drainage, and other maintenance items.
- Provide maintenance for roads and trails as needed based on condition assessments of the road and trail conditions and intended use(s).
- Designate or identify reclamation or restoration objectives for existing routes that do not have identified access purposes.
- Work with the Arizona Department of Transportation and Cochise County to address safety issues related to ingress/egress from state and county highways.

Road Construction/Maintenance

- Manage administrative roads to accommodate the intended access purposes and vehicle type.
- Allow nonmotorized public use on administrative roads (hiking, biking, and horseback riding).
- Provide road maintenance at a level of intensity and frequency based on the functional characteristics of the route, type of use, level of use, and the condition of the route.
- Construct new roads or trails only if existing routes do not provide adequate access to meet management objectives.
- Use or reconstruct existing routes to provide for emerging access needs whenever possible instead of constructing new routes.
- Comply with BLM 9113 Roads Manual, the BLM 9115 Primitive Roads Manual in the design, construction, and maintenance of roads and primitive roads.

Trail Construction and Maintenance

- Design the trail system to provide connectivity between access points and sites or areas of interest throughout the SPRNCA.
- Maintain and improve multi-use trails to accommodate equestrian, hiking, and bicycle use.
- Maintain and improve interpretive paths for foot traffic only, with bicycle and equestrian use not allowed.
- Provide hitching rails for horses and/or bicycles at interpretive sites accessed by equestrian and bicycles.
- Modify vehicle gates to provide trail access without having to unlock a gate for foot, horse, and bike access.

- Ensure that trailhead facility design considers the various types of use (equestrian, hiking, and bicycling).
- Avoid using heavily traveled roads for trail connections and on-grade crossings (cross under highway bridges). Designate the highway crossings (under highway bridge, or on-grade). Work with AZDOT on permits for the highway crossings and safety signs ("horse/hiker crossing ahead").

Accessibility

- Identify recreation opportunities and facilities that will be improved to meet accessibility guidelines for outdoor developed areas in the Rural Recreation Management Zone.
- Distinguish accessibility levels provided using concrete and compacted aggregate surfacing, and backcountry trail accessibility barriers; ensure awareness through signs at access points and visitor information materials.

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Appendix I

Arizona Standards for Rangeland Health and
Guidelines for Grazing Administration

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Appendix I. Arizona Standards for Rangeland Health and Guidelines for Grazing Administration

I.1 INTRODUCTION

The Department of the Interior's final rule for Grazing Administration, issued on February 22, 1995, and effective August 21, 1995, requires that Bureau of Land Management (BLM) State Directors develop State or regional standards and guidelines for grazing administration in consultation with BLM Resource Advisory Councils (RAC), other agencies and the public. The final rule provides that fallback standards and guidelines be implemented, if State standards and guidelines are not developed by February 12, 1997. Arizona Standards and Guidelines (BLM 1997) and the final rule apply to grazing administration on public lands as indicated by the following quotation from the *Federal Register*, Volume 60, Number 35, page 9955.

"The fundamentals of rangeland health, guiding principles for standards and the fallback standards address ecological components that are affected by all uses of public rangelands, not just livestock grazing. However, the scope of this final rule, and therefore the fundamentals of rangeland health of §4180.1, and the standards and guidelines to be made effective under §4180.2, are limited to grazing administration."

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing by livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease.

With the commitment of BLM to ecosystem and interdisciplinary resource management, the standards for rangeland health as developed in this current process will be incorporated into management goals and objectives. The standards and guidelines for rangeland health for grazing administration, however, are not the only considerations in resolving resource issues.

The following quotations from the *Federal Register*, Vol. 60, No. 35, page 9956, February 22, 1995, describe the purpose of standards and guidelines and their implementation:

"The guiding principles for standards and guidelines require that State or regional standards and guidelines address the basic components of healthy rangelands. The Department believes that by implementing grazing-related actions that are consistent with the fundamentals of §4180.1 and the guiding principles of §4180.2, the long-term health of public rangelands can be ensured.

"Standards and guidelines will be implemented through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities.

"The Department anticipates that in most cases the standards and guidelines themselves will not be terms and conditions of various authorizations but that the terms and conditions will reflect the standards and guidelines.

"The Department intends that assessments and corrective actions will be undertaken in priority order as determined by BLM.

"The Department will use a variety of data including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination. It is anticipated that in many cases it will take numerous grazing seasons to determine direction and magnitude of trend. However, actions will be taken to establish significant progress toward conformance as soon as sufficient data are available to make informed changes in grazing practices."

I.2 FUNDAMENTALS AND DEFINITION OF RANGELAND HEALTH

The Grazing Administration Regulations, at §4180.1 (43 Code of Federal Regulation [CFR] 4180.1), *Federal Register* Vol. 60, No. 35, pg. 9970, direct that the authorized officer ensures that the following conditions of rangeland health exist:

(a) Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

(b) Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

(c) Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives such as meeting wildlife needs.

(d) Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

These fundamentals focus on sustaining productivity of a rangeland rather than its uses. Emphasizing the physical and biological functioning of ecosystems to determine rangeland health is consistent with the definition of rangeland health as proposed by the Committee on Rangeland Classification, Board of Agriculture, National Research Council (Rangeland Health, 1994, pg. 4 and 5). This Committee defined Rangeland Health ". . .as the degree to which the integrity of the soil and the ecological processes of rangeland ecosystems are sustained." This committee emphasized ". . .the degree of integrity of the soil and ecological processes that are most important in sustaining the capacity of rangelands to satisfy values and produce commodities." The Committee also recommended that "The determination of whether a rangeland is healthy, at risk, or unhealthy should be based on the evaluation of three criteria: degree of soil stability and watershed function, integrity of nutrient cycles and energy flow, and presence of functioning mechanisms" (Rangeland Health, 1994, pg. 97-98).

Standards describe conditions necessary to encourage proper functioning of ecological processes on specific ecological sites. An ecological site is the logical and practical ecosystem unit upon which to base an interpretation of rangeland health. Ecological site is defined as:

"... a kind of land with specific physical characteristics which differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its response to management" (Journal of Range Management, 48:279, 1995). Ecological sites result from the interaction of climate, soils, and landform (slope, topographic position). The importance of this concept is that the "health" of different kinds of rangeland must be judged by standards specific to the potential of the ecological site. Acceptable erosion rates, water quality, productivity of plants and animals, and other features are different on each ecological site.

Since there is wide variation of ecological sites in Arizona, standards and guidelines covering these sites must be general. To make standards and guidelines too specific would reduce the ability of BLM and interested publics to select specific objectives, monitoring strategies, and grazing permit terms and conditions appropriate to specific land forms.

Ecological sites have the potential to support several different plant communities. Existing communities are the result of the combination of historical and recent uses and natural events. Management actions may be used to modify plant communities on a site. The desired plant community for a site is defined as follows: "Of the several plant communities that may occupy a site, the one that has been identified through a management plan to best meet the plan's objectives for the site. It must protect the site as a minimum." (Journal of Range Management, 48:279, 1995.)

Fundamentals (a) and (b) define physical and biological components of rangeland health and are consistent with the definition of rangeland health as defined by the Committee on Rangeland Classification, Board on Agriculture, National Research Council, as discussed in the paragraph above. These fundamentals provide the basis for sustainable rangelands.

Fundamentals (c) and (d) emphasize compliance with existing laws and regulation and, therefore, define social and political components of rangeland health. Compliance with Fundamentals (c) and (d) is accomplished by managing to attain a specific plant community and associated wildlife species present on ecological sites. These desired plant communities are determined in the BLM planning process, or, where the desired plant community is not identified, a community may be selected that will meet the conditions of Fundamentals (a) and (b) and also adhere to laws and regulations. Arizona Standard 3 is written to comply with Fundamentals (c) and (d) and provide a logical combination of Standards and Guidelines for planning and management purposes.

I.3 STANDARD AND GUIDELINE DEFINITIONS

Standards are goals for the desired condition of the biological and physical components and characteristics of rangelands. Standards:

- (1) are measurable and attainable; and
- (2) comply with various Federal and State statutes, policies, and directives applicable to BLM Rangelands.

Guidelines are management approaches, methods, and practices that are intended to achieve a standard. Guidelines:

- (1) typically identify and prescribe methods of influencing or controlling specific public land uses;
- (2) are developed and applied consistent with the desired condition and within site capability; and
- (3) may be adjusted over time.

I.4 IMPLEMENTING STANDARDS AND GUIDELINES

The authorized officer will review existing permitted livestock use, allotment management plans, or other activity plans which identify terms and conditions for management on public land. Existing management practices, and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to determine if they meet, or are making significant progress toward meeting, the standards and are in conformance with the guidelines. The review will be interdisciplinary and conducted under existing rules which provide for cooperation, coordination, and consultation with affected individuals, federal, state, and local agencies, tribal governments, private landowners, and interested publics.

This review will use a variety of data, including monitoring records, assessments, and knowledge of the locale to assist in making the significant progress determination. Significance will be determined on a case by case basis, considering site potential, site condition, weather and financial commitment. It is anticipated there will be cases where numerous years will be needed to determine direction and magnitude of trend.

Upon completion of review, the authorized officer shall take appropriate action as soon as practicable but no later than the start of the next grazing year upon determining that the existing grazing management practices or level of use on public land are significant factors contributing to failure to achieve the standards and conform with the guidelines that are made effective under 43 CFR 4180.2. Appropriate action means implementing actions that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with guidelines.

Livestock grazing will continue where significant progress toward meeting standards is being made. Additional activities and practices would not be needed on such allotments. Where new activities or practices are required to assure significant progress toward meeting standards, livestock grazing use can continue contingent upon determinations from monitoring data that the implemented actions are effective in making significant progress toward meeting the standards. In some cases, additional action may be needed as determined by monitoring data over time.

New plans will incorporate an interdisciplinary team approach (BLM1995). The terms and conditions for permitted grazing in these areas will be developed to comply with the goals and objectives of these plans which will be consistent with the standards and guidelines.

I.5 ARIZONA STANDARDS AND GUIDELINES

Arizona Standards and Guidelines (BLM 1997) for grazing administration have been developed through a collaborative process involving the BLM State Standards and Guidelines Team and the Arizona Resource Advisory Council. Together, through meetings, conference calls, correspondence, and Open Houses with the public, the BLM State Team and RAC prepared Standards and Guidelines to address the

minimum requirements outlined in the grazing regulations. The Standards and Guidelines, criteria for meeting Standards, and indicators are an integrated document that conforms to the fundamentals of rangeland health and the requirements of the regulations when taken as a whole.

Upland sites, riparian-wetland areas, and desired resource conditions are each addressed by a standard and associated guidelines.

I.5.1 Standard I: Upland Sites

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

Criteria for meeting Standard I

Soil conditions support proper functioning of hydrologic, energy, and nutrient cycles. Many factors interact to maintain stable soils and healthy soil conditions, including appropriate amounts of vegetative cover, litter, and soil porosity and organic matter. Under proper functioning conditions, rates of soil loss and infiltration are consistent with the potential of the site.

Ground cover in the form of plants, litter or rock is present in pattern, kind, and amount sufficient to prevent accelerated erosion for the ecological site; or ground cover is increasing as determined by monitoring over an established period of time.

Signs of accelerated erosion are minimal or diminishing for the ecological site as determined by monitoring over an established period of time.

As indicated by such factors as

- Ground Cover
 - litter
 - live vegetation, amount and type (e.g., grass, shrubs, trees, etc.)
 - rock
- Signs of erosion
 - flow pattern
 - gullies
 - rills
 - plant pedestaling

Exceptions and exemptions (where applicable)

- none

Guidelines

I-1. Management activities will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites within management units. The ground cover should maintain soil organisms and plants and animals to support the hydrologic and nutrient cycles, and energy flow. Ground cover and signs of erosion are surrogate measures for hydrologic and nutrient cycles and energy flow.

I-2. When grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

I.5.2 Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in properly functioning condition.

Criteria for meeting Standard 2

Stream channel morphology and functions are appropriate for proper functioning condition for existing climate, landform, and channel reach characteristics. Riparian-wetland areas are functioning properly when adequate vegetation, land form, or large woody debris is present to dissipate stream energy associated with high water flows.

Riparian-wetland functioning condition assessments are based on examination of hydrologic, vegetative, soil and erosion-deposition factors. BLM has developed a standard checklist to address these factors and make functional assessments. Riparian-wetland areas are functioning properly as indicated by the results of the application of the appropriate checklist.

The checklist for riparian areas is in Technical Reference 1737-15 "Riparian Area Management: Proper Functioning Condition Assessment for Lotic Areas" (BLM technical reference [TR] 1737-15). The checklist for wetlands is in Technical Reference 1737-16 "Riparian Area Management: A User's Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas" (BLM TR 1737-16). These checklists are reprinted on the pages following the Guidelines for Standard 3.

As indicated by such factors as

- Gradient
- Width/depth ratio
- Channel roughness and sinuosity of stream channel
- Bank stabilization
- Reduced erosion
- Captured sediment
- Ground-water recharge
- Dissipation of energy by vegetation

Exceptions and exemptions (unnatural or altered water sources, where applicable)

- Dirt tanks, wells, and other water facilities constructed or placed at a location for the purpose of providing water for livestock and/or wildlife and which have not been determined through local planning efforts to provide for riparian or wetland habitat are exempt.
- Water impoundments permitted for construction, mining, or other similar activities are exempt.
- Ephemeral washes (drainages that don't have flow for more than 30 continuous days) unless there is a resource concern or lentic sources that have improvements causing altered potential and artificial conditions.

Guidelines

2-1. Management practices maintain or promote sufficient vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability, thus promoting stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform.

2-2. New facilities are located away from riparian-wetland areas if they conflict with achieving or maintaining riparian-wetland function. Existing facilities are used in a way that does not conflict with riparian-wetland functions or are relocated or modified when incompatible with riparian-wetland functions.

2-3. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect ecological functions and processes.

I.5.3 Standard 3: Desired Resource Conditions

Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

Criteria for meeting Standard 3

Upland and riparian-wetland plant communities meet desired plant community objectives. Plant community objectives are determined with consideration for all multiple uses. Objectives also address native species, and the requirements of the Taylor Grazing Act, Federal Land Policy and Management Act, Endangered Species Act, Clean Water Act, and appropriate laws, regulations, and policies.

Desired plant community objectives will be developed to assure that soil conditions and ecosystem function described in Standards 1 and 2 are met. They detail a site-specific plant community, which when obtained, will assure rangeland health, State water quality standards, and habitat for endangered, threatened, and sensitive species. Thus, desired plant community objectives will be used as an indicator of ecosystem function and rangeland health.

As indicated by such factors as

- Composition
- Structure
- Distribution

Exceptions and exemptions (where applicable)

- Ecological sites or stream reaches on which a change in existing vegetation is physically, biologically, or economically impractical.

Guidelines

3-1. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, non-native plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as non-native species, and/or (d) cannot compete with already established non-native species.

3-2. Conservation of Federal threatened or endangered, proposed, candidate, and other special status species is promoted by the maintenance or restoration of their habitats.

3-3. Management practices maintain, restore, or enhance water quality in conformance with State or Federal standards.

3-4. Intensity, season and frequency of use, and distribution of grazing use should provide for growth and reproduction of those plant species needed to reach desired plant community objectives.

3-5. Grazing on designated ephemeral (annual and perennial) rangeland may be authorized if the following conditions are met:

- ephemeral vegetation is present in draws, washes, and under shrubs and has grown to useable levels at the time grazing begins;
- sufficient surface and subsurface soil moisture exists for continued plant growth;
- serviceable waters are capable of providing for proper grazing distribution;
- sufficient annual vegetation will remain on site to satisfy other resource concerns, (i.e., watershed, wildlife, wild horses and burros); and
- monitoring is conducted during grazing to determine if objectives are being met.

3-6. Management practices will target those populations of noxious weeds which can be controlled or eliminated by approved methods.

3-7. Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples.

1.6 LOTIC AND LENTIC CHECKLISTS

1.6.1 General Instructions

1. The concept "Relative to Capability" applies wherever it may be inferred.
2. This checklist constitutes the Minimum National Standards required to determine Proper Functioning Condition of lotic or lentic riparian-wetland areas.
3. As a minimum, an ID Team will use this checklist to determine the degree of function of a lotic or lentic riparian-wetland area.
4. Mark one box for each element. Elements are numbered for the purpose of cataloging comments. The numbers do not declare importance.
5. For any item marked "No," the severity of the condition must be explained in the "Remarks" section and must be a subject for discussion with the ID Team in determining riparian-wetland functionality. Using the "Remarks" section to explain items marked "Yes" is encouraged but not required.
6. Based on the ID Team's discussion, "functional rating" will be resolved and the checklist's summary section will be completed.
7. Establish photo points where possible to document the site.

I.7 LOTIC STANDARD CHECKLIST

Name of Riparian-Wetland Area: _____

Date: _____ Area/Segment ID: _____ Miles: _____

ID Team Observers: _____

Yes	No	N/A	HYDROLOGIC
			1) Floodplain inundated in "relatively frequent" events (1-3 years)
			2) Active/stable beaver dams
			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
			4) Riparian zone is widening or has achieved potential extent
			5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
			6) Diverse age-class distribution (recruitment for maintenance/recovery)
			7) Diverse composition of vegetation (for maintenance/recovery)
			8) Species present indicate maintenance or riparian soil moisture characteristics
			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
			10) Riparian plants exhibit high vigor
			11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
			12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	EROSION DEPOSITION
			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
			14) Point bars are revegetating
			15) Lateral stream movement is associated with natural sinuosity
			16) System is vertically stable
			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

(Revised 1995)

REMARKS (Lotic Checklist)

SUMMARY DETERMINATION

Functional Rating:

Proper Functioning Condition _____
Functional--At Risk _____
Nonfunctional _____
Unknown _____

Trend for Functional--At Risk:

Upward _____
Downward _____
Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____
No _____

If yes, what are those factors?

_____ Flow regulations _____ Mining activities _____ Upstream channel conditions
_____ Channelization _____ Road encroachment _____ Oil field water discharge
_____ Augmented flows _____ Other (Specify) _____

I.8 LENTIC STANDARD CHECKLIST

Name of Riparian-Wetland Area: _____

Date: _____ Area/Segment ID: _____ Acres: _____

ID Team Observers: _____

Yes	No	N/A	HYDROLOGIC
			1) Riparian-wetland area is saturated at or near the surface or inundated in "relatively frequent" events (1-3 years)
			2) Fluctuation of water levels is not excessive
			3) Riparian-wetland zone is enlarging or has achieved potential extent
			4) Upland watershed not contributing to riparian-wetland degradation
			5) Water quality is sufficient to support riparian-wetland plants
			6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
			7) Structure accommodates safe passage of flows (e.g., no headcut effecting dam or spillway)

Yes	No	N/A	VEGETATION
			8) Diverse age-class distribution (recruitment for maintenance/recovery)
			9) Diverse composition of vegetation (for maintenance/recovery)
			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
			12) Riparian-wetland plants exhibit high vigor
			13) Adequate vegetative cover present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
			14) Frost or abnormal hydrologic heaving is not present
			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics

Yes	No	N/A	SOILS-EROSION DEPOSITION
			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
			19) Riparian wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
			20) Islands and shoreline characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate wind and wave event energies

(Revised 1995)

REMARKS (Lentic Checklist)

SUMMARY DETERMINATION

Functional Rating:

Proper Functioning Condition _____
Functional--At Risk _____
Nonfunctional _____
Unknown _____

Trend for Functional--At Risk:

Upward _____
Downward _____
Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____
No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership
____ Other (specify) _____

I.9 BIOLOGICAL VEGETATION TREATMENTS

Biological vegetation treatments could include insects (such as the tamarisk beetle) and/or livestock (such as goats, sheep, or cattle).

I.10 TARGETED GRAZING

Targeted grazing could occur using goats, sheep, or cattle and would primarily be used for fuels reduction and/or to control invasive vegetation species such as Johnson grass. The goal of targeted grazing would be to achieve a vegetation objective and not for forage production to meet animal nutritional requirements. In some cases supplemental feeding could be necessary to provide animal nutrition as the targeted vegetation may only provide roughage and have little to no nutritional value.

Targeted grazing is a non-renewable grazing authorization. Non-renewable grazing authorizations are issued annually on a case-by-case basis generally through a free use permit which is different from a Taylor Grazing Act permit. Targeted grazing may be authorized in consecutive years to meet vegetation objectives, but there is no priority for renewing a targeted grazing authorization. Forage would not be allocated for targeted grazing in the RMP.

Targeted grazing could occur throughout the SPRNCA and would not be limited to areas that are available to leased livestock grazing. Site-specific NEPA analysis and site-specific consultation would occur with the US Fish and Wildlife Service to address potential impacts to threatened and endangered species before any targeted grazing occurs.

Goats, sheep, or cattle would be controlled through use of temporary electric fences. The water source for the livestock would be determined on a case-by-case basis and through site-specific NEPA analysis. If there is no water available at an area, temporary water haul sites could be authorized.

I.11 GLOSSARY

ACCELERATED EROSION: Soil loss above natural levels resulting directly from human activities. Due to the slow rate of soil formation, accelerated erosion can lead to a permanent reduction in plant productivity.

ACTIVITY PLAN: A detailed and specific plan for managing a single resource program or plan element undertaken as needed to implement the more general resource management plan decisions. An activity plan is prepared for specific areas to reach specific resource management objectives within stated timeframes.

ALLOTMENT: An area of land where one or more individuals graze their livestock. An allotment generally consists of Federal rangelands, but may include intermingled parcels of private, State, or Federal lands. BLM and the Forest Service stipulate the number of livestock and season of use for each allotment.

ALLOTMENT MANAGEMENT PLAN (AMP): A livestock grazing management plan dealing with a specific unit of rangeland and based on multiple use resource management objectives. The AMP considers livestock grazing in relation to other uses of rangelands and in relation to renewable resources-watershed, vegetation, and wildlife. An AMP establishes the seasons of use, the number of livestock to be permitted on rangelands, and the rangeland improvements needed.

AQUATIC COMPONENTS (HABITATS): Habitats confined to streams, rivers, springs, lakes, ponds, reservoirs, and other water bodies.

AUTHORIZED OFFICER: Any person authorized by the Secretary of the Interior to administer BLM's rangeland management program.

CHANNEL MORPHOLOGY: Relating to the form and structure of channels.

COMPOSITION: The proportions of various plant species in relation to the total on a given area. It may be expressed in terms of cover, density, weight, etc.

DESIRED PLANT COMMUNITY (DPC): The plant community that has been determined through a land use or management plan to best meet the plan's objectives for a site. A real, documented plant community that embodies the resource attributes needed for the present or potential use of an area, the desired plant community is consistent with the site's capability to produce the required resource attributes through natural succession, management intervention, or a combination of both.

ECOLOGICAL SITE: A distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community.

EPHEMERAL: A rangeland that does not consistently produce enough forage to sustain a livestock operation but may briefly produce unusual volumes of forage that may be utilized by livestock.

GOAL: The desired state or condition that a resource management policy or program is designed to achieve. Broader and less specific than objectives, goals are usually not measurable and may not have specific dates by which they must be reached. Objectives are developed by first understanding one's goals.

GRADIENT: Rate of regular or graded ascent or descent.

GRAZING PERMIT/LEASE: Official written permission to graze a specific number, kind, and class of livestock for a specified time period on a defined rangeland.

GULLIES: A furrow, channel or miniature valley cut by concentrated runoff, usually with steep sides through which water commonly flows during and immediately after rains or snow melt.

HYDROLOGIC CYCLE: The circuit of water movement from the atmosphere to the earth and its return to the atmosphere through various stages or processes, such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation and transpiration.

INFILTRATION: The downward entry of water into the soil or other material.

INTERDISCIPLINARY TEAM: A team of varied land use and resource specialists formed to provide a coordinated, integrated information base for overall land use planning and management.

INTERESTED PUBLIC: An individual, group or organization that has submitted a written request to the authorized officer to be provided an opportunity to be involved in the decision-making process for

the management of livestock grazing on specific grazing allotments or has submitted written comments to the authorized officer regarding the management of livestock grazing on a specific allotment.

LANDFORM: A discernible natural landscape that exists as a result of geological activity such as a plateau, plain, basin, or mountain.

LENTIC: Standing water riparian-wetland areas such as lakes, ponds, seeps, bogs, and meadows.

LITTER: The uppermost layer of organic debris on the soil surface, essentially the freshly fallen or slightly decomposed vegetative material.

LOTIC: Running water riparian-wetland areas such as rivers, streams and springs.

MANAGEMENT ACTIONS/PRACTICES: Actions or practices that improve or maintain basic soil and vegetation resources. Rangeland practices typically consist of watershed treatments (planting, seeding, burning, rest, vegetation manipulation, grazing management) in an attempt to establish desired vegetation species or communities.

NONFUNCTIONAL: Riparian-wetland areas are considered to be in nonfunctioning condition when they don't provide adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, or other normal characteristics of riparian areas. The absence of certain physical attributes such as a flood plain where one should be are indicators of nonfunctioning conditions.

NOXIOUS WEED: A weed arbitrarily defined by law as being especially undesirable, troublesome, and difficult to control.

NUTRIENT CYCLE: The process of use, release and reuse of elements by plants and animals through uptake by incorporation into and decomposition of organisms. Elements involved in nutrient cycling remain in the vicinity of the earth's surface.

OBJECTIVES: The planned results to be achieved within a stated time period. Objectives are subordinate to goals, more narrow in scope, and shorter in range. Objectives must specify time periods for completion, and products or achievements that are measurable.

PERMEABILITY: The ease with which gases, liquids (water), or plant roots penetrate or pass through a bulk mass of soil or a layer of soil. Since different soil horizons vary in permeability, the particular horizon under question should be designated.

PERMITTED LIVESTOCK USE: The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and is expressed in animal unit months (AUMs).

PLANT PEDESTALING: A condition where the soil has eroded from around individual plants or other objects such as small rocks, leaving them on small pedestals of soil. Sometimes the result of frost heaving.

PROPERLY FUNCTIONING: Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation.

Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geographic features, soil, water, and vegetation.

RESOURCE ADVISORY COUNCIL (RAC): A citizen-based group of 10 to 15 members chartered under the Federal Advisory Committee Act and appointed by the Secretary of the Interior to forward advice on public land planning and management issues to the BLM. Council membership reflects a balance of various interests concerned with the management of the public lands and users of the public lands.

RILL EROSION: Removal of soil by running water forming shallow channels that can be smoothed out by normal cultivation.

RIPARIAN AREA: An area of land directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and streambanks are typical areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent on free water in the soil.

SEASON OF USE: The time during which livestock grazing is permitted on a given range area, as specified in the grazing permit.

SEEPS: Wet areas, normally not flowing, arising from an underground water source.

SINUOSITY: The ratio of stream length between two points divided by the valley length between the same two points.

SOIL MOISTURE STORAGE: The water content stored in a soil.

SPECIAL STATUS SPECIES: Plant or animal species listed as threatened, endangered, candidate, or sensitive by Federal or State governments.

STRUCTURAL DIVERSITY: The diversity of the composition, abundance, spacing, and other attributes of plants in a community.

TERMS AND CONDITIONS: Stipulations contained in livestock grazing permits and leases as determined by the authorized officer to be appropriate to achieve management and resource condition objectives for the public lands and other lands administered by BLM and to achieve standards for rangeland health and ensure conformance with guidelines for grazing administration.

TREND: The direction of change over time, either toward or away from desired management objectives.

WIDTH/DEPTH RATIO: Bankfull stream width divided by average depth.

UPLANDS: Land at a higher elevation than the alluvial plain or low stream terrace; all lands outside the riparian-wetland and aquatic zones.

WETLANDS: An area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support and which, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include marshes, shallows, swamps, lake shores, bogs, muskegs, wet meadows, estuaries and riparian areas.

I.12 REFERENCES

BLM (US Department of Interior, Bureau of Land Management). Interdisciplinary Resource Management Handbook. Arizona State Office. April 1995.

_____. 1997. Arizona Standards for Rangeland Health and Guidelines for Grazing Administration. BLM, Arizona State Office, Phoenix.

_____. TR (Technical Reference) 1737-15. "Riparian Area Management: Proper Functioning Condition Assessment for Lotic Areas." 1998.

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Appendix J

Watershed Improvement Techniques

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Appendix J. Watershed Improvement Techniques

This appendix was substantially revised from its draft version. Accordingly, there is not highlighting of changes in this appendix, because this revised appendix nearly replaces the earlier version in its entirety.

J.1 INTRODUCTION

This appendix describes the watershed improvement techniques that would be conducted under the range of alternatives. Watershed Improvement techniques is the broad category under which management actions to achieve the objectives in the Resource Management Plan (RMP) fall; these include vegetation treatments, erosion control, recharge enhancements, and riverine geomorphology enhancements. Some techniques fall under multiple categories and have several benefits, e.g. a rock structure that traps sediment and increase infiltration time. The purpose of this appendix is to provide the reader with a non-exhaustive list of likely methods that would be employed. It is not meant to suggest the exact methods and treatments types.

J.2 VEGETATION TREATMENTS

As described in the Reasonably Foreseeable Development (RFD) scenario (**page 3-3**), the overlying goal of vegetation treatments are to return a given vegetation community to the appropriate Historic Climax Plant Community (HCPC; see **Appendix H**), where reasonable. Treatments fall under the following general categories: prescribed fire, mechanical treatments, manual treatments, and herbicide.

J.2.1 Biological

Biological methods of vegetation treatment could employ grazing by cattle, sheep, or goats. Targeted livestock grazing would be used to help achieve vegetation management objectives such as creating fire breaks; improving habitat conditions through modifying, thinning, reducing or removing targeted vegetation through the application of grazing animals; or removing invasive plants. These treatments would be evaluated and conducted under a site-specific vegetation treatment or fuels treatment plan. The plan would specify objective and management actions, including any appropriate active management and monitoring to ensure the intent of the treatment is met.

J.2.2 Prescribed Fire

Implementation of prescribed fire treatments to modify, thin, reduce, or remove fuels within treatment units would fall under two treatment types: broadcast burns and pile burns.

Prescribed fire treatments would be conducted under a site-specific prescribed fire burn plan. The burn plan would specify the weather and fuel conditions, fire behavior modeling, holding resources, and preparation work (i.e. sites to be protected, line construction) needed to safely and efficiently meet the objectives for the treatment. The burn plan would identify any agencies, permittees, or other interested parties to be notified concerning the prescribed fire project. The burn plan would also identify any potential receptor sites and smoke management mitigation measures necessary to minimize impacts to the air shed and receptor sites.

Broadcast Burns

Prescribed fire treatments would be applied across the landscape to meet resource objectives via handheld or aerial ignition devices. Burn plan boundaries would be aligned with natural and built features (e.g. roads, washes, naturally sparse fuels, rocky areas, etc.) to the extent possible to minimize the need for hand line construction. Areas of ground disturbance (i.e. hand line construction, staging areas, etc.) would be culturally surveyed prior to implementation.

Since prescribed fire treatments are dependent on continuous fine fuels (grass) to carry fire, grazing deferment prior to implementation will be necessary. Deferment periods will be at a minimum of one growing season prior to treatment to allow for an adequate amount of fine fuels growth within the treatment unit. It is anticipated that a period of deferment of two growing seasons following the prescribed fire treatment will be necessary to allow for post burn vegetative recovery.

Pile Burns

Construction of piles (hand or machine assembled) would be in areas that limit or remove the potential for fire or heat to impact canopy, structures, or other surrounding vegetation. Pile burns are generally implemented during the fall and winter months when cooler temperatures and higher humidity reduce the potential of fire spreading outside of piles and into adjacent fuels.

J.2.3 Mechanical

Mechanical treatments would modify, thin, reduce, or remove vegetation with the aid of heavy equipment. Heavy equipment may include tracked and rubber-tired vehicles such as trackhoes, backhoes, front end loaders, skid steers, and trucks, all outfitted with special attachments suited for the specific treatment action.

Mechanical treatments would utilize one of the following methods:

- **Mastication:** Utilizing rubber-tired or tracked equipment with special attachments for mulching, chipping, mowing, grinding, or thinning.
- **Grubbing:** Utilizing rubber-tired or tracked equipment for removal of deep rooted vegetation.
- **Thinning:** Utilizing rubber-tired or tracked equipment to push trees, gather/move slash into piles/rows, and/or remove slash from the treatment site.

J.2.4 Manual

Manual vegetation treatments aim to modify, thin, reduce, or remove vegetation through the aid of hand tools. The tools that may be used include hand tools (Pulaski, McLeod, axe, shovel, hand saws, etc.) or powered (chainsaws, weed eaters, field and brush mowers, and other specialized equipment). Although the manual method of vegetation treatment is relatively labor intensive and costly, it can be extremely species selective, and well-suited to areas of sensitive habitat and/or areas that are inaccessible to ground vehicles.

J.2.5 Herbicide

Herbicide treatments would modify, thin, reduce, or remove targeted vegetation through application of chemical herbicides. Herbicides would be applied in either liquid or granular form within treatment units. All proposed herbicides have been approved for use on BLM-administered public lands as

documented in Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) and Record of Decision (BLM 2007) and Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS and Record of Decision (BLM 2016).

Herbicides may be applied in liquid or granular form via the following application methods:

Cut-Stump: Herbicide applied directly to cambium layer of the fresh, flush cut stump of various tree and shrub species. Spot application can be applied with backpack sprayer, hand held bottle sprayer, herbicide roller, or paintbrush.

Basal Bark: Herbicide applied directly to the basal area of small tree, shrub, and grass species, generally utilized on saplings, re-sprouts, or low growing species with thin bark. Spot application, can be applied by hand held bottle sprayer, backpack sprayer, UTV/ATV mounted sprayer, or vehicle mounted sprayer.

Foliar: Herbicide applied directly to target specific species, generally utilized on the canopy layer of small trees and shrubs (6 feet or less). Spot application, can be applied by hand held bottle sprayer, backpack sprayer, UTV/ATV mounted sprayer, or vehicle mounted sprayer.

Broadcast Aerial: Herbicide applied aerially to target specific species at a larger scale. Applications can be by fixed-wing or rotor-wing aircraft in liquid or granular form.

Broadcast Ground: Herbicide applied to target specific species at a larger scale. Applications can be by UTV/ATV mounted sprayer, vehicle mounted sprayer, or by foot using a backpack.

J.3 EROSION CONTROL TREATMENTS

Erosion control treatments would be applied in areas where accelerated erosion occurs, or may occur, from past land practices or disturbances, e.g. agriculture, roads, livestock grazing, fire, etc. Erosion control techniques would include measures described in Technical Supplement 14P of the National Engineering Handbook, the Burned Area Emergency Response Treatment Catalog (Napper 2006), and Zeedyk & Jansens 2009, and are briefly described below. Potential areas for erosion control treatments where delineated through interpretation of aerial imagery for use in the RFD scenarios for analysis in the EIS, erosion control projects would occur where appropriate in the planning area.

Locations of treatments are important for identifying the appropriate type of erosion control technique. Treatments of hillslope erosion on inter-drainage areas will include techniques as straw bales and wattles, silt fences, mulch (rock and vegetation), hydro-mulching, seeding, land reshaping, soil scarification, and contour ripping. In drainage areas, particularly smaller order tributary streams, where vertical and lateral erosion is increasing sediment loads, grade control structures would be implemented. These include loose rock dams, rock run-downs, wicker weirs, etc. and are more thoroughly described in the above references.

Erosion control treatments are described by type, either mechanical or manual, to help understand the potential differences that would be applicable to the alternatives in the RMP/EIS.

Mechanical

Mechanical treatment techniques involve the use of heavy equipment to reshape the land to reduce the grade or modify overland flow patterns. In many cases, the use of heavy equipment to reduce the grade of erosional features, such as large head cuts, would be used before the placement of protective layer. This protective layer would be either properly placed woody plant material from vegetation treatments, rocks, and/or mulch or soil tactifiers, whose placement may also require the use of machinery.

In areas where sheet erosion occurs and the placement of rocks or plant material is not a practicable approach, techniques such as counter ripping (key line plowing) and berming would be used.

Manual

The main focus on this type of treatment is the placement of rocks, or wood, by hand in erosional features or channels. This prescription involves minor earth works with hand tools to reduce the grade of features or to prepare sites for treatment. Rock/wood structures would be similar to those outlined in Zeedyk & Jansens (2009), but not limited to, which include one-rock dams, zuni bowls, rock run downs, media lunas, baffles, vanes, wicker weirs, and log mats.

J.4 RECHARGE ENHANCEMENTS

Watershed improvements would also include recharge enhancement projects (or managed aquifer recharge projects). In general, stormwater projects would be designed to capture increased runoff from development in the upland contributing areas, while to the extent possible still allowing for natural flow regimes. Potential projects include infiltration basins and ponds, infiltration trenches, and dry wells. Subsequent analysis and NEPA compliance will be required before implementation. The focus for recharge enhancement projects would be on the west side of the San Pedro Riparian National Conservation Area (SPRNCA), where recharge projects are planned for development by the Cochise Conservation and Recharge Network, and where urbanization has increased watershed run-off.

Watershed improvement techniques include natural recharge enhancements, which aim to increase the rate at which the natural system moves water into the aquifer. These can either be in-channel or off-channel projects designed to capture flood flows (Bower 2000). Although, there have been some indications of increased soil moisture and vegetation response (Silverman et al. 2017), the amount of additional recharge from implementation of these projects is site dependent.

Anthropogenic features that are still apparent on the landscape would be investigated for their hydrologic influence, for example, the retired gravel operation and pit at the confluence of Banning Creek and the San Pedro River. This area is an example of where investigation on potential benefits from modifying the berm to increase recharge could be conducted.

J.5 RIVERINE GEOMORPHOLOGY ENHANCEMENTS

An evaluation of river function and departure from its current potential needs to be conducted before specifics concerning the efficacy of river restoration can be described. This would be done during implementation level planning. Various treatments can be applied to reach these goals. Tributary upland watershed improvements would help enhance riverine geomorphology by providing naturally regulated rates of runoff and sediments to the main river's stem.

River and stream channels are created and maintained by processes inclusive of the entire basin in which they reside. In the simplest terms, their function is to convey floods, and transport sediment. Rivers live in a state of “dynamic equilibrium” (Rosgen 1996) that is dependent on an appropriate dimension pattern and profile of the channel and associated floodplain. By matching the river channel dimension, pattern and profile to the valley form that it passes through and watershed processes results in a river restoration design that works with the existing stream processes rather than against them.

Stream channel restoration begins with a combination of stream assessments and geomorphic evaluations supplemented by analytic assessments. Stream channel assessments are the first step in determining what to do where and most importantly what the ecological costs and benefits of restoration where the river has been greatly altered in the past. There are three steps: characterization of existing conditions, characterization of past conditions (pre-disturbance), and estimation of current ecological potential from an undamaged reference reach or theoretical reference condition for the river. This allows for comparison of existing conditions in each disturbed reach river against its current potential which leads to the identification of departure from potential for each reach, reach-specific objectives, and design criteria and options.

This assessment process would allow for the efficacy of using various restoration techniques to reach goals and objects at the project level. Once this has been done, and restoration determined to be appropriate, then an analytical assessment of channel hydraulics including critical velocities, shear stresses, and other physical attributes and processes are coupled with various restoration techniques are used to create a restoration design that meets project objectives for a particular reach. By implementing a restoration design gradually and monitoring changes in channel response following flood events, channel restoration can be implemented at low risk and adjusted in situ (on the spot before the next flood season).

J.6 REFERENCES

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Appendix K

Species Common and Scientific Names

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Appendix K. Species Common and Scientific Names

Species Common Name	Species Scientific Name
Amphibians	
Bullfrog	<i>Lithobates catesbeianus</i>
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>
Lowland leopard frog	<i>Lithobates yavaipaiensis</i>
Sonoran Desert toad	<i>Incilius alvarius</i>
Birds	
Aplomado falcon	<i>Falco femoralis</i>
Arizona Bell's vireo	<i>Vireo bellii arizonae</i>
Arizona Botteri's sparrow	<i>Peucaea botterii</i>
Bewick's wren	<i>Thryomanes bewickii</i>
Black hawk	<i>Buteogallus anthracinus</i>
Burrowing owl	<i>Athene cucularia</i>
Cactus ferruginous pygmy-owl	<i>Glaucidium brasilianum cactorum</i>
Canyon towhee	<i>Melospiza fusca</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Desert purple martin	<i>Progne subis hesperia</i>
Gambel's quail	<i>Callipepla gambelii</i>
Gilded flicker	<i>Colaptes chrysoides</i>
Golden eagle	<i>Aquila chrysaetos</i>
Gould's turkey	<i>Meleagris gallopavo mexicana</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Gray hawk	<i>Buteo plagiatus</i>
Least bittern	<i>Ixobrychus exilis</i>
Lucy's warbler	<i>Oreothlypis luciae</i>
Mississippi kite	<i>Ictinia mississippiensis</i>
Northern beardless-tyrannulet	<i>Camptostoma imberbe</i>
Rufous-winged sparrow	<i>Peucaea carpalis</i>
Scaled quail	<i>Callipepla squamata</i>
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>
Sprague's pipit	<i>Anthus spragueii</i>
Varied bunting	<i>Passerina versicolor</i>
Virginia rail	<i>Rallus limicola</i>
Western burrowing owl	<i>Athene cucularia hypugaea</i>
Yellow warbler	<i>Setophaga petechia</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>

Species Common Name	Species Scientific Name
Fish	
Colorado pike minnow	<i>Ptychocheilus Lucius</i>
Desert pupfish	<i>Cyprinodon macularis</i>
Desert sucker	<i>Catostomus clarki</i>
Flannel-mouth sucker	<i>Catostomus latipinnis</i>
Gila chub	<i>Gila intermedia</i>
Gila topminnow	<i>Poeciliopsis occidentalis</i>
Loach minnow	<i>Rhinichthys cobitis</i>
Longfin dace	<i>Agosia chrysogaster</i>
Razorback sucker	<i>Xyrauchen texanus</i>
Roundtail chub	<i>Gila robusta</i>
Sonora sucker	<i>Catostomus insingis</i>
Speckled dace	<i>Rhinichthys osculus</i>
Spikedace	<i>Meda fulgida</i>
Invertebrates	
Crayfish	<i>Orconectes virilis, Procambarus clarki, etc.</i>
Hyalella Azteca	<i>Hyalella Azteca</i>
Mammals	
Allen's big-eared bat	<i>Idionycteris phyllotis</i>
American beaver	<i>Castor canadensis</i>
Arizona myotis	<i>Myotis occultus</i>
Banner-tailed kangaroo rat	<i>Dipodomys spectabilis</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Cave myotis	<i>Myotis velifer</i>
Collared peccary	<i>Pecari tajacu</i>
Coues whitetail deer	<i>Odocoileus virginianus couesi</i>
Desert cottontail	<i>Sylvilagus audubonii</i>
Greater western mastiff bat	<i>Eumops perotis californicus</i>
Harris's antelope squirrel	<i>Ammospermophilus harrisi</i>
Jaguar	<i>Panthera onca</i>
Javelina	<i>Pecari tajacu</i>
Lesser long-nosed bat	<i>Leptonycteris yerbabuenae</i>
Mountain lion	<i>Felis concolor</i>
Mule deer	<i>Odocoileus hemionus</i>
Northern grasshopper mouse	<i>Onychomys leucogaste</i>
Ocelot	<i>Leopardus pardalis</i>
Plains harvest mouse	<i>Reithrodontomys montanus</i>
Pronghorn antelope	<i>Antilocapra americana</i>
Rock pocket mouse	<i>Chaetodipus intermedius</i>
Southern grasshopper mouse	<i>Onychomys torridus</i>
Spotted bat	<i>Euderma maculatum</i>
Tawny-bellied cotton rat	<i>Sigmodon fulviventor</i>

Species Common Name	Species Scientific Name
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
Yellow-nosed cotton rat	<i>Sigmodon ochrognathus</i>
Plants	
Acacia	<i>Acacia</i> spp.
Alkali marsh aster	<i>Almutaster pauciflorus</i>
Alkali sacaton	<i>Sporobolus airoides</i>
Arizona cottontop	<i>Digitaria californica</i>
Arizona eryngo	<i>Eryngium sparganophyllum</i>
Arizona giant sedge	<i>Carex ultra</i>
Arizona walnut	<i>Juglans major</i>
Ash	<i>Fraxinus</i> spp.
Beaked spike rush	<i>Eleocharis rostellata</i>
Bermuda grass	<i>Cynodon dactylon</i>
Big/giant sacaton	<i>Sporobolus wrightii</i>
Bindweed	<i>Convolvulus arvensis</i>
Blue grama	<i>Bouteloua gracilis</i>
Broom snakeweed	<i>Gutierrezia sarothrae</i>
Bur bristle grass	<i>Setaria adhaerens</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
California loosestrife	<i>Lythrum californicum</i>
Cane beardgrass	<i>Bothriochloa barbinodis</i>
Canelo Hills ladies' tress	<i>Spiranthes delitescens</i>
Cattail	<i>Typha domingensis</i>
Chairmaker's bulrush	<i>Schoenoplectus americanus</i>
Coastal sandbur	<i>Cenchrus spinifex</i>
Creosote	<i>Larrea tridentata</i>
Deergrass	<i>Muhlenbergia rigens</i>
Desert saltgrass	<i>Distichlis spicata</i>
Desert sumac	<i>Rhus microphylla</i>
Desert willow	<i>Chilopsis linearis</i>
Desert-thorn	<i>Lycium pallidum</i>
False dandelion	<i>Pyrrhopappus pauciflorus</i>
Fremont cottonwood	<i>Populus fremontii</i>
Giant reed	<i>Arundo donax</i>
Goodding's willow	<i>Salix gooddingii</i>
Huachuca water umbel	<i>Lilaeopsis schaffneriana</i> var. <i>recurve</i>
Johnsongrass	<i>Sorghum halepense</i>
Lehmann lovegrass	<i>Eragrostis lehmanniana</i>
Littleleaf sumac	<i>Rhus microphylla</i>
Malta star thistle	<i>Centaurea melitensis</i>
Mariola	<i>Parthenium incanum</i>
Mesquite	<i>Prosopis velutina</i>

Species Common Name	Species Scientific Name
Netleaf hackberry	<i>Celtis reticulata</i>
Ocotillo	<i>Fouquieria splendens</i>
Palmer's century plant	<i>Agave palmeri</i>
Prairie threeawn	<i>Aristida spp.</i>
Puncturevine	<i>Tribulus terrestris</i>
Rosemallow	<i>Hibiscus spp.</i>
Russian knapweed	<i>Acroptilon repens</i>
Russian thistle	<i>Salsola tragus</i>
Sedge	<i>Carex praegracilis and Cyperus spp.</i>
Sideoats grama	<i>Bouteloua curtipendula</i>
Soap tree yucca	<i>Yucca elata</i>
Tamarisk	<i>Tamarix spp.</i>
Tarbush	<i>Flourensia cernua</i>
Tobosa grass	<i>Pleuraphis mutica</i>
Tree of heaven	<i>Ailanthus altissima</i>
Vine mesquite grass	<i>Panicum obtusum</i>
Wild buckwheat	<i>Eriogonum terrenatum and eucycla</i>
Wire rush	<i>Juncus arcticus var. balticus</i>
Wright's marsh thistle	<i>Cirsium wrightii</i>
Yellow star thistle	<i>Centaurea solstitialis</i>
Yerba mansa	<i>Anemopsis californica</i>
Reptiles	
Canyon spotted whiptail	<i>Cnemidophorus exsanguis</i>
Gila monster	<i>Heloderma suspectum</i>
Massasauga	<i>Sistrurus catenatus</i>
Northern Mexican gartersnake	<i>Thamnophis eques megalops</i>
Ornate box turtle	<i>Terrapene ornata</i>
Regal horned lizard	<i>Phrynosoma solare</i>
Sonora mud turtle	<i>Kinosternon sonoriense</i>
Sonoran coral snake	<i>Micruroides spp.</i>
Sonoran whipsnake	<i>Coluber bilineatus</i>
Yaqui black-headed snake	<i>Tantilla yaquia</i>

Appendix L

Visual Resource Management Objectives

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Appendix L. Visual Resource Management Objectives

L.1 VRM CLASS I OBJECTIVE

The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

L.2 VRM CLASS II OBJECTIVE

The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

L.3 VRM CLASS III OBJECTIVE

The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

L.4 VRM CLASS IV OBJECTIVE

The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

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Appendix M

Method for Calculating Animal Unit Months

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Appendix M. Method for Calculating Animal Unit Months

In order for the Bureau of Land Management (BLM) to allow grazing on public lands, the agency must first establish a carrying capacity for an area. Carrying capacity is the average number of livestock or wildlife that may be sustained in a specific area compatible with management objectives for the area. In addition to site characteristics, the carrying capacity is a function of management goals and intensity. A unit's carrying capacity is typically expressed in animal unit months (AUMs). An AUM is the amount of forage necessary for the subsistence of one cow or its equivalent for one month. Carrying capacity is determined through analyzing various components: determining forage production and forage demand by livestock, adjusting for slope and water, and selecting a harvest coefficient.¹

The determination of forage production was established by the BLM Tucson Field Office (TFO), in coordination with the Natural Resource Conservation Service, to collect information and data through an ecological site inventory (ESI). The ESI is annual forage production for each ecological site on the San Pedro Riparian National Conservation Area (SPRNCA). Available forage² was taken into account when establishing the annual forage production. This ensures that the production amount is not biased to include forage that would not be consumed and if included would incorrectly inflate the carrying capacity. For example, tobosagrass has an available forage of 20 percent, meaning only 20 percent of the plant's total production weight is available for consumption; therefore, only that 20 percent of forage production is considered in setting a carrying capacity.

The determination of forage demand by livestock is the amount of forage consumed by an animal per day when forage availability is not restricted. For the SPRNCA's carrying capacity, the BLM assumed that a cow would consume 3 percent of its total body weight per day when forage availability is not restricted. The agency also assumed that the average weight of a cow is 1,000 pounds; therefore the forage demand for one cow for one day is 30 pounds. To convert this to the forage demand per AUM, the forage demand for one day is multiplied by the number of days in a month (30), which is equivalent to 900 pounds of forage demand per AUM.

Steps for determining the forage demand by livestock:

Step 1.

$$3 \text{ percent (total body weight per day)} \times 1000 \text{ lbs (average weight of cow)} \\ = \text{forage demand for one cow for one day}$$

Example:

$$3 \text{ percent} \times 1000 \text{ lbs} = 30 \text{ lbs per day}$$

Step 2.

$$\text{Forage Demand per day} \times \# \text{ of day in 1 month (30)} = \text{Forage Demand per AUM}$$

Example:

$$30 \text{ lbs} \times 30 = 900 \text{ lbs per AUM}$$

¹ The percentage of total forage assigned to grazing animals for consumption; also known as utilization.

² The portion of forage, expressed as weight, that is accessible for a grazing animal to consume.

In the case of SPRNCA, no slope adjustments were necessary, due to its topography. Also no adjustment was made for distance from water, as water improvements could be implemented to facilitate grazing without an adjustment, depending on which alternative is selected.

The harvest coefficient selected for SPRNCA was 30 percent, based on a variety of reasons. First the team wanted to establish a utilization level that was considered light; light grazing is typically a utilization level of 31 percent or below. This harvest coefficient is the same as that for the Las Ciénegas National Conservation Area, which is also managed by the Tucson BLM. This percentage would also allow for the natural and cultural resources of the SPRNCA to be protected, while allowing for flexibility during lower precipitation years.

With the required components identified, a carrying capacity can now be calculated; the annual forage production amount per acre is multiplied by the harvest coefficient, giving the total annual forage production available for livestock consumption per acre. This amount is then multiplied by the number of acres in a unit, which yields the total amount of annual forage production available for livestock consumption for that unit. This total is then divided by the forage demand per AUM to arrive at the carrying capacity. The AUM amount can also be divided by 12 (months in a year) to equal the number of cattle yearlong.

Steps for calculating carrying capacity:

Step 1.

$Annual\ Forage\ Production\ per\ Acre \times Harvest\ Coefficient$
 $= Total\ annual\ forage\ production\ available\ for\ consumption\ per\ acre\ (TAFPA\ /ac)$

Example:

$$2140\ lbs/acre \times 30\ percent = 642\ lbs/acre$$

Step 2.

$TAFPA/ac \times Unit\ Acres$
 $= Total\ amount\ of\ annual\ forage\ production\ available\ for\ livestock\ consumption\ for\ unit\ (TAFPA)$

Example:

$$642\ lbs\ per\ acre \times 5000\ acres = 3,210,000\ lbs\ for\ unit$$

Step 3.

$TAFPA \div Forage\ Demand\ per\ AUM = AUM\ amount\ for\ unit$

Example:

$$3,210,000\ lbs \div 900\ lbs = 3,567\ AUMs$$

Step 4.

$AUM\ amount \div 12\ (months\ in\ 1\ year) = \#\ of\ cattle\ yearlong$

Example:

$$3,567\ AUMs \div 12 = 297\ cattle\ yearlong$$

Appendix N

Recreation

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Appendix N. Recreation

N.1 RECREATION AND VISITOR SERVICES MANAGEMENT FRAMEWORK

N.1.1 Introduction

This appendix is a description of the specific considerations for managing recreation and visitor services under the Preferred Alternative of the Proposed RMP for the San Pedro Riparian National Conservation Area (SPRNCA).

N.1.2 Extensive Recreation Management Area

Extensive Recreation Management Areas (ERMAs) are administrative units that require specific management consideration in order to address recreation use, demand, and recreation and visitor services. ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions. Management of ERMAs is commensurate with that of other resources and resource uses.

Management objectives for ERMAs, supporting management actions, and allowable use decisions are identified to facilitate visitors participating in outdoor recreation and to protect or preserve the associated qualities and conditions. Uses that may cause impacts on recreational use or the recreational setting may be restricted or prohibited.

N.1.3 ERMA Objectives Decision

ERMA objectives must define the recreation activities and the associated qualities and conditions that become the focus for recreation and visitor services management.

Over the next 20 years, the SPRNCA will offer visitors opportunities to participate in a variety of recreational and educational opportunities that highlight its conservation values. Opportunities will allow visitors to experience features of the area's multiple conservation values in a variety of settings. These range from rural areas along public highways with developments and facilities to largely natural primitive areas that are remote and undeveloped.

Recreational and educational activities that have become established since the SPRNCA was established will be the focus of the recreation and visitor services management program under the Proposed RMP. These activities are based on, and depend on, the following conservation values:

- Viewing and learning about the area's wildlife and the various habitats
- Viewing the scenery and sightseeing
- Viewing remnants and learning about the area's human history, prehistory, and natural history
- Viewing the river and riparian woodland
- Traveling on non-motorized trails and routes via nonmotorized means, such as hiking, bicycling, and equestrian riding, and on designated routes with motor vehicles
- Hunting a variety of game species, as permitted by the Arizona hunting regulations
- Primitive and backcountry camping and vehicle-based camping, in areas with appropriate developments

- Participating in organized activities and special events, available through a variety of providers, such as volunteers, partners, and permittees

Interacting with on-site personnel and getting information from persons knowledgeable of the area and conservation values

N.I.4 Management Actions and Allowable Use Decisions

The supporting management actions and allowable use decisions for the recreation and visitor services program, and other management programs are identified below. These actions are necessary to facilitate visitor participation in the identified outdoor recreation activities; maintain particular recreation setting characteristics; address visitor health and safety, resource protection, use and user conflicts; and address the type(s), activities, and locations where special recreation permits would not be issued.

- I. Recreation and Visitor Services Program** (which includes camping limits, recreation permit/fees, and conditions of use). Supporting management actions and allowable use decisions are summarized below.

- **Camping**
 - Camping would not be allowed within a half-mile of trailheads or other developed sites, unless the site is developed for camping purposes.
 - Visitors would be allowed occupy any specific location in developed campgrounds or on public lands for not more than 7 days in 21 consecutive days, unless otherwise authorized.
 - Camping in or outside developed campgrounds would be allowed only with a permit.
 - Camping would be prohibited where posted, to protect sensitive resources.
- **Pets**
 - Pets, including hunting dogs, would be required to be leashed in developed recreation sites.
 - Pets would be required to be under control of the owner/handler in undeveloped areas.
- **Campfires**
 - Campfires would be allowed in developed sites and areas only within fireplaces provided for that purpose.
 - Campfires in undeveloped areas would be allowed, subject to “fire-wise” or “leave no trace” practices. Use of stoves would be required for backcountry camping where no fireplaces are provided.
 - Campfires would be subject to seasonal fire restrictions.
- **Equestrian use**
 - Horse riding would be allowed on and off roads and trails.
 - Horse riding would be prohibited where posted, to protect sensitive resources or to avoid conflicts.
 - Horses would not be allowed on paths in developed interpretive sites.
 - Horses would be limited to designated routes in developed sites and areas, to prevent trail proliferation.

- Mountain bikes/mechanized equipment
 - Mountain bike riding would be allowed on designated roads and trails.
 - Mountain biking would not be allowed on paths in developed interpretive sites.
 - Mountain biking would be prohibited where posted, to protect sensitive resources or to avoid conflicts.
 - Metal detectors
 - Use of metal detectors would be prohibited.
 - Firearms
 - Use of firearms and other weapons would be allowed for hunting, in accordance with Arizona hunting regulations.
 - Use of firearms and other weapons would be prohibited in developed sites or areas, in accordance with general public land regulations.
 - Trapping
 - Trapping would be allowed, in accordance with Arizona hunting regulations.
 - Special recreation permits
 - Special recreation permits would be required for commercial recreational use, organized group activities, competitive events, and vending, in accordance with federal regulations.
 - Permit applications would be reviewed for conformance with management objectives and would be either denied, modified, or approved with special stipulations.
 - Individual permits would be required for camping at developed or undeveloped sites.
 - Recreational setting characteristics
 - The character of the settings for recreation activities would be preserved and would be consistent with the general recreation management goals and objectives in the Proposed RMP, including the recreation management zones described in Section N.2.1.
- 2. Other programs**, such as stipulations on mineral or other development, types and modes of travel designations, or visual resource management classes

Identified below are stipulations or BMPs for other management programs or activities to support or protect recreational resources and use.

- Air quality
 - Apply stipulations and best management practices (BMPs) to prevent or minimize air quality impacts from recreational use and activities, recreation facility development, and maintenance.
- Soil and water resources
 - Apply stipulations or BMPs to prevent, minimize, or mitigate impacts on soils from recreational use and activities, recreational facility development, and maintenance.
 - Provide and maintain water systems, where appropriate, to support recreation.
 - Provide and maintain sanitation facilities, where appropriate, to prevent or minimize potential impacts on water quality from recreational use.

- Vegetation management
 - Design and implement vegetation treatments to avoid or minimize impacts on recreational use and the recreational setting.
 - Design treatments to maintain vegetation around roads, trails, and facilities to have minimal impacts on vegetation.
 - Allow dead and down wood to be collected for campfires.
 - Identify exotic/invasive weeds and apply treatments in recreational sites, roads, and trails. Include exotic/invasive weed themes in visitor educational and interpretive programs, to prevent spread and introduction of weeds.
 - Require certified weed-free feed for pack animals.
- Fish, wildlife and special status species
 - Restrict or limit recreational use or activities, to reduce stresses on priority habitats and priority species and to avoid or minimize impacts on habitat quality, populations, and distribution.
 - Design and implement habitat restoration treatments, to avoid or minimize impacts on recreational use and the recreational setting.
 - Promote public awareness and appreciation of priority habitats and species via educational and interpretative programs.
- Wildland fire and fuels management
 - Design firebreaks and fuel reduction treatments, to protect recreational resources and facilities, and implement them to avoid or minimize impacts on recreational use and the recreational setting.
 - Areas or sites would be closed to public use during fire suppression or fuels management activities to protect public safety.
- Cultural resources
 - Promote educational and interpretive values
 - Promote awareness and appreciation of resources and protection.
 - Design public access and educational and interpretive activities, to avoid or minimize impacts on resource values at cultural sites managed for public visitation.
 - Do not allow cultural resources or artifacts to be collected for personal use.
- Paleontological resources
 - Promote educational and interpretive values.
 - Reduce impacts from recreational use.
 - Design public access and educational and interpretive activities, to avoid or minimize impacts on resource values at paleontological sites managed for public visitation.
 - Don't allow paleontological resources to be collected for personal use.
- Visual resources
 - Apply design features or mitigation measures, to ensure recreation developments are consistent with the applicable Visual Resource Management Classes.

- Livestock grazing
 - Design and locate range improvements, to avoid or minimize conflicts with recreational use and activities.
 - Design fences to allow safe passage for dispersed recreational users, such as hunters, hikers, and equestrians.
 - Exclude livestock grazing from developed recreation sites and areas, to avoid conflicts with recreational use and activities.

- Transportation and access
 - Designate the area as “limited,” in accordance with 43 Code of Federal Regulations (CFR) 8342.
 - Limit access and travel in the area for public and administrative purposes to designated routes, identified in an approved transportation plan to be developed during implementation of the resource management plan.
 - Guide the public in the NCA to designated, developed, access points or trailheads.
 - Where appropriate, designate access points without trailhead facilities, to provide access from adjacent communities.
 - Improve or realign roads and trails, to correct deficiencies or mitigate site conditions.
 - Temporarily close travel routes, to protect public safety or resources.
 - Allow vehicle travel for emergency purposes on and off the roads and trails and require restoration measures following the emergency, to prevent long-lasting impacts.
 - Allow public nonmotorized mechanized travel on bikes, wagons, and carts on designated roads and trails.
 - Do not allow nonmotorized game carts on or off the roads and trails for the retrieval of game.
 - Do not allow horses and other riding livestock on paths in developed interpretive sites.
 - Allow horses and other riding livestock on designated roads, primitive roads, and trails and cross-country throughout the SPRNCA, unless otherwise prohibited and posted.
 - Allow existing routes not needed for access purposes, to reclaim or revegetate areas through active or passive methods.

- Lands and realty
 - In land use authorizations, include stipulations to protect recreational resources, use, and facilities.
 - Pursue acquisition of land or interest in land, including easements, to provide legal access across nonfederal land to support recreational use and access.

- Wild and Scenic Rivers
 - Allow recreational uses and activities in the study corridor, if they are consistent with the tentative classifications and management guidelines, to protect the study river’s outstandingly remarkable values (ORVs).
 - Design, construct, and maintain recreational facilities in the study corridor, to protect free-flowing conditions, water quality, tentative classifications, and ORVs.

- Public health and safety
 - Make recreational visitors aware, by posting notices and interpretive signs, that potentially hazardous munitions could be encountered in the former Fort Huachuca Military Training Area from past military training operations.
 - Require abandoned mined land hazards to be remediated, as determined by the BLM remediation program, and make recreational visitors aware of the potential physical and other hazards related to abandoned mined lands in the area.
 - Conduct periodic safety, health, and environmental audits, in accordance with the BLM's current policy and procedures, and correct deficiencies identified on the findings.
- Facilities management
 - Maintain and operate recreational developments in accordance with the BLM's facility management system.
 - Maintain roads and trails to appropriate intensity, standards, or guidelines, depending on the access purpose, vehicle type, and level of use.
 - Implement maintenance and improvement plans, to address deficiencies and respond to emerging needs.

N.1.5 Implementation Decisions

Implementation decisions are actions to achieve or implement land use plan decisions. They include management, administration, information and education, and monitoring.

- Management
 - The recreation and visitor services management program would focus on managing a variety of sites to facilitate recreational and educational activities, identified in Appendix O, including those allocated for public use in the Proposed RMP. Most of the sites would remain undeveloped or minimally developed, and sign would be installed to protect resources and accommodate visitation.
 - Supplementary regulations would be published for rules of conduct not already established. Special or temporary use restriction orders would be implemented in case of emergency or new information identified through monitoring.
 - Recreation developments would be maintained and modified, as needed, to correct deficiencies and would be adapted to changing demand or to comply with regulatory or other requirements.
 - New recreation sites and access sites would be developed to achieve specific objectives.
 - Access and roads, trails, and administrative roads would be designated or redesignated to provide appropriate access for recreational use and administrative purposes.
 - Facilities and programs would be evaluated and accessibility improvements would be implemented to comply with current Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas.
 - On-site visitor contact stations (e.g. personned entry gates or information kiosks) would be operated to provide visitor information, using staff, volunteers, permittees, or contractors.
 - Funding allocations would be pursued through the BLM's budget process, grants, and contributions, to provide staffing and operations needed to implement the recreation and visitor services management program.

- Administration
 - Contracts would be administered to provide services and facilities to support the recreation and visitor services programs.
 - Volunteer services agreements would be administered to involve volunteers in providing visitor information, grounds and facility maintenance, and monitoring.
 - Use authorizations, such as special recreation permits, vending permits, individual permits, would be processed on a case-by-case basis to authorize recreational uses and activities provided by other parties.
- Visitor information
 - On-site and off-site information, such as visitor access and trail guides and area and site-specific information fact sheets, would be available through various media and would be kept current and relevant.
 - Visitor contact stations would be provided and maintained at San Pedro House and Fairbank.
 - Self-service visitor information—orientation signs, maps, handouts—would be provided at access points.
 - The BLM would work with local interests in providing appropriate information, such as recreation opportunities, access, rules of conduct, ethics, and overall conditions in the area.
- Education/interpretation
 - Self-guided interpretive paths and signs would be provided and maintained at appropriate sites and locations, to present educational themes, based on site features.
 - Guided interpretive programs, such as presentations, walks, hikes, and rides, would be provided to facilitate educational activities through staff, volunteers, permittees, and partners.
- Monitoring
 - Recreational use and impacts from use would be monitored and appropriate action would be taken, as indicated by the results.
 - Recreation staff would monitor sites, based on observations, counters, and visitor studies or surveys. Monitoring frequency would be greatest at developed recreational sites and areas.
 - Visitor use monitoring would identify the amount and type of use, user and use characteristics, preferences, and emerging conflicts.
 - Resource condition would be monitored to identify damage or impacts on soils, vegetation, and other resources at recreation at sites and activity areas.
 - Recreation facilities, roads, and trails would be monitored, with condition surveys completed periodically to identify deficiencies and corrective measures.
 - The overall character of the recreational setting would be monitored to identify alterations and corrective actions, to ensure desired characteristics are present.

N.I.6 Developed Recreation Sites and Areas

Federal lands administered by the Bureau of Land Management are subject to regulations for the protection of public lands and resources, and for the protection, comfort and wellbeing of the public (43

CFR 8365). The regulations for developed recreation sites, areas and facilities prohibit the discharge or use of firearms and other weapons. (43 CFR 8365.2). Under Arizona state regulations, it is unlawful for a person to discharge a firearm while taking wildlife within one-fourth mile of an occupied farmhouse or other residence, cabin, lodge or building without permission of the owner or resident (Arizona Revised Statutes 17-309.4).

The BLM evaluated existing and proposed recreation sites on the SPRNCA to identify the locations where current public land regulations for developed sites and areas apply, and where Arizona hunting regulations on the discharge of firearms apply. The evaluation primarily considered the presence of buildings, facilities and improvements, administrative functions and recreational activities at sites and areas where persons are expected to be present.

Sites and areas which have buildings or facilities staffed to provide visitor information, or to accommodate a site host residence, or for administrative storage and work are considered administrative sites subject to restrictions on discharge of firearms under Arizona hunting regulations. Additionally, other sites that have permanent improvements or facilities for parking, overnight camping, toilet buildings, and interpretative or educational signs are also considered administrative sites subject to discharge of firearms under Arizona hunting regulations.

Table N-1 shows the sites and areas where existing federal and state regulations to protect public safety apply.

The table lists sites addressed in the Draft EIS, and the criteria reflects current conditions. Some of the sites on the table are proposed, and presently have no facilities or improvements. Depending on the decisions made on the RMP and future implementation project plans, sites may be developed or improved. If sites are developed, they would become subject to existing public land regulations, and may be subject Arizona Game and Fish regulations which restrict discharge of firearms or other weapons.

N.2 RECREATION MANAGEMENT ZONE OBJECTIVES

N.2.1 Primitive RMZ Objectives

In visitor assessments, 70 percent of sampled participants in targeted activities in the primitive recreation management zone (RMZ) report they are highly satisfied with their experience.

Targeted Activities: Walking, hiking, equestrian riding, wildlife viewing in a remote setting, viewing natural scenery, hunting, and camping.

Experiences: Enjoying the natural environment in remote places, away from concentrations of other visitors, away from developed areas and vehicle traffic.

Benefits: Practicing and developing primitive outdoor recreation skills, abilities, and ethics requiring a high degree of self-reliance; preserving opportunities for a variety of recreational opportunities; preserving and protecting areas with outstanding natural characteristics in a naturally appearing condition.

Physical Setting Components:

- a. Area is remote; access requires time and physical effort and the ability to travel on primitive foot and horse or other livestock trail or cross-country.
- b. Area is natural, with improvements or facilities of very low visual impact.
- c. Facilities for visitors are minimal and rustic.

Social Setting Components:

- a. Infrequent contacts among users, six or fewer encounters per day.
- b. Group size of between three and six persons.
- c. Evidence of use includes footprints; vehicles and people are encountered.

**Table N-1
Recreation Sites and Areas**

Site Name	Public Contact Center	Site Host	Storage Building	Improved Parking	Overnight Occupancy	Toilet Building	Picnic Facilities	Interpretive or Other Signs	Developed Site or Area	Occupied Building or Site
Babocomari	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Boquillas Ranch HQ	NO	NO	YES	YES	NO	NO	NO	YES	YES	YES
Brunckow Cabin	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Charleston Townsite	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Charleston Trailhead	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO
Clanton Ranch	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Contention City	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Curtis Flats Trailhead	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Escapule Trailhead	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO
Fairbank Cemetery	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
Fairbank Townsite	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fairbank Trailhead	YES	YES	NO	YES	NO	YES	NO	YES	YES	YES
Grand Central Mill Site	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Hereford Bridge	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
Hereford Trailhead	NO	NO	NO	YES	NO	YES	YES	YES	YES	YES
Kingfisher Interpretive	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
Land Corral Trailhead	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO
Lehner Mammoth-Kill Site	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Lehner Trailhead	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO
Lewis Springs Trailhead	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Little Boquillas Trailhead	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO
Miller Backcountry Camp	NO	NO	NO	NO	YES	YES	NO	YES	YES	YES
Millville Interpretive	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO
Millville Trailhead	NO	NO	NO	YES	NO	YES	NO	YES	YES	YES
Murray Springs Clovis Site	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO

Site Name	Public Contact Center	Site Host	Storage Building	Improved Parking	Overnight Occupancy	Toilet Building	Picnic Facilities	Interpretive or Other Signs	Developed Site or Area	Occupied Building or Site
Murray Springs Trailhead	NO	NO	NO	YES	NO	YES	NO	YES	YES	YES
Palominas Trailhead	NO	NO	NO	YES	NO	YES	YES	YES	YES	YES
Petroglyph Site	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO
Presidio Santa Cruz de Terrenate	NO	NO	NO	NO	NO	YES	NO	YES	YES	NO
San Pedro House	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Summers Lane	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Terrenate Trailhead	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO
Whitehouse Wetland Area	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Notes:

Public Contact Center: Normally staffed visitor center or visitor contact station

Site Host: Normally staffed by site host in temporary residence on-site.

Storage Building: Permanent storage building or warehouse facility.

Improved Parking: Constructed parking area with other capital improvements.

Overnight Occupancy: Includes developed campgrounds for public use, and site host camp units

Toilet Building: Includes permanent toilet building or restroom.

Picnic facilities: Picnic shelters, tables or fireplaces

Interpretive or Other Signs: Includes interpretive exhibits or special site signing.

Developed Site or Area: These are sites where public land regulations for developed sites apply (43 CFR 8365.2)

Occupied Building or Site: These are sites where Arizona hunting regulations apply (ARS 17-309.4).

N.2.2 Backcountry RMZ Objectives

In visitor assessments, 70 percent of sampled participants in targeted activities in the Backcountry RMZ report they are highly satisfied with their experience.

Targeted Activities: Birding, wildlife viewing, viewing natural scenery, viewing remnants of human history, walking, hiking, horseback riding or other livestock riding, mountain biking, limited motorized vehicle driving, sightseeing, hunting, and camping.

Experiences: Enjoying the natural environment in upland and riparian settings, away from concentrations of other visitors and away from developed areas and vehicle traffic.

Benefits: Practicing and developing outdoor recreational skills, abilities, and ethics; learning about the natural environment and human history of the area; preserving opportunities for a variety of recreational opportunities; preserving and protecting areas with natural characteristics in a naturally appearing condition.

Physical Setting Components:

- a. Area is accessed from designated ingress/egress sites, by improved and maintained trails designated for nonmotorized use (foot, horse or other riding livestock, and bicycle), and by limited motor vehicle and primitive roads.
- b. Access by foot or horse, or other riding livestock, allowed cross-country.
- c. Area is largely natural, with some improvements or facilities of very low visual impact.
- d. Facilities for visitors are minimal and rustic, and are used to for safety and to protect resources or public health (i.e., access roads and trails, signs, designated fireplaces/fire rings, rustic toilets, fencing, and hardening to prevent damage).

Social Setting Components:

- a. Low to moderately frequent contacts among users, 7 to 15 or fewer encounters per day.
- b. Group size of between 6 and 12 persons.
- c. Evidence of use includes footprints, tracks, people, infrequent vegetation trampling or damage, and trail or site maintenance activities.

N.2.3 Rural RMZ Objectives

In visitor assessments, 70 percent of sampled participants in targeted activities in the rural RMZ report they are highly satisfied with the experience from visiting the area.

Targeted Activities: Organized learning and interpretive activities, birding, wildlife viewing, viewing scenery, viewing remnants of human history, obtaining visitor and area information, walking, hiking, horseback riding or other livestock riding, mountain biking, picnicking, parking, and going into the backcountry or primitive areas.

Experiences: Enjoying the natural environment in upland and riparian settings as individuals and as groups; enjoying the remnants and reminders of human history.

Benefits: Practicing and developing outdoor recreational skills, abilities, and ethics; learning about the natural environment and human history of the area; increased awareness and personal responsibility for protecting resources.

Physical Setting Components:

- a. Area is not remote and is readily accessed from the public highway, with improved roads and parking areas for passenger cars and large vehicles (trailer-towing vehicle, bus, and motorhome).
- b. Area has designated ingress/egress sites for access to improved and maintained trails into backcountry areas (or primitive areas) by nonmotorized travel (foot and horse or other riding livestock, or bicycle).
- c. Access by foot or horse or other riding livestock on designated routes, not allowed cross-country to prevent trail sprawl.
- d. Area retains natural characteristics, but includes noticeable developments related to the highway, utilities, and site improvements or facilities to accommodate access and public use.
- e. Facilities for recreational and educational purposes are provided to meet recreational and educational objectives and to protect resources, safety, or public health (i.e., visitor information, interpretive programs, signs, designated day-use facilities, fireplaces, toilets, fencing, and hardening to support heavy use and prevent damage).
- f. Programs and activities are accessible according to the Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas.

Social Setting Components:

- a. Frequent contacts among users, 30 or more encounters per days.
- b. Group size of between 25 and 40 persons, including organized groups.
- c. Vehicles in parking area, footprints, tracks, people, infrequent vegetation trampling or damage, official personnel on trail, or site maintenance activities.

N.3 RECREATION SETTING CHARACTERISTICS AND SITE INVENTORY

N.3.1 Recreation Setting Characteristics and Site Inventory

The BLM conducted an inventory of the recreation setting characteristics (RSCs) for the San Pedro Riparian National Conservation Area (SPRNCA). This was done to provide a baseline for recreation resources, visitor management planning, and analysis of resource management plan (RMP) land use allocation alternatives (see **Table N-2**, below). The inventory included a list of recreation sites and features that attract the public for recreation and education in the different settings.

The criteria used for the inventory were a series of physical, social, and operational factors, or attributes, that are used to classify the landscape for its recreation setting qualities.

**Table N-2
Recreation Settings Characteristics Criteria**

ATTRIBUTES Components/ Characteristics (RSCs)	SETTING CLASSES					
	Primitive	Back country	Middle Country	Front Country	Rural	Urban
Physical Setting Attributes (physical qualities of the landscape in the study area)						
Remoteness	More than 1/2 miles from either mechanized or motorized routes.	Within 1/2 miles of mechanized routes.	Within 1/2 miles of four-wheel drive vehicle, all-terrain vehicle, and motorcycle routes.	Within 1/2 miles of low-clearance or passenger vehicle routes (includes unpaved county roads and private land routes).	Within 1/2 miles of paved/primary roads and highways.	Within 1/2 miles of streets and roads within municipalities and along highways.
Naturalness	Undisturbed natural landscape.	Natural landscape without any modifications in harmony with surroundings and not visually obvious or evident (e.g., trails and fire breaks).	Character of the natural landscape retained. a few modifications contrast with the character of the landscape (e.g., fences and primitive roads).	Character of the natural landscape partially modified, but none of the modifications overpower the natural landscape (e.g., roads, structures, and utilities).	Character of the natural landscape considerably modified (e.g., agriculture, residential, or industrial).	Urbanized developments dominate the landscape.
Facilities	No structures. foot/horse and water trails only.	Developed trails made mostly of native materials such as log bridges. structures are rare and isolated.	Maintained and marked trails, simple trailhead developments, and basic toilets.	Rustic facilities such as restrooms, trailheads, and interpretive displays.	Modern facilities such as group shelters and occasional exhibits. recreational vehicle camping with no hookups.	Elaborate full-service facilities such as laundries, restaurants, and groceries. recreational vehicle camping with hookups.

ATTRIBUTES Components/ Characteristics (RSCs)	SETTING CLASSES					
	Primitive	Back country	Middle Country	Front Country	Rural	Urban
Social Setting Attributes (degree of interaction among users)						
Contacts	Fewer than 3 encounters/day at campsites and fewer than 6 encounters/day on travel routes.	3-6 encounters/day off travel routes (e.g., campsites) and 7-15 encounters/day on travel routes.	7-14 encounters/day off travel routes (e.g., trailheads) and 16 encounters/day on travel routes.	15-29 encounters/day off travel routes (e.g., special events) and 30 or more encounters/day on travel routes.	People seem to be generally everywhere.	Busy place with other people constantly in view.
Group Size	Fewer than or equal to 3 people per group.	4-6 people per group.	7-12 people per group.	13-25 people per group.	26-50 people per group for special events.	Greater than 50 people per group for special events.
Evidence of Use	No alteration of the natural terrain.	Areas of alteration uncommon. Little surface vegetation wear observed. sounds of people infrequent.	Small areas of alteration. Surface vegetation showing wear with some bare soils. sounds of people occasionally heard.	Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. sounds of people regularly heard.	A few large areas of alteration. Surface vegetation absent with hardened soils. sounds of people frequently heard.	Large areas of alteration prevalent. Some erosion. constantly hear people.
Operational Setting (management, operations, and maintenance)						
Type of Access	Foot, horse, and nonmotorized float boat travel.	Mountain bikes and perhaps other mechanized use, but all is nonmotorized (except mobility devices).	Four-wheel drives, all-terrain vehicles, dirt bikes, or snowmobiles in addition to nonmotorized, mechanized use.	Two-wheel drive vehicles predominant, but also four-wheel drives and nonmotorized, mechanized use.	Ordinary highway auto and truck traffic is characteristic.	Wide variety of street vehicles and highway traffic is ever present.

ATTRIBUTES Components/ Characteristics (RSCs)	SETTING CLASSES					
	Primitive	Back country	Middle Country	Front Country	Rural	Urban
Visitor Services	No maps or brochures available on-site. Staff rarely present to provide on-site assistance.	Staff infrequently present (e.g., only seasonally and during high-use periods) to provide on-site assistance.	Staff occasionally (e.g., most weekends) present to provide on-site assistance.	Information materials describe recreation areas and activities. Staff periodically present (e.g., weekdays and weekends).	Information materials describe recreation areas and activities, plus experience and benefit descriptions. Staff regularly present (e.g., almost daily).	Information materials describe recreation areas and activities, plus there are regularly scheduled on-site outdoor demonstrations and clinics. There is daily staff coverage.
Management and Controls	No on-site posting/signs of visitor regulations, interpretive information, or ethics. Moderate use restrictions (e.g., camping and human waste). Infrequent patrols.	Basic user regulations at key access points. Moderate use restrictions (e.g., camping and human waste). Less frequent patrols.	Some regulatory and ethics signs. Moderate use restrictions. (e.g., camping and human waste).	Rules, regulations, and ethics clearly posted. There are use restrictions, limitations, and/or closures. Frequent patrols.	Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc. Frequent patrols.	Enforcement in addition to rules to reduce conflicts, hazards, and resource damage. Frequent patrols.

Source: BLM Handbook H-8320—Planning for Recreation and Visitor Services. Washington, DC. August 2014.

N.4 RECREATION SITE INVENTORY

The inventory of sites and areas below includes developed and undeveloped sites that are important for public recreation and education in the SPRNCA. The list includes sites that were designated and developed under the current San Pedro River Riparian Management Plan and sites that were designated in the plan but not developed. Some of the sites receive regular maintenance, and others are basically under custodial management and are unmaintained. The list also includes sites that were not specifically designated in the San Pedro River Riparian Management Plan but that are important for providing access to recreation in the SPRNCA.

The sites in **Table N-3**, below, would be considered and analyzed for management to accommodate public recreation and educational/interpretative purposes.

Table N-3
SPRNCA Inventoried Recreation Sites

Site Name	Primary Recreation Purposes	Current Management and Conditions
Babocomari Trail Access	<ul style="list-style-type: none"> • Access from SR82 to the Babocomari River trail along the railroad grade in the canyon for dispersed recreational opportunities • Viewing wildlife in scenic riparian canyon 	<ul style="list-style-type: none"> • The trail along the river is the old railroad grade. It is designated in the current RMP with a connection to the Boquillas Ranch Road trail route on the east side of the San Pedro River and east of the Union Pacific railroad. The trail has not been developed. • There is a small parking area and trailhead near the river's mouth and an interpretive site • An access point for administration has been established along SR 82; it is a US Geological Survey right-of-way for stream gauge monitoring, which also provides public access.
Boston Millsite	<ul style="list-style-type: none"> • Learning about historic mineral processing and the significance of the site 	<ul style="list-style-type: none"> • Building remnants and tailings along multi-use trail on a trail spur
Boquillas Ranch Headquarters (planned)	<ul style="list-style-type: none"> • Education and interpretation of historic ranching along the San Pedro River • Historic railroads and buildings 	<ul style="list-style-type: none"> • Current RMP-designated recreation facilities • Used for administration, containing a storage yard, warehouse, and camp retreats • Not developed were a planned gravel access road from SR 82, an interpretive display for the ranch house, and an old railroad commissary building • Accessible by multi-use trail along the access road
Brunckow Cabin	<ul style="list-style-type: none"> • Learning about historic ranching and the significance of this site • Viewing building remnants 	<ul style="list-style-type: none"> • Current RMP-designated recreation facilities • Planned site interpretation not implemented • Primitive road access
Charleston Townsite (planned)	<ul style="list-style-type: none"> • Learning about the Charleston Townsite and its significance in the mining boom of the late 1800s • Viewing building remnants 	<ul style="list-style-type: none"> • Current RMP-designated recreation facilities • Planned interpretive display near the ruins and foot trail to the ruins not implemented

Site Name	Primary Recreation Purposes	Current Management and Conditions
Charleston Trailhead (planned)	<ul style="list-style-type: none"> • Access to San Pedro River and Charleston Road • Learning about historic roads and the significance of Charleston Road • Viewing historic bridge 	<ul style="list-style-type: none"> • Current RMP-designated recreation facilities • Gravel parking area on the south side of Charleston Road • Planned visitor information, directions, and interpretive signs • Foot trail to the ruins and a small picnic site not implemented
Clanton Ranch	<ul style="list-style-type: none"> • Learning about historic ranching and the significance of this site and Clanton family in Territorial Tombstone history • Viewing building remnants 	<ul style="list-style-type: none"> • Nonmotorized trail access from Escapule and Murray Springs trailheads and SR 90 • Site interpretation not implemented
Ciénega Site	<ul style="list-style-type: none"> • Learning about the ciénega, the wetland habitat, and the significance of this site • Viewing wetland and wildlife 	<ul style="list-style-type: none"> • Unmaintained nonmotorized paths
Contention City	<ul style="list-style-type: none"> • Learning about historic mineral processing, ghost town, and the significance of this site • Viewing historic building remnants 	<ul style="list-style-type: none"> • Nonmotorized trail access
Curtis Flats Trailhead (new)	<ul style="list-style-type: none"> • Access to the San Pedro Trail System • Learning about early Mormon settlers 	<ul style="list-style-type: none"> • No recreation management
Escapule Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail system • Orientation and learning about the SPRNCA 	<ul style="list-style-type: none"> • Gravel road and parking area • Signs
Fairbank Cemetery	<ul style="list-style-type: none"> • Learning about the historic settlers • Viewing graves 	<ul style="list-style-type: none"> • Interpretive trail • Signs and bench
Fairbank Townsite	<ul style="list-style-type: none"> • Learning about the historic townsite and its significance • Viewing historic buildings • Learning about the SPRNCA, its multiple resources, and conservation values • Access to the San Pedro Trail System 	<ul style="list-style-type: none"> • Small visitor contact and interpretive facility and an information/directions station • Parking area • Small picnic site with water system, toilet, and benches • Site host unit
Fairbank Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail System • Orientation and learning about the SPRNCA 	<ul style="list-style-type: none"> • Gravel parking area • Signs
Grand Central Mill Site	<ul style="list-style-type: none"> • Learning about historic mining and the significance of this site • Viewing building remnants 	<ul style="list-style-type: none"> • Mill site along multi-use trail (Fairbank Loop) • Signs

Site Name	Primary Recreation Purposes	Current Management and Conditions
Hereford Trailhead	<ul style="list-style-type: none"> • Access and orientation to the San Pedro Trail System from Hereford Road to Waters Road • Camping and picnicking in a backcountry setting 	<ul style="list-style-type: none"> • Graveled access road and parking area • Interpretive display • Information/directions station • Picnic shelter and tables • Backcountry permit dispenser • Toilet • Trash collection
Hereford Camping Area (planned)	<ul style="list-style-type: none"> • Planned campground for 15 to 30 units in current RMP 	<ul style="list-style-type: none"> • General developed site would be accessible from Hereford Road • Potential access points are the Del Valle Road on the north side of Hereford Road and the Hereford Trailhead • Management decision has not been implemented
Horsethief Access Point	<ul style="list-style-type: none"> • Access to existing trails north of SR 90 to Escapule trailhead, with connection to trails south of SR 90 	<ul style="list-style-type: none"> • Parking on highway shoulder and pedestrian passage (not gated) • Locked vehicle access gate • No equestrian access
Horsethief Camping Area (planned)	<ul style="list-style-type: none"> • Planned campground development for 30 to 50 units 	<ul style="list-style-type: none"> • Current RMP-designated recreation facilities • Identified with the San Pedro House but with its location not specifically identified; potential locations include south of SR 90 (the vicinity of the San Pedro House using the existing ingress/egress) and north of SR 90, using the existing administrative road for ingress/egress • Management decision has not been implemented
Kingfisher Site	<ul style="list-style-type: none"> • Learning about riparian and open water habitat • Viewing avian wildlife along paths 	<ul style="list-style-type: none"> • Access by multi-use trail from the San Pedro House • Footpaths through riparian habitat • Shoreline access to open water habitat • Signs and benches
Land Corral Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail System • Orientation to the SPRNCA and the St. David Ciénega • Learning about wetland habitat, wildlife, and historic ranching 	<ul style="list-style-type: none"> • Access from Cary Road (partly county maintained) • Gravel parking area • Fencing • Interpretive and other signs • Unimproved paths to wetland; connection to existing trail system at Summers Well not yet implemented
Lehner Mammoth-Kill Site	<ul style="list-style-type: none"> • Learning about Paleoindian people and megafauna 	<ul style="list-style-type: none"> • Interpretive display • Interpretive trail through the site
Lehner Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail System and the Lehner Mammoth-Kill Site 	<ul style="list-style-type: none"> • Gravel road and parking area
Lewis Springs	<ul style="list-style-type: none"> • Learning about the SPRNCA • Camping and picnicking in a backcountry setting 	<ul style="list-style-type: none"> • Graded access road and parking areas • Group picnic site • Primitive camping area • Interpretive displays (not developed)

Site Name	Primary Recreation Purposes	Current Management and Conditions
Little Boquillas Trailhead	<ul style="list-style-type: none"> • Access and orientation to the San Pedro Trail System from SR 82 to Charleston Road 	<ul style="list-style-type: none"> • Gravel road and parking • Signs
Miller Backcountry Camp	<ul style="list-style-type: none"> • Backcountry camping in a primitive setting 	<ul style="list-style-type: none"> • Nonmotorized trail access • Toilet • Tent pads • Signs
Millville Site	<ul style="list-style-type: none"> • Learning about historic mineral processing and the significance of this site • Viewing historic building remnants 	<ul style="list-style-type: none"> • Nonmotorized trail access • Signs • Benches
Millville Trailhead	<ul style="list-style-type: none"> • Access to San Pedro Trail System and interpretive trails 	<ul style="list-style-type: none"> • Gravel road and parking • Toilet • Signs
Murray Springs Clovis Site	<ul style="list-style-type: none"> • Learning about Paleoindian people and megafauna 	<ul style="list-style-type: none"> • Interpretive display • Interpretive trail through the site • Shade shelter • Benches
Murray Springs Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail System and the Murray Springs Clovis Site 	<ul style="list-style-type: none"> • Gravel road and parking area
Palominas Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail System south of SR 92 • Orientation to the SPRNCA 	<ul style="list-style-type: none"> • Highway pullout, with information, directions, and interpretive signs • Graded access road • Small picnic site • Toilet
Petroglyph Site	<ul style="list-style-type: none"> • Learning about prehistoric and native peoples • Viewing petroglyphs 	<ul style="list-style-type: none"> • Nonmotorized trail access • Signs • Bench • Viewing area
Presidio Santa Cruz de Terrenate	<ul style="list-style-type: none"> • Learning about the early Spanish colonization and interactions with native peoples 	<ul style="list-style-type: none"> • Controlled access to the site • An interpretative trail through the site for pedestrian use planned • Toilet • Signs • Benches
San Pedro House	<ul style="list-style-type: none"> • Learning about historic ranching and farming along the San Pedro River • Learning about the San Pedro Riparian National Conservation Area, its multiple resources, and conservation purposes • Access and orientation to San Pedro Trail System 	<ul style="list-style-type: none"> • Current RMP-designated recreation facilities • Large visitor contact and interpretive facility • Interpretive display in the historic San Pedro Ranch House • San Pedro Ranch House includes headquarters of the Friends of the San Pedro River support group • Interpretive trail to the river • Interpretive displays at the campground and picnic sites • Highway pullout • Interpretive pavilion • Signs • Site host camp unit • Water system and toilet

Site Name	Primary Recreation Purposes	Current Management and Conditions
San Pedro River-Kingfisher Site	<ul style="list-style-type: none"> • Learning about the riparian and aquatic habitat • Viewing wildlife 	<ul style="list-style-type: none"> • Nonmotorized trail access • Paths • Signs
Summers Lane	<ul style="list-style-type: none"> • Access to San Pedro River and the SPRNCA 	<ul style="list-style-type: none"> • Unmaintained dirt road into the SPRNCA • Paths on reclaimed roads
Summers Well	<ul style="list-style-type: none"> • End of existing San Pedro Trail north of Millville trailhead • Learning about wetland habitat and wildlife, historic homesteading and ranching, and historic wagon transportation 	<ul style="list-style-type: none"> • Access from administrative road used for groundwater monitoring • Remnants of historic land uses • Minimal signs
Terrenate Trailhead	<ul style="list-style-type: none"> • Access to the Presidio Santa Cruz de Terrenate trail • Orientation to the SPRNCA 	<ul style="list-style-type: none"> • Gravel parking area • Fencing • Signs • Multi-use trail to the Presidio Santa Cruz de Terrenate interpretive site
Waters Road Trailhead	<ul style="list-style-type: none"> • Access to the San Pedro Trail System between Hereford Road and Waters Road • Orientation to the SPRNCA 	<ul style="list-style-type: none"> • Gate and boundary fence • Signs
Whitehouse Well Wetland	<ul style="list-style-type: none"> • Learning about spring fed (artesian well fed) wetland habitat and wildlife 	<ul style="list-style-type: none"> • Nonmotorized trail access • Wetland project • Fencing

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Appendix O

Final Wild and Scenic Rivers Suitability Report

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ACRONYMS AND ABBREVIATIONS

Full Phrase

ACEC	area of critical environmental concern
ADEQ	Arizona Department of Environmental Quality
AZGFD	Arizona Game and Fish Department
BLM	United States Department of the Interior, Bureau of Land Management
CCCP	Cochise County Comprehensive Plan
CFR	Code of Federal Regulations
EIS	environmental impact statement
ESA	Endangered Species Act of 1973
FLPMA	Federal Land Policy and Management Act of 1976
Forest Service	United States Department of Agriculture, National Forest Service
GIS	geographic information system
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NPS	US Department of the Interior, National Park Service
NWSRS	National Wild and Scenic Rivers System
OHV	off-highway-vehicle
ORV	outstandingly remarkable value
PL	Public Law
RMP	resource management plan
RMZ	recreation management zone
ROW	right-of-way
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SPRNCA	San Pedro Riparian National Conservation Area
TFO	Tucson Field Office
USFWS	US Department of the Interior, Fish and Wildlife Service
USGS	US Geological Survey
VRI	visual resource inventory
VRM	visual resource management
WSR	Wild and Scenic River
WSRA	Wild and Scenic Rivers Act of 1968

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Chapter I. Introduction

This report documents the reassessment of the Babocomari River's and San Pedro River's outstandingly remarkable values (ORVs). It also considers the tentative changes in their classification and suitability for designation in the National Wild and Scenic Rivers System (NWSRS) in the San Pedro Riparian National Conservation Area (SPRNCA).

After considering information, comments, and recommendations from Bureau of Land Management (BLM) resource staff, cooperating agencies, stakeholder groups, landowners, and other interested parties, the BLM identified Babocomari River and San Pedro River segments in the SPRNCA as suitable for NWSRS consideration. The BLM used the findings to develop the preferred alternative for the SPRNCA Resource Management Plan (RMP) and to make NWSRS recommendations to Congress.

I.1 PROJECT AREA

The SPRNCA planning area corresponds to the Riparian National Conservation Area boundary designated by Public Law (PL) 100-696. It covers approximately 58,254 surface acres and includes BLM-administered, private, and state land. The subsurface mineral estate was withdrawn under PL 100-696 from all forms of entry, appropriation, or disposal; from location, entry, and patent under the US mining laws; and from disposition under all laws pertaining to mineral and geothermal leasing and all amendments thereto.

The SPRNCA is in Cochise County, south of Benson and west of Tombstone and Bisbee, Arizona. The city of Sierra Vista is to the west of the SPRNCA. Surrounding landownership includes federal land (Fort Huachuca, National Park Service [NPS] lands, US Forest Service [Forest Service] land, and BLM-administered land); state land (Arizona State Land Department); and private land. The BLM is responsible for managing only public land in the planning area. This is known as the decision area and contains 55,990 BLM-administered acres.

I.2 WHY CONDUCT A WILD AND SCENIC RIVER STUDY AND WHY NOW?

Section 5(d)(1) of the Wild and Scenic Rivers Act of 1968 (WSRA; PL 90-542; 16 US Code 1271-1287) directs federal agencies to consider potential WSRs in their land and water planning processes ("In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic, and recreational river areas"). To fulfill this requirement, whenever the BLM undertakes land use planning (for example, in an RMP), it analyzes river and stream segments that might be eligible for inclusion in the NWSRS.

The Tucson Field Office (TFO) is preparing an RMP and associated environmental impact statement (EIS) to guide management of BLM-administered lands in the SPRNCA. The RMP/EIS will be prepared as a dynamic and flexible plan to allow management to reflect the changing needs of the planning area. The RMP updates and clarifies land use plan decisions for the SPRNCA that were previously made in the San Pedro River Riparian Management Plan (BLM 1989) and incorporated into the Safford District RMP (BLM 1992, 1994a).

This Wild and Scenic River (WSR) study is being conducted now because the BLM is required by the WSRA to assess river and stream segments under its management jurisdiction as part of its RMP process.

I.3 WHAT IS A WILD AND SCENIC RIVER?

Congress enacted the WSRA on October 2, 1968, to address the need for a national system of river protection. As an outgrowth of a national conservation agenda in the 1950s and 1960s, the WSRA was in response to the dams, diversions, and water resource development projects that built on America's rivers between the 1930s and 1960s. The WSRA stipulated that selected rivers should be preserved in a free-flowing condition and be protected for the benefit and enjoyment of present and future generations. Since 1968, the WSRA has been amended many times, primarily to designate additional rivers and to authorize the study of other rivers for possible inclusion.

The WSRA seeks to protect and enhance a river's natural and cultural values and to provide for public use consistent with its free-flowing character, its water quality, and its ORVs. Designation affords certain legal protection from development. For instance, new dams cannot be constructed, and federally assisted water resource development projects that might negatively affect the designated river values are not permitted. Where private lands are involved, the federal managing agency works with local governments and owners to develop protective measures.

I.4 STEPS IN THE WILD AND SCENIC RIVER STUDY PROCESS

A WSR study process is composed of two main components: the eligibility phase and the suitability phase. These phases were conducted in accordance with BLM Manual 6400, Wild and Scenic Rivers—Policy and Program Direction for Identification, Evaluation, Planning, and Management (BLM 2012) and with The Wild and Scenic River Study Process technical report (Interagency Wild and Scenic Rivers Coordinating Council 1999). An overview of the WSR study process is shown in **Diagram I-1**, Wild and Scenic Rivers Study Process. Excerpts from BLM Manual 6400 are presented below to explain the process.

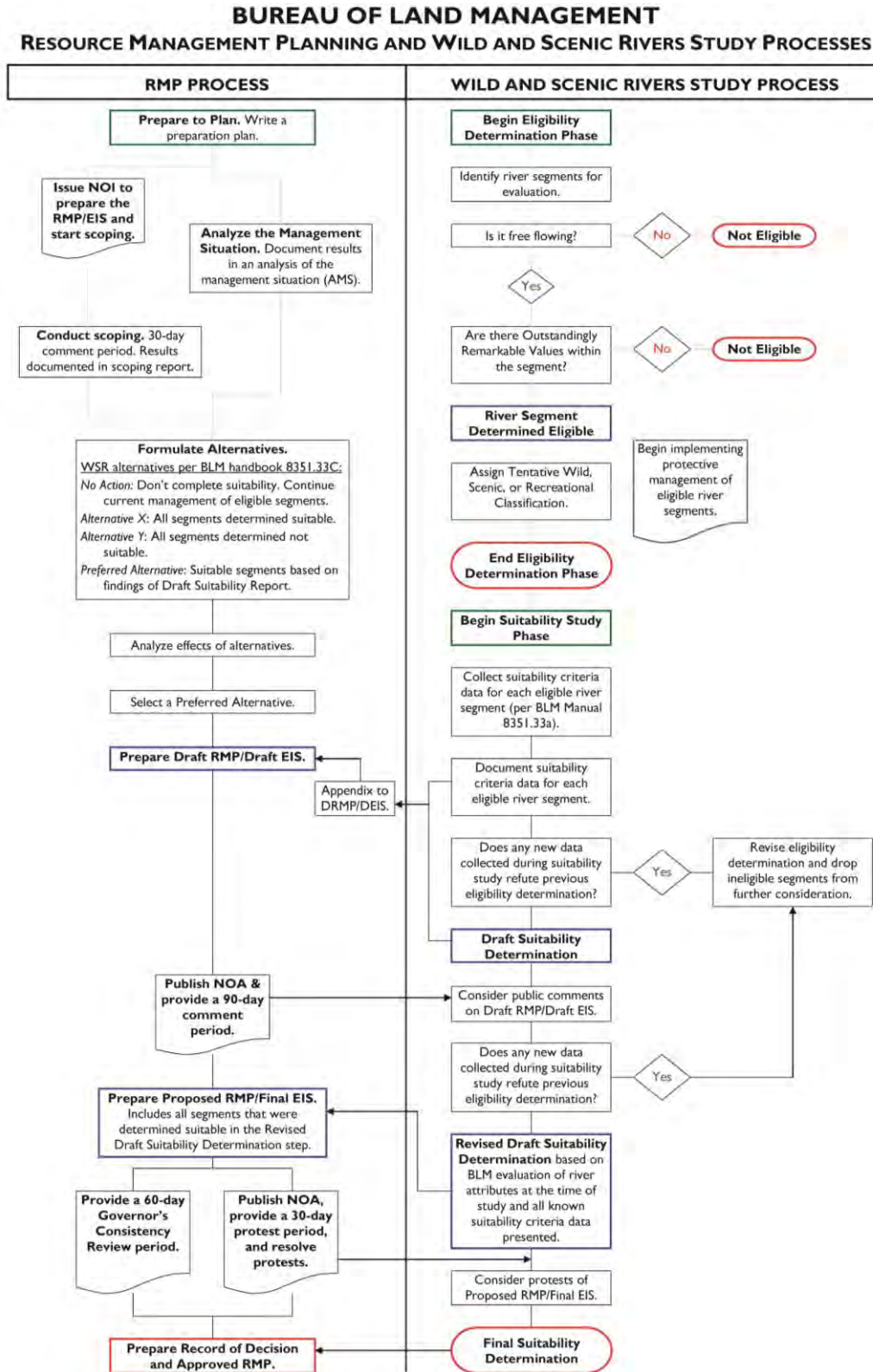
A river study area extends the length of the identified river segment and includes the river area and its immediate environment. It should include (or total) an average of no more than 320 acres per mile, measured from the ordinary high-water mark on both sides of the river. The planning team should outline a preliminary or proposed boundary, usually a 0.25-mile buffer from the ordinary high-water mark on either side of the river.

I.4.1 Eligibility Evaluation

Each identified river segment is evaluated to determine whether it is eligible for inclusion as a component of the NWSRS. The BLM Authorized Officer (Field Manager or District Manager) should document determinations of eligibility. This should be done before the alternatives are formulated but no later than the release of the Proposed RMP or RMP amendment.

The WSRA states that, in order to be found eligible, a river segment must be “free flowing” and contain at least one river-related value considered to be “outstandingly remarkable.” If the eligibility phase determines segments to be eligible, the BLM assigns a tentative classification and management measures needed to ensure appropriate protection of the values supporting the eligibility and classification determinations.

Diagram I-1 Wild and Scenic Rivers Study Process



There are three classes for rivers designated under the WSR: wild, scenic, and recreational. Classes are based on the type and degree of human development and access associated with the river and adjacent lands at the time of the eligibility determination. The classification does not reflect the types of values present along a river segment, and it is tentatively assigned during the eligibility phase. Final classification is a congressional legislative determination, along with designation of a river segment as part of the NWSRS.

I.4.2 Suitability Phase

The purpose of the suitability phase is to determine whether eligible river segments are suitable for inclusion in the NWSRS, in accordance with the criteria of the WSR. Suitability considerations include the environmental and economic consequences of designation and the manageability of a river if Congress were to designate it.

The suitability evaluation does not result in actual designation, only that a river segment is suitable for designation. The BLM cannot administratively designate a stream via a planning decision or other agency decision into the NWSRS; no segment studied is automatically designated as part of the NWSRS. In most cases, only Congress can designate a WSR; however, in some instances, the Secretary of the Interior may designate a WSR. This would happen when the governor of a state, under certain conditions, petitions for a river to be designated.

Members of Congress will ultimately choose the legislative language if any suitable segments are presented to them. Water protection strategies and measures to meet the purposes of the WSR will be the responsibility of Congress in any legislation proposed. Rivers found not suitable would be dropped from further consideration and managed according to the objectives outlined in the RMP. Suitability determinations are in draft form until the record of decision for the RMP is signed.

I.5 ELIGIBILITY ANALYSIS

Previously, in the Safford RMP (BLM 1991), the BLM completed the eligibility phase of the WSR study for specific portions, totaling 44 miles of the San Pedro River on BLM-administered lands. The segments were identified as eligible with a tentative classification as recreational for inclusion in the NWSRS, as defined by the WSR. A suitability determination done as part of the Arizona Statewide WSR Legislative EIS (BLM 1994b) found the entire BLM-administered portion of the San Pedro River (44 miles) to be suitable as recreational for inclusion in the NWSRS. Congress has not designated the San Pedro River as part of the NWSRS.

Due to changed circumstances affecting the San Pedro River's ORVs, its eligibility and suitability are being revisited in this RMP. All other decision area streams were also evaluated for eligibility in this RMP; the only other river that meets the eligibility criteria is the Babocomari River.

Public involvement for this WSR evaluation process was included as part of scoping for the RMP from April 30 through September 27, 2013. An overview of the WSR process and a preliminary draft inventory map were presented at the August 17, 2013, education forum. The BLM presented the draft results of its initial identification process, provided educational materials regarding the WSR process, and solicited comments from the public and government agencies. The public was invited to submit comments via mail, facsimile, or email, and the BLM accepted comments until September 27, 2013. Eight

comments specific to WSR were received during scoping (refer to the SPRNCA RMP Scoping Report [BLM 2014] for more information).

The San Pedro River Wild and Scenic River Study Area Eligibility Report (BLM 2016a) describes the information that the BLM considered in the eligibility and tentative reclassification of the San Pedro River for suitability analysis in the San SPRNCA RMP.

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Chapter 2. Babocomari River

2.1 BACKGROUND

The Babocomari River is a new study river identified during the RMP planning for the SPRNCA. During the 2013 public scoping for the SPRNCA RMP, commenters asked for continued protection of the 44 miles of the San Pedro River and its designation as a WSR. They recommended an inventory of other river segments for possible WSR designation (BLM 2014).

The BLM Final Arizona Statewide Wild and Scenic Rivers Study Report, completed in 1997, identified 13 rivers, totaling approximately 233.5 river miles in Arizona, that were studied and determined suitable for designation as WSRs. They included the San Pedro River (BLM 1997) and other rivers in the Gila District (**Figure 2-1**, Wild and Scenic Rivers: Babocomari River Study Location Map). The Babocomari River was not evaluated in this study report.

The Babocomari River was evaluated in 2016 to determine its eligibility for potential designation in the NWSRS, along with a reassessment of the San Pedro River. The eligibility analysis included approximately 27 river miles from the San Pedro to its headwaters near Elgin. The evaluation found approximately 22.1 miles ineligible because the landownership was predominantly not federal. The evaluation identified approximately 4.9 miles of the river and approximately 560 acres in the SPRNCA as eligible for designation, with several ORVs and a tentative classification of scenic. The ORVs identified were scenic, recreation, wildlife, historic, and cultural.

2.1.1 Authority

The eligibility evaluations were completed under the authority of the WSRA of 1968 (PL 90-542), which Congress enacted “to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.” The suitability analysis is being prepared under the same authority, PL 90-542, and under the Federal Land Policy and Management Act of 1976 (FLPMA) for completing and maintaining inventories of the resources on public lands. Guidance for conducting river studies is provided by BLM Manual 6400—Wild and Scenic Rivers—Policy and Program Direction for Identification, Evaluation, Planning, and Management (BLM 2012).

2.2 SUMMARY





The Babocomari River study area found eligible for designation in the 2016 assessment is summarized on **Table 2-1**, below.

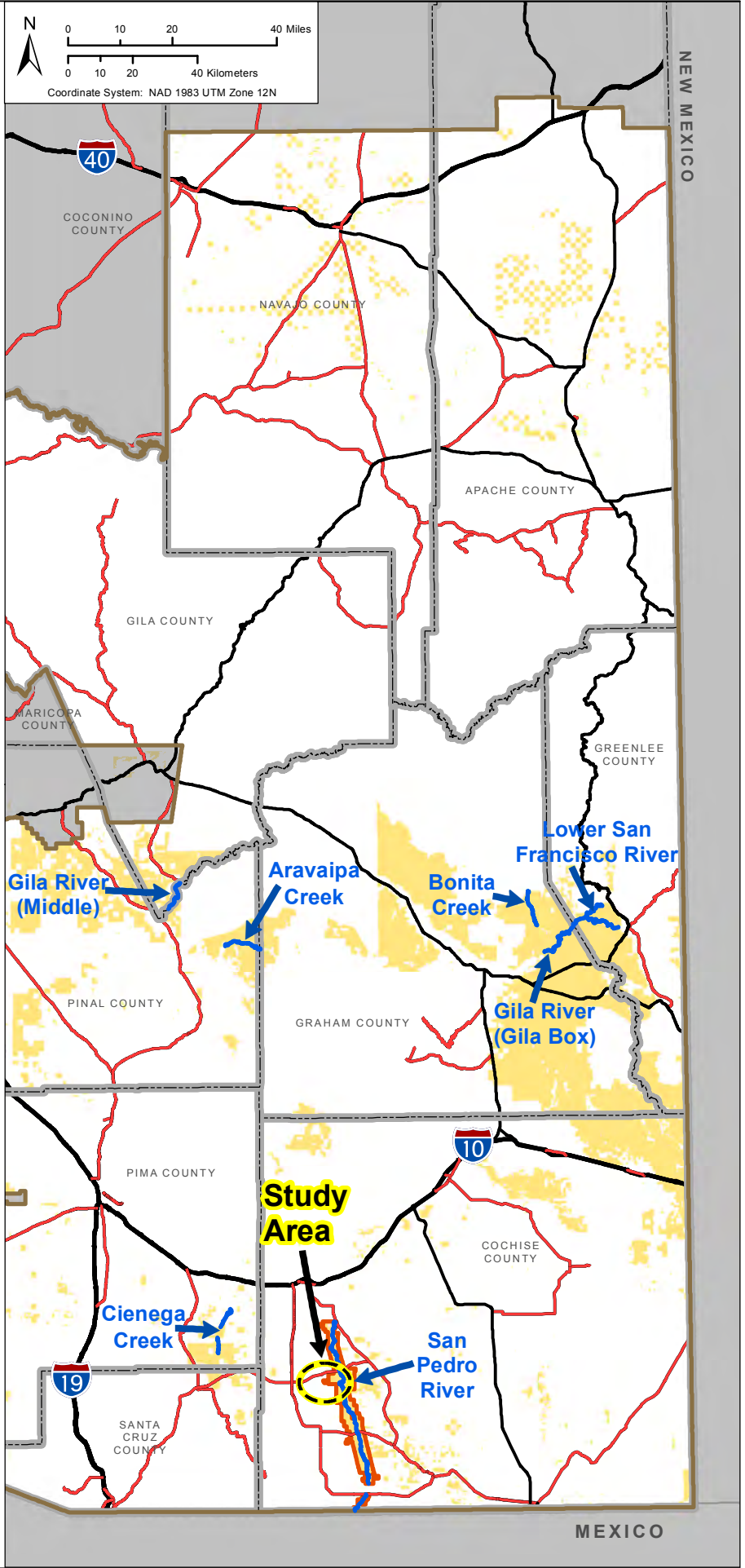
Table 2-1
Babocomari River WSR Study Area and Tentative Classification (River Miles)

Study Area	Wild	Scenic	Recreational	Total
Babocomari River	0	4.9	0	4.9

Note: The river mileage indicated above is slightly greater than the mileage on the 2016 eligibility report due to more accurate mapping of the river channel than that used at the time of the eligibility evaluation.

**Figure 2-1
Wild and Scenic Rivers:
Babocomari River Study
Location Map**

-  SPRNCA Planning Area
-  Gila District Office boundary
-  BLM-administered land
-  Wild and Scenic Study Rivers (1997)



**U.S. Department of the Interior
Bureau of Land Management
Tucson Field Office**

Date: 6/6/2018

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2.3 DESCRIPTION OF STUDY AREA

The Babocomari River is a tributary of the San Pedro River, and the study area includes approximately 4.9 miles of stream entirely in the SPRNCA (see **Figure 2-1**). The river corridor boundary is defined by the topographic break between the canyon slopes and the surrounding rolling uplands; it encompasses approximately 560 acres.

Several rural residences are on private lands next to the study area, including an inholding in the SPRNCA. A historic railroad grade follows the river in the canyon, which provides administrative access and is a designated trail route. The rail line operated in the early 1880s and connected Fairbank to Fort Huachuca, Sonoita, and Patagonia.

2.3.1 General Location and Setting

The Babocomari River study area is near the town of Sierra Vista, approximately 70 miles southeast of Tucson. Access to the study area is from Interstate 10, via State Highway 82, and a primitive resource access road.

The study area is on acquired federal lands generally situated in Township 20 South, Range 21 East, Sections 3, 4, 8, 9, 17, 18 of the Gila and Salt River Principal Meridian, Cochise County.

The natural setting is in the Basin and Range physiographic province, in the Apachian Low Valleys and Low Hills ecoregion, in the Madrean Archipelago found in southeastern Arizona. This ecoregion is characterized by basins and mountain ranges, with local relief of 3,000 to 5,000 feet, and native vegetation mostly composed of grama-tobosa shrub-steppe in the basins and oak-juniper woodland on the mountains. Elevation ranges from 3,850 feet above mean sea level near the confluence with the San Pedro River, to 4,000 feet at the SPRNCA boundary. The local climate is typical of the high deserts in southeastern Arizona, characterized by warm to hot summers and cool to cold winters. Most of the annual precipitation is in the summer rainy season, usually from June to September, with a few snowy days in the winter.

2.3.2 Segment Length

The Babocomari River study area is approximately 4.9 river miles, from the western SPRNCA boundary to its confluence with the San Pedro River.

2.4 SUITABILITY CRITERIA

1) *Characteristics that do, or do not, make the area a worthy addition to the NWSRS*

These characteristics (free flow and outstandingly remarkable values) are described in the WSRA and may include additional factors.

Free-Flowing Condition

The Babocomari River is free-flowing and has a natural and predictable flow regime. Flows are perennial, though they appear to be on a declining trend and may be transitioning to intermittent.¹ There are no diversions or impoundments in the study area. The river drains an area of approximately 306 square miles in the Huachuca Mountains, Canelo Hills, and Mustang Mountains. Peak flows occur in the summer.

¹USGS streamflow information, Babocomari gaging station

Outstandingly Remarkable Values

The following ORVs were identified in the eligibility evaluation completed in 2016:

- **Scenic**—The study area includes a scenic, relatively narrow steep-walled canyon cut through Holocene bedrock formations in the rolling hills and slopes bordering the west side of the San Pedro River. Vegetation is typical of the ecoregion, with a healthy cottonwood-willow riparian community and mesquite woodland along the narrow river bottom. The scenic quality is Class A, with many outstanding landform, vegetation, and water features, in a largely natural appearing condition (Logan Simpson 2013).
- **Recreation**—The study area is in an undeveloped backcountry area, with nonmotorized access that provides opportunities for dispersed recreation (sightseeing, hunting, and trail uses) as part of the SPRNCA. The area is relatively remote but is accessible by a designated trail along the historic railroad grade. A primitive road provides administrative vehicle access from State Route 82.
- **Wildlife**—The study area contains relatively undisturbed, high quality habitat for a variety of terrestrial and avian species, including several federally listed or proposed to be listed species.
- **Historical**—The study area includes a historic railroad grade along the river in the canyon. The grade and associated structures are visible remnants of a railroad that operated in the late 1880s and connected Fairbank, Fort Huachuca, Sonoita, and Patagonia.
- **Cultural**—The study area is known to contain abundant prehistoric and historic sites, representing human occupancy from the end of the last glacial period to historic times.

2) The current status of landownership and use in the area

The study area is predominantly BLM-administered lands, entirely within the boundaries of the SPRNCA. Due to the intermingled landownership pattern, the study area includes a private property inholding within the SPRNCA boundary (**Table 2-2**, below).

Table 2-2
Babocomari River Study Area River Miles and Landownership

Ownership	Acres	River Miles
Bureau of Land Management	525.8	3.9
Private land	31.5	1.0
Total	557.3	4.9

3) The reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS

All reasonably foreseeable potential uses of federal lands in the study area are subject to PL 100-696, which established the SPRNCA and requires the BLM “to conserve, protect, and enhance the riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources,” and to “only allow such uses of the conservation area as he finds will further the primary purposes for which the conservation area is established.”

Foreseeable and potential uses in the river study area are also subject to the land use allocations for all resources and uses in the current RMP. It is being updated and a range of alternatives are being analyzed

in the Proposed RMP.² The allowable uses under the Proposed RMP would vary among the alternatives. Discussed below are the potential impacts on those uses from designating the study river’s eligibility for inclusion in the NWSRS.

Alternatives for Designation and Classification of the Babocomari River

Described below in the text and in **Table 2-3** are the NWSRS designations for the Babocomari River under the Proposed SPRNCA RMP alternatives.

**Table 2-3
Alternatives for Suitability of the Babocomari River Study Area for Designation (Proposed SPRNCA RMP)**

Proposed RMP Alternative	Wild (Miles)	Scenic (Miles)	Recreational (Miles)
A	0	0	0
B	0	0	0
C	0	0	4.9
D	0	4.9	0

Alternatives A and B

The Babocomari study area would be eligible as scenic under Alternative A (see **Figure 2-2**, Wild and Scenic Rivers: Babocomari River Alternative A). The Babocomari study area would be determined non-suitable under Alternative B. This would be done to allow maximum flexibility for potential future management actions that may be taken to achieve multi-resource management objectives in the SPRNCA (see **Figure 2-3**, Wild and Scenic Rivers: Babocomari River Alternative B). Resources in the study area would be protected under PL 100-696 and the RMP.

Alternative C

The Babocomari study area would be determined suitable for designation with a classification of recreational (see **Figure 2-4**, Wild and Scenic Rivers: Babocomari River Alternative C).

Alternative D

The Babocomari study area would be determined suitable for designation with a classification of scenic (see **Figure 2-5**, Wild and Scenic Rivers: Babocomari River Alternative D).

Impacts on Allowable Uses from Designation



Air Quality

Uses in the study area that could emit pollutants would be managed as part of the SPRNC. The purpose would be to reduce emissions that may violate Arizona Class II air quality standards. Projects would be required to minimize surface disturbance to prevent dust emissions and mitigate potential impacts on air quality.


Designating the study river as eligible for the NWSRS would not affect uses that may affect air quality or cause of air quality standards to be redesignated. Air quality in the study area would be protected from potential impacts on the SPRNCA lands under all alternatives in the Proposed RMP.

²SPRNCA Proposed RMP/EIS, Chapter 2 (Alternatives)

**Figure 2-2
Wild and Scenic Rivers:
Babocomari River Alternative A**

-  SPRNCA Planning Area
-  BLM-administered land

Study Corridor Management

-  Eligible as scenic

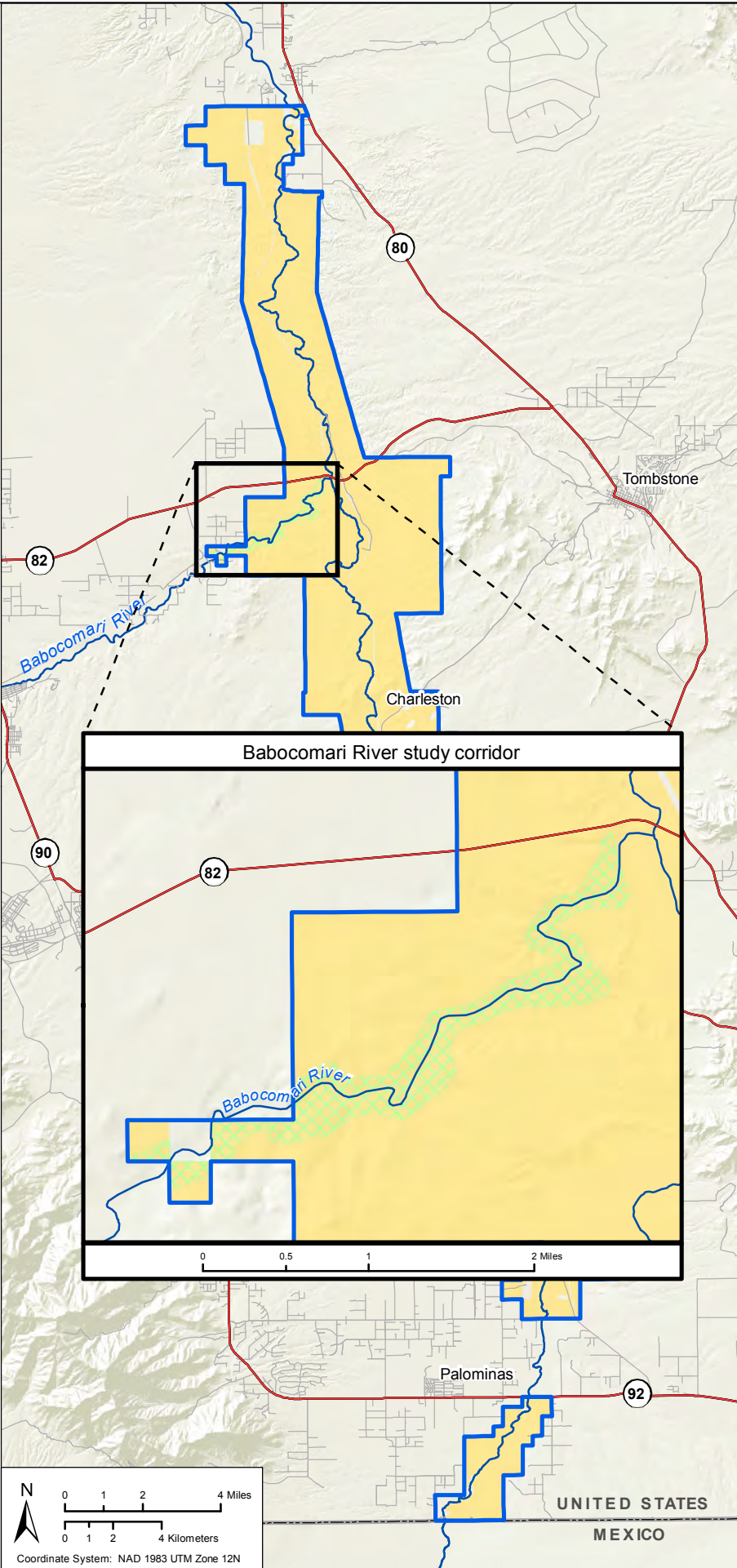
The entire BLM-administered portion of the Babocomari River in the SPRNCA (4 miles) is eligible as scenic.





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**Figure 2-3
Wild and Scenic Rivers:
Babocomari River Alternative B**

-  SPRNCA Planning Area
-  BLM-administered land

The Babocomari River study corridor is preliminarily non-suitable for designation.



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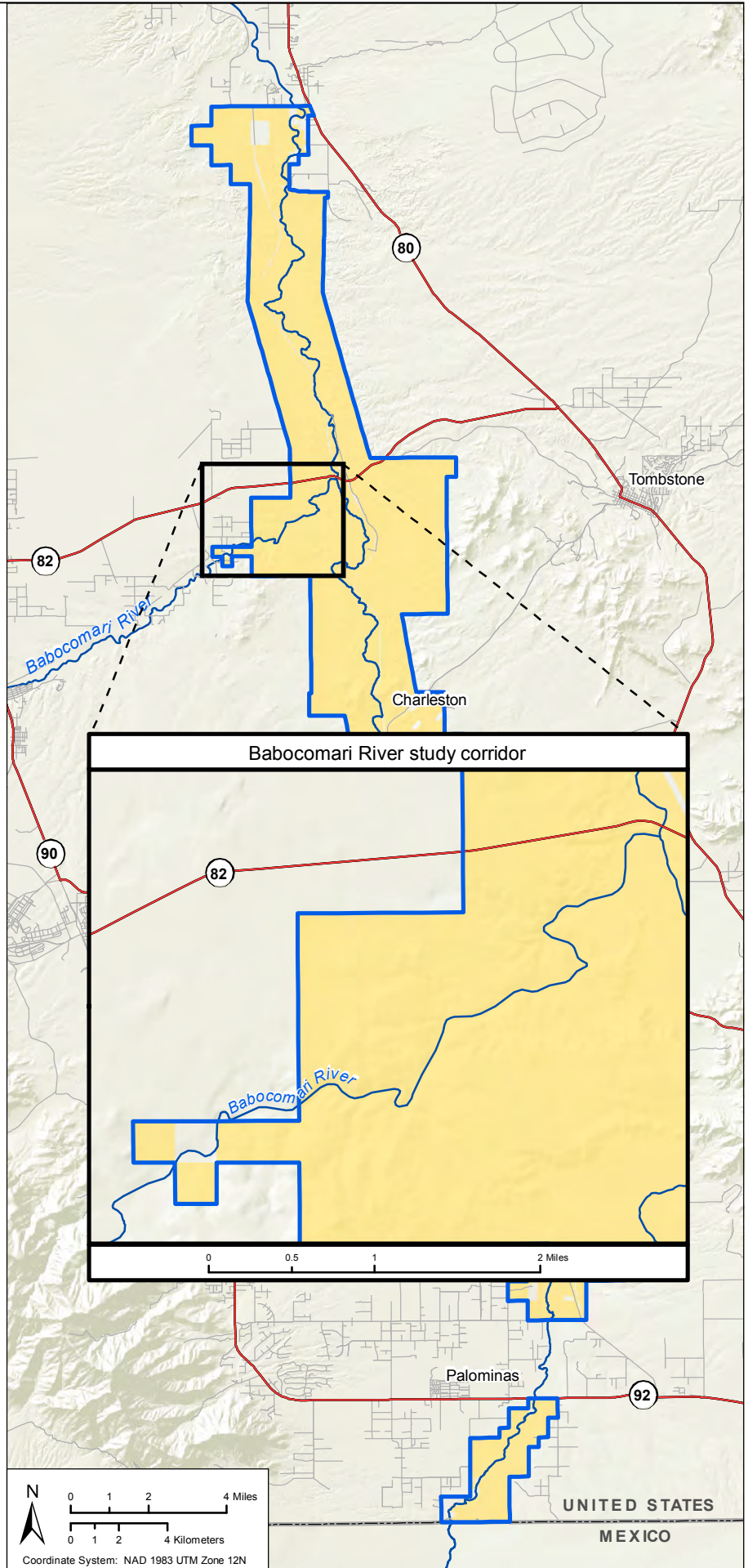





Figure 2-4
Wild and Scenic Rivers:
Babocomari River Alternative C
and the Proposed Plan

-  SPRNCA Planning Area
-  BLM-administered land

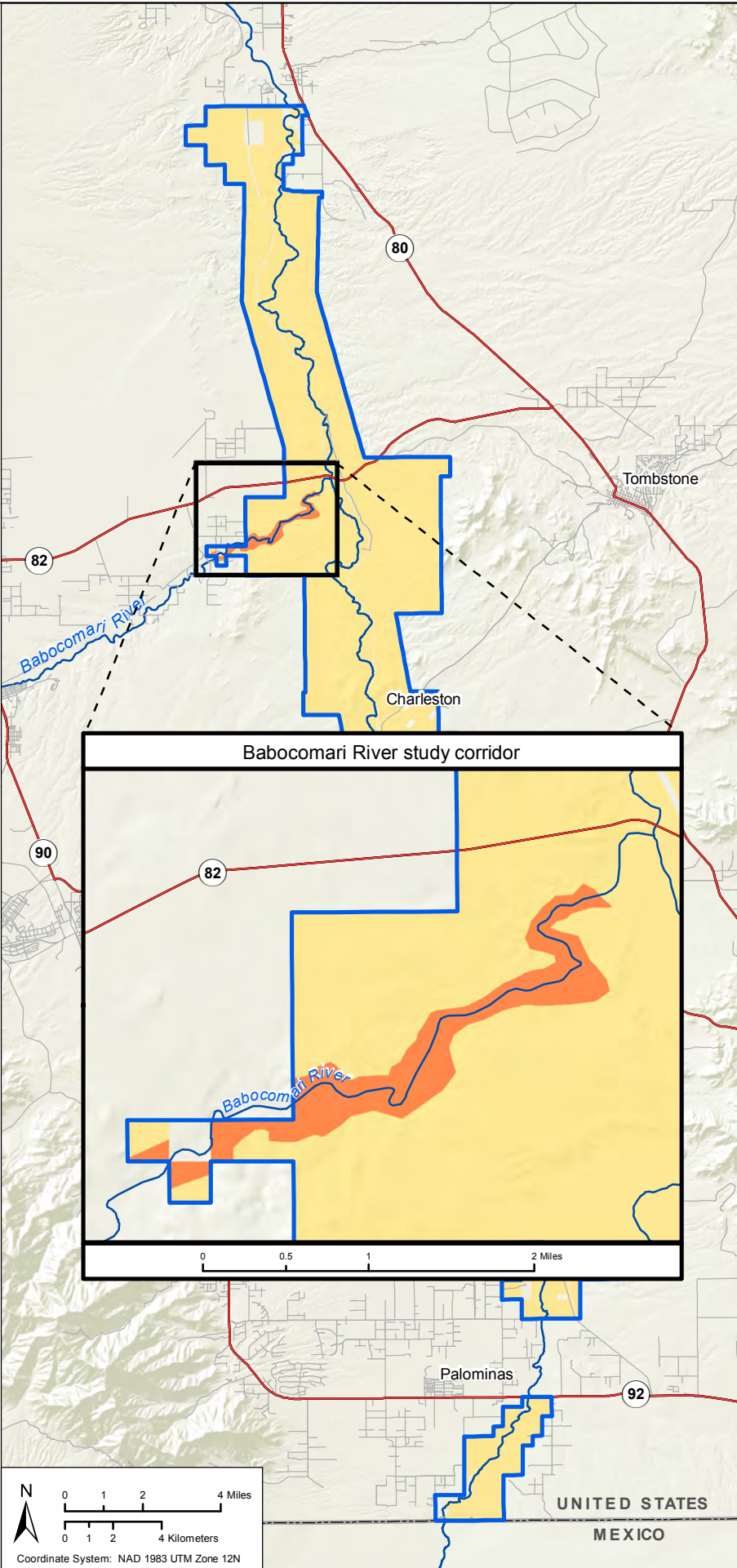
- Study Corridor Management**
-  Suitable as recreational





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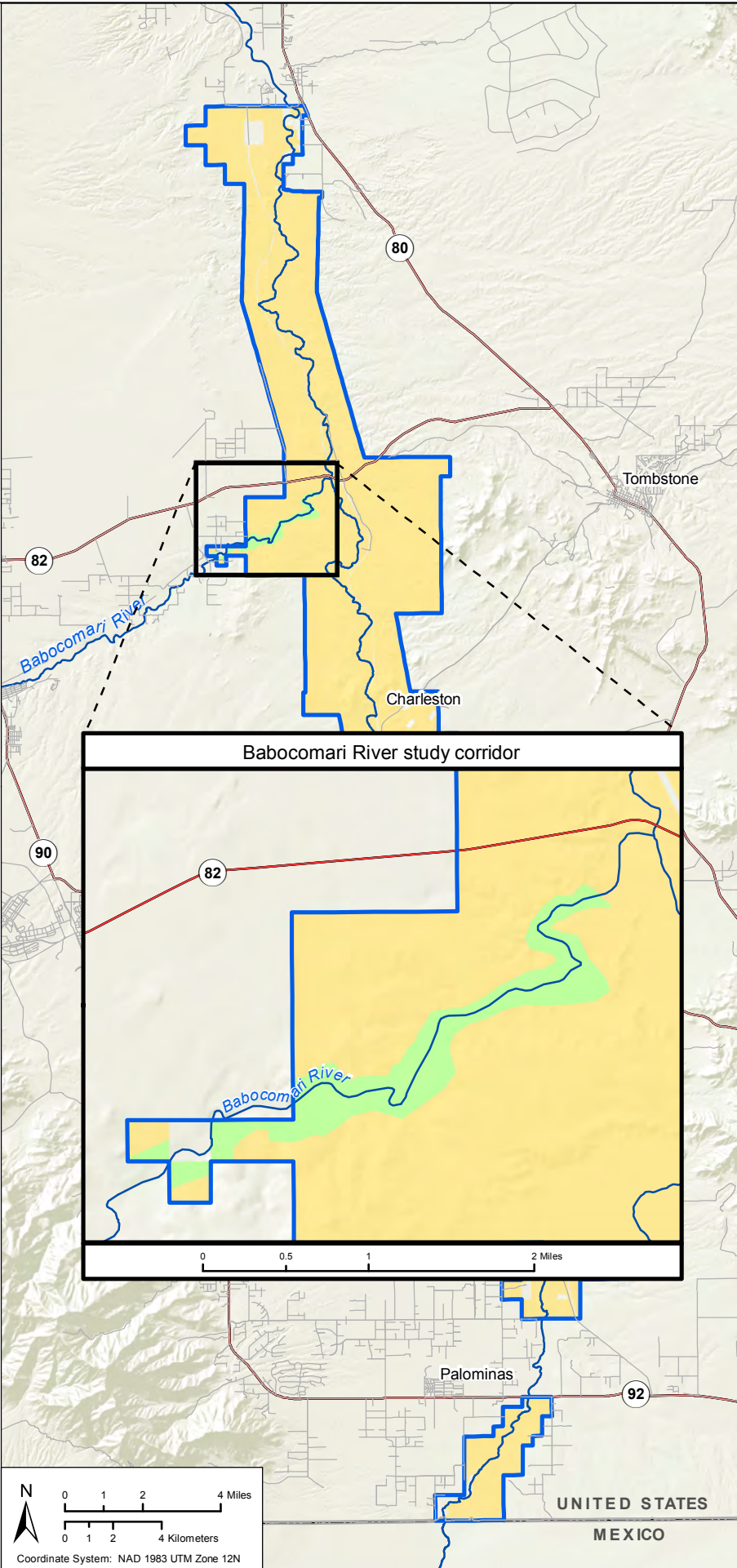
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**Figure 2-5
Wild and Scenic Rivers:
Babocomari River Alternative D**

-  SPRNCA Planning Area
-  BLM-administered land

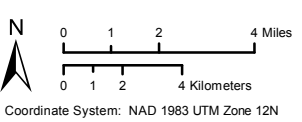
- WSR Inventory Class**
-  Suitable as scenic



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Soils and Water

Stream flows in the study area are considered perennial, but they have been declining over the past 16 years and appear to be transitioning to intermittent during dry years. The river sustains a cottonwood-willow riparian area approximately 100 to 300 feet wide in a narrow, scenic canyon. There are no federally reserved water rights on the Babocomari River, but its flows contribute to the federally reserved water rights on the San Pedro River in the SPRNCA. According to the Arizona Department of Environmental Quality (ADEQ 2015), the Babocomari River is listed as attaining the standards set by the Clean Water Act for some uses.

The study area would be found non-suitable for designation under Alternatives A and B; resource values would continue to be protected by the SPRNCA legislation and the RMP. Under Alternatives C and D, the BLM would not approve land use authorizations involving additional groundwater pumping in the SPRNCA. Use of wells for administrative purposes throughout the SPRNCA would be designed to reduce impacts on base flows in the San Pedro River; this could benefit flows on the Babocomari River.

Land and stream treatments to control soil erosion, promote watershed stability and infiltration of surface runoff, and prevent lowering of the water table would be allowed in the SPRNCA. Structural and nonstructural treatments to enhance groundwater recharge and river geomorphology would also be allowed.

Designation of the study river in the NWSRS under Alternatives C and D would not affect potential uses of water and soils; however, it may constrain the design of watershed treatments in the study area to protect river values.

Paleontological Resources

No significant paleontological resources have been identified in the study area; however, significant paleontological resources are found along the San Pedro River in the SPRNCA: the Murray Springs and Lehner sites, which are used for interpretation, education, and research.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected as part of the SPRNCA. Designating the study area for inclusion in the NWSRS under Alternatives C and D would not affect potential uses of paleontological resources if any are found in the future.

Vegetation

As part of the SPRNCA, the study area would be managed to control invasive plants and restore native species, to maintain or improve habitats, to allow for firebreaks, and to maintain unique ecological sites. Generally, vegetation treatments could be allowed to achieve vegetation management objectives, such as biological, mechanical, prescribed fire, and chemical treatments. Under Alternatives B and C. Only natural processes with limited management would be used under Alternative D.

The study area would be determined non-suitable under Alternatives A and B, and vegetation resources would be protected under PL 100-696 as part of the SPRNCA. Designation of the study area in the NWSRS would not relinquish foreseeable uses of vegetation resources; however, it could constrain the design of potential treatments in the study area to protect river values under Alternatives C and D.

Wildland Fire Management

The study area contains sensitive resource values that are at risk of loss and destruction by natural or human-caused wildland fire. As part of the SPRNCA, all fires in the study area would be managed commensurate with the values at risk, and they would be fully suppressed under all alternatives. Minimum impact suppression tactics would be employed, where required by the nature of the resource values. Appropriate emergency stabilization and rehabilitation would be implemented following a wildfire to prevent post-fire resource damage. If needed, fire breaks could be established and maintained to control the spread of fire in the wildland-urban interface and around developments and sensitive areas, including the study area.

The study area would be determined non-suitable under Alternatives A and B, and fires would be managed according to the SPRNCA RMP. Designation of the study river in the NWSRS would not affect fire management but may constrain fire suppression tactics. This would come about by requiring minimum impact suppression methods and special measures for restoration or rehabilitation activities under Alternatives C and D.

Fish, Wildlife, and Special Status Species

The study area provides a variety of natural riparian, aquatic, wetland, and upland habitats used by native fish and avian and terrestrial wildlife, including several special status species. The study area includes US Fish and Wildlife Service (USFWS) designated critical habitat for the yellow-billed cuckoo and proposed critical habitat for the northern Mexican garter snake, which is federally listed as threatened.

As part of the SPRNCA, the study area may be used for reintroducing species to recover, maintain, or increase populations, distribution, and genetic diversity under all alternatives in the Draft RMP. Projects may be considered for restoring habitat for special status species under Alternatives B and C.

The study area would be determined non-suitable for designation under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS would not affect wildlife habitat under Alternatives C and D; however, it could constrain the design of potential habitat treatments or restoration.

Cultural Resources

The study area is in an area with abundant cultural resources. It contains remnants of a historic railroad that once connected Fairbank to Sonoita and Patagonia. As part of the SPRNCA, if significant cultural resources are identified in the future, they may be evaluated and allocated for appropriate uses, such as research, education, and preservation, depending on their nature and value. They would be managed according to Section 106 of the National Historic Preservation Act (NHPA) under all alternatives in the Draft RMP. Uses and activities may include developing interpretive and educational materials, site stabilization and restoration, and detailed recording and monitoring. The historic railroad grade is used for nonmotorized trail access and for administrative vehicle access.

The study area would be determined non-suitable for designation under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP. Designating the study river

as eligible for the NWSRS under Alternatives C and D would not affect potential uses of cultural resources; it may enhance their management.

Visual Resources Management

The study area is in largely natural condition, with outstanding scenic values, and is enjoyed for its natural scenery. Visual resources in the study area are protected by the existing visual resource management (VRM) Class II designation under current management and all alternatives in the Draft RMP. In Class II areas the existing landscape is retained, with a low level of change from management activities.

The study area would be determined non-suitable for designation under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP. Designating the study area for inclusion in the NWSRS under Alternatives C and D would not affect the use of visual resources, and it may enhance their protection.

Lands with Wilderness Characteristics

The part of the study area south of the river is in an area identified as having wilderness characteristics, which are those areas that are over 5,000 acres, are roadless, and provide opportunities for solitude and primitive and unconfined recreation (BLM 2016b).³ The study area is currently used for nonmotorized dispersed recreation in a roadless, largely natural, and relatively remote setting, without specific management to protect those values. Those uses and settings would be managed to protect wilderness characteristics under Alternative D.

The study area would be determined non-suitable for designation under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS would not affect its wilderness characteristics, and, under Alternatives C and D, it may enhance protection of the resource values.

Special Designations

The study area is in the SPRNCA, a congressionally designated National Conservation Area protected by PL 100-696. There are no other administrative special designations in the study area.

The study area would be determined non-suitable for designation under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS under Alternatives C and D would not affect any specially designated areas.

Energy and Lands and Realty

Federal lands in the study area were acquired and are not open for mineral entry or disposal; these lands are closed to mineral material leasing and sales under current management. No energy projects have been identified in the SPRNCA or near the study area. The study area includes a right-of-way (ROW) for a US Geological Survey (USGS) stream gaging station and access road (AZA-31107), and a

³Wilderness Characteristics Inventory, Oxbow Unit AZ-G022-014, 2016

ROW for the historic railroad (PHX-059615). A private land inholding in the study area is used for residences.

Existing infrastructure in the ROWs would continue to be maintained under all alternatives in the Draft RMP. The entire SPRNCA, including the study area, would be open to new ROWs under Alternatives A and B, on a case-by-case basis. This could result in applications for transportation or utility ROWs. The entire SPRNCA, including the study area, would be designated an avoidance area under Alternative C. This would protect resource values if new ROW proposals were to arise. The entire SPRNCA, including the study area, would be designated an exclusion area under Alternative D, which would preclude new ROWs.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS under Alternatives C and D would constrain development of new ROWs.

Livestock Grazing

Part of the study area is grazed by cattle under current management (Babocomari allotment). The entire study area would be open to cattle grazing under Alternative B; this could require new fencing, range improvements, and access for maintaining and operating them. Most of the study corridor would be open to grazing under Alternative C; this also could require new fencing or range improvements. The entire SPRNCA would be closed to grazing under Alternative D, which may require new fencing on the SPRNCA boundary. Cattle grazing may increase the risk of water quality impacts, particularly by *E. coli* bacteria, under Alternatives B and C.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS may constrain the design of range improvements under Alternative C, particularly construction of new fencing and range improvements. Cattle grazing may also be constrained if water quality impacts exceed acceptable levels under Alternative C.

Recreation Resources

The study area is used as part of the SPRNCA for dispersed public recreation in a backcountry setting, primarily related to hunting and sightseeing along the trail. Visitation is currently low, and the designated trail has not been maintained or connected to the main San Pedro Trail near the Boquillas Ranch. The public access route from State Route 82 is limited to nonmotorized travel, and there are no designated ingress/egress public facilities.

Recreation management zones (RMZs) would be designated under Alternatives B, C, and D in the Draft RMP. This would be based on the character of the landscape, with different configurations to emphasize different recreation outcomes and settings. Under Alternatives C and D, the study area would be designated partly under a primitive RMZ and partly under a nonmotorized backcountry RMZ. This would protect nonmotorized recreation.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS would not affect recreation; it may enhance opportunities for nonmotorized recreation under Alternatives C and D.

Interpretation and Environmental Education

As part of the SPRNCA, the study area is available for interpretation and environmental education. The study area may be used for guided interpretive or educational tours, and self-interpretive exhibits or signs may be installed under all alternatives in the Draft RMP.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS would not affect interpretation or educational uses, and it may enhance opportunities for those uses.

Travel Management

The study area is designated as limited, under 43 Code of Federal Regulations (CFR) 8342, which limits motor vehicle use to designated routes under current management. The entire SPRNCA and study area would continue to be designated as limited to designated roads and trails under Alternatives B and C.

Part of the study area south of the railroad grade would be designated as closed to motor vehicle use, and the rest of the study area would be designated as limited to designated roads and trails under Alternative D. Under all alternatives, the administrative access road would be available for motorized vehicle use for administrative purposes and for nonmotorized recreation. After the RMP is completed, the route inventory for the SPRNCA would be evaluated to identify the appropriate route designations. This would be done to provide a comprehensive transportation system for administrative access and public use. River values would be considered as part of the route evaluation criteria.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS under Alternatives C and D would not affect travel management or route designations, and it may enhance nonmotorized uses.

Scientific Research and Monitoring

As part of the SPRNCA generally, the study area may be used for various scientific research and monitoring activities for various resources—groundwater, stream flows, water quality, vegetation, wildlife, and cultural resources—and other purposes. Some of these activities are conducted by other agencies and partners. The USGS would continue to operate a streamflow gaging station in the study area. These uses would continue under all alternatives in the Draft RMP.

The study area would be determined non-suitable under Alternatives A and B, and resource values would be protected by PL 100-696 and the SPRNCA RMP.

Designating the study area for inclusion in the NWSRS under Alternatives C and D would not affect research or monitoring. Access by vehicle for research and monitoring may be constrained by the travel management designations in the RMP.

4) The federal agency that will administer the area should it be added to the NWSRS

The study area is on federal lands administered by the BLM as part of the SPRNCA. It would continue to be administered by the BLM if it were added to the NWSRS.

5) The extent to which the agency proposes that administration of the river, including the costs thereof, is shared by state and local agencies

- Since the Babocomari river study area is in the SPRNCA, the BLM would continue to administer its resources and uses according to PL 100-696, other laws, public land regulations, and the SPRNCA RMP. The study area is small and would not require a high level of management intensity. It is not expected to increase current administration costs significantly.
- The BLM currently works with other agencies, organizations, and individuals in its management; this includes providing visitor services and information, monitoring, and other activities under partnership agreements or voluntary contributions.
- The USGS would continue monitoring stream flows.
- State agencies, such as the ADEQ and Arizona Game and Fish Department (AZGFD), would continue to administer state laws and regulations within their authority.
- Cochise County would continue to regulate land use and development on private land in the study area, through zoning and building requirements for new developments.
- The BLM would pursue volunteers from local groups and organizations to help implement various projects or management; this would include such activities as public outreach, interpretation and education, trail maintenance, signing, resource and use monitoring.

6) The estimated cost to the United States of acquiring necessary lands or interests in land within the corridor, as well as the cost of administering the area, should it be added to the NWSRS

Potential acquisition costs based on all private land acres in the study corridor (undeveloped and developed)

Most of the Babocomari River study area is BLM-administered land, with approximately 31.2 acres of private land inholdings developed for residential use.

A rough estimate of acquisition costs, assuming a willing seller, is approximately \$30,000, based on labor and incidental acquisition costs, such as those for property surveys, environmental assessment, appraisals, legal description, title work, and environmental professional and legal services. The estimated purchase price is roughly \$0.5 to \$1 million, depending on property values and other factors at the time of acquisition.

Cost of administering the area if designated as eligible for the NWSRS

The cost of administering the study area would be about the same as current costs, because the BLM is already administering it for conservation purposes. The additional acreage from acquiring inholdings would be small. Administration costs are not expected to increase significantly, except for one-time costs for land restoration projects that may be needed.

The total additional cost to administer the study area is estimated at less than one work month for basic custodial management, or approximately \$4,000 annually.

7) A determination of the extent that other federal agencies, the state, or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS

The BLM would be the primary agency responsible for administration in the study river. Federal, state, or other agencies would continue to participate within their own agency programs and authorities to achieve common or related purposes.

The USGS operates a stream gauge monitoring station on the Babocomari River, and it has been collecting stream flow information for over 10 years. The data collected benefits water resource management in the basin and the SPRNCA.

The USFWS would continue providing technical assistance and consultations under the Endangered Species Act of 1973 (ESA). It would do this on a case-by-case basis, whenever the BLM is considering land use plans or project proposals. The USFWS has designated critical habitat in the study area.

The BLM would pursue the participation of Arizona State Parks for shared funding through its grant programs for eligible activities. Examples of these activities are recreation site construction and improvements, trails, accessibility, education, interpretation, preservation, and signing.

The AZGFD would continue participating in wildlife habitat preservation through cooperative habitat improvement projects or habitat management plans and enforcement of hunting and off-highway-vehicle (OHV) regulations.

Cochise County would continue to administer zoning regulations on private land development in the river corridor.

8) An evaluation of local zoning and other land use controls in protecting the river's outstandingly remarkable values and preventing incompatible development

Cochise County regulates private lands development in the study area through zoning districts (Cochise County 2015). The 31-acre private land inholding in the study area is in an RU-4 zoning district. It provides for residential development on lots with a minimum size of 4 acres. There are three residences on the inholdings, and an additional three to four residences could be developed under current zoning. Current zoning promotes low density rural residential development, which would be compatible with protecting river values.

9) The statelocal government's capacity to manage and protect the outstandingly remarkable values on non-federal lands; this factor requires an evaluation of the river protection mechanisms available through the authority of state and local governments. Such mechanisms may include, for example, statewide programs related to population growth management, vegetation management, and water quantity or quality or protection of river-related values, such as open space and historic areas

The study area includes a relatively small amount of non-federal land, consisting of several private land parcels. State and local regulations could be applied to help protect the San Pedro River values through

zoning and development permitting. This would keep the area's character rural and natural and would reduce the demand for groundwater.

10) The existing support or opposition of designation; assessment of this factor will define the political context. The interest in designation or non-designation by federal agencies; state, local, and tribal governments; national and local publics; and the state's congressional delegation should be considered

During the BLM's 2013 public scoping process for the SPRNCA RMP revision, it received a few comments on designating the San Pedro River as eligible for the NWSRS. The comments were from nongovernmental organizations: Friends of San Pedro River, Sierra Club Grand Canyon Chapter, Center for Biological Diversity, and the Huachuca Audubon Society. Commenters asked for continued protection of the San Pedro River and studies on other rivers for potential designation. The BLM received no comments addressing designation from any federal, state, county, or town governments.

Additional opportunities will be available for public comment on the Draft RMP, including preliminary suitability recommendations for designation of the Babocomari River in the NWSRS. The BLM will consider comments received during the RMP and EIS process when finalizing this suitability report.

11) The consistency of designation with other agency plans, programs, and policies in meeting regional objectives

Designation may help or impede the goals of tribal governments or other federal, state, or local agencies. For example, designating a river may contribute to state or regional protection objectives for fish and wildlife resources. Similarly, adding a river that includes a scarce recreation activity or setting to the NWSRS may help meet statewide recreation goals; however, designation might limit irrigation or flood control measures in a manner that is inconsistent with regional socioeconomic goals.

BLM reviewed the following plans for their consistency with NWSRS designations.

- Arizona's Statewide Comprehensive Outdoor Recreation Plan (SCORP)—The recreation opportunities available in the study area, together with those available in the SPRNCA, meet some of the recreation demand identified in the 2013 SCORP (Arizona State Parks 2013).
- Arizona Trails Plan—The trail in the study area, together with the San Pedro Trail System, meets some of the demand for nonmotorized trail use identified in the Arizona Trails Plan, approved by the Arizona State Parks board in 2009 (Arizona State Parks 2009).
- Cochise County Comprehensive Plan (CCCP)—The SPRNCA generally is valued and is essentially considered by Cochise County to be protected open space. Land use zoning in the study area and adjacent land promotes a rural character, with relatively large residential lots and low density; however, the CCCP contains no specific designation for open space or park protection related to the river.

12) The contribution to river system or basin integrity

This factor reflects the benefits of a systems approach (e.g., expanding the designated portion of a river in the NWSRS or developing a legislative proposal for an entire river system—headwaters to mouth—or watershed). Numerous benefits may result from managing an entire river or watershed, including the ability to design a holistic protection strategy in partnership with other agencies and the public.

Although small, the study area is one of a few rivers found eligible for designation. It contributes to the integrity of the San Pedro River and the integrity of the Upper San Pedro Basin in sustaining diverse, healthy riparian, aquatic, and upland habitats connected to the surrounding mountains.

The study area's location in the Madrean Archipelago ecoregion in Arizona would contribute toward broadening the representation of natural landscapes in the NWSRS.

13) The potential for water resources development

Identify any proposed water resource projects that may be relinquished, as designation may limit development of water resources projects as diverse as irrigation and flood control measures, hydropower facilities, dredging, diversion, bridge construction, and channelization.

There are no such planned or proposed projects in the study area. There is some potential for development of small structural improvements in the study area to promote groundwater recharge under all alternatives in the Draft RMP, except Alternative D. Structural projects in the channel may not be constructed if the study area is designated, but no projects have been proposed.

The potential for groundwater development on private land inholdings is likely; however, this is beyond the jurisdiction of the BLM, unless it acquires inholding, such as new wells, continued use of wells, or deepening of existing wells as water table drops. Continued groundwater pumping could increase the local cone of depression in the water table and affect the rivers' flows over time. This also could continue to gradually transition intermittent flows.

2.5 SUITABILITY DETERMINATION

The preliminary determination is that the Babocomari River study area in the SPRNCA is suitable for designation as recreational in the NWSRS, as described in Alternative C in the Draft RMP. It is also suitable for designation in the NWSRS as scenic, as described in Alternative D in the Draft RMP.

Key factors in this determination are the following:

- The study river is free flowing, with perennial flows, and it contains ORVs.
- The study area consists primarily of federal land already administered under PL 100-696 for conservation purposes.
- Foreseeable land and water uses under the management alternatives in the Draft RMP would be minimally affected by designating the river for inclusion in the NWSRS.
- Estimated land acquisition and administration costs are anticipated to be low and reasonable, though acquiring parcels already developed for residential use may not be feasible.
- The study river is mostly under BLM jurisdiction, and it could be administered as part of the SPRNCA with minimal impacts.
- The public generally supports designation; support from local government agencies is uncertain.
- Designation would be generally consistent with state agency plans.
- Designation would contribute to preserving the integrity of the Upper San Pedro basin and would contribute to representing underrepresented ecoregions in the NWSRS.
- Designation would not relinquish any water resource development projects.

Chapter 3. San Pedro River

3.1 BACKGROUND

The San Pedro River was studied and described in the Arizona Statewide WSR Legislative EIS (BLM 1994b). This 1994 study identified two river segments, totaling 44 river miles, in the SPRNCA as eligible for designation in the NWSRS, with a recreational classification. The river segments were determined suitable for designation, and the Associate Secretary of the Interior approved the recommendation in 1997 (BLM 1997). Congress has not designated the river, and it is presently under protective management, as identified in the BLM Safford RMP/EIS, approved in 1992 (BLM 1992).

During the BLM public scoping for the SPRNCA RMP in 2013, commenters asked for continued protection of the 44 miles of the San Pedro River and its designation as a WSR. They recommended an inventory of other river segments for possible WSR designation (BLM 2014).

In an eligibility reassessment completed in 2016 the BLM evaluated the San Pedro River study area for changes in the study area that have occurred in the 20 years since the 1997 study. The BLM also determined whether those changes affect the eligibility or suitability determinations. In the SPRNCA RMP the agency identified potential amendments to its recommendations for designation. Notable changes in the study area are landownership, access, and the condition of natural resources. Using more accurate river length measurements using current geographic information system (GIS) data, the BLM determined that the 44 river miles reported in the 1997 EIS are closer to 50.8 miles. Based on the location of the river channel in 2015 aerial imagery, the channel alignment has remained relatively stable since 1994.





Statewide Arizona legislative EIS recommendations (BLM 1997)—The Final Arizona Statewide Wild and Scenic Rivers Study Report identified the two segments of the San Pedro River, totaling 44 river miles, as suitable for designation as recreational. The San Pedro River was one of 13 rivers on BLM-administered lands in Arizona, totaling approximately 233.5 river miles; this included several rivers in the Gila District (**Figure 3-1**, Wild and Scenic Rivers: San Pedro River Study Location Map).

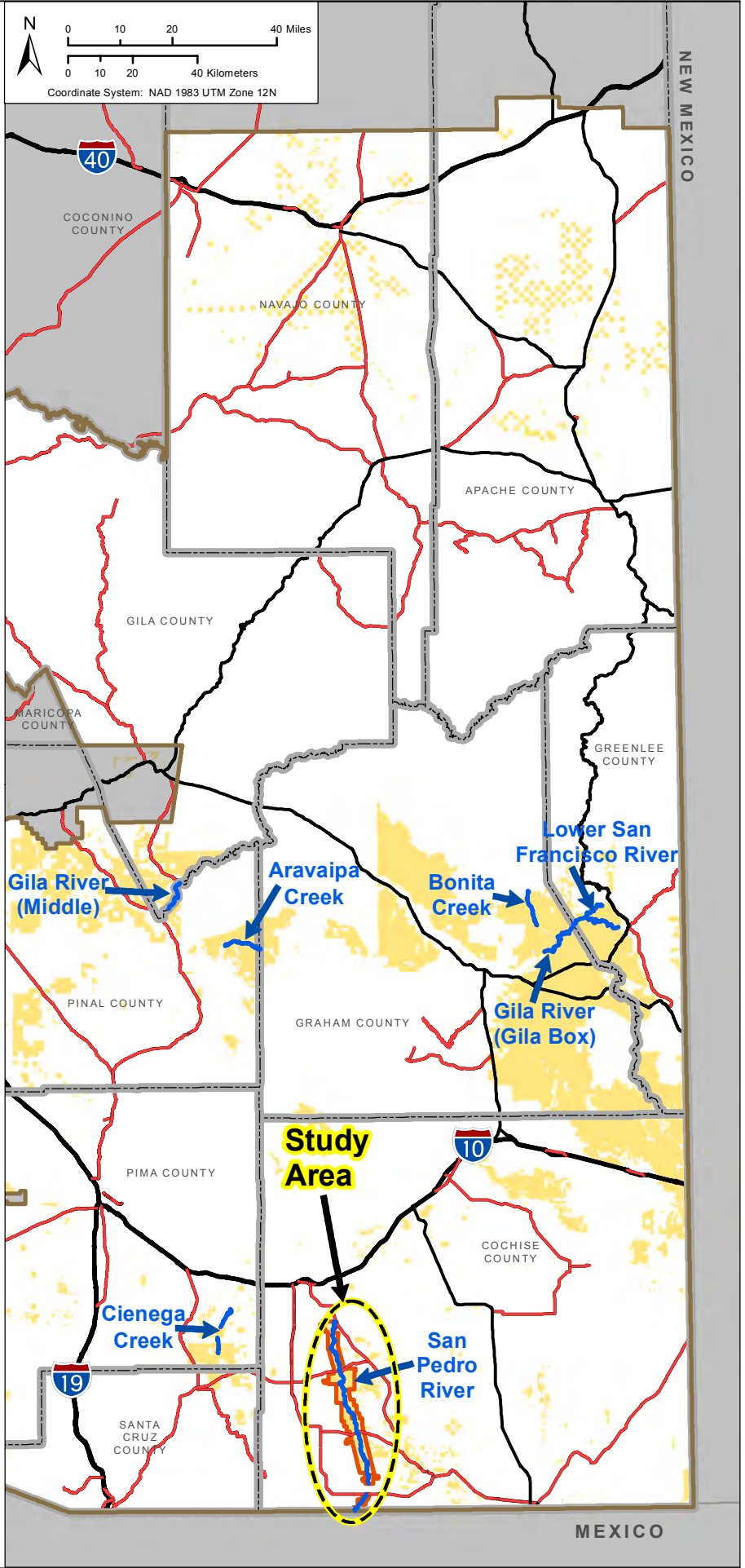
GIS data and landownership changes since 1996—The BLM made several land acquisitions in the SPRNCA that increased the amount of public land in the river study area by approximately 521 acres.

2016 reassessment of San Pedro River (eligibility and tentative re-classifications)—The BLM reevaluated the San Pedro River in 2016 to determine if any changes in circumstances had occurred since the 1997 suitability determination. The changes in circumstances include a minor change in the amount of federal land in the study area, due to BLM acquisitions in the SPRNCA, access, and condition of riparian vegetation and habitat.

This report documents the reassessment of the San Pedro River's ORVs and tentative changes in its classification and suitability for designation in the NWSRS.

**Figure 3-1
Wild and Scenic Rivers:
San Pedro River Study
Location Map**

-  SPRNCA Planning Area
-  Gila District Office boundary
-  BLM-administered land
-  Wild and Scenic Study Rivers (1997)



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3.1.1 Authority

The BLM made the eligibility evaluations under the authority of the WSRA of 1968 (PL 90-542), which Congress enacted “to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.” The reevaluation was done under the authority of the FLPMA for completing and maintaining inventories of the resources on public lands. BLM Manual 6400—Wild and Scenic Rivers—Policy and Program Direction for Identification, Evaluation, Planning, and Management (BLM 2012) provided guidance.

3.2 SUMMARY

The San Pedro River study area found eligible for designation in the 2016 assessment is summarized in **Table 3-1**, below.

Table 3-1
San Pedro River WSR Study Area and Tentative Classification (River Miles)

Study Area	Wild	Scenic	Recreational	Total
San Pedro River	27.7	11.8	8.8	48.3

3.3 DESCRIPTION OF STUDY AREA

The San Pedro River study area is one of a few free-flowing perennial streams in southeastern Arizona. The river flows in a shallow valley approximately 1/2 to 1 mile wide, bounded by low hills and bajada slopes. There is a relatively narrow cottonwood-willow riparian forest along the river that is from 200 to 800 feet wide. Land use in the study area includes wildlife habitat, developed and dispersed recreation (camping, hiking, biking, equestrian riding, birding, and viewing historic/cultural sites) utilities (power line, natural gas line, and surveillance tower), transportation (highways, roads, trails, and an abandoned railroad), and research. Rural residential areas are near the river in the Palominas, Hereford, Escapule and Escalante Crossing areas.

3.3.1 General Location and Setting

The study area is near the town of Sierra Vista, approximately 70 miles southeast of Tucson (**Figure 3-1**). Access to the study area is from Interstate 10 via State Highways 82, 90 and 92, county-maintained Charleston and Hereford roads, and BLM primitive roads and trails.

The natural setting is in the Basin and Range physiographic province, in the Apachian Low Valleys and Low Hills ecoregion (USGS 2013), which is in the Madrean Archipelago in southeastern Arizona. This ecoregion is characterized by basins and mountain ranges, with local relief of 3,000 to 5,000 feet. Native vegetation is mostly composed of grama-tobosa shrub-steppe in the basins, with oak-juniper woodland on the mountains. The San Pedro River is at the bottom of the upper basin, bordered by the Dragoons Mountains, Huachuca Mountains, Canelo Hills, and Mustang Mountains. Elevation ranges from 3,650 feet above mean sea level at the north terminus to 4,290 feet at the international boundary. The climate is typical of the high deserts in southeastern Arizona, with warm to hot summers and cool to cold winters. Most of the annual precipitation is in the summer rainy season, usually from June to September.

3.3.2 Segment Length

The San Pedro River study area includes the two river segments previously studied, totaling approximately 48.3 river miles from the international boundary between the United States and Mexico,

to the SPRNCA boundary along Escalante Crossing. The study area is entirely in the SPRNCA (**Figure 3-1**).

The river segment on private land between State Highway 92 and the SPRNCA boundary near Waters Road was found non-suitable in 1997 and is not included in this study (BLM 1997). The river miles indicated in this report differ from the miles indicated in the 1997 study report, due to today's more accurate measurements of the river channel alignment.

3.4 SUITABILITY CRITERIA

Characteristics that do, or do not, make the area a worthy addition to the NWSRS. These characteristics (free flow and outstandingly remarkable values) are described in the WSRA and may include additional factors

Free-Flowing Condition

The San Pedro River is free flowing and is considered perennial, with intermittent stretches. There are no impoundments, but there is one diversion near the north terminus of the study area for the Saint David Irrigation Ditch.

Outstandingly Remarkable Values

The ORVs identified in the 2016 eligibility reassessment include scenic, recreational, fish and wildlife habitat, cultural, historic, paleontological, and botanical. The ORVs identified in the 1997 river study are still present. A new ORV for botanical resources was identified, due to the outstanding and diverse native vegetation cover, which has developed since current management was put in place for the SPRNCA.

- **Scenery**—The study area is scenic and is viewed at all distances along state and county highways, recreation trails and sites, and the residential developments in the surrounding area. The study area appears largely natural in the landscape, with many outstanding landform, vegetation, and water features. In the visual resources inventory completed for the SPRNCA in 2012, the BLM identified the study area as having Class A scenic quality and a Class II visual resource inventory (VRI) (Logan Simpson 2013).

In the current RMP, the BLM designated portions of the river study corridor in several areas of critical environmental concern (ACECs) (Saint David Ciénega, San Pedro River, and San Rafael) under VRM Class I. This was done to preserve the character of the landscape and provide for natural ecological changes, with very limited management activity. The rest of the riparian corridor was designated under VRM Class II to retain the character of the landscape.

- **Recreational**—Together with the other SPRNCA lands, the study area provides opportunities for dispersed outdoor recreation in a variety of settings, ranging from rural to primitive. Designated access points with minimal facilities and visitor services are available along States Route 82, 90, and 92 and Charleston, In Balance, Cary, Waters, and Hereford Roads. Public contact and information centers staffed by volunteers are available at the Fairbank Historic Townsite and San Pedro House, with self-serve information kiosks at trailheads at locations throughout the SPRNCA.

The San Pedro Trail System, initially established in 1995, provides opportunities for hiking, horse, and bicycle access to backcountry recreation in remote areas away from access points and between trailheads.

Recreation opportunities, which attract most of the public use, include scenic sightseeing, wildlife viewing, hunting, viewing sites of historic, prehistoric, or paleontological interest, viewing high desert vegetation, viewing the river and riparian woodland, and backcountry camping.

Bird watching opportunities are internationally renowned, and the San Pedro River is recognized as a globally important bird area. Fishing opportunities are limited, with warm water exotic species attracting limited use. River floating is severely limited by the short duration river flows, narrow channel, and sections of channel obstructed by vegetation or debris.

Water play (wading and swimming) attracts some use, particularly near the public access points along the highways. Hunting opportunities for deer, javalina, dove, quail, and other game species are available, with nonmotorized access facilitated by the trail system. State hunting regulations prohibit use of fire arms for hunting in the SPRNCA, between Charleston Road and State Route 92, to protect public safety; this limits hunting to archery use.

Visitor facilities and services include gravel parking areas, trails, vault toilets, signs, interpretive exhibits, trash collection and disposal, and visitor information. Visitor stations are available at the Fairbank Historic Townsite and the San Pedro House. Volunteer site hosts assist with visitor services and grounds maintenance, though the position for the San Pedro House site host has been vacant for several years.

- **Fish**—The San Pedro River provides aquatic habitat for native and exotic species, such as the desert pupfish and Gila topminnow. These native fish species are listed as endangered by the USFWS under the ESA. Habitat for fish species is limited by poor water quality, which leads to occasional fish kills. The river segment between State Route 90 and Charleston Road offers the most reliable fish habitat, due to generally sufficient flows and good water quality. The segment from Fairbank to the Saint David Irrigation Ditch diversion is not considered fish habitat, due to insufficient flows and poor water quality. Sport fish species that may be found in the river are channel catfish, green sunfish, black bullhead catfish, carp, and occasionally largemouth bass.
- **Wildlife Habitat**—Biological and resource studies since the 1996 river study report have identified numerous resident and migratory avian species that use the San Pedro River year-round or for part of the year. Many rare and unique avian species may be present at times. The San Pedro River is in a critical location along a north-south migratory corridor for neotropical birds from South America to Canada. Many species depend on the river for survival.

The study area includes habitat for federally listed (or proposed for listing) species: Huachuca water umbel, southwest willow flycatcher, yellow-billed cuckoo, northern Mexican garter snake, desert pupfish, Gila topminnow, lesser long-nosed bat, jaguar, and ocelot. Critical habitat designated or proposed for designation by the USFWS is found in study area for the following species: Huachuca water umbel, listed as endangered; the northern Mexican garter snake, listed as threatened, and the yellow-billed cuckoo, also listed as threatened. The critical habitat designations, or proposed critical habitat designations, were made after the 1996 rivers study report, and highlight the importance of these ORVs.

Together with the entire SPRNCA, the study area provides habitat that supports game species that attract hunters for javalina, mule deer, white-tailed deer, dove, quail, rabbit, waterfowl, predators, and fur bearers. Additionally, the study area supports a high diversity of reptile species, including lizards, snakes, amphibians, and insects, which attract research and wildlife viewing for enjoyment.

- **Cultural**—The study area includes significant cultural resources, including several allocated for public use. Numerous sites represent evidence of human occupancy by various peoples from the end of the last glacial age through historic times. Significant sites allocated for public interpretation and educational purposes are the Presidio de Terrenate, Boquillas Ranch, Fairbank Historic Townsite, Millville, site, San Pedro House, Clanton Ranch, and the international border.
- **Historic**—The study area includes the historic townsites of Fairbank, Contention, and Charleston and remnants of mining and ore processing (Millville, Boston Mill, and Central Station Mill), historic railroad grades, historic roads and trails, historic ranching (Clanton Ranch), and farming (Del Valle and Palominas). These sites represent land use and development during the area’s mining boom of the late 1800s. The Fairbank Historic Townsite and San Pedro House have been refurbished and restored and are managed to provide visitor contact and information facilities.
- **Paleontological**—Geologic formations in the study area include alluvial deposits dating to the last glacial age (Holocene), approximately 11,000–13,000 years ago, which contain world renowned paleontological resources. The Lehner and Murray Springs sites, both National Historic Landmarks, are next to the study area. Both sites have contributed information, which helped date and understand the Clovis culture in North America during the last ice age, and the interactions of humans and mega fauna. Both sites are internationally renowned for scientific research, education, and visitation.
- **Botany**—The river study area supports a high variety of riparian and upland vegetation, which attracts the public for research, education, sightseeing, and recreation and provides habitat for wildlife. The study area includes outstanding cottonwood/willow gallery tree woodland, mesquite bosque, sacaton grassland, mixed desert shrubs and other vegetation communities. It also has examples of the natural revegetation process, converting previously irrigated farm fields into native vegetation cover, mostly sacaton grass land and mesquite bosque.

2) The current status of landownership and use in the area

Existing Study Corridor

The existing river study area primarily consists of BLM-administered land as part of the SPRNCA. Acquisitions since the 1994 river study report was completed increased federal land in the quarter-mile river corridor by approximately 521 acres. This study area was determined suitable for designation in the NWSRS in 1997; it and now includes approximately 13,998.5 acres (**Table 3-2**, below). The private lands in the study corridor mainly consist of the Union Pacific Railroad right-of-way, abandoned farm fields, or undeveloped parcels; several parcels contain residences.

Proposed River Study Corridor

The proposed river study area, defined by topography, primarily consists of BLM-administered land as part the SPRNCA (**Table 3-3**, below).

The lands in the SPRNCA, including the existing and proposed river study corridors, are withdrawn from mineral entry under PL 100-696 and are closed to mineral material leasing or sales under current management. The study area includes several existing land use authorizations for transportation, utilities, or special purposes.

**Table 3-2
San Pedro River 1997 Study Area River Miles and Landownership**

Ownership	Acres	River Miles
Bureau of Land Management	12,872.7	45.3
International Boundary Waters Commission	3.0	0.01
Private	1,122.8	2.9
Total	13,998.5	48.3

Source: BLM 1997

**Table 3-3
San Pedro River Proposed Study River Miles Landownership**

Ownership	Acres	River Miles
Bureau of Land Management	16,567.5	45.3
International Boundary Water Commission	8.4	0.01
Private	1,278.6	2.9
Total	17,854.5	48.3

3) The reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS

All reasonably foreseeable potential uses of federal lands in the study river corridor are subject to PL 100-696, which established the SPRNCA and requires the BLM “to conserve, protect, and enhance the riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources” and to “only allow such uses of the conservation area as he finds will further the primary purposes for which the conservation area is established.” The SPRNCA is withdrawn from mineral entry and disposal by PL 100-696.

Foreseeable and potential uses in the existing and proposed river study corridor are also subject to the land use allocations for all resources and uses in the current RMP and in the management alternatives being considered in the Proposed RMP⁴ for the SPRNCA.

Discussed below are the potential impacts of designating the study river for inclusion in the NWSRS.

Alternatives for Designation and Classification of the San Pedro River

The NWSRS designations for the San Pedro River are described below and in **Tables 3-4** through **3-6**.


Alternative A

The existing San Pedro River study area would remain under the current protective management as suitable for designation in the NWSRS, with a recreational classification and a quarter-mile-wide corridor (**Table 3-4**). The suitability recommendation approved by the Secretary of the Interior in 1997 would remain unchanged (**Figure 3-2**, Wild and Scenic Rivers: San Pedro River Alternatives A, B). The river segment on International Boundary Waters Commission property is non-suitable.


⁴SPRNCA Proposed RMP/EIS Chapter 2 (Alternatives)

Figure 3-2
Wild and Scenic Rivers:
San Pedro River Alternatives A, B

 SPRNCA Planning Area

 BLM-administered land

Study Corridor Management

 Suitable as recreational



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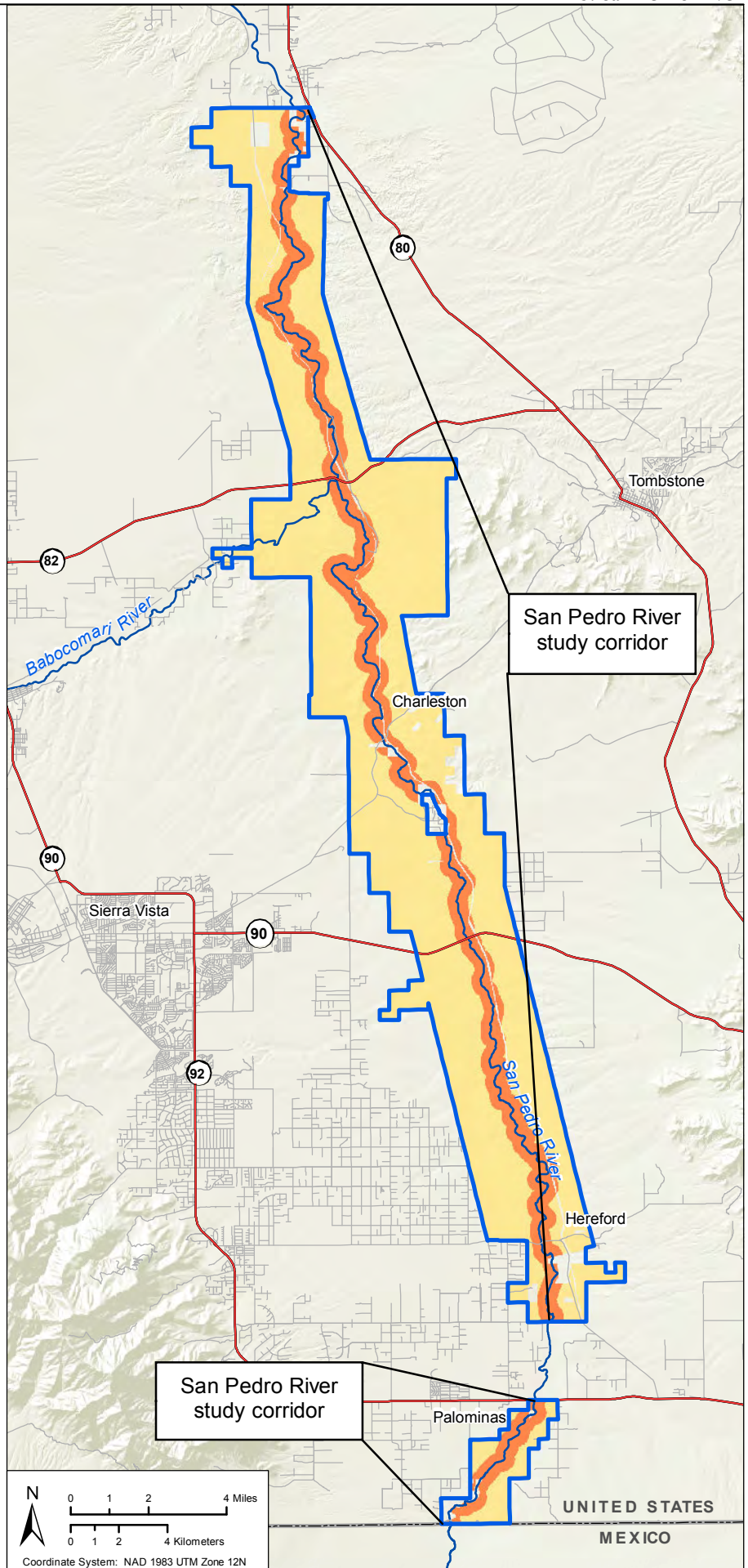


Table 3-4
Alternatives A and B for San Pedro River Study Area Designation (Draft RMP)

Tentative Class	River Miles	BLM-Administered Acres	Private Acres	Total Acres
Wild	0	0	0	0
Scenic	0	0	0	0
Recreational	48.3	12,872.7	1,122.8	13,995.5
Total	48.3	12,872.7	1,122.8	1,3995.5

Alternative B

The existing San Pedro River study area would remain under protective management as suitable for designation in the NWSRS, with a recreational classification and a quarter-mile-wide corridor, same as Alternative A (**Figure 3-2**, Wild and Scenic Rivers: San Pedro River Alternatives A, B). The suitability recommendation approved by the Secretary of the Interior in 1997 would remain unchanged (**Table 3-4**). The river segment on International Boundary Waters Commission property is non-suitable.

Alternative C

The San Pedro River study area would be determined suitable under this alternative, classified as recreational. The river corridor would be redefined to follow the topographic break of the river valley and along the top of the valley slopes. The redefined corridor would include lands in the river valley next to the river that are outside the quarter-mile corridor (**Figure 3-3**, Wild and Scenic Rivers: San Pedro River Alternative C). The suitability recommendation approved by the Secretary of the Interior in 1997 would be amended to reflect the proposed study area (**Table 3-5**). The river segment on International Boundary Waters Commission property is non-suitable.

Table 3-5
Alternative C for San Pedro River Study Area Designation (Draft RMP)


Tentative Class	River Miles	BLM Acres	Private Acres	Total Acres
Wild	0	0	0	0
Scenic	0	0	0	0
Recreational	48.3	16,567.5	1,278.6	17,846.1
Total	48.3	16,567.5	1,278.6	17,846.1

Alternative D


The San Pedro River study area would be determined suitable for designation. Multiple segments would contain wild, scenic, and recreational tentative classifications, as shown on the Draft RMP (**Figure 3-4**, Wild and Scenic Rivers: San Pedro River Alternative D). The tentative classifications reflect the study area's conditions and the character of the recreational setting under current management. It would be accessed by nonmotorized travel on trails. The suitability recommendation approved by the Secretary of the Interior in 1997 would be amended to reflect the proposed study area and the new tentative classifications (**Table 3-6**, below). The river segment on International Boundary Waters Commission property is non-suitable.

Figure 3-3
Wild and Scenic Rivers:
San Pedro River Alternative C
and the Proposed Plan

 SPRNCA Planning Area

 BLM-administered land

Study Corridor Management

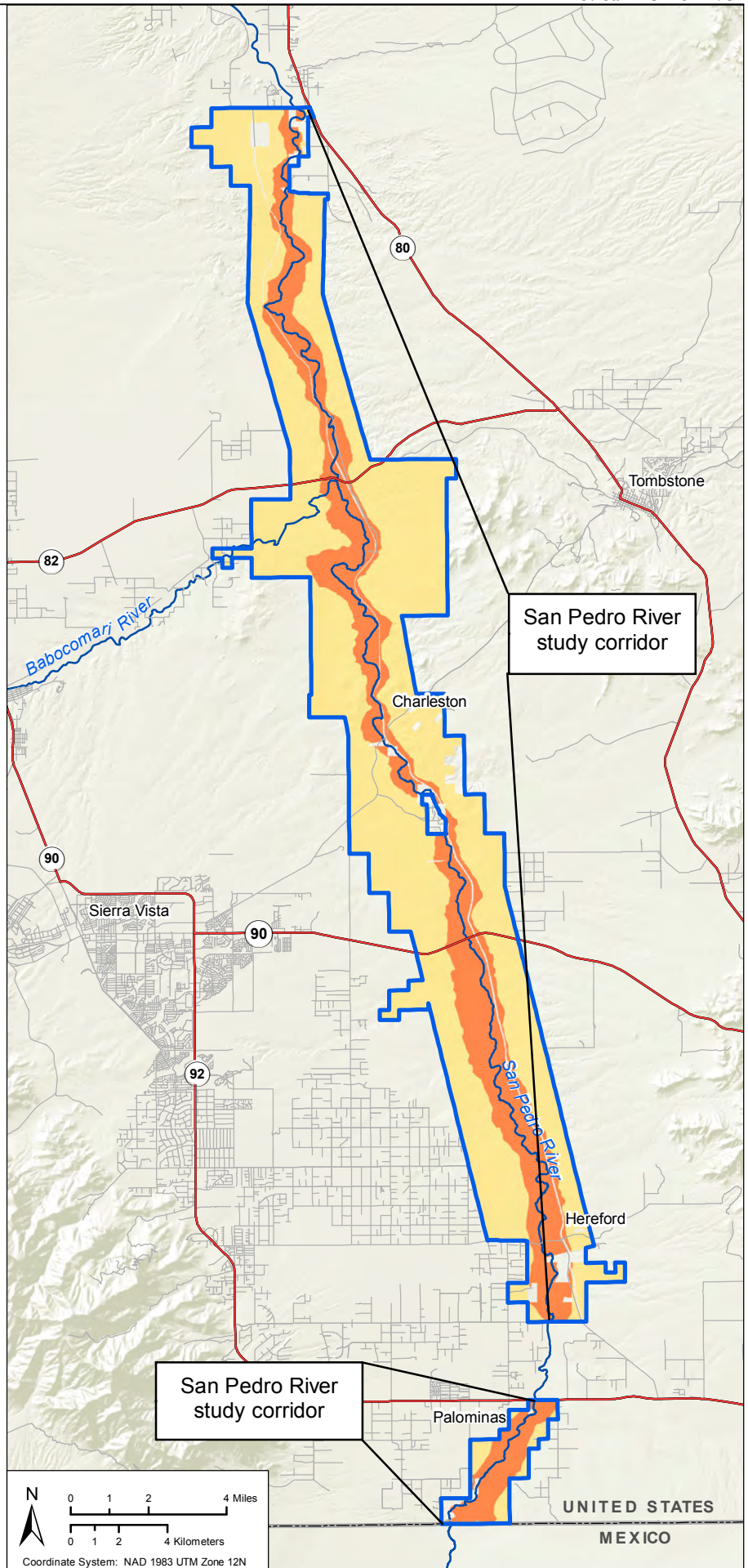
 Suitable as recreational





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

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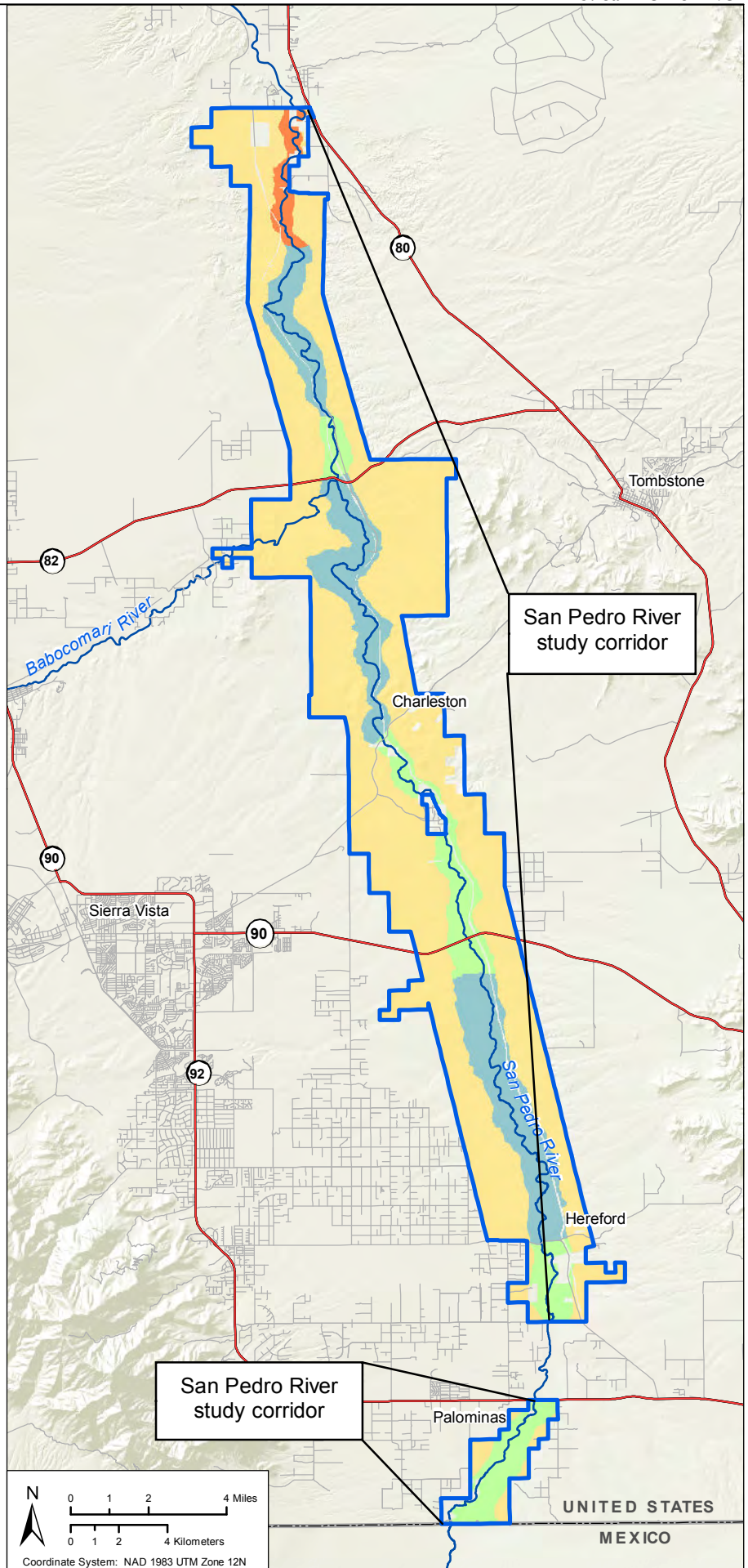


**Figure 3-4
Wild and Scenic Rivers:
San Pedro River Alternative D**

-  SPRNCA Planning Area
-  BLM-administered land

Study Corridor Management

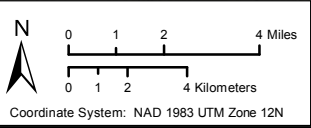
-  Suitable as recreational
-  Suitable as scenic
-  Suitable as wild



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**Table 3-6
Alternative D for San Pedro River Study Area Designation (Draft RMP)**

Tentative Class	River Miles	BLM Acres	Private Acres	Total Acres
Wild	27.7	9,668.1	319.3	9,987.3
Scenic	11.8	5,945.8	833.3	6,779.1
Recreational	8.8	953.7	126.0	1,079.7
Total	48.3	16,567.6	1278.6	17,846.1

Impacts of Designating the San Pedro River on Allowable Uses

Discussed below are the potential impacts on the allowable uses of designating the San Pedro River for inclusion in the NWSRS.

Air Quality

The air in the study area is used by visitors engaged in outdoor recreation, and it contributes to the quality of the area for healthy outdoor activities. The air quality in the area is good, though airborne dust and other pollutants may be encountered at times due to soil disturbance or other activity.

Uses in the study area and SPRNCA that may emit pollutants would be managed under all alternatives in the Draft RMP to reduce emissions that could violate Arizona Class II standards. Projects involving construction or land treatments would be required to minimize surface disturbance, to prevent dust emissions, and to mitigate potential impacts on air quality.

Designating the study river for inclusion in the NWSRS would not affect uses that may affect air quality, nor would it cause air quality standards to be redesignated. Air quality in the study area would be protected from potential impacts on SPRNCA lands under all alternatives by implementing best management practices.

Soils and Water

PL 100-696 reserved a quantity of water sufficient to fulfill the purposes of the SPRNCA. The Upper San Pedro Basin has been the subject of intensive groundwater measuring and monitoring for several decades by the USGS, the BLM, and others. This was done to gather information to manage the area's water resources. Information gathered so far indicates groundwater pumping is lowering the local water table, potentially causing a decline in river flows. The BLM filed a federally reserved water right. It is being adjudicated to establish and protect a base flow for the San Pedro River that sustains the SPRNCA values and ORVs.

The ADEQ monitors water quality in the study area. It lists the reach of the San Pedro River between the Babocomari River and Dragoon Wash as Category 5, impaired due to *E. coli* exceedance; it lists the reach between Charleston and Walnut Gulch as Category 2, attaining some use; finally, the ADEQ lists the reach from the US-Mexico border to Charleston as Category 5, impaired due to *E. coli*, copper, and oxygen level exceedances (ADEQ 2016). Livestock grazing under Alternatives B and C could introduce additional pollutants in the river and contribute to *E. coli* exceedances.

The BLM would continue to pursue water rights to achieve the purposes of the SPRNCA and to promote water conservation under all alternatives. Land use proposals involving additional groundwater

pumping would not be approved under Alternatives B, C, and D, and water use for administrative purposes would be minimized. Use of wells for administration would be designed to reduce potential impacts on base flows. The BLM would continue to operate water systems for fire protection or potable uses in Fairbank Historic Townsite and at San Pedro House.

Under Alternatives B and C, land and stream treatments to control soil erosion, promote watershed stability and surface runoff infiltration, and prevent water table lowering would be allowed in the SPRNCA and in the study area. This includes treatments to enhance groundwater recharge and river geomorphology. Watershed conditions would be allowed to evolve with predominantly natural processes and largely unaided by management under Alternative D.

Designating the study river for inclusion in the NWSRS would enhance water resources protection and efforts to define and protect base flows on the San Pedro River. Designation would curtail projects that may require in-stream structures to enhance river geomorphology, if they would interfere with free-flowing characteristics.

Paleontological Resources

The SPRNCA and study area contain significant paleontological resources, including the Murray Springs and Lehner sites. These sites are used for public interpretation, educational, and scientific research, which would continue under all alternatives. Surveys would be required before surface-disturbing activities take place. Avoidance or mitigation would be implemented as needed to protect paleontological resource values under all alternatives.

Designating the study area for inclusion in the NWSRS would not affect foreseeable uses of paleontological resources.

Vegetation

As part of the SPRNCA, the study area would be managed to control invasive plants, to restore native species, to maintain or improve habitats, to provide firebreaks, and to maintain unique ecological sites. Vegetation treatments would be allowed to achieve management objectives, including biological, mechanical, prescribed fire, and chemical treatments, under Alternatives B and C. Only natural processes with limited management would be used to manage vegetation under Alternative D.

Designating the study river for inclusion in the NWSRS would not affect foreseeable uses of vegetation; however, it could constrain the design of potential vegetation treatments in the study area to protect river values under all alternatives.

Wildland Fire Management

Lands in the study area contain sensitive resource values and developments, which are at risk of loss and destruction by natural or human-caused wildland fire. As part of the SPRNCA, all fires in the study area would be managed commensurate with the values at risk. They would be fully suppressed under all alternatives. Minimum impact suppression tactics would normally be employed as required by the nature of the resource values. Appropriate emergency stabilization and rehabilitation would be implemented following a wildfire to prevent post-fire resource damage. Fire breaks in designated areas would be allowed to control the spread of fire (wildland-urban interface and around developments and sensitive areas).

Designating the study river for inclusion in the NWSRS would not affect foreseeable fire management uses; however, it may constrain the design of firebreaks and restoration or rehabilitation activities under all alternatives.

Fish, Wildlife, and Special Status Species

Lands in the study area provide a variety of riparian, aquatic, wetland, and upland habitats used by numerous native fish, avian, and terrestrial wildlife, including several special status species. The river study area includes USFWS-designated critical habitat for several species. Under all alternatives the area may be used for reintroduction, transplant, and supplemental stocking of fish and wildlife populations to recover, maintain, or increase populations, distribution, and genetic diversity.

Designating the study area for inclusion in the NWSRS would not affect uses to support wildlife habitat or related management activities.

Cultural Resources

The study area includes many sites with significant cultural resources, some of which are allocated for the public for interpretive and educational purposes. The cultural resource sites include historic roads and railroad grades, townsites, homesteads, mineral processing mills, petroglyph sites, farmhouses, a Spanish presidio, and other sites representing human occupancy from the end of the last glacial period until historic times. Sites currently allocated for public use would continue to be so managed under all alternatives. Stabilization and rehabilitation to preserve cultural values would continue.

Designating the study river for inclusion in the NWSRS would not affect foreseeable uses of cultural resources under the alternatives.

Visual Resources Management

Lands in the study area are part of a scenic landscape used for sightseeing and the setting for a variety of outdoor recreation opportunities. The landscape appears to be in largely natural condition, has many outstanding visual values, and contributes to the enjoyment of the SPRNCA.

Visual resources are managed under current VRM classes aimed at preserving, retaining, or partially retaining the character of the landscape. VRM Class I areas preserve the landscape, with allowable changes due to natural ecological changes and very limited management activity. The level of change in the landscape is limited to very low levels and must not attract attention. VRM Class II areas retain the landscape, with a low level of change from management activities. VRM Class III areas partially retain the landscape, with moderate levels of change from management.

Current VRM classes would be redesignated under the alternatives. The purpose would be to retain, or partially retain, the character of the landscape, with different configurations, depending on the alternative.

Designating the study river for inclusion in the NWSRS would not affect use of the landscape in the study area for visual resource protection; however, it could constrain the design of allowable landscape modifications to scenic values.

Lands with Wilderness Characteristics

The study area includes portions of the SPRNCA that were identified as having wilderness characteristics. These areas are over 5,000 acres; they are roadless and largely natural, with opportunities for primitive and unconfined recreation or solitude. These areas are relatively remote and are accessed by nonmotorized trails for backcountry and primitive recreation. They would be managed to protect their wilderness characteristics under Alternative D.

Designating the study river for inclusion in the NWSRS would not affect use of the area to protect wilderness characteristics. Management for those values would support the primitive tentative river classification under Alternative D.

Special Designations

Portions of the study river corridor are presently designated as ACECs to protect special vegetation communities: Saint David Cienega, San Pedro River, and San Rafael. The ACECs would be undesignated under Alternatives B and C. The Saint David Cienega and San Pedro River ACECs would be expanded under Alternative D to protect cultural resources; two new ACECs would be designated to protect both cultural and paleontological resources.

Designating the study river for inclusion in the NWSRS would not affect use of the area for ACECs. It could enhance protection of vegetation and cultural and paleontological resources under Alternative D.

Energy and Lands and Realty

Federal lands in the SPRNCA were withdrawn from mineral entry and disposal by PL 100-696. They are closed to mineral material leasing and sales under current management. Acquired lands are not open to mineral entry.

No energy projects have been identified in the SPRNCA or near the study corridor, though the general area has solar energy potential. The study area is crossed by a high voltage electric transmission line along Charleston Road and a high pressure natural gas pipeline near the north end of the study area. Several power distribution lines are also found in the study corridor.

The study river corridor is crossed by State Routes 82 and 90, county roads (Charleston, Hereford, Copper Gance, and Escapule), and a water pipeline near Escapule.

Existing infrastructure uses in ROWs would continue under all alternatives. The entire SPRNCA would be open to issuance of new ROWs under Alternatives A and B on a case-by-case basis. These alternatives could result in applications for transportation or utility ROWs in the study corridor.

The entire SPRNCA would be designated as an avoidance area under Alternative C, except at the utility corridor crossing along Charleston Road. This alternative could result in new ROW applications across the study corridor along Charleston Road. New ROWs would be excluded in the entire SPRNCA under Alternative D. It would impact potential new future development of transportation, utility, or other projects in the study corridor.

Designating the study river for inclusion in the NWSRs would not affect existing uses for utilities and transportation infrastructure under ROWs; however, it could constrain the design of facilities to protect river values under all alternatives.

Livestock Grazing

A small portion of the study area, the Brunkow Hill allotment, is used for cattle grazing, and most of the area is closed to grazing under current management. The entire river corridor would be used for cattle grazing under Alternative B, with one exception: for exclusions at designated locations to prevent conflicts with other uses. This would require constructing new fencing and range improvements for managing livestock and for maintaining and operating range improvements.

Most of the study area would be closed to grazing under Alternative C. This would prevent grazing in the riparian area but would allow grazing on upland portions of the study area. It also would require constructing fencing and range improvements to manage livestock. The entire SPRNCA, including the study area, would be closed to grazing under Alternative D, thereby preventing grazing and eliminating the need for range improvements.

Designating the study river would not affect grazing use under any alternative; however, it may constrain the design of range improvements to protect river values under Alternatives B and C. Grazing uses under those alternatives could introduce new pollutants, potentially affecting the water quality in the river.

Recreation Resources

Public lands in the study area are used for outdoor recreation under current management, primarily that related to natural, cultural, and paleontological resources which attract visitors. Use is concentrated around designated public use sites and along the San Pedro Trail System. The most heavily used sites are the San Pedro House and the Fairbank Historic Townsite, where visitor contact stations and other amenities are provided. Public use sites have minimal developments to accommodate ingress and egress, parking, sanitation, signing, and camping or picnicking, depending on the specific site and its primary purposes. Popular recreation is birding and viewing other wildlife, viewing the natural landscape, viewing historic and paleontological sites, picnicking, and hunting.

The San Pedro Trail System and administrative access roads are used to access recreation throughout the SPRNCA from the designated public access points. This attracts recreationists for hiking, horseback riding, and bicycling. The study area is primarily for day use, with a small amount of overnight backcountry camping. Most of the study river corridor consists of largely undeveloped backcountry settings, with rural settings found along the public highways and areas with rural residential developments.

Portions of the study area away from the access points are characterized by primitive recreation settings. Recreation management zones would be designated under the alternatives considered in the Draft RMP, based on the existing character of the landscape; different configurations would emphasize different recreation outcomes and settings.

Existing recreation facilities are the visitor contact stations at the San Pedro House and the Fairbank schoolhouse; trailhead and picnic facilities; and outdoor toilets, roads, and trails. Trash receptacles are

provided at the San Pedro House and Fairbank Historic Townsite and are emptied weekly. Most of the land is undeveloped, with no facilities. Some sites and trails receive weekly maintenance, some receive annual maintenance, and others may be maintained every 3 to 5 years. Site hosts are located at Fairbank Historic Townsite and the San Pedro House to help with grounds maintenance, though the San Pedro House position is currently vacant because the power supply is inadequate.

Foreseeable recreation uses in the study area under Alternative B would be similar to those under current management; however, developments would be allowed for car and recreational vehicle camping in the vicinity of the San Pedro House and Hereford. Also, several roads would be managed to accommodate public motor vehicles for sightseeing and access to backcountry recreation.

Recreation in the study area under Alternative C would be similar to that under current management. Alternative D would include primitive RMZs, which would protect the setting for nonmotorized recreation.

Designating the study river for inclusion in the NWSRS would not affect recreation under the alternatives; it could enhance opportunities for some recreation.

Interpretation and Environmental Education

Designated sites in the river corridor are used for public interpretation and environmental education under current management; these uses would continue under all the alternatives.

Designating the study river for inclusion in the NWSRS would not affect interpretation and environmental education under the Draft RMP.

Travel Management

Public lands in the study area are designated under 43 CFR 8342 as limited to designated roads and trails. Public motor vehicles are allowed on designated routes under current management, which would continue under Alternatives B and C. Part of the study area would be designated as closed to motor vehicles under Alternative D to protect natural resources and primitive settings.

The existing route inventory for the SPRNCA will be evaluated to identify the appropriate route designations and to provide a comprehensive transportation system for administrative access and public use, depending on the management alternative. Protecting river values would be part of the route evaluation criteria. To meet recreation management objectives, several routes would be opened to accommodate campground developments and to provide motorized recreation opportunities under Alternative B. This would introduce vehicles in portions of the study corridor that are presently closed; however, this would be consistent with the recreational classification under this alternative.

Designating the study river for inclusion in the NWSRS would not affect access and travel under the Draft RMP alternatives; however, it could constrain the design of potential road improvements to protect river values.

Scientific Research and Monitoring

The BLM and other agencies use the SPRNCA and river study area for various scientific research and monitoring activities, particularly those related to groundwater, stream flows, water quality, vegetation,

wildlife, and cultural resources. These uses would continue under all alternatives. Access to monitoring wells, gaging stations, study sites, and other monitoring locations require vehicle access, which would be accommodated by the administrative road system.

Designating the study river for inclusion in the NWSRS would not affect research or monitoring uses or activities; however, access by vehicle may be constrained, depending on the travel management designations established to implement the new RMP decisions.

4) The federal agency that will administer the area should it be added to the NWSRS

The study area is on BLM-administered lands as part of the SPRNCA. The BLM would continue to administer the San Pedro River if it is added to the NWSRS.

5) The extent to which the agency proposes that administration of the river, including the costs thereof, is shared by state and local agencies

The BLM would continue administering the study river as part of the SPRNCA, since the river is entirely within the SPRNCA boundaries. Administrative costs for labor and operations would continue to be funded by BLM budget appropriations and through grants or voluntary contributions by other agencies or cooperators.

State agencies would continue to administer state laws and regulations under their own regulatory obligations and state laws. The AZGFD would continue to administer hunting-related uses and regulations.

Cochise County would continue to regulate land use and development on private lands in the study area through zoning and building requirements. The county would continue to establish groundwater recharge projects, using reclaimed effluent and captured stormwater runoff; this would help preserve the San Pedro River flows.

Sierra Vista, Fort Huachuca, and other communities near the study area would continue administering and regulating land uses through their own programs and building permits. This could reduce demand for groundwater and help preserve the San Pedro River flows.

Local nongovernment interest groups and organizations would continue to help with many administrative functions through voluntary contributions. Examples of such opportunities to engage individual and organization volunteers are public outreach, interpretation and education, visitor contact and information, trail maintenance, and special projects.

6) The estimated cost to the United States of acquiring necessary lands or interests in land in the corridor, as well as the cost of administering the area should it be added to the NWSRS

Potential acquisition costs (based on all private land acres within the study corridor)

Most of the San Pedro River study area is BLM-administered land; approximately 1,122.8 acres are private land inholdings in the quarter-mile-wide study area under Alternatives A and B. The private parcels are in several locations, and most are presently undeveloped; three parcels have residential developments, and the rest could be developed for rural residential use under current Cochise County zoning. Because of the slightly larger river study area under Alternatives C and D, the private land

inholdings would be approximately 1,278.6 acres, including those parcels with existing residential development.

A rough estimate for processing acquisition costs, assuming a willing seller, is approximately \$100,000. This is based on labor and incidental acquisition costs, for example, negotiations, property surveys, environmental assessments, appraisals, legal descriptions, title work, and environmental professional and legal services. The estimated purchase price is roughly \$5 to \$6 million, depending on property values and other factors at the time of acquisition.

Cost of administering the area if designated in the NWSRS

The cost of administering the San Pedro River as a national river would be about the same as the cost of administering the SPRNCA for its conservation purposes, with little or no additional costs. The cost of administering potentially acquired inholdings would be relatively small and would not increase costs significantly due to the foreseeable uses of the acquired lands.

Based on total expenditures to administer the SPRNCA during the past 5 fiscal years (fiscal year 2013 to fiscal year 2017), the cost to administer the river if designated in the NWSRS would be approximately \$1 to 1.2 million annually.

7) A determination of the extent that other federal agencies, the state, or its political subdivisions might participate in preserving and administering the river should it be proposed for inclusion in the NWSRS

The BLM would be the primary agency responsible for administering the study river. This is because most of the lands are already under BLM jurisdiction and are administered as part of the SPRNCA. Federal, state, or other agencies would continue to participate in administration in their own agency programs and authorities to achieve mutual, common, or related purposes.

The USGS operates three stream gauge monitoring stations on the San Pedro River and has been collecting stream flow information for many years. The information is invaluable for water resource management in the Upper San Pedro Basin and the San Pedro River.

The Bureau of Reclamation holds a withdrawal on approximately 78 acres of the study area for the Charleston Dam project. This project was determined unnecessary in the 1970s and was never approved for development. The withdrawn lands are currently under BLM administration, and the withdrawal could be revoked, since it is not expected to be developed.

The USFWS would continue providing technical assistance and consultations under the ESA on a case-by-case basis, whenever the BLM considers land use plans or project proposals in the study area. The USFWS has designated critical habitat for several species in the study area and is proposing new critical habitat designations.

The BLM would pursue Arizona State Parks participation for shared funding through its grant programs. This would be done for eligible activities, such as recreation site construction and improvements, trails, accessibility, education, interpretation, preservation, and signing.

The AZGFD would continue participating in preserving wildlife habitat through cooperative habitat improvement projects or habitat management plans, access acquisition, and enforcement of hunting and OHV regulations.

Cochise County would continue to administer zoning regulations on private land developments in the study area. It would also continue maintaining several county roads that provide important access to the SPRNCA.

8) An evaluation of local zoning and other land use controls in protecting the river's outstandingly remarkable values and preventing incompatible development

Cochise County regulates development of private lands in the study area through existing zoning districts (Cochise County 2015). Private land parcels in the river study area under Alternatives C and D total approximately 1,278.6 acres, in a number of separate parcels. The private lands in the study area are under an existing RU-4 zoning district, which provides for residential development on a minimum site area of 4 acres, with a maximum density of one dwelling per 4 acres. The private land inholdings could be developed for approximately 300 to 320 residences. Potential development of the inholdings would likely depend on individual wells, which could affect groundwater pumping near the river and potentially contribute to lowering the water table and declining river flows. Potential development of the inholdings would also likely depend on individual septic systems, which could introduce new sources of pollutants and potentially affect water quality in the river.

9) The state and local governments' capacity to manage and protect the outstandingly remarkable values on non-federal lands

This factor requires an evaluation of the river protection mechanisms available through the authority of state and local governments. Such mechanisms may include, for example, statewide programs related to population growth management, vegetation management, water quantity or quality, or protection of river-related values, such as open space and historic areas.

The study area is predominantly on BLM-administered land, and it includes approximately 1,278.6 acres of private land. State and local regulations could be applied to help protect the San Pedro River values, through zoning and permits, from development impacts on the private lands; however, there are no specific mechanisms to protect the private lands from development and its potential impacts on the river and its ORVs from declining river flows.

Groundwater and water table monitoring has revealed that pumping has been lowering the water table and creating a growing cone of depression, which could dry up river flows within several decades. Protecting river flows is the most critical factor in sustaining the ORVs in the study area. It is the greatest challenge facing all water conservation and development stakeholders at the state, county, and local levels in the Upper San Pedro Basin.

Some water conservation is already being implemented by county and local governments, such as groundwater recharge projects (treated and captured runoff); water conservation education, water quantity and quality monitoring; and building code and permit requirements. These efforts might help preserve river flows, but they are not likely to change the long-term declining water table and river flows that the river's ORVs depend on.

10) The existing support or opposition of designation. Assessment of this factor will define the political context

The BLM should consider the interest in designating or not designation by federal agencies; state, local, and tribal governments; national and local publics; and the state's congressional delegation.

During the 2013 SPRNCA RMP scoping process, the BLM received comments on potentially designating the San Pedro River for inclusion in the NWSRS. Comments came from several nongovernment organizations, such as the Friends of San Pedro River, the Sierra Club Grand Canyon Chapter, the Center for Biological Diversity, and the Huachuca Audubon Society (BLM 2014). Commenters asked for continued protection of the San Pedro River and studies on other rivers for potential designation. No comments addressing designation were received from any federal, state, county, or town governments.

Additional opportunities will be available for other agencies and the general public to comment on the Draft RMP and on the recommendations for potential designation of the San Pedro River in the NWSRS. The BLM will consider comments received during the RMP/EIS process when finalizing the suitability report.

11) The consistency of designation with other agency plans, programs, and policies in meeting regional objectives

Designation may help or impede the goals of tribal governments or other federal, state, or local agencies. For example, designating a river may contribute to state or regional protection objectives for fish and wildlife resources. Similarly, adding a river that includes a scarce recreation activity or setting to the NWSRS may help meet statewide recreation goals; however, designation might limit irrigation or flood control measures in a manner that is inconsistent with regional socioeconomic goals.

BLM reviewed the following plans for their consistency with NWSRS designations.

- Arizona's SCORP—The recreation opportunities available in the San Pedro River study area, together with the SPRNCA, meet some of the recreation demands identified in the 2013 SCORP (Arizona State Parks 2013).
- Arizona Trails Plan—The trail system in the study area meets some of the demand for nonmotorized trail use, identified in the Arizona Trails Plan and approved by the Arizona State Parks board in 2009 (Arizona State Parks 2009).
- CCCP—Cochise County values the SPRNCA and essentially considers it to be protected open space. Land use zoning in the study area and adjacent land promotes a rural character, with relatively large residential lots and relatively low density; however, no specific designation for open space or park protection related to the river is in the CCCP (Cochise County 2015).

12) The contribution to river system or basin integrity

This factor reflects the benefits of a systems approach (e.g., expanding the designated portion of a river in the NWSRS or developing a legislative proposal for an entire river system—headwaters to mouth—or watershed). Numerous benefits may result from managing an entire river or watershed, including the ability to design a holistic protection strategy in partnership with other agencies and the public.

- The study river includes only approximately 48.3 miles, or 31 percent of the 158 river miles of the San Pedro River, from the US-Mexico boundary to its confluence with the Gila River near the town of Winkelman.
- Designating the river would contribute to the integrity of the river system in the Upper San Pedro Basin and would provide an indicator of the overall health of the water system in the basin.
- Designation would enhance habitat preservation for the international neotropical bird migration corridor between Mexico and Central America and the northern United States and Canada.
- Designation would support local efforts in promoting water use and conservation to meet the long-term needs of the local communities; it also would preserve the SPRNCA and ensure the long-term viability of Fort Huachuca.

13) The potential for water resources development

Identify any proposed water resource projects that may be relinquished, as designation may limit development of water resources projects as diverse as irrigation and flood control measures, hydropower facilities, dredging, diversion, bridge construction, and channelization.

- There are no planned or proposed water resource, hydroelectric, flood control, channelization, diversion, bridge construction, or other similar structural projects that would not be developed due to designating the study area for inclusion in the NWSRS.
- There is no potential for construction of the Charleston Dam under the existing dam and reservoir site withdrawal (Public Land Order 5269), which is approximately 78 acres of the withdrawn lands in the study river corridor.
- The potential for dam construction in Mexico in the headwaters of the San Pedro River is unknown.
- The State Route 90 bridge over the San Pedro River was recently replaced. The construction area is in the early stages of reclamation or revegetation. No other bridge replacement projects have been identified.
- The Saint David Irrigation Ditch diversion will continue to be operated, and the water rights holder will rebuild the earthen diversion dam, using river bed material. There are no other diversions in the study area.
- There is potential for small dams or impoundments on side drainages along the study river corridor. Under all alternatives except Alternative D, this would be done to achieve SPRNCA management objectives for livestock water, groundwater recharge, and erosion control.
- Groundwater for livestock use could be developed under Alternatives B and C. This would provide for grazing in all or parts of the SPRNCA, including the study area.
- The potential for groundwater development on private land remains beyond the jurisdiction under all the alternatives, unless the BLM acquires the land.

3.5 SUITABILITY DETERMINATION

The quarter-mile-wide study river under Alternatives A and B was previously determined to be suitable for designation, with a recreational classification. Under Alternative C, the study river, with a topographically defined corridor, would be determined suitable for designation, with a recreational classification.

Under Alternative D the study river, with a topographically defined corridor, would be determined suitable for designation, with wild, scenic, and recreational classifications, on different sections to reflect river characteristics under (see **Table 3-7**, below).

Table 3-7
San Pedro River Alternative D Suitability Recommendation in Miles

Wild	Scenic	Recreational	Total
27.7	11.8	8.8	48.3

The key factors in this determination are as follows:

- The San Pedro River is perennially free flowing and contains outstandingly remarkable values.
- The study area has been previously studied and determined to be suitable for designation, with a recreational classification.
- The study area is suitable for designation, with a scenic classification, in sections that are less developed and are accessible by nonmotorized travel on trails.
- The study area may not be suitable for designation, with a wild classification on the entirety of the segment, due to impaired water quality.
- The study area consists primarily of federal land already administered under PL 100-696 for conservation purposes.
- Foreseeable land and water uses under the management alternatives in the Draft RMP would be minimally affected by designating the river for inclusion in the NWSRS.
- Estimated land acquisition and administration costs are anticipated to be relatively low and reasonable, though acquisition of parcels already developed for residential use may not be feasible.
- The study river is mostly under BLM jurisdiction, and, if designated for inclusion in the NWSRS, it could be administered as part of the SPRNCA, with minimal impacts.
- In general, the public appears to support designation, although federal, state, and local government support is uncertain. Comments on the potential designation during the RMP process help determine the level of support among various agencies and the general public.
- Designation would be generally consistent with state agency plans.
- Designation would contribute to preserving the integrity of the upper San Pedro River and would contribute to representing the diverse landscapes in the NWSRS.
- Designation would not relinquish any water resource development projects.

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Chapter 4. Interim Management and Next Steps

4.1 INTERIM MANAGEMENT

River segments determined to be eligible are afforded interim protective management until a suitability study is completed. The BLM’s policy is to protect any ORVs identified in the eligibility determination process. This is to ensure that a decision on suitability can be made, or in the case of suitable rivers, until Congress designates the river or releases it for further uses (BLM 2012).

The BLM has broad discretion authority to not affect river values or make decisions that might lead to a determination of eligibility. It is the BLM’s policy to manage and protect the free-flowing character, tentative classification, and identified ORVs of eligible rivers according to the decisions in the associated RMP. This protection occurs at the point of eligibility determination, so as not to adversely constrain the suitability assessment or subsequent recommendation to Congress. The BLM may protect river values using both the National Environmental Policy Act of 1969 (NEPA) and the FLPMA.

Wild and scenic river issues involving NEPA supplementation are the same as those for other resource values. When the BLM considers a proposal that could constitute a major federal action that significantly affects the quality of the human environment, the Council on Environmental Quality’s regulations require NEPA compliance before the BLM can act on the proposal (40 CFR 1506.1). Eligible river segments determined to be unsuitable through a land use plan decision are subject to the direction and management decisions contained in the RMP.

Table 4-1, below, describes the interim protection standards for eligible and suitable segments.

**Table 4-1
Interim Protection for Candidate Wild and Scenic Rivers**

Issue	Management Prescription/Action
Study boundary	Minimum of a quarter-mile from the ordinary high-water mark Boundary may include adjacent areas needed to protect identified values
Preliminary classification (Section 2[b] of WSRA)	Three classes: wild, scenic, recreational (defined by statute) Criteria for classification described in interagency guidelines Manage at recommended classification
Study report review procedures	Notice of study report/draft EIS published in the <i>Federal Register</i> Comments from federal, state, and local agencies and the public and the BLM’s responses included in the study report/final EIS transmitted to the president and Congress
Private land administration and acquisition	Affect private land uses through voluntary partnership with state and local governments and landowners No regulatory authority Typically an evaluation of the adequacy of local zoning and land use controls is a component of suitability determination ¹ No ability to acquire interest in land under the act’s authority prior to designation

Issue	Management Prescription/Action
Water resources project	River's free-flowing condition protected to the extent of other agency authorities; not protected under the WSRA
Land disposition	Agency discretion to retain lands in a river corridor in federal ownership
Mining and mineral leasing	Protect free flow, water quality, and ORVs through other agency authorities
Actions of other agencies	Affect actions of other agencies through voluntary partnership
Protect ORVs	No regulatory authority conferred by the WSRA; agency protects through other authorities Section 11(b)1: Limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources ²

Source: Interagency Wild and Scenic Rivers Coordinating Council 1999

¹For an agency-identified study river that includes private lands, there is often the need to evaluate existing state and local land use controls and, if necessary, to assess the willingness of state and local government to protect river values.

²Section 11(b)1 authorizes the Secretary of the Interior and Secretary of Agriculture, or the head of any other federal agency, to provide for "limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources." This authority "applies within or outside a federally administered area and applies to rivers which are components of the National and to other rivers." The recipients of federal assistance include states or their political subdivisions, landowners, private organizations, or individuals. Some examples of assistance under this section include riparian restoration, riparian fencing to protect water quality and riparian vegetation, and vegetation screening to enhance scenery/recreation experience.

4.2 NEXT STEPS

The Proposed RMP and Final EIS includes final suitability determinations on the eligible rivers. Congressional action is required for actual designation and final classification of suitable river segments.

Chapter 5. List of Preparers

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Appendix P

Management Guidelines for Wild and Scenic Rivers

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Appendix P. Management Guidelines for Wild and Scenic Rivers

These management guidelines were considered in developing the Resource Management Plan (RMP) management alternatives. The guidelines would be applied when considering and analyzing site-specific projects and activities on Bureau of Land Management (BLM)-administered lands within the suitable river corridor or on adjacent lands. The guidelines would continue to be applied until Congress acts on the river designation recommendations.

A. MINERALS

I. *Wild, Scenic, and Recreational*

- i. **Locatable.** Subject to valid existing rights, the minerals in any Federal lands that constitute the bed or bank or are situated within ¼ mile of the bank of any river listed under Section 5(a) are withdrawn from all forms of appropriation under the mining laws, for the time periods specified in Section 7(b) of the Wild and Scenic Rivers Act (WSRA). See Section 9(b) of the WSRA. Mining activity on a Section 5(a) study river on properly located claims existing at the time Congress authorized the study may still be allowed. Existing or new mining activity on a BLM-identified study river are allowed and will be conducted in a manner that minimizes surface disturbance, sedimentation and pollution, and visual impairment. The BLM identification of a study river does not withdraw the lands from appropriation under the mining law.
- ii. **Leasable.** New leases, licenses, and permits under mineral leasing laws may be made, but consideration should be given to applying conditions necessary to protect the values of the river corridor in the event it is subsequently included in the National System. Existing leases, licenses, and permits may be renewed, but consideration should be given to applying conditions necessary to protect the values of the river corridor upon renewal.
- iii. **Saleable.** For river segments tentatively classified as wild, new disposal of saleable mineral material or the extension or renewal of existing contracts should be avoided to the greatest extent possible to protect river values. For river segments tentatively classified as scenic or recreational, disposal of saleable mineral material is allowed, but consideration should be given to applying conditions necessary to protect values for which the river may be included in the National System.

B. TRANSPORTATION SYSTEM

1. **Wild.** New roads and airfields are not generally compatible with this classification. A few existing roads leading to the boundary of the river corridor may be acceptable. New trail construction should generally be designed for nonmotorized uses. However, consider allowing limited motorized uses and unobtrusive bridges that are compatible with identified values.
2. **Scenic.** New roads and railroads may be allowed to parallel the river for short segments or bridge the river if such construction fully protects river values (including the river's free-flowing condition). Bridge crossings and river access are allowed. New trail construction or airfields should be compatible with and fully protect identified values.

3. *Recreational.* Consider permitting new roads and railroads that parallel the river if such construction fully protects river values (including the river's free-flowing condition). Bridge crossings and river access are allowed. Consider new trail construction or airfields that are compatible with and fully protect identified values.

C. AUTHORIZATION OF RIGHTS-OF-WAY

1. *Wild, Scenic, and Recreational.* For BLM-identified eligible and suitable rivers, the BLM should consider exercising its discretion to deny applications for right-of-way (ROW) grants if the BLM determines through appropriate environmental analysis that the ROW proposal is not compatible with the river's classification and the protection and enhancement of river values. Where the ROW proposal is found to be compatible, additional or new facilities should be located, to the greatest extent possible, to share, parallel, or adjoin an existing ROW. For congressionally authorized study rivers, see chapter 7.5D for guidance. Any portion of a utility proposal that has the potential to affect the river's free-flowing condition will be evaluated as a water resources project (see chapter 3.6j).

D. RECREATION DEVELOPMENT

1. *Wild.* Major public-use areas, such as large campgrounds, interpretive centers, or administrative headquarters, should be located outside the river corridor. Minimum facilities may be provided in keeping with the essentially primitive condition. If sanitation and convenience facilities are necessary, they should be located at access points or a sufficient distance from the river bank so that they are not visible from the river. Such facilities should be located and developed in a manner that maintains or improves water quality and other identified river values. Any portion of a recreation restoration or enhancement project that has the potential to affect the river's free-flowing condition (e.g., a whitewater park for kayakers) will be evaluated as a water resources project (see chapter 3.6j).
2. *Scenic.* Public-use facilities, such as moderate-size campgrounds, simple sanitation and convenience facilities, public information centers, administrative sites, and river access developments, are allowed within the river corridor. All facilities should be located and designed to harmonize with the natural and cultural settings, protect identified river values including water quality, and be screened from view from the river to the extent possible. Any portion of a recreation restoration or enhancement project that has the potential to affect the river's free-flowing condition (e.g., a whitewater park for kayakers) will be evaluated as a water resources project (see chapter 3.6j).
3. *Recreational.* Recreation, administrative, and river access facilities may be located in close proximity to the river. However, recreational classification does not require extensive recreation development. All facilities should be located and designed to harmonize with the natural and cultural settings, protect identified river values including water quality, and be screened from view from the river to the extent possible. Any portion of a recreation restoration or enhancement project that has the potential to affect the river's free-flowing condition (e.g., a whitewater park for kayakers) will be evaluated as a water resources project (see chapter 3.6j).

E. MOTORIZED TRAVEL

1. *Wild, Scenic, and Recreational.* Motorized and mechanized travel on land or water may be permitted, prohibited, or restricted to protect the river values.

F. WILDLIFE AND FISH PROJECTS

1. *Wild.* Construction of minor structures and vegetation management to protect and enhance wildlife and fish habitat should harmonize with the area's essentially primitive condition and should fully protect identified river values. Any portion of a wildlife or fisheries restoration or enhancement project that has the potential to affect the river's free-flowing condition will be evaluated as a water resources project (see chapter 3.6j).
2. *Scenic.* Construction of structures and vegetation management to protect and enhance wildlife and fish habitat should harmonize with the area's largely undeveloped condition and fully protect identified river values. Any portion of a wildlife or fisheries restoration or enhancement project that has the potential to affect the free-flowing condition will be evaluated as a water resources project (see chapter 3.6j).
3. *Recreational.* Construction of structures and vegetation management to protect and enhance wildlife and fish habitat should fully protect identified river values. Any portion of a wildlife or fisheries restoration or enhancement project that has the potential to affect the river's free-flowing condition will be evaluated as a water resources project (see chapter 3.6j).

G. VEGETATION MANAGEMENT

1. *Wild.* Cutting or eradication of trees and other vegetation is not consistent with the wild classification except under the following circumstances: (1) when needed in association with a primitive recreation experience, such as to clear trails; (2) to protect users or the environment, including the use of wildfire suppression; and (3) when vegetation is an invasive species and managed in accordance with chapter 3.611. In addition, prescribed fire and wildland fire may be used to restore or maintain habitat for threatened, endangered, or sensitive species and/or restore the historic range of variability.
2. *Scenic and Recreational.* The authorized officer may consider a range of vegetation management and timber harvest actions that are designed to protect, restore, or enhance the river environment, including the long-term scenic condition.

H. LIVESTOCK GRAZING

1. *Wild, Scenic, and Recreational.* Domestic livestock grazing should be managed to protect identified river values. Existing structures may be maintained. Any new facilities to facilitate livestock management should be unobtrusive so as to maintain the values for which a river was found eligible or suitable.

I. INVASIVE SPECIES MANAGEMENT

1. *Wild, Scenic, and Recreational.* The spread of terrestrial and aquatic invasive species should be prevented and controlled, consistent with direction in the land use plan, other authorities, and available funding. A full range of manual and chemical prevention and control methods may be used, consistent with direction in the land use plan; BLM Manual Sections 9011, 9014, and 9015; BLM Handbook 1740-2; and other approved Federal direction. Chemical treatment must be

carefully evaluated so as not to adversely affect water quality and outstandingly remarkable values.

J. WATER RESOURCES AND HYDROELECTRIC POWER PROJECTS

- I. *Wild, Scenic, and Recreational*. For congressionally authorized study rivers, see chapter 3.8 for guidance on the determination of impacts under Section 7(b) of the WSRA. The WSRA does not explicitly address hydroelectric facilities or other federally assisted water resources projects that have the potential to affect BLM-identified eligible or suitable rivers. However, the BLM should, within its authority, consider protecting the river values that make the river eligible or suitable (as previously discussed in chapter 3.5) through the Coordinated Resource Management Plan (CRMP) and activity-level National Environmental Policy Act (NEPA) analysis. If a river is listed in the Nationwide Rivers Inventory, the Federal agency involved with the proposed action must consult with the land-managing agency in an attempt to avoid or mitigate adverse effects.

K. WITHDRAWAL FROM PUBLIC LAND LAWS

- I. *Wild, Scenic, and Recreational*. Public (Federal) lands within ¼ mile of a congressionally authorized (WSRA Section 5(a)) study river are withdrawn from entry, sale, or other disposition under the public land laws of the United States pursuant to Section 8(b) of the WSRA (BLM Manual 6400).

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BLM (US Department of Interior, Bureau of Land Management). BLM Manual Sections 9011, 9014, and 9015.

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Appendix Q

Historic Climax Plant Communities

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Appendix Q. Historic Climax Plant Communities (HCPC)

**Table Q-1
Chihuahuan Desert Scrub**

State	Acres ¹	Percent	State Description	HCPC
HCPC	4,550	14	<ul style="list-style-type: none"> • Native shrub, grass, and forb • Creosote, whitethorn 1–45% • Bush muhly, threeawns 0–35% • Other sub-shrubs and succulents 0–10% • Perennial forbs and grasses 	See State description
1	1,220	4	<ul style="list-style-type: none"> • Native shrub with exotic annuals • Nonnative annuals 1–80% • Creosote, whitethorn 10–20% 	See state description for HCPC, above
2	19,510	59	<ul style="list-style-type: none"> • Increase of shrubs • Mimosas, mesquite 10–35% • Other shrubs and succulents 5–20% • Annuals and half shrubs dominate understory 	See state description for HCPC, above
3	110	<1	<ul style="list-style-type: none"> • Large mesquite • Mesquite and large shrubs 10–15% • Native and nonnative annual forbs and grasses 	See state description for HCPC, above
4	1,070	3	<ul style="list-style-type: none"> • Mesquite, natives • Mesquite 20–80% • Mid-grasses 5–20% 	See state description for HCPC, above
Outside model	4,360	13	<ul style="list-style-type: none"> • 40% Sacaton, 60% annual forbs/annual grasses² 	See state description for HCPC, above
No data	2,090	6	N/A	N/A

Source: Natural Resources Conservation Service (NRCS) 2018, BLM GIS 2017

Notes:

¹ Total acres may differ slightly from those in **Table 3-10** because acres in the two tables are derived from different spatial data layers.

² Observed in data

**Table Q-2
Semidesert Grassland**

State	Acres ¹	Percent	State Description	HCPC
HCPC	1,190	17	<ul style="list-style-type: none"> • Native mid-grassland; perennial grassland • Mid-grass 1–30% • Suffrutescent grasses 5–25% • Mesquite 1–5% • Half shrubs 1–5% 	See state description
1	640	9	<ul style="list-style-type: none"> • Mesquite, Lehmann • Mesquite 5–15% • Lehmann 40–70% • Remnant natives 	See state description for HCPC, above

State	Acres ¹	Percent	State Description	HCPC
2	820	11	<ul style="list-style-type: none"> • Mesquite, annuals • Mesquite 10–15% • Annuals 5–90% 	See state description for HCPC, above
3	1,210	17	<ul style="list-style-type: none"> • Mesquite, 20–25% • Other shrubs and succulents 15–30% • Erosion 	See state description for HCPC, above
4	680	9	<ul style="list-style-type: none"> • Mesquite, natives • Mesquite 2–10% • Mid-grass 5–20% • Suffrutescent grasses 5–15% 	See state description for HCPC, above
Outside model	1,250	17	<ul style="list-style-type: none"> • Medium density to velvet mesquite state² 	See state description for HCPC, above
No data	1,370	19	N/A	N/A

Source: NRCS 2018, BLM GIS 2017

Notes:

¹ Total acres may differ slightly from those in **Table 3-10** because acres in the two tables are derived from different spatial data layers.

² Observed in data

**Table Q-3
Mesquite Forest (Bosque)**

State	Acres ¹	Percent	State Description	HCPC
HCPC	950	13	<ul style="list-style-type: none"> • Warm perennial grasses dominant—alkali sacaton • Scattered trees • Perennial grass—twoflower chloris, desert saltgrass, vine mesquite • Annual grass—prairie threeawn, fingergrass 	See state description
1	330	5	<ul style="list-style-type: none"> • Mesquite 20–30% • Creosotebush 10–20% • Whitethorn 10–20% • Nonnative annuals 1–80% 	See state description for HCPC, above
2	1,210	17	<ul style="list-style-type: none"> • Mesquite, shrubland • Mesquite, shrubby 5–20% • Graythorn and other shrubs 5–15% • Annuals fluctuate with climate 	See state description for HCPC, above
3	150	2	<ul style="list-style-type: none"> • Eroded, with or without mesquite • Mesquite 0–25% • Other shrubs and succulents 0–10% 	See state description for HCPC, above
4	2,170	30	<ul style="list-style-type: none"> • Sacaton grassland • Sacaton 25–80% • Annuals 0–20% • Mesquite 1–15% 	See state description for HCPC, above
Outside model	350	5	<ul style="list-style-type: none"> • Observed 84% sacaton cover—outside of the 25–80% described in State 4², above 	See state description for HCPC, above
No Data	2,020	28	N/A	N/A

Sources: NRCS 2018; BLM GIS 2017

Notes:

¹ Total acres may differ slightly from those in **Table 3-10** because acres in the two tables are derived from different spatial data layers.

² Observed in data

**Table Q-4
Big Sacaton Grassland**

State	Acres ¹	Percent	State Description	HCPC
HCPC	120	2	<ul style="list-style-type: none"> • Warm perennial grasses dominant—alkali sacaton • Scattered trees • Perennial grass—twoflower chloris, desert saltgrass, vine mesquite • Annual grass—prairie threeawn, fingergrass 	See state description
1	60	1	<ul style="list-style-type: none"> • Mesquite 5–30% • Lehmann’s lovegrass 40–70% • Remnant natives 	See state description for HCPC, above
2	360	5	<ul style="list-style-type: none"> • Mesquite, shrubland • Mesquite, shrubby 5–20% • Graythorn and other shrubs 5–15% 	See state description for HCPC, above
3	660	9	<ul style="list-style-type: none"> • Mesquite bosque, exotic annuals • Mesquite, large 20–80% • Understory dominated by exotic annuals—London rocket and foxtail barley 	See state description for HCPC, above
4	1,170	16	<ul style="list-style-type: none"> • Mesquite shrubland/sacaton grassland • Mesquite 1–20% • Sacaton 25–80% • Annuals 0–20% 	See state description for HCPC, above
Outside model	230	3	<ul style="list-style-type: none"> • Observed 84% sacaton cover—outside of the 25–80% described in State 4², above 	See state description for HCPC, above
No data	640	9	N/A	N/A

Sources: NRCS 2018; BLM GIS 2017

Notes:

¹ Total acres may differ slightly from those in **Table 3-10** because acres in the two tables are derived from different spatial data layers

² Observed in data

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Appendix R

Weed Species on the San Pedro Riparian National
Conservation Area

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Appendix R. Weed Species on the SPRNCA

Table R-1
Weed Species on the SPRNCA

Noxious Weed and Invasive Plant Species	Presence on the SPRNCA	Arizona Department of Agriculture (ADA), Plant Services Division, Noxious Weed?
<u>Russian knapweed</u>	The species occupied less than 1 acre total in six separate sites on the SPRNCA; however, eradication began in 2008 and is nearly complete.	Yes
<u>Giant reed</u>	Giant reed has been controlled on the SPRNCA since 2009. Nine giant reed patches were known along the San Pedro River on the SPRNCA boundary. At least one new occurrence was found near Hereford during the proper functioning condition (PFC) assessments in April 2012.	No
<u>Malta star thistle and yellow star thistle</u>	In 2009 a small patch of Malta star thistle was discovered near Charleston Road, between Moson Road and the San Pedro River. The patch was removed by hand, and plants and seed heads were placed in trash bags and removed. The patch has been periodically monitored since then, and no Maltese star thistle has been observed, demonstrating the importance of early weed detection and control.	Yes
<u>Bindweed</u>	Bindweed grows on dry soil in retired agricultural fields on the SPRNCA.	Yes
<u>Puncturevine</u>	Puncturevine begins growing after the beginning of monsoons, on barren soil along roads, trails, and retired agricultural fields on the SPRNCA. It has been introduced to areas by foot and vehicle traffic; burs become attached to shoes and tires and then dislodge and germinate.	
<u>Johnsongrass</u>	This species is commonly found in moist areas along the San Pedro River. Repeat photography at permanent photo points on the SPRNCA has indicated that Johnsongrass infestations have become newly established or have enlarged since the original photos were taken in 1988. Its control or eradication has not been feasible because of its widespread infestation throughout the riparian area. Use of specific herbicides to target weedy grasses is not feasible because of native grasses in stands of Johnsongrass.	No
<u>Bermuda grass</u>	Bermuda grass is widespread along the banks of the San Pedro River where additional moisture is present; however, it is also very drought and alkali resistant once established. It may be found in sandy washes on the SPRNCA, where only ephemeral moisture is available. Bermuda grass on the SPRNCA has not been controlled or eradicated for the same reasons that Johnsongrass control is not feasible (see above).	

Noxious Weed and Invasive Plant Species	Presence on the SPRNCA	Arizona Department of Agriculture (ADA), Plant Services Division, Noxious Weed?
<u>Russian thistle</u>	Russian thistle commonly occurs in disturbed areas and retired agricultural fields on the SPRNCA. It has been mowed in some agricultural fields to prevent fire hazard and seed maturation.	No
<u>Lehmann lovegrass</u>	Lehmann lovegrass on the SPRNCA has not been controlled or eradicated. This is due to its widespread infestation throughout upland areas and because current control methods are not effective.	No
<u>Bur bristle grass</u>	This species is found in retired agriculture fields on the SPRNCA.	Yes
<u>Coastal sandbur</u>	This species is found mainly in disturbed areas on the SPRNCA.	Yes
<u>Tree of heaven</u>	Documented on the SPRNCA at Boquillas and Fairbank; control is ongoing, although few plants remain.	No

Sources: BLM TFO data (BLM 2017); Parker (1972); Howard (2004); Makings (2006); ADA (2006)

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Appendix S

Threatened and Endangered Species and
Critical Habitat

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Appendix S. Threatened and Endangered Species, and Critical Habitat

**Table S-1
Federally Listed Threatened, Endangered, and Proposed Species and Designated and Proposed Critical Habitat**

Common Name	Scientific Name	Status	Occurrence and Designated Critical Habitat in the SPRNCA	Priority Habitat
PLANTS				
Huachuca water umbel	<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i>	Endangered	<p>Occurs in perennial portions of the San Pedro River. In the Babocomari River the species is present between two sections of the San Pedro Riparian National Conservation Area (SPRNCA), but it has not been observed on Bureau of Land Management (BLM)-administered lands. It has been transplanted to Murray Spring, Horse Thief Draw, and Frog Spring, where self-sustaining populations may become established.</p> <p>Designated critical habitat for Huachuca water umbel exists in the SPRNCA, from approximately 660 feet (200 meters) south of the Hereford Road Bridge continuing north (downstream) for about 33.7 miles to about 1 mile north of Summers Well (64 Federal Register [FR] 37453).</p>	Ciénega Wetland

Common Name	Scientific Name	Status	Occurrence and Designated Critical Habitat in the SPRNCA	Priority Habitat
AMPHIBIANS				
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>	Threatened	This species has been extirpated from the SPRNCA but has been reintroduced in two locations. There is no critical habitat for this species on the SPRNCA. Habitat has the potential for species recovery in protected open water habitats when excluded from bullfrogs.	Aquatic Lentic and Lotic
FISH				
Desert pupfish	<i>Cyprinodon macularius</i>	Endangered	This species has been extirpated from the SPRNCA but was reintroduced into springs and wetlands in the SPRNCA. There is no critical habitat for this species on the SPRNCA. Habitat has the potential for species recovery in aquatic habitats protected from invasive, predatory fish.	Aquatic Lentic and Lotic
Gila topminnow	<i>Poeciliopsis occidentalis occidentalis</i>	Endangered	This species has been extirpated from the SPRNCA but was reintroduced into springs on the SPRNCA. No critical habitat has been designated for this species. Habitat on the SPRNCA has the potential for species recovery in habitats protected from invasive, predatory species.	Aquatic Lentic and Lotic
REPTILES				
Northern Mexican garter snake	<i>Thamnophis eques megalops</i>	Threatened	USFWS has documented observations of the northern Mexican gartersnake from the SPRNCA. Proposed Critical habitat occurs on the SPRNCA.	Ciénega Wetland

Common Name	Scientific Name	Status	Occurrence and Designated Critical Habitat in the SPRNCA	Priority Habitat
BIRDS				
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Willow flycatchers have been documented as nesting and as migrants in the SPRNCA (Krueper 1999; Radke 2014). There is no critical habitat for this species on the SPRNCA.	Cottonwood/ Willow
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Threatened	Up to five pair could be found per mile of riparian habitat, for an estimated 125 pair utilizing SPRNCA during the nesting season (Krueper 1999). Proposed critical habitat exists in the SPRNCA, running its full length, up the Babocomari River, to the SPRNCA boundary. It includes not only the stands of the riparian gallery forest along the river, but also the mesquite bosques on the bajadas and floodplains along the San Pedro river.	Cottonwood Willow, Mesquite Bosque
MAMMALS				
Jaguar	<i>Panthera onca</i>	Endangered	Jaguars have not been documented in the SPRNCA but potentially use the area as connectivity/movement habitat. There is no critical habitat for this species on the SPRNCA.	Xeric Riparian
Ocelot	<i>Leopardus pardalis</i>	Endangered	Ocelots have not been documented in the SPRNCA but potentially use the area as connectivity/movement habitat. No critical habitat has been designated for this species.	Xeric Riparian

Table S-2
BLM Sensitive Species that May Occur in the SPRNCA

Common Name	Scientific Name	Occurrence and Habitat in the Planning Area	Priority Habitat
PLANTS			
Arizona giant sedge	<i>Carex ultra</i>	Documented in the SPRNCA in spring habitat (Radke 2014).	Cottonwood/Willow Riparian Forest
San Pedro River wild buckwheat	<i>Eriogonum terrenatum</i>	Documented in the SPRNCA in the area between Highway 82 and Escalante (Anderson 2004; Radke 2011).	Chihuahuan Desert Scrub
FISH			
Desert sucker	<i>Catostomus clarki</i>	Occurs on the SPRNCA in the San Pedro River, from Charleston to the Highway 90 Bridge, and still persists in small numbers in the lower mile of Curry Draw.	Aquatic Lentic and Lotic
Longfin dace	<i>Agosia chrysogaster</i>	This is the last native minnow in the SPRNCA. It can still be found throughout the San Pedro River, where there is still perennial surface water during dry periods. It is an excellent colonizer of unoccupied habitat and can be found in intermittent reaches, but most individuals perish annually.	Aquatic Lentic and Lotic
AMPHIBIANS			
Sonoran desert toad	<i>Bufo alvarius</i>	Documented in the SPRNCA at Fairbank (BLM 1988).	Ciénega Marsh
REPTILES			
Ornate box turtle	<i>Terrapene ornata</i>	Documented in the SPRNCA in preferred shrub/grass habitat (BLM 1988).	Semidesert Grassland
Sonora mud turtle	<i>Kinosternon sonoriense sonoriense</i>	Documented in the SPRNCA in most permanent aquatic habitats, especially the San Pedro River, Babocomari River, and St. David Ciénega and in some intermittent aquatic habitats (BLM 1988).	Aquatic Lentic and Lotic
BIRDS			
Sprague's pipit	<i>Anthus spragueii</i>	A rare local winter resident in the SPRNCA in grasslands near Palominas and Hereford. There are no breeding records in Arizona.	Semidesert Grassland
Arizona Botteri's sparrow	<i>Peucaea botterii arizonae</i>	Fairly common to common summer breeding bird in the SPRNCA in savannah-type grassland habitats, primarily between Charleston and Palominas (Krueper 1999).	Big Sacaton Grassland
Arizona grasshopper sparrow	<i>Ammodramus savannarum ammolagus</i>	This sparrow has an extremely small breeding range in southeastern Arizona and northern Sonora. In the SPRNCA, it is a common summer breeding bird in Semiarid Grasslands, with a low, woody shrub component, such as scattered young mesquite (Radke 2014).	Semidesert Grassland

Common Name	Scientific Name	Occurrence and Habitat in the Planning Area	Priority Habitat
Cactus ferruginous pygmy-owl	<i>Glaucidium brasilianum cactorum</i>	A calling individual was reported south of Kingfisher Pond in the SPRNCA in 1997, but it was not located the next day; this sighting is considered hypothetical (Krueper 1999).	Cottonwood/Willow Riparian Forest
Desert purple martin	<i>Progne subis hesperia</i>	Casual spring and fall migrant in the Upper San Pedro River Valley, with no documented breeding (Krueper 1999).	Chihuahuan Desert Scrub
Gilded flicker	<i>Colaptes chrysoides</i>	Uncommon permanent resident below 4,000 feet of the Upper San Pedro River Valley and within the riparian zone of the SPRNCA (Krueper 1999).	Chihuahuan Desert Scrub
Golden eagle	<i>Aquila chrysaetos</i>	Uncommon permanent resident in the Huachuca and Mule Mountains, where adult and juvenile birds have been observed (Radke 2014)	Cottonwood/Willow Riparian Forest; Bat Roosts/Rocky Outcropping
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	Rare permanent resident of desert and grasslands in the Upper San Pedro River Valley in the SPRNCA. These owls have been observed in the SPRNCA, where erosion has created holes in which to burrow (Radke 2014).	Semidesert Grassland
BATS			
Cave myotis	<i>Myotis velifer</i>	Documented in the SPRNCA at Fairbank, Boquillas, Hereford, and Highway 92 (Duncan 1989).	Bat Roosts/Rocky Outcropping; Chihuahuan Desert Scrub
Greater western mastiff bat	<i>Eumops perotis californicus</i>	Documented in the SPRNCA at Lewis Spring (Duncan 1989).	Bat Roosts/Rocky Outcropping; Chihuahuan Desert Scrub
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	This species has been documented in the SPRNCA (Duncan 1989). The planning area is within the foraging radius from known roost site.	Chihuahuan Desert scrub; Semidesert Grasslands
Spotted bat	<i>Euderma maculatum</i>	Range maps (Reid 2006) depict the occurrence of spotted bat in southeastern Arizona, and it has been documented in the SPRNCA (Duncan 1989).	Bat Roosts/Rocky Outcropping
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Documented in the SPRNCA at Hereford (Duncan 1989).	Bat Roosts/Rocky Outcropping; Chihuahuan Desert Scrub
MAMMALS			
Banner-tailed kangaroo rat	<i>Dipodomys spectabilis</i>	This species has not been documented within the SPRNCA. Range maps indicate it may occur in the planning area (Reid 2006), and records do exist for the Upper San Pedro River Valley.	Semidesert Grassland

Source: BLM 2017; USFWS 2018

Compiled using Arizona Game and Fish Department (AZGFD) Heritage Data Management System unpublished species' abstracts

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Appendix T

Primary Constituent Elements of
Proposed and Final Critical Habitat

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Appendix T. Primary Constituent Elements of Proposed and Final Critical Habitat

Primary constituent elements (PCEs) are specific elements of physical or biological features that provide for a species' life-history processes and are essential to its conservation. Critical habitat is a specific geographic area that is essential for the conservation of a threatened or endangered species; only areas that contain a species' PCEs are considered critical habitat. This may be an area that is not currently occupied by the species but that may be required for its recovery.

Table T-I lists the PCEs for critical habitats of federally listed species that occur in the San Pedro Riparian National Conservation Area (SPRNCA).

**Table T-I
Primary Constituent Elements of Proposed and Final Critical Habitats on the SPRNCA and Upper San Pedro Watershed (USPW)**

Feature	Description
Yellow-billed cuckoo (proposed critical habitat: 10,200 acres on the SPRNCA, 16,500 acres in the USPW)	
Riparian woodlands	Riparian woodlands with mixed willow-cottonwood vegetation, mesquite-thorn forest vegetation, or a combination of these. These areas contain habitat for nesting and foraging, in contiguous or nearly contiguous patches that are greater than 325 feet wide and 200 acres or more in area. These habitat patches contain one or more nesting groves, which are generally willow dominated, have above average canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats.
Adequate prey base	Presence of a prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, and dragonflies) and tree frogs, for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.
Dynamic riverine processes	River systems that are dynamic and provide hydrologic processes that encourage sediment movement, and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor. Examples are lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams. This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old.
Huachuca water umbel (final critical habitat: 480 acres on the SPRNCA, 570 acres on USPW)	
Base flows	Sufficient perennial base flows to provide a permanent or nearly permanent wetted substrate for growth and reproduction.
Stream channel	A stream channel that is relatively stable but subject to periodic flooding, that provides for rejuvenation of the riparian plant community, and that produces open microsites for <i>Lilaeopsis</i> expansion.
Riparian plant community	A riparian plant community that is relatively stable over time, where nonnative species do not exist or are at a density that has little or no adverse effect on resources available for <i>Lilaeopsis</i> growth and reproduction.
Refuge sites	In streams and rivers, refuge sites in each watershed and in each reach, including springs or backwaters of mainstem rivers, that allow each population to survive catastrophic floods and to recolonize larger areas.

Feature	Description
Northern Mexican garter snake (proposed critical habitat: 6,600 acres on the SPRNCA, 15,160 acres in the USPW)	
Aquatic or riparian habitat	<ul style="list-style-type: none"> • Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat and that possess a natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads • Lentic wetlands, such as livestock tanks, springs, and ciénegas • Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, predator protection, and foraging opportunities; examples are boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, and leaf litter • Aquatic habitat, with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the northern Mexican garter snake or the maintenance of prey populations
Adequate terrestrial space	Adequate terrestrial space (600 feet lateral extent to either side of bankfull stage) next to designated stream systems with sufficient structural characteristics to support life-history functions, such as gestation, immigration, emigration, and brumation (extended inactivity).
Adequate prey base	A prey base consisting of viable populations of native amphibian and native fish species.
Absence of nonnative fish species	Absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, or crayfish or occurrence of these nonnative species at low enough levels that there is still recruitment of northern Mexican garter snakes and maintenance of its prey, native fish or soft-rayed and nonnative fish.
Chiricahua leopard frog (0 acres on the SPRNCA, 1 acre in the USPW)	
Aquatic breeding habitat next to uplands	<p>Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:</p> <ul style="list-style-type: none"> • Standing bodies of freshwater (with salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present), including natural and human-made ponds (such as stock ponds), slow-moving streams or pools within streams, off-channel pools, and other ephemeral or permanent water bodies that typically hold water or rarely dry for more than a month. During periods of drought or less than average rainfall, these breeding sites may not hold water long enough for individuals to complete their metamorphosis, but they would still be considered essential breeding habitat in non-drought years. • Emergent or submerged vegetation, root masses, undercut banks, fractured rock substrates, or some combination thereof, but emergent vegetation does not completely cover the surface of water bodies. • Nonnative predators, such as crayfish, bullfrogs, and nonnative fish, absent or occurring at levels that do not preclude the Chiricahua leopard frog. • Absence of chytridiomycosis,¹ or if present, then environmental, physiological, and genetic conditions are such that allow Chiricahua leopard frogs to persist. • Upland habitats that provide opportunities for foraging and basking and are next to or surrounding breeding aquatic and riparian habitat.

¹ An infectious disease in amphibians, caused by the chytrid fungi *Batrachochytrium dendrobatidis* and *Batrachochytrium salamandrivorans*.

Feature	Description
Dispersal and nonbreeding habitat	<p>This habitat consists of areas with ephemeral (present for only a short time), intermittent, or perennial water that is generally unsuitable for breeding; also associated upland or riparian habitat that provides corridors (overland movement or along wetted drainages) for frogs among breeding sites in a metapopulation with the following characteristics:</p> <ul style="list-style-type: none"> • Are not more than 1.0 mile overland, 3.0 miles along ephemeral or intermittent drainages, 5.0 miles along perennial drainages, or some combination thereof not to exceed 5.0 miles • In overland and nonwetted corridors, provide some vegetation cover or structural features, such as boulders, rocks, organic debris (such as downed trees or logs), small mammal burrows, or leaf litter for shelter, forage, and predator protection; wetted corridors provide some ephemeral, intermittent, or perennial aquatic habitat • Are free of barriers that block movement by Chiricahua leopard frogs, including urban, industrial, or agricultural development; reservoirs that are 50 acres or more and contain nonnative predatory fish, bullfrogs, or crayfish; highways that do not include frog fencing and culverts; and walls, major dams, or other structures that block movement.

Source: USFWS 1999, 2004, 2012, 2013, 2014a, 2014b

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Appendix U

Social and Economic Conditions and
Analysis Methods

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Appendix U. Social and Economic Conditions and Analysis Methods

This appendix provides an overview of the current social and economic conditions of the San Pedro Riparian National Conservation area (SPRNCA) and surrounding area to support analysis for the Resource Management Plan/Environmental Impact Statement. In addition, information is provided for the method used for analyzing the social, economic, and environmental justice concerns, based on proposed management. A summary of this information is in **Section 3.5.3**.

U.1 SOCIAL AND ECONOMIC CONDITIONS

Certain defining features of every area influence and shape the nature of local economic and social activity. Features of particular relevance for this planning are as follows:

- Local history
- Population
- Presence of or proximity to large cities or regional population centers
- Types of longstanding industries, such as agriculture and forestry
- Predominant land and water features
- Unique area amenities

To accurately portray the relationship of Bureau of Land Management (BLM) management and the community, the social and economic geographic scope of analysis must be defined. At the broad scale, the entire planning area is used to examine social and economic conditions. As discussed in **Section 3.5.3**, the broad socioeconomic study area is defined as Cochise County. Data is also provided for Sierra Vista, which is the closest and largest municipality to the SPRNCA and has the most visitor services. There are three other incorporated places within 20 miles of the study area with populations greater than 1,000, based on 2010 data: Benson (5,105), Tombstone (1,380), and Bisbee (5,575). Given their size and proximity to the SPRNCA, and since visitation to the SPRNCA is often coupled with visitation to these other communities, data is also presented for these communities. Comparison with trends for Arizona is used to place Cochise County trends in context, relative to larger regional trends.

The economic analysis focuses on the existing social and economic conditions in and surrounding the planning area, such as population and ethnicity and employment and income. This was based on publicly available data sources, including Headwater Economic's Economic Profile System; US Department of Commerce, Census Bureau, 2000 and 2010 census data, as well as 5-year American Community Survey (ACS) data (US Census Bureau 2016); Bureau of Economic Analysis; Bureau of Labor Statistics; Environmental Protection Agency (EPA) Environmental Justice Guidance; and other state and local data.

In addition, planning area-specific data are included from a BLM and US Geological Survey (USGS) pilot project launched in early 2010. Its purpose is to assess the validity of ecosystem service valuation as an input to the BLM's resource management decisions. The pilot project was to review available tools for quantifying, mapping, and valuing ecosystem services; it also was used to quantify ecosystem services

using different tools, where feasible, comparing the utility of model outputs for decision-makers for a chosen management unit and for agency-wide application.

Two spatially explicit, ecosystem services modeling systems are designed to quantify tradeoffs between multiple services: Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) and Artificial Intelligence for Ecosystem Services (ARIES). Quantification and comparison of these models was performed in the pilot project (Bagstad et al. 2013).

U.1.1 Overview of Area History

Human occupation of the SPRNCA stretches back at least 12,000 years. The SPRNCA contains the Murray Springs Clovis Site, a significant archaeological resource that contains evidence of the earliest known people to inhabit North America; the site served as a hunting camp approximately 9,000 years before common era (BCE) (Haynes 2007). The hunter-gatherer Cochise culture next made this area home, between about 5000 and 200 BCE, followed by the more advanced Mogollon, Hohokam, and Salado people, who built permanent homes and engaged in agriculture here. By the time the first Europeans arrived, the San Pedro River was home to the Sobaipuri people.

The first Europeans to visit the San Pedro River may have been the parties of Cabeza de Vaca (1536), Fray Marcos de Niza (1536), or the Coronado expedition (1540). The Jesuit priest Eusebio Kino visited the villages along the San Pedro and Babocomari Rivers in 1692 and soon after introduced the first livestock to this area. By the late 1700s conflicts between the Apache, Spanish, and other Indian tribes increased, driving many of the Sobaipuri and Spanish out of the San Pedro Valley (Seymour 2011). The Spanish established the Presidio Santa Cruz de Terrenate around 1775; however, it was never completed, partially due to repeated attacks from the Apache, and it was abandoned in 1780.

Early American exploration of the San Pedro River was driven by the pursuit of beaver pelts. James Ohio Pattie and his father led a party of fur trappers down the Gila River and then down the San Pedro River in 1826. Trapping was so successful that he called the San Pedro the Beaver River. The Mexican government granted the San Juan de las Boquillas y Nogales and San Rafael del Valle land grants to individuals in the Gonzales family in the 1830s for use as cattle ranches. By the late 1840s, however, the ranches were abandoned, as Apache raids continued and wild cattle were left behind to graze on the open range.

Southern Arizona became a US possession at the end of the Spanish American War, with the Treaty of Guadalupe Hidalgo of 1848 and the Gadsden Purchase of 1854. Conflicts between the US Army and the Apaches began during the Mexican-American war in 1849. These armed conflicts, collectively known as the Apache Wars, continued until approximately 1886, though some smaller battles extended into the early 1900s.

As the Apache presence was reduced in the area, American prospectors started mining silver deposits previously known to the Spanish and Mexicans. In the late 1800s the population in the area exploded in mining boom towns. From around 1877 to 1890 the Tombstone mines produced 40 to 85 million dollars in silver bullion, the largest productive silver district in Arizona. The town of Bisbee was known as The Queen of the Copper Camps; mines there produced nearly 3 million ounces of gold and more than 8 billion pounds of copper until mining operations closed in the 1970s. The SPRNCA features the

ruins of Fairbank, active from about 1892 to 1900, which was important as a railroad and mining supply town for Tombstone.

In the late 1880s to early 1900s the land grants in the area were sold to American investors by descendants of the original land grant holders, and eventually the land was acquired by a large cattle ranching company. Other claims to the land were invalidated in court and other land uses and residents were removed.

A downturn in mining and removal of other land uses resulted in large-scale cattle ranching in the area; from the late 1800s to 1930, the Willcox depot in Cochise County was a nationwide ranching and cattle-shipping area. The San Pedro House, a 1930s-era converted ranch house, is from this period and is an example of former agricultural use along the SPRNCA.

U.1.2 Communities of Place

Sierra Vista

Located 75 miles southeast of Tucson, Sierra Vista serves as the main commercial, cultural, and recreational hub of Cochise County. Its population is 44,892 people (US Census Bureau 2015). The main economic sectors in the local economy are retail trade, military, and defense activities at Fort Huachuca, as well as healthcare, supported by the new 100-bed Canyon Vista Hospital (Sierra Vista Economic Development 2016). Sierra Vista is approximately 9 miles from the SPRNCA.

Tombstone

Tombstone is a historic western town founded in 1879. It prospered from about 1877 to 1890, during which time its mines produced 40 to 85 million dollars in silver bullion, the largest productive silver district in Arizona. Its population grew from 100 to around 14,000 in less than 7 years; current population is around 1,510 (US Census Bureau 2015), and today the town draws most of its revenue from tourism. Tombstone received approximately 48,000 visitors in 2015 (Arizona Sonoran News 2016). It is approximately 5 miles from the SPRNCA.

Bisbee

Bisbee has a population of 5,415 (US Census Bureau 2015). It was founded as a copper, gold, and silver mining town in 1880. By 1910 its population had swelled to 25,000, but by 1950 the population had dropped to fewer than 6,000. In 1975 the Phelps Dodge Corporation halted its Bisbee copper mining operations (Western Mining History 2016). Starting in the 1960s, Bisbee became a destination for artists. In the 1990s, additional people were attracted to Bisbee, leading it to develop such amenities as coffee shops and live theatre. Many of the old houses have been renovated, and property values in Bisbee now greatly exceed those of other southeastern Arizona cities. Today the town is supported by the tourism and cultural scene and as a retirement community. It is approximately 15 miles from the SPRNCA.

Benson

Benson has a population of 5,013 (US Census Bureau 2015). The city was founded in 1880 when the Southern Pacific Railroad came through. Today Benson is supported by tourism. It is home to the Kartchner Caverns State Park. Benson is approximately 10 miles from the SPRNCA.

U.1.3 Communities of Interest

In addition to communities in the planning area, there are specific groups for whom management of public lands is of particular interest, specifically bird and wildlife groups, residents, and area ranchers. Furthermore, special interest groups and individuals who represent resource conservation or resource use perspectives have an interest in planning area public lands management.

Wildlife Groups

The SPRNCA is an important site for national and international bird and wildlife groups. These groups, such as the Audubon Society, value the rare desert riparian habitat as a site to visit and view bird species. These groups are principally concerned with maintaining the biological value of the site to support bird and wildlife populations and to maintain access for wildlife viewing.

Residents

Residents represent a diverse group, with varying interests and priorities; however, most residents with property next to the SPRNCA are concerned with regulating visitation and recreation and minimizing conflicts. In addition, residents are concerned with fire and fuels, due to the potential for fires on the SPRNCA to spread to adjacent property.

Ranchers

The planning area has traditionally supported livestock grazing. Ranchers in the planning area use both private and BLM-administered lands to support grazing operations. Ranchers are primarily concerned with locations where grazing will be permitted, as well as the level of restrictions applied to structural and nonstructural range improvements.

U.1.4 Social and Economic Conditions and Trends

Populations and Demographics

The 2015 population in Cochise County was 129,647 (US Census Bureau 2016). The population density was 21 per square mile, compared with the state average of 56 people per square mile and a national average of 79.6 people per square mile (Arizona Department of Administration 2012).

The 2010 census population estimate of Cochise County (131,346) represented a 24.6 percent increase since 2000 in Arizona as a whole and an 11 percent increase in the county. It also represents a growth of 32 percent since 1990, the year after the last resource management plan (RMP) was undertaken.

Sierra Vista's population in 2010 was 43,888, a 16 percent increase since 2000. Since 1970, Cochise County's population has increased 112 percent. The state's population is projected to increase to 7,485,163 by 2020, an increase of 17 percent from 2010 (Arizona Department of Administration 2012). Of note is that while more recent data (2012) for Sierra Vista show over a 4 percent population increase since 2010 (45,794), the county's population fell 0.4 percent, to 130,752, during the same period (Cochise College 2013). The rate of increase for communities in the socioeconomic planning area may be slower or may even decrease if current trends continue (see **Table U-1**).

In addition to communities named in **Table U-1**, there are numerous other unincorporated communities near the SPRNCA that function with independent or shared services, including water districts, sewer districts, and school districts.

**Table U-1
Socioeconomic Study Area Population**

Population	Sierra Vista	Benson	Bisbee	Tombstone	Cochise County	Arizona
2000 population	37,775	4,711	6,090	1,504	117,775	5,130,632
2010 population	43,888	5,105	5,575	1,380	131,346	6,392,017
2015 population	44,892	5,013	5,415	1,510	129,647	6,641,928
Percent change	18.8	6.4	-11.1	0.4	10.1	29.5

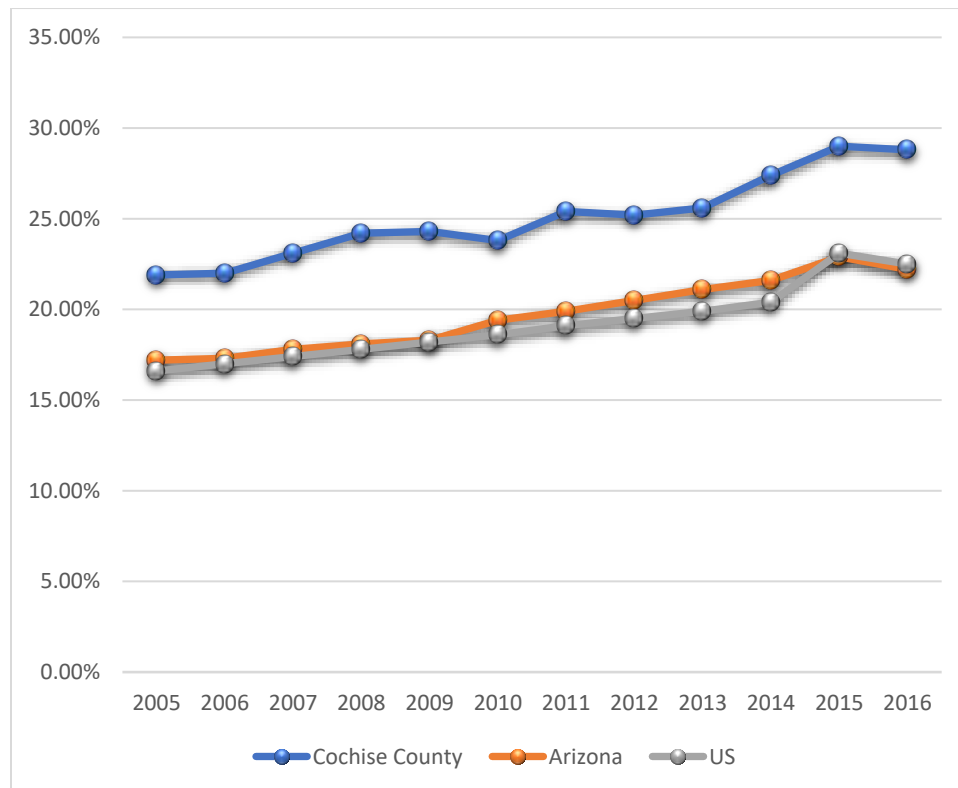
Source: US Census Bureau 2000, 2010, 2015

Population Age Distribution

Over the past 10 years, Cochise County has consistently had an older population of residents than that of Arizona or the United States, and a greater percent of the population has been over the age of 60 (see **Diagram U-1**, Percent of Population Over Age 60). In 2016, the median age in Cochise County was 42.2, and 28.8 percent of the population was over the age of 60. In comparison, the median age in Arizona was 37.4, and 22.2 percent of the population was over age 60. In the United States, the median age was 37.8, and 22.5 percent of the population was over the age of 60 during the same period (US Census Bureau 2016).

The age of the population is one indicator of the types of public services required in an area, indicating that the planning area population may require services to support an aging population.

**Diagram U-1
Percent of Population Over Age 60**



Source: US Census Bureau 2016

Education

Education levels in an area may be one indicator of the most commonly available types of local employment. In Cochise County, 86.7 percent of persons over 24 were high school graduates, similar to statistics for Arizona (86.0 percent) and the same as the United States as a whole (US Census Bureau 2016).

Employment and Income

Historically, employment in Cochise County was based on mining. From 1879 to 1970 nearly 4 million tons of copper, 193,000 tons of lead, 244,000 tons of zinc, 146.4 million ounces of silver, and more than 3 million ounces of gold were produced in Cochise County (Arizona Bureau of Geology and Mineral Technology 1985). Mining peaked in the early 1900s, although it continued to some extent until the 1970s. Since then, mining employment in the county has further declined, from 7.4 percent to 1 percent of all private employment in the county by 2014 (Headwaters Economics 2016).

Ranching and agriculture, another historically important economic sector, have declined from about 5 percent in 1970 to just over 3 percent in 2014. Over the same period, employment in the service industries has steadily increased, from 34 percent of total employment in 1970 and 60 percent in 2014 (Headwater Economics 2016).

Currently, employment in Cochise County is primarily focused on education services, health care, and the social assistance industry, with 20.5 percent of the population employed in these categories. Several other industries employ greater than 10 percent of the population (see **Table U-2**). These industry employment percentages are nearly similar to that for Arizona as a whole.

The exception is public administration, in which Cochise County is almost 10 percent higher, likely due to the presence of Fort Huachuca, a US Army base and home of the US Army Intelligence Center and the US Army Network Enterprise Technology Command. Fort Huachuca is the largest employer in Cochise County and Sierra Vista, and this has been so since at least 1999. Fort Huachuca has a military presence of approximately 4,100; it employed 9,369 full-time employees in 2012.

Fort Huachuca also has had a large indirect employment impact on Cochise County. It has been estimated that 26,921 full-time employees are supported by Fort Huachuca, which includes the 9,369 employees listed above as well as those employed in support of government contracts and those who are supported by the spending of Fort Huachuca and its employees. Nearly 83 percent of the indirect and induced¹ employment generated by Fort Huachuca is in the county's retail trade and services industries.

Other important employers in the area are General Dynamics Information Technology, which was the second largest employer in Sierra Vista in 2012, with 855 full-time employees. Others are Sierra Vista Unified School District (685 employees), the Sierra Vista Regional Health Center (611 employees), and Mantech International (560 employees) (Cochise College 2013).

¹ Indirect employment is from industries that sell goods to the industries that are directly affected; induced employment is changes in household spending as household income increases or decreases due to the changes in industry production.

Overall, total employment in Cochise County increased 104 percent between 1970 and 2014, compared with a 364 percent increase in Arizona overall (Headwater Economics 2016). Major industries have remained similar at the county and state level for the past decade, based on US Bureau of Economic Analysis data from 2001 and 2014 (see **Table U-2**).

Table U-2
County Employment by Sector (2001–2014)

Industry	Cochise County		Arizona	
	2001	2014	2001	2014
Farm employment	3%	3%	.4%	1%
Forestry, fishing, and related activities	N/A	1%	1%	.4%
Mining, quarrying, and oil and gas extraction	0.2%	1%	0.5%	1%
Utilities	1%	1%	0.4%	<.01%
Construction	6%	4%	8%	5%
Manufacturing	2%	2%	7%	5%
Wholesale trade	1%	1%	4%	3%
Retail trade	12%	12%	11%	11%
Transportation and warehousing	2%	2%	3%	3%
Information	1%	1%	2%	2%
Finance and insurance	2%	3%	5%	6%
Real estate, rental, and leasing	N/A	4%	5%	6%
Professional, scientific, and technical services	5%	7%	6%	6%
Company and enterprise management	0.2%	1%	1%	1%
Administrative and support and waste management and remediation services	4%	5%	8%	8%
Educational services	1%	2%	1%	2%
Health care and social assistance	8%	8%	8%	11%
Arts, entertainment, and recreation	1%	2%	2%	2%
Accommodation and food services	8%	7%	8%	8%
Other services (except public administration)	6%	5%	5%	5%
Government and government enterprises	32%	30%	14%	13%

Source: Bureau of Economic Analysis 2014, table CA25

N/A = not available due to nondisclosure requirements

Note that sectors of industry vary from those collected by the US Census Bureau, as displayed in **Table U-3**.

Employment characteristics in the City of Sierra Vista are similar to those of Cochise County (see **Table U-3**). The opening of the enlarged Copper Vista Medical Center in Sierra Vista in 2015 has continued to fuel the educational services, health care, and social assistance industries.

Educational services/health care/social assistance (27.5 percent) and retail (17 percent) are the two strongest industries in Benson.

Educational services/health care/social assistance (27.1 percent), arts and entertainment, accommodation and food services (15.3 percent), and retail (17 percent) employ the most people in Bisbee. Traffic from US Interstate Highway 10 and the presence of Kartchner Caverns influence spending in the second two categories.

In Tombstone, the most employment (27.5 percent) is in the arts, entertainment, recreation, accommodation, and food services industry; this sector is driven primarily by tourism.

Table U-3
Socioeconomic Study Area Employment by Sector (2016)

Industry	Sierra Vista	Benson	Bisbee	Tombstone	Cochise County	Arizona
Agriculture, forestry, fishing and hunting, and mining	1.3%	1.9%	1.9%	3.6%	4.0%	1.6%
Construction	2.7%	6.1%	5.1%	8.7%	5.1%	6.6%
Manufacturing	4.1%	5.5%	5.6%	0.0%	3.8%	7.3%
Wholesale trade	1.3%	3.8%	0.7%	1.1%	1.3%	2.4%
Retail trade	10.8%	17.0%	14.0%	11.9%	11.6%	12.2%
Transportation, warehousing, and utilities	2.7%	3.2%	4.1%	7.8%	4.2%	4.9%
Information	0.0%	0.0%	0.0%	0.0%	1.4%	1.8%
Finance and insurance, real estate, rental, and leasing	5.4%	4.8%	1.4%	0.8%	4.2%	8.1%
Professional, scientific, and management and administrative and waste management services	12.6%	8.3%	7.8%	3.2%	11.3%	11.9%
Educational services and health care and social assistance	21.0%	27.5%	27.1%	22.3%	22.0%	22.1%
Arts, entertainment, and recreation, accommodation and food services	12.5%	6.2%	15.3%	27.5%	10.8%	10.8%
Other services, except public administration	3.4%	3.4%	2.6%	1.7%	3.9%	4.8%
Public administration	21.5%	14.0%	13.5%	10.4%	16.4%	5.5%

Source: US Census Bureau 2016

Note: Data were derived from US Census Bureau American Community Survey (ACS) data about selected economic characteristics for the civilian population age 16 years and older at the state, county, and local level. ACS employment data reflect place of residence and an individual's primary occupation only.

The 2015 median family income in Cochise County was \$45,075, with a per capita income of \$25,506. This is lower than Arizona as a whole, at \$50,255 and \$25,848 (see **Table U-4**). Sierra Vista has a significantly higher median family income (\$59,091) and per capita income (\$26,988), which is likely due to its proximity to Fort Huachuca and its higher paying jobs. Benson and Bisbee are close in both median family income (\$32,010 and \$31,010) and per capita income (\$19,239 and \$22,051). Median family income in Tombstone (\$32,140) is approximately \$18,000 less than the state as a whole, and per capita income (\$17,717) is approximately \$8,000 less than the state as a whole. Poverty data is discussed below under *Environmental Justice*.

Table U-4
Socioeconomic Study Area Income in Dollars (2015)

Income Type	Sierra Vista	Benson	Bisbee	Tombstone	Cochise County	Arizona
Median family income	59,091	32,010	31,010	32,140	45,075	50,255
Per capita	26,988	19,239	22,051	17,717	23,506	25,848

Source: US Census Bureau 2016

Components of Personal Income

A further examination of trends in personal income provides insight into the area economy and its connection to the lands administered by the BLM. There are three major sources of personal income, as follows:

- Labor earnings or income from the workplace
- Investment income or income received by individuals in the form of rent, dividends, or interest earnings
- Transfer payment income or income received as Social Security, retirement and disability income, or Medicare and Medicaid

In Cochise County, labor earnings account for only 49.4 percent of total personal income; non-labor earnings in the county represented a higher percentage of total income than for the state or nation (**Table U-5**).

Table U-5
Source of Personal Income (2014)

Income Type	Cochise County	Arizona	United States
Total personal income*	\$4,679,941	\$255,092,928	\$14,683,147,000
Non-labor income	\$2,367,728	\$98,416,844	\$5,252,427,000
	50.6%	38.6%	35.8%
Dividends, interest, and rent	\$ 941,268	\$46,309,843	\$2,723,288,000
	20.1%	18.2%	18.5%
Transfer payments	\$1,426,460	\$52,107,001	\$2,529,139,000
	30.5%	20.4%	17.2%
Age-related transfer payments (e.g., Medicare and Social Security)	\$664,738	\$29,124,554	\$1,432,431,000
	14.2%	11.4%	9.8%
Hardship-related transfer payments (e.g., unemployment and welfare)	\$485,082	\$15,426,343	\$803,394,000
	10.4%	6.0%	5.5%
Other transfer payments (e.g., veterans' benefits)	\$276,640	\$7,556,104	\$293,314,000
	5.9%	3.0%	2.0%
Labor earnings	\$2,312,213	\$156,676,084	\$9,430,720,000
	49.4%	61.4%	64.2%

Source: Headwaters Economics 2016

*In \$1,000 of 2014 dollars

Note: Nonlabor income and labor earnings may not total personal income because of adjustments made by the Bureau of Economic Analysis. This is done to account for contributions from such factors as Social Security and cross-county commuting.

In Cochise County, a slightly higher rate of income from dividends, income, and rent may relate to the higher percentage of retirees in some portions of the county. Retirees are more likely than younger adults to have investment earnings. In addition, age-related transfer payments, such as Social Security and Medicare, are higher in Cochise County; however, hardship-related payments also represent a higher percent of income than in Arizona as a whole. In addition, a higher rate of other transfer payments (specifically, payments to veterans) is likely due to the presence of Fort Huachuca and associated business (Headwater Economics 2016).

Housing

Housing information is an indication of the economic strength of the area and the ability to accommodate changes in population. Cochise County contains approximately 60,087 housing units (US Census Bureau 2016). The rental vacancy rate is approximately 15.9 percent. Median home value was \$143,900, and median rental rates were \$802 per month, slightly lower than the Arizona state rates (see **Table U-6**).

Table U-6
Cochise County Housing (2015)

Housing	Cochise	Arizona
Number of housing units	60,087	2,890,664
Occupied	48,825	2,412,212
Vacant	11,262	478,452
Homeowner vacancy rate	3.4%	2.9%
Rental vacancy rate	15.9%	8.6%
Median value	\$143,900	\$167,500
Median rental rate	\$802	\$913

Source: US Census Bureau 2016

Local Fiscal Conditions

Revenues for Cochise County are from property taxes; the general fund; contributions from special funds collected for highway maintenance, health services, library districts, and other uses; and capital improvement funds for investment to support infrastructure projects.

A summary of revenue sources and expenditures is in **Table U-7**, below. County property taxes are collected at a rate of 2.6276 per \$100 of assessed value. Property values and the resultant property taxes may be influenced by adjacent public land regulations. The positive effect of a land use regulation on property values can be due to an “amenity effect,” when land use regulations protect, enhance, or create amenities or services that benefit property owners. For example, positive amenity effects can arise with regulations to protect environmental amenities, open space, and farmland or to control objectionable conditions, such as noise, congestion, and pollution (Jaefer 2006).

Table U-7
Cochise County Finances

Fund	Adopted Budgeted Expenditures and Expenses 2014	Actual Expenditures 2014	Fund Balance, as of June 2014	Estimated Property Tax Revenue 2015	Estimated Revenue Other than Property Taxes 2015	Total Funds Available 2015
Total general fund	\$80,459,349	\$54,407,112	\$29,059,354	\$25,114,167	\$27,190,434	\$81,595,849
Special revenue funds	\$46,216,289	\$34,652,084	\$15,233,765	\$4,512,860	\$24,609,018	\$44,209,619
Capital projects funds	\$29,117,440	\$7,830,674	\$16,766,605	NA	\$4,880,826	\$21,515,649
Total enterprise funds	\$4,570,433	\$4,975,470	-\$305,596	NA	\$4,959,542	\$4,653,946
Total all funds	\$160,363,511	\$161,247,922	\$60,754,128	\$29,627,027	\$61,639,820	\$151,975,063

Source: Cochise County 2014

The sales tax in Arizona, is based on a state rate of 5.6 percent, plus a county rate of .5 percent and an additional city rate, where applicable, averaging 2.5 percent. Cochise County average total tax rates are

approximately 8.6 percent. Sales tax may be generated from expenditures made by recreationists coming to BLM-administered lands.

The presence of federal lands results in payment in lieu of taxes (PILT) to offset lack of tax revenues generated from these lands. PILT payments to Cochise County in fiscal year 2014 were \$2,142,985 (Department of Interior 2014). PILT payments are included in general fund revenue and come from BLM-administered lands and from National Forest System, Bureau of Reclamation, and National Park Service lands.

U.1.5 Ecosystem Services

Ecosystem services describes the comprehensive set of benefits that people receive from nature, including both nonmarket and market components. Ecosystem processes are the complex physical and biological cycles and interactions that underlie what is observed as the natural world; ecosystem services are the specific results of those processes that either directly sustain or enhance human life or maintain the quality of ecosystem goods (Brown et al. 2007; Costanza et al. 1997; Daily et al. 1997; Kline 2013).

The Millennium Ecosystem Assessment Classification System (Millennium Ecosystem Assessment 2005) developed a frequently referenced classification of ecosystem services into four categories: provisioning, supporting, regulating, and cultural services. Each is summarized below.

Provisioning services—These are broadly described as products derived from ecosystems. They can include a broad spectrum of products from raw materials, minerals and energy products, water, and medicines. In the planning area, livestock forage and water resources represent the primary provisioning services from BLM-administered lands.

Supporting services—These are the underlying natural processes that sustain ecosystems and enable the production of all other ecosystem services, such as nutrient recycling and soil formation. These processes, in turn, support plants and animals, which support habitat and species diversity, abundance, and distribution. The functioning ecosystem in the planning area provides support for maintained biodiversity.

Regulating services—These are defined as benefits obtained from the regulation of ecosystem processes. Examples are carbon sequestration and climate regulation, waste decomposition and detoxification, and water and air purification. The San Pedro River provides a range of regulating services, particularly those focused on clean water.

Cultural services—These are defined as the benefits that people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences. The planning area supports a variety of cultural services, including preservation of historic resources and traditional life-ways, such as ranching. In addition, the area supports recreation and preserves the viewshed for visitors and local residents.

Ecosystem service contributions were modeled using two spatially explicit, ecosystem service modeling systems: InVEST and ARIES. The two scenarios modeled were urban growth and restoration management. The urban growth scenarios were compared using year 2000 baseline data plus “open” and “constrained” development scenarios for 2020. These scenarios assume expansion in desert scrub (10 to 17 percent) and urban land cover (179 to 507 percent) types and reductions in agriculture (13 to

85 percent) and grasslands (17 to 21 percent). Carbon, water, and watershed models are included in both ARIES and InVEST, so these services were quantified and compared (Bagstad et al. 2013).

While other biodiversity and cultural services were not included in the ARIES and InVEST comparisons, they have been measured and quantified using those or other tools. Biodiversity supports key recreation activities, such as bird watching, wildlife viewing, and hunting on the SPRNCA. Cultural services include the nonmaterial benefits people obtain through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences (Begsted et al. 2012).

Carbon

InVEST results indicated a loss of 168,000 tons per year of stored carbon under the open development scenario (valued at 35 to 144 million 2011 dollars; Bagstad et al. 2012) and 110,000 tons per year under the constrained development scenario (valued at 26 to 105 million 2011 dollars; Bagstad et al. 2012). Under ARIES, results indicate a relatively similar lost carbon sequestration under the urban-growth scenarios—a loss of 115,000 and 110,000 tons per year, respectively, under the open and constrained development scenarios. A relatively small change in carbon sequestration was quantified under the mesquite management scenario (loss of 148 tons per year) (Bagstad et al. 2013), valued at .76 to 3.0 million in 2011 dollars (Bagstad et al. 2012).

Water

The InVEST water-yield model showed annual water-yield increases in the Upper San Pedro Watershed of 8 to 12 percent under the open development scenario (estimated at 9.0 to 36.5 million in 2011 dollars; Bagstad et al. 2012) and 4 to 5 percent under the constrained development scenario (valued at \$9.1 to \$37 million in 2011 dollars, Bagstad et al. 2012). This increase in water yield results from reduced infiltration and faster runoff, which are a function of increased impervious surfaces with urban growth. This is generally an undesirable effect, as faster runoff causes problems with erosion, water quality, aquatic habitat, and groundwater recharge, though these impacts were not quantified (Bagstad et al. 2013).

ARIES results are not directly comparable to those obtained using InVEST. ARIES quantified theoretical changes in water yield, independent of actual hydrologic flows, which it calculates as the reduction in infiltration and evapotranspiration under the urban-growth scenarios. ARIES quantified a decrease in theoretical (flow-independent) infiltration and evapotranspiration of 2.3 percent under the constrained development scenario and 2.7 percent under the open development scenario. Although the sign of the change is opposite of the InVEST results (which quantified increased water yield), they quantify the same type of change—reduced infiltration and evapotranspiration in the case of ARIES and increased water yield due to the reduced infiltration and evapotranspiration in the case of InVEST. In both the models, the predicted changes result largely from reduced infiltration, an undesirable change in a groundwater-driven system (Bagstad et al. 2013).

Using InVEST, annual water yield of 0.3 to 0.8 percent was found for the mesquite management scenario (valued at .3 to 1.2 million in 2011 dollars; Bagstad et al. 2012). This result was expected, given the lower evapotranspiration typical of grasslands, relative to mesquite, as demonstrated by Neeetal (2012), using similar scenarios as modeled by the soil and water assessment tool (Arnold and Fohrer 2005).

As modeled by ARIES, mesquite management similarly reduced annual evapotranspiration on the SPRNCA by 0.3 percent. The finding that grasslands promote greater surface and groundwater flows and lower evapotranspiration, benefitting nearby riparian ecosystems, is theoretically consistent with field studies and disciplinary hydrologic models (Bagstad et al. 2013).

Viewshed

The InVEST viewshed model quantified a substantial increase in the number of visual blight across the landscape, with an 89 percent increase in the constrained development scenario and a 275 percent increase in the open development scenario; however, these results tell only part of the story, as they do not comprehensively account for the locations of viewers, visual blight, and visually valued views.

ARIES mapped the theoretical source (i.e., view-source quality, independent of the location of users) and actual use (depending on user presence and ecosystem service flows via lines of sight) for viewsheds. There was a decrease in theoretical viewshed quality of 0.04 to 0.1 percent, as land-cover types with greater visual appeal were replaced by development. Actual viewshed use increased by 240 to 555 percent. Greater changes occurred in the open than in the constrained development scenario because of the higher population growth associated with the former (Bagstad et al. 2013).

The ARIES viewshed results illustrate a case of how landscape quality can decline, while becoming more valuable, as ecosystem-service use increases with more beneficiaries on the landscape, in both the urbanization scenarios. This shows how rising demand for ecosystem services can increase their value, even as ecosystems are being degraded; thus, it is important that rising ecosystem service values not always be equated to improvements in ecosystem quality (Bagstad et al. 2013).

U.1.6 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that federal agencies identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority, low-income, and tribal populations. Analyzing environmental justice impacts therefore requires two steps: (1) an initial screening to identify minority and low-income populations and (2) identifying any impacts that disproportionately and adversely affect these populations, compared to non-minority and middle- and upper-income populations.

According to the Council on Environmental Quality's (CEQ) Environmental Justice Guidelines for National Environmental Policy Act (NEPA; 1997), "minority populations should be identified where either the minority population of the affected area exceeds 50 percent or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis."

Minorities are defined as individuals who are members of the following population groups:

- American Indian or Alaska Native
- Asian or Pacific Islander
- Black, not of Hispanic origin
- Hispanic

Further, CEQ states that in identifying minority communities, agencies may consider as a community either of the following:

- A group of individuals living in geographic proximity to one another
- A geographically dispersed/transient set of individuals, where either type of group experiences common conditions of environmental exposure or effect

A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

Low-income populations are defined as persons living below the poverty level, based on total income of \$12,071 for an individual and \$24,008 for a family of four for 2014 data (US Census Bureau 2014a). The BLM, CEQ, and EPA guidance do not provide a quantitative threshold (e.g., a limit on the percent of persons in poverty) for determining whether a population should be considered low income. Typically, the percent of persons in poverty in the study area is compared with that in another area, such as the state.

Low-Income Populations

Cochise County as a whole has a slightly smaller population of individuals below the poverty line (17.5 percent) than the State of Arizona, which is at 18.2 percent. Due to the low population in the census tracts around the planning area, poverty data was not examined by census tract; however, communities in the socioeconomic study were examined.

Sierra Vista has the smallest population in poverty, at 12.6 percent of individuals, while Benson is slightly above state levels, with 21.3 percent. Tombstone (25.0 percent) and Bisbee (25.7 percent) have poverty levels more than 5 percentage points above that of the state and is considered for further environmental justice impacts (see **Table U-8**).

Table U-8
Socioeconomic Study Area Poverty (2014)

Population	Sierra Vista	Benson	Bisbee	Tombstone	Cochise County	Arizona
Families below the poverty level	8.7%	16.9%	20.9%	23.2%	13.1%	13.3%
Individuals below poverty level	12.6%	21.3%	25.7%	25.0%	17.5%	18.2%

Source: US Census Bureau 2014b

Minority Populations

Based on 2010–2014 data, approximately 56.9 percent of Arizona’s population was identified as White, not Hispanic or Latino. The remaining 43.1 percent identified as ethnic or racial minorities or both. People of Hispanic or Latino descent (of any race) were the largest minority group and accounted for 30.1 percent of the total state population (US Census Bureau 2014b) (see **Table U-9**).

Cochise County is slightly less diverse than the state. In Cochise County, approximately 57.3 percent of the population was identified as White, non-Hispanic or Latino, and the remaining 42.7 percent were ethnic or racial minority or both. The largest minority groups were those of Hispanic/Latino descent

(see **Table U-9**). All communities in the planning area were less diverse than the comparison population of Concho County or the state, except for Bisbee, which was slightly above that of the County, at 43.7 percent combined minority population. As a result, no populations were identified for further consideration.

While Native Americans do not currently represent a substantial portion of the local area population, they have occupied the region for more than 12,000 years, using lands in the planning area for hunting, fishing, plant gathering, trade and exchange, and other cultural, social, and religious activities (see **Section 3.5.3**). The potential for impacts on Native American populations are considered in the environmental justice impacts analysis.

Table U-9
Study Area Populations by Race/Ethnicity

Population	Sierra Vista	Benson	Bisbee	Tombstone	Cochise County	Arizona	United States
Hispanic or Latino ethnicity of any race	9,997 22%	1,174 23.1%	2,140 39.1%	527 31.5%	43,777 29.7%	1,977,026 30.1%	53,070,096 16.9%
White alone	33,755 74.4%	4,406 86.8%	4,629 84.5%	1,378 82.3%	104,360 79.8%	5,174,082 78.9%	231,849,713 73.8%
Black or African American alone	3,378 7.4%	15 0.3%	70 1.3%	0 0	5,148 3.9%	274,380 4.2%	39,564,785 12.6%
American Indian or Alaska Native alone	653 1.4%	113 2.2%	71 1.3%	0 0	1,599 1.2%	290,780 4.4 %	2,565,520 0.8%
Asian alone	1,671 3.7%	19 0.4 %	48 0.9%	3 0.2%	2,266 1.7%	191,071 2.9%	15,710,659 5.0%
Native Hawaiian and Other Pacific Islander alone	178 0.4%	19 <.1%	0 0	0 0	200 0.2%	12,638 .2%	535,761 0.2%
Some other Race	2,118 4.7%	270 5.3%	483 8.8%	86 5.1%	9,948 7.6%	418,033 6.4%	14,754,895 4.7%
Two or more races	3,612 8.0%	252 5.0%	174 3.2%	207 12.4%	7,286 5.6%	200,532 3.1%	9,125,751 2.9%
Combined minority population	38.7%	26.6%	43.7%	35.5%	42.7%	43.1%	37.2%

Source: US Census Bureau 2014b

Note: The combined minority population is calculated by total population, minus those who reported as White, non-Hispanic. American Community Survey estimates are based on data collected over 5 years. The estimates represent the average characteristics of populations between January 2010 and December 2014 and do not represent a single point in time.

Multiple federally recognized tribes in the region continue to recognize and use the public lands and resources of the SPRNCA in their traditional practices and beliefs.

U.2 ECONOMIC IMPACTS METHOD

This section describes the method and data used to model the quantitative economic impacts of public land management decisions on communities surrounding federal lands. The inputs required to run the IMPLAN model are described in the following narrative and tables. The resulting estimates from the IMPLAN model, by alternative, can be found in *Economic Conditions* in **Chapter 3**.

IMPLAN is a widely accepted model commonly used for estimating regional economic contribution and analyzing economic impacts. This model provides a mathematical representation of the local economy, which enables the flow of money, goods, and services to be tracked and reported in terms of regional jobs and income. IMPLAN models the way a dollar injected into one sector is spent and re-spent in other sectors of the local economy, creating a ripple effect. This effect, also called the multiplier effect, reflects changes in economic sectors that may not be directly affected by management actions but are linked to industries that are directly affected. In IMPLAN, these ripple effects are termed indirect impacts (for changes in industries that sell inputs to the industries that are directly affected) and induced impacts (for changes in household spending as household income increases or decreases due to the changes in production).

The analysis conducted for this RMP/EIS used IMPLAN (2016). Before the model was run, cost and price data were converted to a consistent dollar year (2017), using the Bureau of Economic Analysis Consumer Price Index calculator. (The values in this appendix are expressed in year 2017 dollars so that the earnings and employment estimates can be easily compared to baseline data.) The IMPLAN production coefficients were modified to reflect the interaction of producing sectors in the study area. Key variables in the IMPLAN model use data specific to the region, including employment estimates, labor earnings, and total industry output. Data on resource use levels (e.g., from recreation visits and animal unit month [AUMs]) were collected from BLM subject-matter specialists, as detailed below.

U.2.1 Grazing

Economic impacts associated with livestock grazing on BLM-administered lands in the planning area were estimated based on the produced value of livestock and the level of BLM forage needed to produce livestock.

Forage was measured in AUMs; one AUM is the amount of forage needed to feed a cow-calf pair for one month. For this analysis the total permitted AUMs per alternative were determined to represent a maximum level of potential impacts.

The value for produced livestock was determined based on 2016 data from the University of Arizona College of Agriculture and Life Sciences Cooperative Extension Program. Data were used for the southeastern region cow/calf budget “high” scenario (Teegerstrom and Tronstad 2016). Converted to 2017 dollars, the total budget was \$818. The assumption was that an average of 12 AUMs was required to produce marketable livestock, resulting in average spending of \$68.17 per AUM. The total economic value of livestock production, which was used as the direct impact input to the IMPLAN, was calculated for each alternative based on the number of permitted AUMs. This amount was broken into component parts for entry into the IMPAN model, in the following categories:

- Sector 2_Grains
- Sector 11_Beef cattle ranching and farming
- Sector 19 Agricultural support activities
- Sector 63 Maintenance, repair, and construction of nonresidential structures
- Sector 57 Newly constructed commercial structures, including farms
- Sector 395 Wholesale trade
- Sector 411 Truck transportation services
- Sector 433 Non-depository credit intermediaries
- Sector 437 Insurance
- Sector 445 Equipment leasing and rental
- Sector 459 Veterinary services
- Not Applicable - Labor

The economic contributions of current recreation visits and those anticipated under alternative management actions were modeled in IMPLAN. This was done to estimate the indirect and induced effects on the local economy of recreation-related spending under the different alternatives.

U.2.2 Recreation

On their way to the planning area, and once they arrive, visitors to the SPRNCA spend money on goods and services, such as gas, food, lodging, and souvenirs. In contrast to many other resource and land uses, economic activity associated with outdoor recreation is not captured in any one industrial sector; instead, spending associated with recreation stimulates economic activity in a wide range of economic sectors associated with accommodations and food service, arts and entertainment, passenger transportation, and retail trade.

This analysis examined economic impacts of spending by visitors from outside Cochise County only, as their recreation-related spending constitutes “new dollars” being injected into the local economy. Economic impacts from recreation is used because, in the absence of recreation opportunities on the SPRNCA, spending by local recreationists would likely be shifted to other sectors of the local economy or a substitute local recreation area would be selected.

Outdoor recreationists participating in activities on public lands have unique spending profiles. Analyses of expenditures reported by national forest visitors have shown that the primary factor determining the amount of money spent on a recreational visit to public lands is the type of trip taken rather than the specific activity the visitor intends to participate in (White 2017). Based on this assumption, visits to BLM-administered lands on the SPRNCA reported by the Recreation Management Information System were segmented into day and overnight trips. Percentages of day and overnight visitors were determined based on Ore and Colby (2002), a local study of recreation use. The distribution residents or visitors is estimated, based on the percentage of residents and visitors, as recorded at the San Pedro House visitor register (BLM 2017). This analysis assumes 13 percent of visitors are from Cochise County, and the remaining 87 percent are from outside the area.

Visitation data were collected from the BLM's Recreation Management Information System. Based on the proposed management activities, the variation in visitation was estimated by alternative, based on the BLM recreation specialist's professional expertise.

Baseline visitation levels for each alternative are displayed in **Table U-10**. In addition, recreation levels are assumed to increase over the planning period. Based on trends observed in Recreation Management Information System data, a rate of 2 percent increase per year was estimated. Projected visitation levels of three time points in the planning period, 2017, 2027, and 2028, are shown in the table.

Detailed visitor spending profiles developed by the National Visitor Use Monitoring Program were determined to represent the best available data for recreation spending profiles and were applied to SPRNCA visitation. Average National Visitor Use Monitoring visitor spending profiles were used, converted to 2017 dollars. (See **Table U-11** for spending profiles.)

Table U-10
Estimated Recreation Visits by Alternative

Year	A and D	B	C
2017	111,318	119,881	112,807
2027	135,696	191,415	143,381
2037	165,412	233,334	174,780

Sources: RMIS 2017; BLM Recreation Specialist input

Table U-11
Recreation Spending Profiles

Recreation	Visitor Overnight	Visitor Day Trip
Lodging	\$140.17	\$0
Restaurants	\$70.71	\$13.27
Groceries	\$68.68	\$9.31
Gas	\$86.13	\$30.32
Other transport	\$3.43	\$1.00
Entry fees	\$15.01	\$5.07
Recreation and entertainment	\$18.55	\$5.28
Sporting goods	\$15.94	\$3.17
Souvenirs	\$19.88	\$2.42
Other retail	\$438.5	\$69.83

Source: based on White 2010

Total spending represents per-party totals, so visit numbers were converted to party numbers using an assumption of 2.5 people per party of day visitors and 2.2 for overnight visitors, based on White (2010). Total local recreation-related spending was estimated by applying National Visitor Use Monitoring spending profiles to estimated numbers in SPRNCA parties.

The economic contributions of current recreational visits and those anticipated under each alternative were modeled in IMPLAN to estimate the indirect and induced effects on the local economy of recreation-related spending.

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Appendix V

Public Comment Response Report

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Appendix V. Public Comment Response Report

Air Quality

Summary: The RMP/EIS should analyze the emissions of trash burning by the city of Sierra Vista.

Response: This comment is out of scope; no change made. The RMP/EIS does not analyze air quality in detail because management differences described within the scope of this plan are not expected to materially influence air quality (Section 3.2.1, *Air Quality*). In addition, the BLM does not have jurisdiction to regulate emissions on private property.

Alternatives

Summary: The RMP/EIS should explain how alternatives that are not “light on the land” are still consistent with the enabling legislation.

Response: No change made. The enabling legislation includes language that says “conserve, protect, and enhance”; how this is achieved is not defined in the enabling legislation. Alternatives that considered a broad array of tools and active resource management could be more efficient in conserving, protecting, and enhancing resources on the SPRNCA compared to a “light on the land” management approach; thus both approaches are consistent with the enabling legislation and are analyzed in the RMP.

Summary: The RMP/EIS should provide a clearer justification of the decision for choosing the preferred alternative.

Response: The Record of Decision (ROD) provides justification for the decision to choose the Proposed RMP.

Alternatives—Other

Summary: The RMP should include a universal prohibition on uncertified feed for livestock on the SPRNCA.

Response: No change made. BLM regulations do not allow for supplemental feeding on public lands and other lands that it administers (43 CFR 4140.1(a)(3)). Not only is feeding not anticipated or planned at this time, feed is not allowable on the SPRNCA; therefore, feeding would not have an effect, and this issue is not germane to this planning effort. Stipulations about supplemental feeding for recreation pack animals is included in Appendix V of the Proposed RMP/Final EIS.

Summary: The RMP should include expanding livestock grazing at Brown Canyon Ranch in lieu of expanding grazing on the SPRNCA.

Response: No change made. The scope of decisions under this RMP is defined by the plan’s purpose and need. That scope is geographically limited to the SPRNCA. The decision to graze or not graze the SPRNCA does not depend on the decision to graze or not graze the Brown Canyon Ranch. In addition, the BLM does not have jurisdiction on the Brown Canyon Ranch, placing it further out of scope.

Summary: The RMP should include the use of volunteers to remove wildfire fuel accumulation on the SPRNCA in lieu of grazing or other mechanized techniques.

Response: No change made. Specifying the use of volunteers is not a planning level decision.

Summary: The RMP should include a requirement that stream projects would not be implemented without additional environmental analysis and input from consultants with sufficient subject matter expertise.

Response: No change made. The RMP does not implement any stream projects, so additional environmental analysis would need to take place in advance of any project approval or implementation. Project-specific analysis will occur at a later date.

Summary: The RMP should exclude motorized recreation from riparian areas and lands with wilderness characteristics.

Response: No change made. Alternative D would exclude motorized vehicle use on all 23,810 acres of lands managed for the protection of their wilderness character (see Section 2.5.13, *Transportation and Access*, page 2-46). Applying this restriction across all alternatives would unduly narrow the range of reasonable alternatives for consideration. Motorized use would be consistent with the rural and backcountry motorized RMZs; crossings in riparian areas are only on existing major roadways, the effects of which are localized, and it is impractical to resolve them by closure. Motorized routes will be determined during travel management planning after the ROD is signed.

Summary: The RMP should include allocations for different types of recreation in greater detail than provided in the DEIS to prevent conflict of uses, such as hunting and hiking, especially for road density.

Response: No change made. The objectives, management actions, and allowable uses described in the plan provide adequate management direction for recreation. Specific deficiencies of the analysis were not identified. Regarding road densities, travel management plans consider road density in route evaluations. They are done as implementation level plans after the RMP is complete. These plans must conform to the decisions in the RMP.

Summary: The RMP should include more specific management actions (several recommendations detailed in comment) to restore and protect wildlife corridors.

Response: Detail has been added to the management actions for wildlife corridors in the RMP/EIS. Xeric-riparian objectives were added to Section 2.5.4., *Vegetation Communities*, in lieu of specific allocations or management actions. These objectives will prescribe the protection, conservation, and enhancement of xeric-riparian habitats, which facilitate wildlife movement across the SPRNCA. A management action has also been added to restore wildlife movement, where appropriate. Impacts on wildlife movement from projects will be analyzed at the implementation level.

Summary: The RMP should include a goal of no net loss or net gain for special status species and wildlife habitat.

Respond: No change made. Based on the impact analysis for fish and wildlife, vegetation, and special status species (Sections 3.4.5, 3.4.6, and 3.4.4), the BLM believes that the goals and objectives of its RMP can be reached without a no-net-loss or net-gain mitigation standard. The comment failed to provide detailed information on how the RMP would fall short of its goals and objectives in the absence of no net

loss or net gain standards. The RMP/EIS is consistent with the BLM's special status species guidance (MS 6840) and its mitigation policy (IM 2018-093).

Summary: The RMP should nominate all properties within ACEC boundaries for listing on the National Register of Historic Places.

Response: No change made. Planning decisions for cultural resources are based on goals, objectives, allowable uses, and management actions. NRHP nomination is a process outside of the scope of land use planning.

Summary: The RMP should include a requirement that (Class III) cultural resource surveys take place in advance of decisions, to allow livestock grazing on the SPRNCA.

Response: No change made. Historic properties would be identified ahead of any decisions to open areas to livestock grazing, in compliance with applicable environmental and cultural resource laws. The commenter did not provide information that would give a reasonable basis for a Class III survey to be required across the entire planning area.

Summary: The RMP should include an adaptive management strategy, based on specific, measurable indicators and thresholds for management change.

Response: No change made. The BLM will develop implementation level plans and decisions that detail the adaptive management plan for the SPRNCA. Measurable indicators and thresholds for adaptive management are not planning level decisions.

Summary: The RMP should include clear thresholds on what environmental circumstances would trigger a plan amendment or revision.

Response: No change made. The BLM's Land Use Planning authorities, such as through H-1601-1, do not require it to identify in its plans the measurable thresholds that depart from desired conditions, warranting an amendment.

Summary: The RMP should analyze the risks of temperature and precipitation trends to conservation values on the SPRNCA and produce a management plan to respond to those risks.

Response: Temperature and precipitation trends were added to cumulative impacts in Section 3.2.2, *Soil Resources*, Section 3.2.3, *Water Resources*, Section 3.2.4, *Vegetation*, and Section 3.2.5, *Wildlife Habitat*.

Summary: The RMP should manage the SPRNCA as VRM II or more restrictive, as appropriate.

Response: No change made. VRM classes are based on the values identified in the visual resource inventory (VRI classes) under H-8410, which includes consideration for potential land use activities. VRM classes identified in the Proposed Plan (modified Alternative C) are based on existing visual resource values and the visual sensitivities of the area in question. Preserving the visual landscape was not a provision of the SPRNCA's enabling legislation, thus VRM is based on a site-specific basis.

Summary: The RMP should maximize backcountry RMZs and minimize backcountry (motorized) and rural RMZs to protect conservation values.

Response: No change made. RMZs are based on an area's existing and desired recreational setting characteristics, including remoteness and access, naturalness, visitor facilities, visitor services, and management controls. The RMZs evaluated in the RMP were developed in response to public input for providing recreation opportunities in a variety of settings, including those of primitive and backcountry setting.

Summary: The RMP should close areas next to LWCs to OHV use, to protect wilderness characteristics but still provide for multiple use management.

Response: No change made. The BLM does not manage buffer areas around LWC units, and the enabling legislation limits OHV use to designated routes on the SPRNCA. Inventory units and adjacent lands would be protected by an OHV designation limiting vehicles to designated routes.

Summary: The RMP should limit hunting to certain parts of the primitive and backcountry RMZs.

Response: In an effort to improve the public's ability to understand the rules regarding hunting, and in conformance with Secretarial Orders 3347, 3356, and 3362, areas on the SPRNCA will be open to hunting, as determined by Arizona state law and hunting regulations. Much of the SPRNCA has been open to hunting since its inception, and no issues or concerns with impacts on wildlife, recreation, or individual safety were identified during that time. The public may pursue hunting closures through established procedures with the Arizona Game and Fish Department (AGFD) and the Arizona Game Commission.

Summary: The RMP should use beavers as a management tool.

Response: No change made. The RMP does not restrict the use of beavers as a management tool from any part of the SPRNCA. The BLM will use beavers during restoration and enhancement, where appropriate.

Summary: The RMP should use the macroinvertebrate sampling and a monitoring program to inform management of land activities that could contribute to water quality impairment.

Response: No change made. The BLM will continue to cooperate with the EPA, USGS, and other agencies in managing the San Pedro River.

Summary: The RMP should remove encroaching shrub species.

Response: No change made. Objectives in Section 2.5.4, *Vegetation Communities*, specifically address encroaching shrubs under the action alternatives, B, C, and D. Alternatives B and C include management actions that permit the use of mechanical, chemical, and prescribed fire to manage encroaching shrubs.

Summary: The RMP should permit livestock grazing only where it does not jeopardize restoration of the San Pedro River to proper functioning condition and attainment of water quality standards.

Response: Analysis has been added addressing the water quality concerns related to livestock (Section 3.2.3, *Water Resources*).

Summary: The RMP should preclude the use of herbicides until they are validated as safe through scientific study.

Response: No change made. The RMP tiers to the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) and Record of Decision (BLM 2007) and Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS and Record of Decision (BLM 2016), which analyze and outline the approval for the use of herbicides on BLM-administered lands in 17 western states. The BLM would follow these reports and standard operating procedures to limit herbicide transport to surface water. No comments received included peer-reviewed literature or other credible information that substantially changes that analysis and its conclusions. Impacts from specific herbicides will be analyzed at the project level before any herbicide projects are implemented.

Summary: The RMP should include rangeland restoration management activities (specific recommendations made in comments).

Response: No change made. The RMP provides for vegetation treatments to remove encroaching shrubs and promote native grasses for rangeland restoration. Information was not submitted showing that restoration would not be adequate for supporting rangeland forage needs.

Summary: The RMP should include wildlife and habitat objectives to promote species that were historically extirpated and that could be reintroduced.

Response: No change made. The RMP includes management actions for species reintroductions, as well as goals and objectives for promoting native species (Section 2.2.5, *Fish, Wildlife, and Special Status Species*). If they are reintroduced, species that were historically extirpated would be managed under the goals and objectives promoting native species. Additional goals and objectives to reintroduce species are not warranted.

Summary: The RMP should let land health standards drive the initial location and extent of new grazing allotments. It should maintain a moratorium on grazing on lands that do not meet land health standards until they do meet those standards, using management tools to facilitate restoration.

Response: No change made. See Management Action 3 under Section 2.5.11, *Livestock Grazing*. Under all alternatives that allow expanded grazing, the BLM will allow livestock grazing to occur only if an area is shown, based on a comprehensive land health evaluation, to be meeting BLM Arizona standards, and where grazing would meet the objectives in the enabling legislation.

Summary: The RMP should restrict firearm use within a distance to trails and other high-use areas so they would not pose a safety risk to trail users and the public (specific locations were identified in the comments).

Response: Additional information is provided under Alternative C and Appendix N to identify areas where discharging firearms and other weapons is restricted under current BLM regulations and under current State of Arizona hunting regulations.

Summary: The RMP should restrict the type of hunting permissible on the SPRNCA, allowing small-game hunting with shotguns rather than big-game hunting with rifles.

Response: No change made. In an effort to improve the public's ability to understand the rules on hunting, and in conformance with Secretarial Orders 3347, 3356, and 3362, areas on the SPRNCA would be open to hunting, as determined by Arizona state law and hunting regulations. Much of the SPRNCA has been open to hunting since its inception, and no issues or concerns with impacts on wildlife, recreation, or individual safety were identified during that time. Lawful methods of take are regulated by Arizona hunting regulations. These restrictions can be pursued with the AGFD and the Arizona Game Commission through established procedures.

Summary: The RMP should designating backcountry byways on the SPRNCA along existing roads.

Response: The text of the RMP/EIS has been updated to include a new issue that had been eliminated from detailed analysis about backcountry byways, in Section 1.4.2, *Planning Issues Considered but Not Further Analyzed in this RMP*.

Summary: The RMP should provide a flexible allowance for the amount of trail construction on the SPRNCA.

Response: No change made. Limits on the amount of trail construction are not established in the RMP; the reasonably foreseeable development (RFD) is simply an indication of foreseeable trail development for analysis. Trail construction needed to resolve issues identified in the RMP or in the subsequent travel and transportation management plan will be identified in future implementation plans.

Summary: The RMP should close the SPRNCA to hunting.

Response: No change made. To improve the public's ability to understand the rules on hunting, and in conformance with Secretarial Orders 3347, 3356, and 3362, areas on the SPRNCA would be open to hunting, as determined by Arizona state law and hunting regulations. Much of the SPRNCA has been open to hunting since its inception, and no issues or concerns with impacts on wildlife, recreation, or individual safety were identified during that time. The public can pursue hunting closures through the AGFD and the Arizona Game Commission.

Summary: Allow fire use over a greater area, because the use of herbicides kills dicots and enables the spread of invasive species.

Response: No change made. The BLM can manage species to meet its vegetation goals and objectives with the more limited scope of management tools. Fire and herbicides will be used, as appropriate to the resource conditions. The environmental impacts and risks associated with the use of herbicides is analyzed in the Record of Decision for the Final Programmatic Environmental Impact Statement National Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron (ROD; BLM 2016), which the RMP/EIS tiers to.

Summary: The RMP should designate an additional cultural resource allocation category: infrequently visited.

Response: No change made. The cultural resource use designations in the RMP/EIS are defined in accordance with BLM policy manual 8130 and BLM handbook H-1601-1. Infrequently visited is not a cultural resource designation recognized by the BLM.

Summary: The RMP should open specific additional administrative vehicle routes to public vehicular use.

Response: No change made. Decisions to open routes to public vehicle use will be made in the Travel Management Plan (TMP) after the RMP is completed. The RMP identifies RMZs to accommodate motorized recreation in backcountry settings in several areas, depending on the alternative. Specific routes will be designated in the TMP.

Summary: The RMP should include research to determine fire history of Saint David Cienega.

Response: No change made. Research is not a management action; it is an administrative action outside of the scope of land use planning.

Summary: Grazing should be excluded from all riparian vegetation associations, including those in tributaries.

Response: No change made. The comment does not contain a clear direction on redefining the boundary definition between riparian and non-riparian areas that could be used consistently across the decision area to distinguish management zones. The RMP contains allocations and management actions that protect the riparian zone, vegetation communities, and wildlife, despite allowances for grazing in tributaries. No peer-reviewed literature or other information was included in the comment that identifies specific deficits in the analysis.

Summary: The RMP should contain a requirement that only wildlife-friendly fencing be used.

Response: No change made. Fencing type would be determined at the implementation level, when allotments are considered for availability. The BLM typically requires rangeland fence construction to meet AGFD wildlife-friendly standards on fence height, wire type, and wire spacing.

Summary: The RMP should include a seasonal restriction on hunting.

Response: No change made. To improve the public's ability to understand the rules on hunting, and in conformance with Secretarial Orders 3347, 3356, and 3362, areas on the SPRNCA would be open to hunting, as determined by Arizona state law and hunting regulations. Much of the SPRNCA has been open to hunting since its inception, and no issues or concerns with impacts on wildlife, recreation, or individual safety were identified during that time. The BLM defers to the State on matters of hunting regulation, except where public safety on BLM-administered lands is concerned, in which case the BLM works with the State to identify appropriate restriction areas by implementing current federal and state regulations to protect public safety. The SPRNCA has been effectively open to hunting since it was designated, and it has not been a management issue or safety concern. Commenters did not provide peer-reviewed literature on the impacts from not seasonally restricting hunting.

Summary: The RMP should enhance the presence of law enforcement.

Response: No change made. Law enforcement is not a component of land use planning.

Areas of Critical Environmental Concern (ACECs)

Summary: The RMP/EIS should provide further information on how the removal of ACEC designations would not reduce resource protections.

Response: No change made. After review, the BLM has determined that the analysis contains adequate explanation to support the conclusion that ACEC designation is not needed to manage the resources of concern: relevant and important (R&I) values. The entire SPRNCA must be managed under the enabling legislation to conserve, protect, and enhance the values that the proposed ACECs would be managed for, such as cultural and paleontological. The commenters did not offer examples of the specific kind of additional management that is needed to protect specific values and what specific benefits ACEC designation would confer. The withdrawals and legal restrictions overlapping potential ACECs prevent uses that would most likely have adverse effect on the R&I resource, such as mineral entry, ROWs, and OHV use. There are no additional allocations or management actions that would foreseeably protect the resources of concern and advance the overall goals of the planning initiative.

Summary: If there is a heightened potential for adverse effects on relevant and important (R&I) resources in the absence of an ACEC designation, then further information should be provided for how those effects would be mitigated.

Response: No change made. As shown in the analysis, the lack of an ACEC designation would not lead to greater resource impacts to R&I values. The BLM cannot avoid, minimize, or compensate for an impact that does not occur or is not measurable. Moreover, the enabling legislation prohibits impacts on those resources and the management actions in the RMP provide for the maintenance and enhancement of those values.

Summary: The RMP/EIS should provide further information on why ACECs are being removed and replaced with alternative designations or allocations.

Response: To be eligible for further consideration for designation, an area must be evaluated for its R&I values. The presence of these values alone, however, does not warrant designation. ACEC designations are defined by the management prescriptions needed to protect R&I values. Depending on the nature of resources and their environments, management prescriptions can vary, from few and largely passive to many and highly intensive. Whatever the management needs for the R&I values, they must be weighed against the background management of an area to determine whether special management attention is still required to protect the values. This is not the case for the SPRNCA, all of which must be managed under the enabling legislation to conserve, protect, and enhance what the proposed ACECs would be managed for, such as cultural and paleontological. The BLM has determined that the background management prescriptions under each of the alternatives are sufficient to protect the resources.

Summary: Published BLM reports indicate the need to use vegetation treatments to protect R&I resources in the Saint David Cienega ACEC. Alternative D would not allow vegetation treatments in this ACEC. How is Alternative D a viable management approach?

Response: Alternative D provides for a limited set of management activities, which are nevertheless sufficient to meet the needs for maintaining and protecting R&I resources. The management needs outlined in referenced reports are not incompatible with the management that can be achieved under the truncated set of management tools under Alternative D.

Assumptions and Method

Summary: The RMP/EIS fails to disclose how animal unit months (AUMs) were calculated. It should explain this, and in doing so identify if this is based on anticipated forage production resulting from expanded lovegrass.

Response: No change made. Appendix M, *Livestock Grazing AUMs*, explains how the BLM calculates AUMs. The BLM has also made the ecological site inventory publicly available at <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=48115>.

Summary: There is a conflict in the forage limitations prescribed under the RMP and the Babocomari Allotment Management Plan (AMP). If the RMP is superseding the AMP and nullifying its allowances, it should be made explicit. If this is the case, an updated carrying capacity analysis should be developed.

Response: The RMP has been updated with text explaining that the RMP utilization cap would override and replace the Babocomari AMP utilization cap, from 50 percent to 40 percent. The BLM will determine carrying capacity, based on AUMs at the implementation level. RMP-level determinations for livestock grazing address whether grazing should be allowed, based on existing conditions; the number of allowable livestock is defined at the implementation level.

Summary: The assumption in the RMP/EIS that there will be sufficient water resources in the future to meet the objectives in the plan is not clearly supported. The RMP should provide clearer definition on this point and explain limitations on this assumption.

Response: No change made. The cumulative effects analysis in the water resource section evaluates the foreseeable impacts on water resources into the foreseeable future. Based on that outlook, the BLM does not expect water availability to affect the attainability of goals and objectives. Should environmental circumstances change, in the RMP evaluation process, the BLM will assess whether progress is being made toward achieving goals and objectives, accounting for monitoring and other available data. If progress is not being made toward resource targets and desired conditions over a reasonable period of time, this will trigger an RMP amendment or revision. The purpose will be to change management actions or allocations and bring management into trajectory with goals and objectives (if the existing goals and objectives remain relevant and appropriate).

Summary: The RMP/EIS does not disclose how BLM water demand was calculated. USGS-supported calculations do not comport with the numbers in the plan.

Response: No change made. The USGS-supported median consumption rate of cattle is 12 gallons/day. The BLM uses an estimate of 20 gallon/day, based on Gungle et al. 2016, citing Hereford NRC. This is a net figure, accounting for evaporation losses and direct consumption. The USGS and BLM numbers are compatible. The analysis appropriately accounts for water consumption and evaporation losses.

Summary: There appears to be an inconsistency between the analysis area for impacts from livestock grazing (a quarter-acre) and statements that forage could be reduced by 50 percent within a half-mile area around water sources (e.g., 3-44).

Response: Text has been added to provide further information about utilization estimates. The two acreage figures are not conflicting, but rather refer to different impacts. The quarter-acre figure is an estimate of ground disturbance, whereas the 0.5-mile figure is an estimate of the area over which forage

would be reduced by at least 50 percent. The quarter-acre figure has been updated to 2 acres for estimated ground disturbance.

Summary: The RMP/EIS should disclose the amount of potential southwestern willow flycatcher (SWFL) habitat that would be adversely affected by livestock cattle allowances, as measured by forage limitations against the SWFL recovery plan.

Response: No change made. SWFL habitat will not be adversely affected by grazing allocations, because AUMs are calculated using a 30 percent average utilization rate of perennial grasses. This is 5 percent below what is permissible under the 2002 Final Recovery Plan for SWFL. There will be no additional livestock in riparian areas, with the exception of some areas in xeric-riparian washes, and the BLM will address indirect impacts with terms and conditions during consultation with the US Fish and Wildlife Service (USFWS).

Summary: The assumption in the RMP/EIS that the population around SPRNCA is increasing is not supported and should be corrected. Cochise County's population has decreased over the last decade.

Response: No change made. The statements in the RMP/EIS about population trends in Cochise County characterize the population trajectory since the last RMPs were completed (1989/1992 to the present); the commenter's concern is about trends in recent years. Lower or negative population growth rates in recent years do not contradict the assertion about long-term trends.

Summary: The RMP/EIS fails to include any analysis of several water indicators, such as changes to groundwater supply from conservation easements, retired agricultural wells, vegetation treatments, vegetation growth or die off, and changes in annual precipitation. The BLM should explain why it omits these, or how it arrived at the indicators it relies on.

Response: No change made. Although the resource indicators identified in the comment reflect water characteristics in the basin, they are ineffective measures of the magnitude of water resource impacts and how they vary among alternatives. This was the basis of the indicators identified in the plan. Analysis assumptions are identified in Section 3.1.1.

Summary: The suggestion that scoping was an effective effort at engaging with the public is poorly supported, based on the limited turnout at public meetings and number of organized comment groups.

Response: No change made. RMP/EIS public scoping and engagement was extensive, compared with other planning projects. It included an interactive website, a variety of public strategic, planning, and public education meetings, resource field trips, and meetings for development of alternatives. This outreach was supplemented with newsletters and public notices, including an extension of the public comment period from 90 days to 150 days. The resulting engagement and collaboration with individuals, tribes, state, local, and regional agencies, as well as organized special interest groups and other partners underscores the effectiveness of the outreach.

Summary: The RMP/EIS should better explain the extent to which public comments will contribute to changes in the RMP/EIS.

Response: No change made. NEPA resources can be found on the BLM's website (<http://www.blm.gov/programs/planning-and-nepa>). RMP/EIS documents are meant to be concise,

analytical documents and not to recapitulate the guidance for how they are developed or what they contain. While the RMP/EIS contains some reader guidance, public comment guidance is outside the core content of the document and was therefore provided separately on the BLM's project website for the SPRNCA RMP. The BLM posted guidance on public commenting and the public comment process and handed out physical materials on this subject at public meetings. The final EIS will identify changes made between the draft and final analysis. Public comments are also included as part of the final EIS, as well as this report, mapping how public input tracks with changes to the EIS/RMP.

Summary: The RMP/EIS assumes that a greater population near the SPRNCA will lead to greater recreation demand. This assumption is unsupported.

Response: No change made. The BLM received scoping comments asking for increased public access, indicating a demand for recreation that is not being met.

Summary: The RMP/EIS identified 50 acres for human-made structures to be removed. The EIS should disclose how this number was arrived at.

Response: Text has been added to the RFD, explaining that the 50-acre estimate was measured from aerial imagery of structures, most of which were berms alongside the agricultural fields. "Human-made structures" are those retired from use, identified in Section 2.5.3, *Soil Resources and Water Resources*, such as agricultural dikes and berms, railroad grades, ditches, and diversions, that are candidates for restoration.

Summary: The RMP/EIS identified 2,170 acres for recharge enhancement projects. The EIS should disclose how this number was arrived at.

Response: The RFD scenario description in Section 3.1.1 was updated with text describing general locations and concepts that would be used. As described in the RFD, this number reflects soil types that have the highest potential for infiltration.

Summary: The RMP/EIS identified 5,040 acres for erosion control projects. The EIS should disclose how this number was arrived at.

Response: Revised as noted. The acreage for erosion control projects was identified based on a resource specialist's interpretation of aerial imagery.

Summary: The RMP/EIS should disclose how the figures identified in Table 3-8 (page 3-17) were estimated.

Response: Revised as noted. Methods are outlined at the bottom of Table 3-8, with a detailed breakdown of the individual water demands and their calculation.

Summary: The RMP does not identify any monitoring in upland areas. Given that this area could be open to grazing, the RMP/EIS should provide for monitoring or explain why it is not needed.

Response: An upland monitoring plan will be developed after allotment-specific objectives identified during plan implementation. The monitoring plan will be developed during the land health evaluation process, when livestock grazing leases are processed.

Summary: The assumption that state firearm regulations are sufficient to protect humans from bullets is not clearly supported. The plan should provide supporting evidence or change this prescription.

Response: The BLM coordinated with the AZDGF and completed an evaluation to identify areas where discharge of firearms is restricted by current Arizona hunting laws and BLM regulations. Such areas are developed recreation sites and sites where visitor services and permanent facilities are provided. This area was expanded to include a quarter-mile buffer around the San Pedro House that was added between the Draft and Final EIS. Current regulations and visitor education will be used to protect public safety on the SPRNCA generally. If the need for further restrictions on the discharge of firearms or other weapons arises in the future, the BLM may consider restrictions through established procedures.

Summary: The RMP/EIS should provide explicit rationale for why a quarter-acre from water developments is the appropriate scale from analysis.

Response: The quarter-acre disturbance footprint associated with water developments has been increased to 2 acres and is based on a resource specialist's interpretation of aerial imagery.

Summary: The practicality and reasonableness with which the BLM can implement the management actions proposed under the RMP do not seem to be supported by staff levels and budgets of past years.

Response: No change made. RMPs are long-range planning documents that guide management over many years. Actions to achieve goals and objectives are implemented over the long term, generally with no required time frame. Implementation of projects may be based on many things, including resource condition and need, partnership and volunteer participation, changing administrative priorities, and emergencies. The BLM has the flexibility to plan implementation level activities with available budget and staffing levels.

Cultural Resources

Summary: The RMP/EIS should be explicit about meeting the requirements of the Arizona-Idaho Conservation Act of 1988 (PL 100-696) with respect to cultural resources.

Response: No change made. Chapter I includes a discussion of the enabling legislation. The language relevant to cultural resources is limited and vague, and restating it in the plan would not add material value to either the plan or the analysis.

Summary: The RMP/EIS should include more recent research on impacts of grazing on cultural resources.

Response: No change made. The BLM reviewed additional literature referenced by the public and found that the Draft RMP/EIS adequately described, analyzed, and disclosed potential impacts on cultural resources.

Summary: The RMP/EIS should include more information on impacts from OHV use on cultural resources.

Response: No change made. The BLM reviewed additional literature referenced by the public and found that the Draft RMP/EIS adequately described, analyzed, and disclosed potential impacts on cultural resources.

Summary: The RMP/EIS should include maps of areas of critical cultural concern for the densest concentrations of important sites.

Response: No change made. The Draft RMP/EIS includes maps of existing (Alternative A) and potential (Alternative D) ACECs (see Figures 2-31 and 2-33). Note that cultural resources locations are restricted from public disclosure, in accordance with 43 CFR 7.18 (see also BLM policy manual 8130).

Summary: The RMP/EIS should mention the Jocome and Jano people and should include more information on early occupation of the area by the Apache and other historic and prehistoric populations.

Response: No change made. This comment did not contain documentation or peer-reviewed research to support the statement and therefore fails to warrant further consideration.

Summary: There are significantly more cultural sites in SPRNCA than are identified in the RMP/EIS; survey requirements should be required in advance of authorizing impact-causing activities.

Response: No change made. The commenters do not provide a clear basis to reconsider the ability of existing statutes, policies, and procedures to account for the identification and consideration of cultural resources. The RMP/EIS discloses the total number of known archaeological sites on the SPRNCA. Surveys will be carried out at the implementation level, in accordance with applicable laws and regulation, including NEPA and NHPA.

Summary: The RMP/EIS includes only the Hopi and Tohono O'odham Nations as claiming affiliation; the Pascua Yaqui tribe should be included.

Response: The Draft RMP/EIS listed 14 federally recognized tribes that claim affiliation or traditional use, or both, of the SPRNCA, including the Pascua Yaqui. At the time of publication of the Draft RMP/EIS, the Hopi Tribe and Tohono O'odham Nation were the only two tribes that had responded to the BLM, specifically stating their ancestral claim/interest in the planning area.

The text to be revised in Section 3.5.1, *Tribal Interest*, (reference page 3-141; first paragraph, last two sentences) is as follows: “To date, the Hopi Tribe, Pascua Yaqui Tribe, and Tohono O'odham Nation have provided written responses to the BLM as interested parties who claim cultural affiliation to the lands and resources of the SPRNCA. The Salt River Pima-Maricopa Indian Community, San Carlos Apache Tribe, and White Mountain Apache Tribe also have expressed interest in the BLM's management of the planning area during in-person meetings and presentations. No tribes have signed or requested the development of a cooperating agency memorandum of understanding.”

Summary: The RMP/EIS should list ranching as a cultural resource and a conservation value.

Response: No change made. Ranching is not a conservation value identified in the enabling legislation; however, numerous ranching features and localities are documented across the SPRNCA, some of which are considered historic properties. Several sites and features are further defined as being significant and, therefore, worthy of additional consideration or preservation, in accordance with Sections 106 and 110 of the NHPA and the compliance regulations found at 36 CFR 800. The term historic property is a legal definition relating to significance and does not equate with something being historic-in-age. Evidence need not be physical, and physical evidence would not be limited to buildings or structures.

The BLM defines “cultural resources” at PRMP/FEIS 3-74 per professional standards and BLM policy to include “. . . archaeological and architectural sites, structures, or places with public and potential scientific value, including locations of traditional cultural or religious importance to a specified social or cultural group.” As defined by the BLM, cultural resources are contained within a definite location of human activity, occupation, or use that are identifiable through field surveys, historical documentation, or oral histories (BLM Manual 8110, Identifying and Evaluating Cultural Resources).

Outside of the specific applications described at the outset of this response, ranching falls outside of the technical use of the term cultural resources. It is cultural only insofar as there is common use, and it is analyzed appropriately as such. Impacts on ranching are analyzed under the livestock grazing and socioeconomics sections of the EIS. Although physical evidence of prior, historic-age ranching across the landscape, such as buildings or other structures, may be considered cultural resources, current or continued ranching is considered a land use and, therefore, is not one of the conservation values identified in PL 100-696.

Cumulative Impacts

Summary: The extent of livestock grazing on lands surrounding SPRNCA, and their cumulative impact on resources, should be analyzed.

Response: No change made. Cumulative impacts are defined and identified on a resource-specific geographic and temporal scale. The cumulative impact analysis area is accurate as written in the RMP/EIS for all resources relevant to grazing impacts. Grazing next to the SPRNCA is considered in the cumulative impact analyses.

Summary: Further information should be provided on the increasing demand for water in the San Pedro basin and the future projections of water supply in the San Pedro River and its tributaries.

Response: No change made. The BLM considered the impacts of existing and foreseeable housing developments in the cumulative impacts section for relevant resources.

Summary: The public submitted projects for consideration by the BLM as present and foreseeable impacts to be included in the analysis.

Response: The analytical assumptions and language in the draft were reviewed and modified as appropriate to account for projects submitted by the public for consideration as part of the cumulative effects analysis.

Summary: The RMP/EIS mischaracterizes projects (notably, Cochise County Recharge Network projects) as contributing to cumulative adverse impacts, when, in fact, they contribute to the protection or conservation of resources.

Response: Text has been added to the cumulative effects section of vegetation, which recognizes the reestablishment of vegetation (Section 3.2.4, *Vegetation*). The following sentence was added to Section 3.2.3, *Water Resources*: “Modeled full build out of proposed managed aquifer recharge sites has projected baseflows maintained at or near current levels until 2075 (Lacher 2017).”

Summary: The analysis area for cumulative impacts should be expanded, particularly for wide-ranging species.

Response: No change made. The BLM reviewed the analysis area for wildlife habitats and has determined that the analysis area for wildlife habitat identified in the Draft RMP/EIS is appropriate. The commenter did not provide information on the specific impacts that were not captured for the wide-ranging species with the smaller analysis area.

Summary: The allocations on nearby public lands (e.g., areas open to vehicle use and hunting) should be factored into the analysis.

Response: No change made. The analysis area for the RMP is already larger than the SPRNCA and establishes context at an appropriate geographic scale. An analysis area was established for each resource analyzed in the RMP and activities on adjacent public lands in the analysis area are included in the cumulative effects analysis.

Summary: Unauthorized trails should be included as part of the cumulative effects analysis.

Response: Routes identified in the inventory include the currently designated trail system, including trails established on the initial system and subsequent implementation projects. Some routes on the inventory are considered “social” trails, established by users under current management conditions. All routes will be considered in the TMP that will be prepared after the RMP is completed and will be the basis for any changes in the designated SPRNCA trail system.

Increasing temperatures and decreasing water availability resulting from climate change should be included as part of the cumulative effects analysis.

Response: Trends of temperature and precipitation were added to Section 3.2.2, *Soil Resources*, Section 3.2.3, *Water Resources*, Section 3.2.4, *Vegetation*, and Section 3.2.5, *Wildlife Habitat*.

Fish and Wildlife

Comment: Existing water use by livestock should be disclosed.

Response: Text has been added, identifying the location and use of livestock waters. Water use was identified in the Draft RMP/EIS in the Water resource section Table 3-8. The RFD scenario on 3-2 and 3-3 has been updated. There are at least two existing waters. The BLM developed a more in-depth analysis of impacts of 23 wildlife waters on threatened and endangered species and included it in the biological assessment.

Summary: The RMP/EIS should explain how overhunting will be avoided on the SPRNCA.

Response: No change made. The State of Arizona has the primary authority and trust responsibility to manage fish and wildlife populations. The populations objective and bag limits are set by the Arizona Game and Fish Commission. The BLM does not regulate hunting and fishing.

Summary: The RMP/EIS should analyze the impact of fences on wildlife movement.

Response: No change made. The impact of fencing is addressed in Section 3.2.5, *Fish and Wildlife* (pages 3-51 and 3-53). Fencing would have to comply with standards to facilitate wildlife movement.

Summary: The RMP/EIS should analyze the potential impact of opening roads to public use on wildlife movement.

Response: No change made. The RMP/EIS analyzes wildlife corridors in Section 3.2.5, *Fish and Wildlife* (page 3-41). Decisions to open routes to public use, including analysis of wildlife corridor impacts, will be made in the TMP after the RMP is completed.

Summary: The RMP/EIS should explain how fish and wildlife are affected by water developments and identify which species benefit and which are harmed by them. The analysis of impacts should at least be comparable to the analysis done for fencing in the table on page 3-23.

Response: Section 3.2.5 was updated with analysis of wildlife impacts from water development. Water developments are habitat improvements for several priority species. More detailed assessment of the impacts of new water developments will be addressed at the implementation level.

Summary: The RMP/EIS should analyze the impacts of livestock grazing on herpetofauna.

Response: No change made. At the planning level, the RMP/EIS relies on several high-level assumptions. These assumptions are necessary for practicality and to aid in the readability of the analysis. One of these assumptions is that priority habitats serve as an accurate proxy for wildlife impacts from management actions and use allowances. The BLM believes that this is a reasonable assumption; as such, herpetofauna are analyzed under Section 3.2.5, *Fish and Wildlife*.

Summary: The RMP/EIS contains a disproportionate analysis of non-avian species. Birds are the most unique resource of the SPRNCA and warrant commensurate analysis in the RMP/EIS. This should be corrected.

Response: No change made. At the planning level, the RMP/EIS relies on several high-level assumptions. These assumptions are necessary for practicality and to aid in the readability of the analysis. One of these assumptions is that priority habitats serve as an accurate proxy for wildlife impacts from management actions and use allowances. The BLM believes that this is a reasonable assumption.

Summary: The RMP/EIS should analyze whether restoration of fragmenting activities under Alternatives C and D would be functionally equivalent to preventing fragmentation.

Response: No change made. The comment questioning the functional equivalence of compensatory mitigation/management offsets does not provide documented evidence or peer-reviewed analysis contravening the BLM's claim. The BLM maintains that its analysis is adequate.

Summary: The RMP/EIS should acknowledge the relationship between forage utilization and southwestern willow flycatcher recovery standards.

Response: The plan does not include forage utilization allowances in exceedance of SWFL standards.

Summary: The RMP/EIS does not account for the inadvertent killing of non-game animals that results from hunting. This should be analyzed.

Response: No change. The BLM is not aware of documentation that estimates the magnitude of inadvertent killing of non-game animals from hunting. The potential lethal impacts on species resulting from hunting vary by species; however, they are infrequent and poorly documented, meaning that that the

BLM cannot provide a quantitative estimate. The inadvertent taking of wildlife is illegal and is addressed by Arizona regulations. Wildlife takings are the jurisdiction of the Arizona Game and Fish Department.

Summary: The RMP/EIS should analyze the potential for hunting to poison wildlife with lead and should identify mitigation, as appropriate.

Response: No change made. Managing allowable ammunition types is not a planning-level decision. The regulation of allowable types of ammunition is under the purview of the State of Arizona, and the BLM defers to its management in this area.

Summary: The RMP/EIS should analyze the environmental effects of fish barriers that are identified as a management action in the RMP.

Response: The management action concerning fish barriers at Murray Springs and Government Draw has been removed.

Summary: The RMP/EIS should analyze impacts on wildlife corridors and, as part of at least one alternative, should include allocations to protect wildlife corridors. The BLM also should consider designating wildlife corridors.

Response: No change made. The RMP/EIS analyzes wildlife corridors in Section 3.2.5, *Fish and Wildlife* (page 3-41). Current allocations are adequate to achieve desired future conditions.

Summary: The effect of gunfire on bird occupancy should be analyzed in the EIS.

Response: No change made. Impacts are expected to be temporary displacements or highly localized and infrequent incidental deaths that are difficult to quantify and not of management concern at a population level.

Summary: The RMP/EIS should explain how the boundary between uplands and riparian areas are defined.

Response: No change made. The BLM uses ecological site descriptions and the vegetation classification system of the Watts Layer to map vegetation on the SPRNCA and to identify upland-riparian boundaries. This is discussed in Section 3.2.4, *Vegetation*. Also see Table 3-9, *Vegetation Communities*.

Summary: The RMP/EIS should analyze the effect of using heavy equipment on wildlife.

Response: No change made. Impacts from heavy equipment on wildlife and birds are analyzed in Section 3.2.5, *Fish and Wildlife* (pages 3-50 and 3-51).

Summary: Text should be added to page 3-63 acknowledging that critical habitat can be affected by actions of outside development, such as groundwater pumping.

Response: The text on page 3-63 has been modified as follows: "Critical habitats for threatened and endangered species would be affected by development outside the SPRNCA. Effects would mainly be those resulting from depletions of groundwater, which supports aquatic habitat and riparian vegetation essential to the conservation of federally listed species."

Summary: The RMP/EIS should include an alternative that has a design feature providing for fishing activities limited to nonnative species in order to promote the conservation values of the area.

Response: The State of Arizona is the primary authority in managing fish and wildlife. Fishing allowances and disallowances falls under the State's jurisdiction, not the BLM's. Should the State choose to regulate fishing to nonnative species on the SPRNCA, there are no decisions in the plan that would prevent or hinder this action. Management actions and allowable uses in the plan would augment and facilitate selective fishing allowances to promote native fish species. The plan includes a broad set of management actions (identified in coordination with the AGFD) to promote native species (see goals and objectives, management actions, and allowable uses under Section 2.5.5, *Fish, Wildlife, and Special Status Species*).

Issues Dismissed from Detailed Analysis

Summary: The RMP/EIS should not have dismissed research activities from analysis; the BLM should analyze impacts on research activities and scientific values of the SPRNCA.

Response: Text has been added to Section 3.3.2 that evaluates research activities and scientific values on the SPRNCA.

Summary: The RMP/EIS should analyze potential impacts on jaguar and Mexican wolves, given their documented presence on the SPRNCA region.

Response: No change made. These species are addressed under impacts on riparian habitat and in the biological assessment. Both jaguar and Mexican wolves are federally listed under the Endangered Species Act, and their taking without a permit is a federal crime. Takings of these species are also a violation of Arizona state law. The BLM initiated Section 7 consultation with the USFWS in October 2018. Consultation will continue through the development of the ROD. It addresses species that may be affected by the management actions identified in the Proposed RMP.

Summary: The RMP/EIS should provide further information on the activities that are within its control concerning water management.

Response: No change made. The RMP included the management actions within BLM's jurisdiction in Chapter 2, along with an analysis of impacts on water quantity and quality.

Summary: The RMP/EIS should further discuss archaeological resources from the eighteenth, nineteenth, and twentieth centuries.

Response: No change made. The cultural and historic contexts provided for the SPRNCA adequately characterize the diversity of known and documented site types in the planning area.

Summary: The RMP/EIS dismisses the issue of vegetation management for water conservation without sufficient justification. This should be analyzed in greater detail.

Response: No change made. The RMP/EIS adequately analyzes water resources and management actions for water resources.

Lands and Realty

Summary: More information should be provided about the context, rationale, and environmental effects of a withdrawal for the Charleston Dam and Reservoir.

Response: No change made. As explained in the RMP/EIS text (Section 3.3.4, *Lands and Realty* [pages 3-125 and 3-129]), the planned Charleston Dam and Reservoir were never developed. Accordingly, in the absence of foreseeable interest in development, the BLM finds that the withdrawal and land transfer to the Bureau of Reclamation to be no longer warranted. Additional background context for the decisions around this issue is not needed or appropriate at the land use planning level.

Summary: The RMP should include an explicit reaffirmation of the full scope of rights conferred by RS2477 and other preexisting rights preserved under the plan.

Response: No change made. Most of the SPRNCA is re-conveyed land that was private and not subject to RS2477 when it was enacted in 1866 and before its repeal by the FLPMA in 1976. There are a few parcels on the SPRNCA boundary that were public land before the SPRNCA was established in 1978, but no claims are known to have been filed on any routes. The RMP recognizes all valid existing rights (see Section 1.5.2, *Legislative Constraints*, and Management Action 10 on page 2-48 [Section 2.5.14, *Lands and Realty*]); the decisions in the RMP would not affect or change the BLM's obligation to recognize any potential RS2477 routes.

Lands with Wilderness Characteristics

Summary: The RMP/EIS should include at least one alternative that includes an intermediate acreage of land managed to protect wilderness characteristics.

Response: BLM regulations (43 CFR 46 and 1600) and policies (MS 6320 and H-1601-1) require the BLM to consider wilderness characteristics in land use planning. In evaluating management to achieve the goals of the SPRNCA, the BLM evaluates how designating lands with wilderness characteristics potentially constrains activities and how wilderness characteristics are affected by allowances and management under each of the alternatives. A decision about whether wilderness characteristics should be managed applies to all units, reflecting consistency in the principles or criteria that are applied for management. The BLM cannot split the difference on acreages out of the convenience of an intermediate option alone. The agency needs rationale for defining its alternatives and how they resolve specific issues. The commenters failed to provide justification beyond a vague assertion that there is a benefit of a general compromise between options of management and non-management. What is represented under the designation "managed for wilderness characteristics" does not restrict use; rather it is a label that encompasses a range of management options, from minimal management to intensive management.

Summary: The RMP/EIS should explain why the closure and reclamation of roads or the acquisition of private lands would not be considered as a way to qualify lands potentially eligible for lands with wilderness characteristics management.

Response: No change made. Lands with wilderness characteristics eligibility are based on the application of criteria to the existing condition of an area and not the potential condition of an area. Further, the railroad land would include railroad grade and structures that would affect naturalness, separating the two areas suggested by the comment to become one unit.

Summary: The RMP/EIS should provide for both baseline protections and unit-specific protections for wilderness characteristics.

Response: No change made. PL 100-696 Sec. 102 provides a set of allocations, such as withdrawal from mineral entry, vehicle use limited to designated routes, and a withdrawal of lands from disposal. These serve as a base-line that does not exist in most areas. These are substantively similar allocations that might be called baseline; therefore, the lands with wilderness characteristics allocations are a step down from a baseline and are, in a sense, unit specific. Comments were general and did not identify unit-specific allocation recommendations that the BLM did not already consider.

Summary: The RMP/EIS appears to include non-BLM-administered lands in the calculation of eligibility for lands with wilderness characteristics, in apparent direct conflict with statements in the RMP.

Response: Text has been modified for clarity. Wilderness characteristics inventories, the basis for lands with wilderness characteristics management, are based on contiguous acres of BLM-administered land, regardless of special or congressional designations; thus, an inventory unit can include land in the planning area and adjacent land outside the planning area, but the decisions made in the plan would affect only the part of the unit in the planning area. Future RMPs for lands outside the planning area would take into consideration the resource values on the adjacent lands in this planning area.

Summary: The RMP/EIS should recognize the potential for unauthorized mechanized off-road vehicle use in lands with wilderness characteristics, if routes within them are opened to public use.

Response: No change made. Management of lands with wilderness characteristics under the plan does not propose expanding vehicle use. The BLM recognizes that trespass vehicle use on public lands is a potential problem that accompanies road use and will continue to enforce its travel management determinations through law enforcement patrols and physical barriers where needed.

Summary: The Cereus inventory unit contains wilderness characteristics that the wilderness characteristics inventory failed to identify. The inventory should be redone.

Response: The wilderness inventory was completed in accordance with BLM policy and procedures, and the Cereus unit was found to have wilderness characteristics, including supplemental values as indicated in the inventory report.

Livestock Grazing

Summary: The RMP/EIS should clarify whether grazing would be allowed in riparian areas of the SPRNCA under Alternative C and should identify the criteria that were used to define upland areas.

Response: Text has been added for clarification under Section 2.5.II. Under Alternative C, the BLM would allow grazing in the riparian in the Babocomari and Brunckow allotments, maintaining existing grazing allowances, but would otherwise restrict grazing to upland areas. Newly available lands for livestock grazing, under Alternative C, would be exclusively located in upland areas with the exception of areas where riparian vegetation is expressed along xeric-riparian washes. The Proposed Plan would only allow grazing in riparian areas in the Babocomari and the Brunckow allotments.

Summary: The public submitted studies for consideration by the BLM regarding livestock grazing.

Response: The BLM has used the best available science and assessed the impacts from livestock accordingly.

Summary: At least one alternative should limit grazing during migratory bird breeding seasons and require frequent monitoring of grazing practices and vegetation conditions.

Response: No change made. Seasonal use, rotation details, monitoring, and other aspects of allotment management are determined at the implementation level. The decision to be made in this document is whether the areas should be open to grazing at all, not how they would be managed.

Summary: The RMP/EIS should mention more positive impacts of livestock grazing.

Response: The text has been revised to recognize positive impacts of livestock grazing where peer-reviewed literature supports the positive impacts of livestock grazing.

Summary: At least one alternative should provide for increased monitoring to prevent unauthorized grazing from nearby properties (including those in Mexico) and potential ecological and livestock health consequences.

Response: No change made. Trespass cattle is an unauthorized use that is not part of land use planning. In accordance with its policy, the BLM will continue to remove trespass cattle and cite responsible parties, as resources allow.

Summary: Expansion of grazing (and infrastructure that comes with it) conflicts with the purposes for which SPRNCA was founded.

Response: In response to public comments, the BLM added additional analysis of the impacts from increased livestock grazing on water resources, vegetation, wildlife habitat, and cultural resources. As a result of this analysis, the BLM's Proposed Plan is a modified version of Alternative C from the Draft RMP/EIS with the livestock grazing allocation from Alternative A which allows livestock grazing on 7,030 acres.

Summary: Rather than allow for all land uses in all acres of SPRNCA, the BLM should, under at least one alternative, provide for allocations that minimize conflicts among uses, especially between grazing and conservation.

Response: The RMP/EIS includes a reasonable range of allocations for land uses not prohibited by the enabling legislation. This range of allowances includes complete closure and complete availability. The Proposed Plan, a modified version of Alternative C, has an allocation that restricts livestock grazing to the areas that are currently available to livestock grazing.

Summary: Commenters suggested that buffalo rather than cattle graze in SPRNCA.

Response: No change made. The BLM's regulations and policies do not differentiate between types of livestock in land use planning. Should there be an interest in grazing bison, the BLM would analyze the difference in grazing patterns and preference at the implementation-level. The current planning question is whether any grazing should be permitted on the SPRNCA or parts of it.

Summary: Cattle should not be allowed to graze in riparian areas along the San Pedro River, because grazing removes vegetation, which will exacerbate erosion.

Response: No change made. Section 3.2.2, *Soil Resources*, analyzes the effect of grazing and other land uses on soil and erosion. Section 3.2.3, *Water Resources*, analyzes how erosion affects water quality. In recognition of the environmental sensitivities of the riparian area, the Proposed Plan restricts livestock grazing to the existing allotments which only allows riparian grazing on the Babocomari and Brunckow allotments. The difference in erosion potential is detailed in Section 3.2.2, *Soil Resources*. The BLM cannot, without analysis, dismiss the potential for allowing grazing in the riparian area.

Summary: Cattle require large amounts of fresh water for drinking; they should not be permitted to drink from the San Pedro River, to prevent additional flow reduction.

Response: The Proposed Plan would only allow livestock grazing to occur on the existing allotments which already have water sources. Under Alternative C, any new areas made available to livestock grazing will not allow watering to occur directly from the San Pedro River. Water will be provided by wells, the numbers of which can be found in Section 3.1.1, *Analysis Assumptions* on page 3-3 under the RFD scenario for livestock grazing infrastructure. They are drawn at a rate described in table 3-8 on page 3-17. Alternative B would involve the greater water depletions, about 25 acre-feet per year.

Summary: The BLM should provide more background information and scientific research on ecological impacts of cattle grazing on arid and riparian habitats, such as SPRNCA.

Response: No change made. The RMP/EIS already analyzes the ecological impacts of cattle grazing on a resource-by-resource basis. The existing environment and cumulative effects sections contextualize the arid and riparian characteristics of the area. The commenters did not identify a specific error, omission, or mischaracterization, nor did they suggest documentation or peer-reviewed research to be included in or change the analysis.

Summary: The BLM's definition of animal unit month (one cow) is different from the definition used by other agencies, such as the NRCS, which defines it as one cow plus her calf; the BLM should explain why in the RMP/EIS.

Response: No change made. The BLM operates within a specific set of statutory and regulatory authorities; it can align its management with other agencies only within the scope of its regulations. Animal unit months (AUMs) are defined in 43 CFR 4130.8-1(c), except as provided in Section 4130.5 of the same title. These regulations clearly delimit what constitutes an AUM and how it is financially interpreted; these are fixed as far as this planning is concerned. Rule-making changes are outside the scope of this plan.

Summary: The RMP/EIS should include a discussion of the number of AUMs grazing on the SPRNCA now, how many acres per AUM are currently available, and how many acres per AUM will be available under the preferred alternative.

Response: No change made. The total AUMs currently available are identified in Section 2.5.11, *Livestock Grazing* (page 2-35). Under Alternative A (the No Action alternative) and the Proposed Plan, there are 592 AUMs. AUMs are defined in 43 CFR 4100.05 as the amount of forage necessary to sustain one cow or its equivalent for a period of 1 month (43 CFR 4130.8-1(c)). For purposes of assessing a grazing fee, an AUM is defined as a month's use and occupancy of the range by one cow, bull, steer, heifer, horse, burro, mule, or five sheep or five goats over the age of 6 months at the time they enter lands administered by the BLM; and any weaned animals regardless of age; and any such animals that will become 12 months old

during the authorized period of use. The BLM will not charge grazing fees for animals that are less than 6 months old at the time of entering BLM-administered lands, provided that they are the natural progeny of animals on which fees are paid and will not become 12 months old during the authorized period of use.

Summary: The BLM should ensure humane treatment of cattle grazing in SPRNCA.

Response: No change made. Animal treatment is outside the scope of this plan.

Summary: Cattle grazing increases the concentration of contaminants (such as *E. coli*) in the San Pedro River; expanding grazing in SPRNCA will make this worse.

Response: Additional literature has been cited in reference to the analysis of water contaminants, including *E. coli*, in Section 3.2.3, *Water Resources*.

Summary: Additional grazing management and infrastructure requires funds and personnel that may not be available to the agency.

Response: No change made. In accordance with CEQ regulations on NEPA, the BLM does not speculate its budget to be of land use planning.

Summary: The BLM should explain in the RMP/EIS how the management category for SPRNCA's four active grazing allotments were changed from "improve" to "maintain," when the 1992 Safford District RMP and 1997 Biological Opinion #2-21-96-F-160 assigned them to the "improve" category. It also should explain why compliance assessments for Arizona Standards for Rangeland Health and Guidelines for Grazing Administration have not been completed.

Response: No change made. These decisions were administrative actions that are outside the scope of the plan.

Summary: The RMP/EIS fails to address grazing utilization standards for the SPRNCA.

Response: No change made. The RMP/EIS does address grazing utilization standards. The BLM used a 30 percent utilization in its AUM calculations. Comments on the appropriateness of utilization standards under existing RMPs are outside the scope of the current planning.

Summary: An adaptive management approach is most appropriate for managing SPRNCA allotments.

Response: No change made. Under the Proposed Plan, the BLM plans to incorporate adaptive management into the management of livestock on existing allotments. . Specific characteristics of adaptive management (details about the type and frequency of monitoring and feedbacks) are dealt with at the implementation level and are not planning-level decisions.

Summary: Livestock grazing is one of the many uses recognized in the mission of the enabling legislation as a key part of the economy of Cochise County. It should be acknowledged as such.

Response: No change made. Ranching is not a conservation value identified in the enabling legislation; however, numerous ranching features and localities are documented across the SPRNCA, some of which are considered historic properties. Several sites or features are further defined as being significant and, therefore, worthy of additional consideration and preservation, in accordance with Sections 106 and 110 of the NHPA and the compliance regulations found at 36 CFR 800. The term historic property is a legal

definition relating to significance; it does not equate with something being historic-in-age. Evidence need not be physical, and physical evidence would not be limited to buildings or structures.

The BLM defines cultural resources in the PRMP/FEIS at page 3-74, in accordance with professional standards and BLM policy, to include “. . . archaeological and architectural sites, structures, or places with public and potential scientific value, including locations of traditional cultural or religious importance to a specified social or cultural group.” As defined by the BLM, cultural resources are contained within a definite location of human activity, occupation, or use that are identifiable through field surveys, historical documents, or oral histories (BLM Manual 8110, Identifying and Evaluating Cultural Resources).

Outside of the specific applications described at the outset, ranching is not covered under cultural resources; it is cultural only insofar as common use and was analyzed, appropriately, as such. Impacts on ranching are analyzed under the livestock grazing and socioeconomics sections of the EIS. Physical evidence of prior, historic-age ranching across the landscape, such as buildings or other structures, may be considered cultural resources; however, current or continued ranching is considered a land use and, therefore, is not one of the conservation values identified in PL 100-696.

The educational component of the enabling legislation may include interpretation related to the historic livestock grazing use on and off the SPRNCA. The research component of the enabling legislation may also include interpretation related to the scientific value of adaptive management in this environment. Both of these topics have been added to Table 1-2 of the PRMP/EIS.

New Alternatives

Summary: The RMP/EIS should include an alternative whose allocations are more restrictive to land uses than Alternative D.

Response: No change made; the commenter recommended no specific changes. Generally, resource protections greater than those afforded in Alternative D would restrict recreation opportunities that are protected as a conservation value of the enabling legislation.

Summary: The RMP/EIS should include an alternative that restricts Del Valle Road from mechanized vehicle use.

Response: No change made. The BLM will make decisions about specific road restrictions in the travel management plan after the RMP is completed.

Summary: The RMP/EIS should include an alternative that restricts grazing from major washes.

Response: No change made. The commenter does not identify any environmental impacts that are not already taken into account in the Draft RMP/EIS and that could warrant further consideration of a new alternative.

Summary: The RMP/EIS should include an alternative that provides the full latitude of management tools for resource protection and enhancement and that prohibits all other discretionary land use activities.

Response: No change made. The proposed change could be chosen by the decision-maker using a combined approach of the alternatives. The existing alternatives encompass the described suggestion and provide adequate analysis and disclosure of its effects.

Summary: The RMP/EIS should include an alternative that restricts shooting to a safe distance from trails and high-use areas on the SPRNCA to protect humans and the recreation experience.

Response: Additional information is provided under Alternative C and Appendix N to identify areas where discharging firearms and other weapons is restricted under current BLM regulations and under current State of Arizona hunting regulations.

Human Health and Safety

Summary: Hunting and trapping are a safety risk to people and pets and could discourage visitors from using SPRNCA for other types of recreation.

Response: Additional information is provided under Alternative C and Appendix N to identify areas where discharging firearms and other weapons is restricted under current BLM regulations and under current State of Arizona hunting regulations.

Summary: The RMP/EIS needs to consider the impact on public safety of restricting hunting to only a quarter-mile radius of recreation sites. Other recreation uses can exceed this buffer and dense vegetation can render people and pets invisible to hunters. In addition, lead bullets from handguns and rifles can travel farther than a quarter-mile.

Response: Analysis has been added to Section 3.5.2 that more closely looks at the effects of hunting with firearms on public health and safety.

Summary: How would impacts on visitor safety due to firearms on the SPRNCA be avoided?

Response: Impacts on visitor safety due to firearm use would be avoided by limiting discharge of firearms and other weapons to hunting-related purposes; by enforcing current State of Arizona hunting regulations, which prohibit discharging firearms within a quarter-mile of specified developed sites and areas; by enforcing BLM regulations for developed sites and areas; and by educating visitors.

Summary: More Arizona Game and Fish Department officers should be assigned to SPRNCA if hunting use increases, especially near populated areas, to minimize impacts on public safety.

Response: No change made. The BLM does not set priorities for state agencies and how they allocate their law enforcement officers. Priorities for BLM law enforcement is not a planning-level decision.

Summary: The RMP/EIS should include a reference from Biomedical Central, Environmental Health 2016, which discusses the impacts of glyphosate-based herbicides on human health. Recent court cases and the World Health Organization's International Agency for Research on Cancer provide evidence that these herbicides could be carcinogenic to humans.

Response: No change made. The RMP tiers to the Record of Decision for the Final Programmatic Environmental Impact Statement National Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron (ROD; BLM 2016). No commenters provided peer-reviewed literature or other credible information that substantially changes that analysis and its conclusions.

Summary: The RMP/EIS should include the spread of zoonotic diseases from livestock as an impact on public health and safety.

Response: No change made. The commenter submitted no documents or peer-reviewed literature to support the assertion.

Purpose and Need

Summary: The purpose and need of the Draft RMP/EIS is based on a need that is not sufficiently demonstrated. The analysis is based on unfulfilled commitments by the BLM to study the potential for grazing allowances on the SPRNCA; however, these written commitments do not justify analyzing something that does not merit analysis to begin with.

Response: In accordance with NEPA, the BLM has discretion to establish the purpose and need for a proposed action (40 CFR 1502.13). The BLM's purpose and need for the SPRNCA RMP conforms with existing decisions, policies, regulations, and laws and does not foreordain any particular outcome. It's purpose and need statement reflects a need to update management in order to respond to changed conditions, as well as provide an analysis to inform a management decision on livestock grazing which otherwise has not been adequately analyzed under NEPA to make a decision. In recognition of the impacts revealed by the analysis, BLM's Proposed Plan does not provide for increased livestock grazing.

Summary: The purpose and need statement ever mentions why the SPRNCA was established. It simply says that it is time to address the management of all resources.

Response: No change made. In the second paragraph, the purpose and need statement explicitly mentions the enabling legislation, its requirements, and the resources to be managed.

Summary: The purpose and need statement should be recrafted to make a clearer legal commitment to be consistent with the requirements of the enabling legislation, rather than just stating it "considers" the requirements.

Response: The language, "[I]t considers the requirements of the enabling legislation..." has been changed to "[I]t is consistent with the requirements of the enabling legislation."

Hunting/Recreation

Summary: Hunting and the use of firearms are inconsistent with other types of recreation due to noise disturbance and safety hazards.

Response: No change made. The SPRNCA has been open to hunting since it was established, and there is no record of complaints about hunting interfering with other types of recreation. The most restrictive protected designations administered by the BLM, such as wilderness, ordinarily allow for hunting. The commenter did not submit evidence of the incompatibility of hunting and other recreation uses. The comments are conjectural and are based on unobserved levels of recreation and hunting in the same area. Developed sites and areas are identified where current state and federal regulations restrict the use of firearms to protect public safety.

Summary: According to the San Pedro House logs, only 1 percent of people use the area for hunting. The BLM should add from Orr and Colby resources that 87 percent of visitors to

SPRNCA were birders, 65 percent were interested in birding or natural areas, and 52 percent were return visitors.

Response: The San Pedro House and connected riparian and birding trails are in a part of the SPRNCA where use of firearms for hunting is restricted by current supplementary regulations. Additional information has been included under Alternative C and Appendix N, which would establish a developed area boundary that includes the riparian and birding trails connected to the San Pedro House. This would avoid potential conflicts in this high-use area.

Summary: Firearm use on the SPRNCA presents a risk to special status species.

Response: No change made. The commenter does not present a clear case for specific impacts on specific species nor provide documents or peer-reviewed literature to support the general claim. The BLM has managed special status species successfully for 4 decades with hunting on the SPRNCA.

Summary: Areas along the river and trails or near San Pedro House should be closed to firearms or designated only for shotgun use during bird seasons. Consider closing populated areas to hunting and instead designate backcountry areas for hunting.

Response: Additional information is provided under Alternative C and Appendix N to identify areas where firearms discharge is prohibited under current State of Arizona hunting regulations and under BLM regulations for developed sites and areas. The riparian and birding trails closely connected to the San Pedro House are included in an area where discharging firearms is prohibited under current State regulations.

Summary: The RMP/EIS should include an analysis of unquantifiable values, such as public perception and emotional responses.

Response: In the absence of a survey or other systematic means of capturing perspective, the BLM cannot put a meaningful weight on the emotional state of the public without a reasonable way to sample that.

Summary: The RMP/EIS does not include the effects of grazing on recreation. Grazing could affect walking trails, increase noise pollution, and destroy understory vegetation, which could degrade bird habitats and affect bird watching. Using fencing for livestock animals could also restrict recreation access.

Response: Text has been added to Section 3.3.2 that discusses the potential impacts of livestock on recreation.

Summary: The RMP/EIS should note that gun safety related to firearm use in other BLM-administered areas has not been an issue.

Response: No change made. In response to other comments, the BLM added analysis to Section 3.5.2 that evaluates the potential risk of firearm use on human health and safety. That analysis is sufficient to inform a decision about the risk under each alternative and is adequate disclosure of the risk of firearm use. In view of that analysis, the characteristics of firearm use on other BLM-administered lands is not germane.

Summary: Drone use should be included in Alternative D of the RMP/EIS and restricted to limited uses.

Response: Text has been added to Section 3.3.2 that provides guidance on the use of drones on BLM-administrated lands. Use of drones is under the jurisdiction of the Federal Aviation Administration, and the BLM cannot regulate their use. The BLM may regulate the Use of sites on BLM-administered land for take-offs and landings, if warranted by emerging conflicts.

Summary: The RMP/EIS needs to analyze the impact of trapping on public safety and beaver reintroduction.

Response: No change made. Because hunting and trapping are the jurisdiction of the Arizona Game and Fish Department, the BLM defers direction on trapping to that agency. The BLM's regulations do not require the agency to make determinations on areas open and closed to trapping.

Summary: The text on page 3-120, paragraph 4, Fort Huachuca, suggests that vegetation treatments would contribute to positive recreation outcomes. Is this accurate?

Response: No change made. The commenter is correct; the RMP/EIS suggests that vegetation treatments will contribute to positive recreation outcomes. Vegetation treatments would be targeted at moving plant communities toward their historic climax potential. In doing so, grass-dominated areas would increase and fewer areas would be dominated by white thorn acacia and other thorn brush. Grass-dominated areas are preferred by cross-country travelers (both pedestrian and equestrian) to thorn brush-dominated areas.

Summary: The BLM should provide additional information on why it may need the haul road for administrative purposes in Banning Creek.

Response: Decisions about closures, complete or limited, are addressed in the transportation management plan. The BLM anticipates that administrative use of Banning Creek Road would be valuable because it would provide access to a retired quarry that could, with additional active restoration, become a water recharge site.

Summary: The areas available for hunting with firearms should not include the San Pedro House because it is heavily used by people and presents a safety risk.

Response: The Proposed Plan was modified to identify the developed area around the San Pedro House and heavily used trails to the river and Kingfisher Pond as a developed area, subject to hunting restrictions under state hunting regulations.

Summary: Areas near trails and roadways should not be available for hunting with firearms because they present a safety risk.

Response: Developed sites and areas were identified where hunting is restricted under current state hunting regulations. These are sites and areas where facilities are provided to accommodate public recreation and administrative functions and where people are likely to be present.

Resources—General

Summary: The Draft RMP/EIS does not adequately identify management options or alternatives that consider drought impacts.

Response: Text has been added to Section 3.2.4 to address trends in water and precipitation.

Summary: The Draft RMP/EIS does not adequately describe the extent to which grazing occurs on the Brunckow Hill allotment.

Response: Text has been added to clarify the boundaries of the Brunckow Hill allotment and addressing whether grazing occurs in the riparian zone.

Summary: The maps in the Draft RMP/EIS should provide further detail in order to allow the public to fully analyze the potential impacts of livestock grazing and adequacy of the BLM's analysis.

Response: The scale of the maps in the document is limited by the page size. The GIS data used to create the maps was available for viewing at larger scales at the public meetings in 2018 and were provided to the public on request. The SPRNCA RMP ePlanning website has enlargeable maps that provide detailed viewing opportunity of the planning area and of planning decisions.

Summary: The Draft RMP/EIS does not adequately disclose the current effects of livestock grazing on the SPRNCA area.

Response: No change made. The RMP/EIS already discloses the impacts of livestock grazing in the analysis of Alternative A. The RMP/EIS discloses the impacts on all resources from the existing allotments using GIS overlays. The commenter did not suggest specific improvements.

Summary: The BLM should analyze how the impacts of livestock grazing are now and will continue to be exacerbated by climate change, including any cumulative impacts or combined impacts from drought. The Draft RMP/EIS should also evaluate the effects on the SPRNCA area generally. It also should contain goals, objectives, and practices to address these issues.

Response: An analysis of climate trends has been added to the cumulative effects analysis in Section 3.2.4, *Vegetation Communities*, in Chapter 3. The BLM has reviewed sources submitted by the commenter and added them to the references.

Summary: The Draft RMP/EIS does not adequately discuss livestock trespass incidents or the impacts from current and future trespassing livestock or identify an adaptive management plan to address trespassing livestock. The BLM does not analyze how it would address and manage unauthorized and permitted livestock.

Response: No change made. The impacts of the existing and past trespass livestock are included in the affected environment and in the current condition of the resources of the SPRNCA today. The BLM cannot predict future trespass because it is an unauthorized activity; however, its policy addresses both permitted and unpermitted livestock.

Summary: The BLM has not identified any basis or criteria for identifying upland areas that would be available for grazing under the Preferred Alternative. One commenter stated that the BLM has not demonstrated how its concept of "upland" habitat respects the integrated nature of mesic riparian areas across SPRNCA.

Response: No change made. The BLM uses ecological site descriptions and a vegetation classification system to map vegetation on the SPRNCA and to identify upland-riparian boundaries. Xeroriparian washes are addressed in the PRMP/FEIS in Section 2.5.4.

Summary: The document should disclose that livestock will affect surrounding landscapes and wildlife, by increasing *e. coli*, affecting aquatic life, mammals, and birds, causing erosion and soil loss, reshaping river channels, reducing water quantity and quality, reducing the abundance of streamside plants, and causing nutrient overloading.

Response: Appropriate literature has been added to the Section 3.2.3, *Water Resources*. The commenter did not submit literature to support the other impacts identified in the comments.

Summary: Commenters expressed their belief that the BLM's proposal to open most of the SPRNCA to grazing and firearm use is not consistent with landscape-level management and riparian ecosystem conservation.

Response: In response to public comments, the BLM has modified the preferred alternative so that livestock grazing is limited to the existing allotments in the Proposed Plan and the area around the San Pedro House will remain unavailable to hunting with firearms. The RMP provides context for the scope of impacts.

Summary: The impacts assessment does not address the impacts of cattle in SPRNCA priority habitats.

Response: No change made. The impacts of livestock on priority habitats are analyzed in Section 3.2.5, *Fish and Wildlife* (pages 3-48 and 3-49).

Social and Economic

Summary: Ecotourist activities associated with wildlife watching and birding generate around \$25 million in revenue for Cochise County. This impact outweighs the benefits associated with grazing, and opening the SPRNCA for grazing would negatively affect the economy. Grazing provides only a small contribution to the economy.

Response: No change made. The commenter's assertions were not backed up by references on which the BLM can rely.

Summary: The Draft RMP for the SPRNCA assumes population growth in Cochise County; however, population has been declining in the county. The BLM should revise the Draft RMP.

Response: No change made. The statements in the RMP/EIS about population trends in Cochise County characterize the population trajectory since the last RMP was completed (1989/1992 to the present). The commenter's concern is about trends in recent years. Lower or negative population growth rates in recent years do not contradict the assertion about long-term trends. Statewide trends also reinforce the population direction of growth.

Summary: Federal government should coordinate with state and local governing authorities to protect and preserve the SPRNCA. The BLM should explain how it prioritizes comments. It should prioritize comments from individuals closer to the SPRNCA over individuals or entities farther away.

Response: The BLM has developed the RMP/EIS in collaboration with a variety of communities, local governments, tribes, state and federal agencies, and cooperating agencies. The BLM addresses all comments received during plan development and review according to regulations found at 40 CFR 1503.4. There is no requirement to prioritize comments.

Summary: The Draft RMP of the SPRNCA does not consider the impacts of water allocation or consider the impacts of a reduction in water supply on surrounding communities and property values. How will the RMP adapt to housing and other planned developments?

Response: The RMP/EIS assesses reasonably foreseeable future actions and cumulative effects and the impacts of the proposed action on water quality and quantity on the SPRNCA.

Summary: Clarify the "increased demand for use" of the SPRNCA and the resources that the increased demand will stress. What county and city plans are being referenced?

Response: Text was added to Section 3.1.1, *Recreation*, identifying more clearly the basis for the BLM's conclusion that recreation demand is increasing. It references the BLM's annual recreation use reports, the San Pedro visitor register, Arizona Department of Transportation traffic counts, and the San Pedro National Riparian Conservation Area Analysis of the Management Situation Report.

Soil Resources

Summary: The RMP/EIS does not provide adequate support for statements about the potential benefits of grazing on soil health and nutrient cycling on the SPRNCA. Additionally, the it does not adequately evaluate how grazing negatively affects soil chemistry and water quality.

Response: Text has been added to Section 3.2.2, *Soil Resources*, and Section 3.2.3, *Water Resources*, with more detail on the impacts of grazing on soil chemistry and water quality. The BLM also has updated text on soil health and nutrient cycling, which depends highly on vegetation, soils, and stocking intensity.

Summary: The RMP/EIS should include an erosion control plan that identifies soil stabilization opportunities and methods in order to enhance watershed conditions and maintain groundwater levels and base flows throughout the SPRNCA.

Response: No change made. The RMP identifies the allowance and disallowance of major categories of land uses, activities, and management actions. The level of detail contained in an erosion control plan is addressed at the implementation level and is not a planning-level decision.

Summary: The RMP/EIS does not adequately evaluate potential erosion effects from livestock grazing, including soil compaction, loss of topsoil, channel downcutting, vegetation trampling, increased runoff rates and sedimentation, and deteriorated channel stability and water quality.

Response: Changes were made to the soils analysis in Section 3.2.2 and literature was incorporated relevant to soil erosion and compaction. The changes also influence Section 3.2.3, *Water Resources*.

Summary: The RMP/EIS is inconsistent in its statements regarding grazing impacts on soils under Alternative D.

Response: Changes have been made to the text. Removing grazing from soils susceptible to erosion under Alternative D would improve soil conditions.

Summary: There is no detailed analysis to assess how much of the Chihuahuan desert scrub community on the SPRNCA has fragile soils and what percent has a trend toward soil stability and return of understory native grasses.

Response: No change made. Soil sensitivity is discussed across the planning area but not by vegetation type. The BLM has information on the overlap by habitat type, but it does not highlight a new management need or distinct environmental impact. Trend data are not available on soil stability and return of understory native grasses, and the commenter did not submit documents or peer-reviewed literature that might provide direction on this information.

Summary: The RMP/EIS should not interfere with natural rapid channel adjustments unless special issues or conditions exist. Passive restoration should be favored over active interventions, such as induced meanders.

Response: The discussion of riverine geomorphology enhancements has been revised to clarify this issue. This change can be found in Table 2.5.3. The discussion of enhancing riverine geomorphology has been revised in Section 3.2.3, *Water Resources*.

Summary: Vegetation treatments using herbicides on the Chihuahuan desert shrub in some areas may actually increase erosion by killing robust plant species.

Response: No peer-reviewed literature or other supporting documents were submitted to substantiate the commenters' assertion. An assumption was added to Section 3.2.2, *Soil Resources*, which discloses the following: "The vegetation treatments designed to convert upland Chihuahuan desert scrub to grasslands are assumed to improve soil conditions by decreasing accelerated erosion (Abrahams et al 1994) and that unlike the biotic response, the abiotic (soils) response will take much longer before improvements are shown (Perkins et al 2005)."

Summary: The RMP should be clearer about several aspects of the slope analysis data in the RMP/EIS.

Response: No change to text. Slope analysis would likely not capture head-cuts because of the spatial resolution of the data. Other factors considered in the erosion hazard areas, such as K factor and rock fragments, would indicate if an area is susceptible to this kind of erosion; thus, the ratings would indicate the likelihood of the existence of these features in these areas. Site-specific data on head-cuts was not available for the entire SPRNCA, thus the BLM used the best available data.

Special Designations

Summary: The RMP/EIS cannot undesignate or fail to designate areas eligible for designation on the basis of there being sufficiently protective allocations in place. Redundant, layered planning is part of planning. The BLM must use special designations where lands qualify for designation.

Response: Designations are used to delineate areas for special management to protect resources. On the SPRNCA, the Congressional NCA designation provides for special management to protect resources across the entire planning area. The enabling legislation requires special management to protect important values that other designations would afford, including riparian, cultural, archaeological, paleontological, and aquatic resources. The ACEC manual states that if management attention provided under the congressional designation is adequate to protect a resource or value, it is not necessary or appropriate to designate an ACEC.

Travel and Transportation Management

Summary: Increased vehicle use in SPRNCA will increase the risk of vehicle-ignited fire in locations where it is difficult to get firefighting equipment.

Response: Language has been added to Section 3.2.7, *Wildland Fire and Fuels Management*, addressing the risk of fire associated with use of roads, particularly in riparian areas.

Summary: Existing roads should be opened to permitted recreational vehicle use, but off-roading should remain prohibited.

Response: No change made. Cross country vehicle travel is prohibited by the enabling legislation, except for emergencies. The RMP considers providing opportunities for motorized recreation in rural and motorized backcountry RMZs under Alternative C. Specific routes that would be designated in these RMZs to provide for motor vehicle access will be designated in the TMP, to be prepared after the RMP is completed.

Summary: OHV use in SPRNCA should be entirely prohibited, except in cases of emergency and for research.

Response: No change made. Cross country travel by vehicles is prohibited by the enabling legislation, except for emergencies. Motor vehicle use would be limited to designated routes under Alternative C. After the RMP is completed, during the travel management planning process, the BLM would designate vehicle routes to meet management objectives, including motorized access for recreation and administration.

Summary: Use of roads will harm wildlife.

Response: No change made. The BLM analyzed the impact from road use on wildlife in Section 3.2.5, *Fish and Wildlife*.

Summary: Driving in unpaved areas will promote erosion.

Response: No change made. The BLM analyzed erosion associated with existing routes and future surface disturbance under each alternative in Section 3.2.2, *Soil Resources*.

Summary: Access points proposed in the plan lie on private property.

Response: The text and maps have been updated to ensure that access does not traverse private property. Any access points indicated on non-federal land would be subject to acquisition of legal access across the non-federal land.

Tribal Interest

Summary: Because potential impacts on tribal concerns are not fully known, the RMP should include a plan outline for the BLM to implement ongoing procedures and regular meetings with affiliated tribes to avoid or mitigate impacts.

Response: Potential impacts on tribal interests regarding archaeological and historic resources, TCPs, and sacred sites are discussed primarily as cultural resources in Section 3.2.8, and then they specifically point to information at DEIS 3-73 et seq. (also reference the cultural resources standard operating procedures and best management practices at G.2.6 for further information on tribal consultation and coordination). The BLM fully acknowledges that tribal consultation is a dynamic and ongoing process and that additional tribal consultations will be necessary to coordinate future efforts.

Summary: The Pascua Yaqui Tribe asserts its cultural affiliation to and interest in the planning area.

Response: Text to be revised in Section 3.5.1, *Tribal Interest*, (reference page 3-141; first paragraph, last two sentences) as follows: “To date, the Hopi Tribe, Pascua Yaqui Tribe, and Tohono O’odham Nation have provided written responses to the BLM as interested parties who claim cultural affiliation to the lands and resources of the SPRNCA. The Salt River Pima-Maricopa Indian Community, San Carlos Apache Tribe, and White Mountain Apache Tribe also have expressed interest in the BLM’s management of the planning area during in-person meetings and presentations. No tribes have signed or requested the development of a cooperating agency memorandum of understanding.”

Summary: The BLM needs to define non-manipulative research and education.

Response: The use of this term is specific to the special management prescriptions for the proposed expanded San Pedro RNA ACEC under Alternative D (reference page C-9). Under ACEC administrative authorities and in accordance with the BLM’s Science Strategy (BLM 2000), RNAs are maintained as natural areas, where only low-impact research activities would be allowed. RNAs are noted to contain important ecological and scientific values that are managed for minimum human disturbance. The degree of manipulation permissible under the non-manipulative standard is evaluated on a case-by-case basis; however, it generally restricts manipulation of the soil, structures, and artifacts. This leaves the potential room for noninvasive remote sensor surveying, permitted surface collecting, and measurements of surface characteristics.

Vegetation

Summary: The public submitted information for consideration by the BLM regarding impacts of grazing on vegetation and grassland restoration.

Response: The BLM reviewed the literature submitted by commenters and made changes to the analysis and plan, as appropriate, in Section 3.2.4, *Vegetation*. The substantial conclusions of the analysis were not affected by the suggestions or studies.

Summary: The RMP/EIS notes that removing vegetation is inconsistent with conserving vegetation values. The RMP/EIS goes on to acknowledge that livestock grazing removes vegetation. It appears that by the RMP’s own language, conservation values are compromised by livestock and thus is in conflict with the SPRNCA.

Response: The language in the RMP/EIS has been modified to more clearly express that conservation values can be adversely affected by vegetation removal and degradation, particularly when there is a lasting effect. The RMP/EIS also recognizes, however, that periodic or seasonal changes in aboveground biomass or localized impacts, such as those brought about by grazing, do not necessarily constitute an adverse impact on those values at a larger scale of consideration.

Summary: The RMP/EIS appears to show that there has not been monitoring on the acres that have been available for livestock grazing since 1988. How does the BLM know if BMPs, vegetation treatments, and adaptive management have been effective?

Response: No change made. If there is an allowance for grazing, the BLM will need to complete additional NEPA analyses to establish new allotments under this plan. At the time of allotment establishment, the BLM will create allotment objectives to carry out the monitoring and adaptive management program.

Summary: The RMP/EIS fails to address rehabilitation needs for invasive species removal treatments, particularly shrub removal.

Response: The text has been added to Section 3.2.4 that addresses rehabilitation needs after invasive species are removed, if there is a potential for delayed revegetation and elevated erosion.

Summary: The RMP/EIS fails to address non-mechanical forms of herbicide use that could be implemented selectively, using cut-and-apply methods.

Response: No change needed. This method of herbicide application is considered as part of the analysis for herbicide use. The effects of cut-and-apply methods are sufficiently similar to other methods of herbicide application in that their environmental effects are properly accounted for at this level of analysis. The BLM would consider and analyze any type of treatment at the implementation level.

Summary: The RMP/EIS should analyze the potential for vegetation treatments to promote Lehmann lovegrass.

Response: Text has been added to Section 3.2.4, *Vegetation*, that addresses the potential for Lehmann lovegrass and its effects on native species, soil retention, and hydrological effects.

Summary: The Draft RMP/EIS did not adequately describe the criteria the BLM would use to identify the upland areas on the SPRNCA that may be made available for grazing under the Preferred Alternative.

Response: The boundary determinations for riparian and upland areas are based on the ecological site description (posted on the BLM ePlanning website), the WATTs vegetation layer, and observation-based characterizations by BLM resource specialists.

Summary: The RMP/EIS appears to say that there are 34 miles of impaired stream that will be subject to grazing (page 3-20), while indicating that there will not be any riparian grazing (page 3-2). Can this be explained?

Response: The text has been reviewed and corrected any misstatements about riparian grazing. Under Alternatives A, C, and the Proposed Plan, the only riparian grazing would be that occurring on existing allotments. Under Alternative B, riparian areas would be made available for grazing; under Alternative D no riparian areas would be available for grazing.

Summary: The RMP/EIS does not provide adequate assurances for monitoring to inform adaptive management.

Response: No change made. Implementation and effectiveness monitoring must be carried out as part of land use planning (43 CFR 1610.4-9), but this kind of monitoring relates to the intervals and general standards for monitoring, not detailed information for guiding adaptive management activities under the plan. The BLM will handle monitoring and adaptive management of livestock grazing through an activity-level adaptive management strategy.

Summary: Statements in the RMP/EIS that trampling by cattle and overgrazing of forage have caused stream bank damage and loosened soil causing erosion are contradicted by more recent NRCS studies.

Response: Text has been added, recognizing that a 2018 evaluation of conditions in the reach indicated that the channel was relatively stable and unlikely to experience accelerated erosion and that the condition

of the vegetation and banks had improved since the original assessment in 2013. After 5 years of improved grazing management that resulted in recovery of the reach, the current rating is PFC.

Summary: Historic climax plant community (HPCP) indices indicate that areas that have been grazed tend to be in worse vegetation condition than areas that have not been grazed. Other parts of the RMP/EIS concede that there are adverse impacts on vegetation with “even low utilization.” This does not appear consistent with the SPRNCA’s enabling legislation’s mandate for enhancement.

Response: No change made. The RMP/EIS adequately analyzes the impacts of livestock grazing, and no specific error was identified in the comment. The analysis indicates that grazing under certain circumstances is not incompatible with the enabling legislation.

Summary: The RMP/EIS fails to disclose or analyze whether grazing would impede the development of cottonwood/willow communities by suppressing riparian vegetation or withdrawing water in these areas.

Response: An analysis and discussion has been added of the effect of grazing on cottonwood and willow growth and community expansion.

Summary: The RMP/EIS should prioritize active restoration measures and vegetation treatments to areas affecting stream reaches that are not meeting the NRST class functional-at-risk.

Response: No change made. Prioritization of treatment areas is not an RMP-level decision. Language addressing the subject can be found in Chapter 2.

Summary: The RMP/EIS should broaden its vegetation objectives to include key forage and cover plants for wildlife species, overall cover and diversity of native plants, and soil health, as described in Arizona Standards and Guidelines for rangeland health.

Response: Language has been updated in Section 2.5.4, *Vegetation Communities*, and Appendix H, including the Arizona Standards and Guidelines for rangeland Health.

Summary: The RMP/EIS should clarify what it considers to be the desired future condition of upland areas and the grasses that compose this plant community. As written, it appears that the proliferation of palatable grasses, which may not be preferred from an ecological perspective, would meet the objectives of the vegetation treatments.

Response: The word palatable has been removed. As previously described in the RMP and noted in the comment, there is an overlap between palatable grasses and the grasses that compose the desired future condition for the native grass community in the upland areas. In the plan, there are limits on the promotion of palatable species. The goals and objectives for vegetation include “natural variation in plant composition” and “natural diversity and abundance of natural vegetation.” Meanwhile, there are no goals and objectives to promote livestock forage. Were vegetation treatments to be found to promote invasive grasses or dominance of particular native grass, there would be conflict with the goals and objectives of this section, and the BLM respond to them accordingly.

Summary: Although precise acreages are stated for various vegetation treatments (fire, herbicide, and mechanical), the RMP/EIS is unclear where individual treatments would be implemented; therefore, it is difficult to assess whether a specific treatment is appropriate for a given site and it is difficult to comment on the use of these practices.

Response: No change made. Treatment acreages provide sufficient context for land use-level planning. Specific locations would be determined and analyzed during implementation.

Summary: The RMP/EIS should include a discussion of climate change favoring shrub communities and its influence on restoration treatments.

Response: Text has been added to Section 3.2.4, recognizing that treatments to restore grasslands could be made more challenging by conditions favoring shrubs.

Summary: A statement in the RMP/EIS states that resting lands that are in poor land health would help move them toward historical climax plant community (HCPC) or PFC. The RMP/EIS should recognize that grazing rest does not always achieve this movement toward improved conditions and that certain parts of the SPRNCA need soil disturbance.

Response: Text has been added to the RMP/EIS in Section 3.2.4. This recognizes that the suggested change is a valid correction to the earlier assertion and notes that disturbance is a positive agent for certain ecological sites and areas with past disturbance.

Summary: The RMP/EIS does not include a discussion or management standards for nonnative lovegrasses (page 3-24). The expansion of these grasses is a concern and warrants management attention.

Response: No change made. The management actions for nonnative species management (MA-I, Section 2.5.4, *Vegetation Communities*) provide adequate planning-level direction to manage nonnative lovegrass.

Summary: It is unclear what would be treated on the 40 percent of semi-desert grasslands identified for treatment under Alternatives C and D and for what objectives.

Response: No change made. Vegetation treatments identified under Alternatives C and D would move sites that are currently departed into HCPC. Grasslands identified for treatment would be those that are currently departed from HCPC or the reference condition. This is discussed in Section 3.2.4, *Vegetation*, the RFD for vegetation treatments, and in Appendix Q, *Historic Plant Climax Community*.

Summary: The public submitted information for consideration by the BLM regarding the potential for thresholds to have been crossed by former grasslands, which would render them resistant to restoration.

Response: The BLM reviewed the submitted literature and made appropriate changes in Section 3.2.4, *Vegetation*.

Visual Resources

Summary: The visual resource summary tables should be reviewed for accuracy.

Response: Visual resource summary tables were reviewed and typos were corrected.

Summary: The visual impact of livestock should be analyzed.

Response: No change made. The most restrictive visual resource management standard on the SPRNCA is VRM Class II, under which about 30 percent of the SPRNCA is managed. The presence of cattle does not conflict with the allowable visual contrast under VRM Class II and therefore does not warrant additional analysis. The visual impact of livestock was not raised as an issue of concern during scoping. Also, if facilities to support grazing were going to be considered at the implementation stage, the visual impacts of the proposal would be analyzed at that time. Visual design guidelines would be applied on development of range improvements to ensure visual impacts are consistent with the VRM class.

Water Resources**Summary: The effect of pesticides on water quality should be analyzed.**

Response: Section 3.2.3, *Water Resources*, has been modified at page 3-20 to account for pesticides.

Summary: The analysis should identify and disclose in more detail how, and to what degree, livestock contribute to water quality degradation.

Response: Language has been added to Section 3.2.3, *Water Resources*, adding information on the impacts of livestock on water quality.

Summary: Given water trends in the San Pedro basin, the BLM should make stronger commitments to improve water availability in the San Pedro River.

Response: No change made. As reflected in the goals and objectives of the RMP for water resources, the BLM plans to maximize water availability. Toward that end, it will take actions within its authority to maintain flows for conservation values. Land use planning is based on goals, objectives, allocations, and management actions. The BLM has identified reasonable measures in each of these areas to promote water availability.

Summary: Goals for water resources appear in conflict with an allowance for grazing that would increase contaminant runoff. This relationship should be explained.

Response: The analysis in Section 3.2.3, *Water Resources*, has been revised, as noted.

Summary: The RMP/EIS recognizes water quantity as a key issue for the watershed, yet additional waters are proposed to support cattle. This does not appear to be sound management, especially in view of a conservation mandate.

Response: The RMP discloses and analyzes additional waters proposed to support cattle. The exact number of waters could range from zero to 23 under Alternative B, which opens the most area to grazing. Although the amount of water use would increase, the consequences of that for water quality and water-dependent resources is not anticipated to be material. The question of if opting to allow more waters to support cattle is sound management is a professional judgment about balancing use and protection within the boundaries of the enabling legislation and at the discretion of the agency. Rationale for the decision on the final plan is included in the Record of Decision.

Summary: Potential impacts of water management on the Kartchner Caverns is not analyzed.

Response: No change made. The Kartchner Caverns are outside the analysis area for water resources because they are not influenced by the management decisions of the SPRNCA.

Summary: The RMP/EIS should explicitly disclose the potential for actions to affect the use of private wells.

Response: No change made. The BLM does not have the authority to directly control use or enforce non-use of private wells. The operation of private wells is outside the scope of this planning effort. The federal reserved water rights conveyed to the SPRNCA by the enabling legislation is part of ongoing litigation in the State of Arizona court system. The RMP/EIS analyzes and sets direction on how resources will be managed regardless of the water rights that the BLM could acquire as a result of the Gila River adjudication. If an action on the SPRNCA that used water were to be implemented after RMP approval, impacts on private wells would be evaluated at the project level. None of the proposed management actions under this plan would draw on groundwater in competition with private wells. The BLM's proposed management actions to improve water infiltration would, if implemented, help slow the lowering of groundwater levels by private wells in the region.

Summary: Groundwater modeling of the San Pedro Basin indicates that reducing groundwater withdrawals would not have a strong or positive effect on increasing baseflows on the mainstem of the river. This is because of the existing cone of depression and that recharge projects are necessary for sustaining water resources.

Response: Changes have been made to the environmental effects and cumulative effects section of Chapter 3, to the RFD description, and to Appendix J for water resources, accounting for the study of interest in the comment. The changes do not substantively modify the conclusions of the analysis.

Summary: Water terms described as goals, metrics, and parts of the analysis appear overly restrictive (e.g., base flows). Are these the appropriate metrics to ensure adequate management, or could a more general term, such as flows or waters, be used instead?

Response: Changes to the text clarify the need for flood flows and base flows. Reasons for declining base flows have also been added to the RMP/EIS. The narrowness of the term base flow does not restrict the BLM's range of management actions. Surface waters and groundwater collectively encompass all terrestrial water and are not meant to exclude any particular water type. The BLM believes these terms to be adequately circumscriptive and detailed enough for planning-level management direction.

Summary: The RMP/EIS should provide additional detail on what it considers water recharge enhancements.

Response: Text has been added to Appendix J that provides additional detail on what is and is not considered water recharge enhancements.

Summary: The public submitted comments requesting clarification of information and data presented in the RMP.

Response: Changes were made to the document as appropriate. The groundwater impact analyses on page 3-17 were consolidated. The use of "land use authorizations" is now clearer and more explicit.

Summary: The public submitted reports and literature about water resources for consideration by the BLM.

Response: Changes were made to Section 3.2.3, as appropriate. Cumulative impacts for water resources were modified to account for the models of the Cochise Country Recharge Network.

Summary: The affected environment section does not appear to bear on management and contains information contested in ongoing litigation.

Response: The affected environment section is required by law and regulation (40 CFR 1502.15) and sets the context for potential impacts. The information presented in the affected environment section provides the baseline or existing condition, as appropriate, concerning water resources. When the court issues the partial decree for the federal reserved water right for the SPRNCA, the BLM will reevaluate the RMP analysis to determine whether material changes to the original analysis are warranted.

Summary: The RMP/EIS should explain the range of hydrological conditions that would remain sufficient to meet the goals and objectives of the plan.

Response: No change made. The goals and objective for water in the RMP/EIS are sufficiently detailed to address this comment. The RMP evaluation process provides a feedback loop for monitoring data to reenter the planning process and requires that the BLM address evidence of departure from the goals and objectives in the plan. If needed, revision or amendments will be recommended in those periodic reports.

Summary: The RMP/EIS should include commitments to cooperative management.

Response: No change made. Section 2.4.2 addresses collaboration and partnerships and the need to work with stakeholders.

Summary: The assertion that riverine geomorphology enhancements, or in-channel stream restoration, is desired or feasible to reintroduce to the San Pedro River appears to be unsupported in the RMP/EIS and is inconsistent with science on the subject.

Response: The BLM reviewed the references provided by the commenter and made changes on page 2-10 and in Appendix J. Generally, the BLM finds that the language in the RMP/EIS is adequate for the planning-level analysis. Before specific features of river restoration can be described, the BLM needs to evaluate river function and departure from its current potential. Accordingly, that level of detail is omitted from the RMP/EIS and will be addressed at the implementation level.

Summary: The rationale for not including riverine geomorphology enhancements, or in-channel stream restoration, under Alternative D should be explained in the RMP/EIS.

Response: Detail has been added to the rationale for excluding sinuosity in Alternative D. NEPA requires that there be an analysis of the complete range of management alternatives, which includes riverine geomorphology enhancements. Not completing the projects in the mainstem of the river and focusing on upland management was a suggestion from the NRST (2012) report.

Summary: The RMP/EIS should restrict riverine geomorphology enhancements, or in-channel stream restoration, to tributary streams that influence flows in the San Pedro River.

Response: No change made. This option is already accounted for in the analysis through a combination of Alternatives C and D, providing the full suite of structural interventions only on the tributaries.

Summary: Riverine geomorphology enhancements, or in-channel stream restoration, included in the RMP/EIS should use beaver as a management tool.

Response: No change made. Beaver can be used as a management tool under all alternatives, to the extent consistent with goals, objectives, and other management action allowances in the plan. The decision to use or not use beaver is not an RMP-level decision.

Summary: Because of its heightened importance, the RMP should highlight the influence of water withdrawals related to development on water levels of the San Pedro River.

Response: No change made. The affected environment Section 3.2.3, *Water Resources*, and Section 3.2.4, *Vegetation*, discuss water withdrawals associated with development and how that has affected water levels of the San Pedro River. There is an adequate level of emphasis on water withdrawals.

Wild and Scenic Rivers

Summary: The rationale for the inclusion or exclusion of Wild and Scenic River segments should be clearer.

Response: Text was added to the Section 3.4.2 about why river suitability varies by Alternative. A central purpose of land use planning is to study how management actions achieve resource objectives using different levels of impact or intensity. Wild and Scenic River suitability is influenced by management impact and intensity and varies accordingly. Under the Proposed Plan (modified Alternative C), the BLM does not include eligibility of river segments because it does not want to constrain future projects necessary to achieve the purpose of the SPRNCA, particularly projects that could alter river morphology and function. Existing and potential rivers were considered during this RMP process in response to public scoping input. An eligibility assessment identified the Babocomari River as a potential study river and identified resource condition changes along the San Pedro River (an existing study river). This may warrant a change in the river classification. The suitability of the Babocomari River is analyzed, along with the suitability of changing the classification for the San Pedro River.

Wildland Fire and Fuels

Summary: The RMP/EIS does not address the risk of open fires.

Response: No change made. The risk of open fires is sufficiently low that it does not warrant detailed analysis in the RMP/EIS. The analysis discloses that about 2 percent of fires over the last decade on the SPRNCA were related to campfires. If weather and vegetation conditions become such that restrictions on open fires are warranted, the BLM reserves the ability to implement fire bans. Under normal fire conditions, the SPRNCA does not warrant special management attention for this issue. The fire risk associated with open fires was not raised as an issue during scoping.

Summary: The BLM should explore opportunities to share staff and other resources with other land managers for fire management.

Response: No change made. Agreements are in place with regional land managers to share emergency resources. Establishing agreements is not an RMP-level decision.

Summary: The RMP/EIS should allow for the use of fire for managing resources where it would not be a hazard to property and structures.

Response: No change made. The RMP/EIS already allows for the use of fire for management purposes. Objective 2 of the Wildland Fire and Management Section (page 2-22) states “Manage all wildfire commensurate with values at risk”; thus, where fire would benefit resource management and can be safely managed, it would be managed as such. Management Action 1 under Vegetation Communities says “Use...prescribed fire...to suppress, control, and/or eliminate invasive species/noxious weeds.”

Summary: Objectives, land use allocations, management actions, and allowable uses should be added for prescribed fire.

Response: No change made. Objectives, allocations, management actions, and allowable uses for prescribed fire already exist in the plan and can be found in Section 2.5.6, *Wildland Fire and Management*, and Section 2.5.4, *Vegetation Communities*, of Chapter 2 in the RMP/EIS.

Summary: The relationship between grazing and fire hazards should be analyzed.

Response: No change made. The impacts of grazing on fire risk are addressed under Section 3.2.7, on page 3-66, which notes “Livestock grazing may reduce the level of fine fuel loads, thereby affecting fire size and behavior (Davies et al. 2010), but this effect is strongest in grassland systems and mild weather conditions (Strand et al. 2014). Impacts of grazing on fire behavior would vary based on specific vegetation type and weather conditions.” Specific recommendations for how the analysis should be modified were not provided in comments, nor were Specific deficiencies or analytical improvements.

Summary: The RMP/EIS should recognize that the fire-wise cooperative plan requires fuel reduction along the San Pedro River.

Response: No change made. Nothing in the RMP/EIS conflicts with fuels reduction along the San Pedro River. The BLM is party to a number of agreements and is engaged with partners in managing fire on the SPRNCA. Adding specific recognition of guidelines under the fire-wise cooperative plan is redundant and would add unneeded complexity to the plan.

Summary: The RMP/EIS should analyze the risk of fire associated with vehicle use.

Response: Language has been added to Section 3.2.7, *Wildland Fire and Fuels Management*, addressing the risk of fire associated with use of roads, particularly in riparian areas.

Summary: The RMP/EIS should analyze the risk of fire associated with firearm use.

Response: No change made. While wildfire ignitions have occurred in the region due to target shooting with firearms in dry grassland, the fire risk on the SPRNCA from hunting with firearms is considered very low, due to the fuel types and low intensity of use. If weather and vegetation conditions should merit further management attention, the BLM reserves the ability to implement fire bans. But under normal fire conditions, the BLM does not have a reasonable basis on which to restrict firearm use. Additionally, firearm use would be allowed on the SPRNCA only for hunting purposes, thus minimizing the risk of fire ignition associated with target shooting.

Summary: Language in the RMP/EIS that refers to the “restricted” use of fire management tactics gives the impression that fire suppression would be compromised in areas under Alternative D, when in fact, the full set of measures “as necessary in the control of fire” would be available to manage vegetation, as per Manual 6340.

Response: No change made. The BLM reviewed the sections and finds that the language is reasonably clear on the difference in fire management strategies and the environmental consequences of managing under each of them.

V.1 REFERENCES

BLM. 2016. Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS and Record of Decision.

BLM. 2007. Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) and Record of Decision.

V.2 PUBLIC COMMENTS

The following public comments are those that the BLM considered to be substantive out of all the comments it received. They are organized by topic, corresponding with the summaries and summary responses provided in Section X.1. Complete public comment submissions are posted on the SPRNCA RMP ePlanning website.

Air Quality

Has the BLM considered the effect the trash the city of Sierra Vista burns two or three times a month. Evidently they have permission from the EPA to burn plastic and other toxic waste and put that into our air down here. That will not be healthy for the SPRNCA.

Alternatives

The DEIS fails to explain why all the alternatives were not developed to be "light on the land" given the enabling legislation and purposes of the SPRNCA.

Although the Draft RMP/EIS provides descriptions of each resource and resource use, the Department believes the document lacks a clear justification of why Alternative C is the BLM's preferred alternative over the other three alternatives under consideration. Given that Alternatives B, C, and D are all departures from the existing situation (Alternative A), the Department recommends a side-by-side comparison of the reasons BLM chose Alternative C over the other Alternatives would provide the essential justification for the BLM's preferred selection for the Draft RMP/EIS.

Alternatives – Other

The DRMP/DEIS states that it would require certified weed-free feed for riding livestock and pack animals on the SPRNCA. DRMP/DEIS at 2-44. But it fails to require this for permitted livestock, despite the fact that some of the cattle on the SPRNCA move on and off of the BLM-administered lands. There should be a universal prohibition on uncertified feed for livestock on the SPRNCA, but the DRMP/DEIS should also discuss how allowing livestock to spread invasive weeds furthers the mandate of protection.

Grazing would be much more appropriate in an area such as Brown Canyon Ranch. There would still be an effect on the water table, but not such a severe and immediated effect on the river.

There is presently tonage of very dry tinder along this river. You have a population of citizins, who given a chance would volunteer to clear land along the San Pedro. Do not scuff at this. It is not one of your Alternative Options that you have presented to the public.

the Office of the Attorney General is concerned that the Draft Plan and EIS do not impress upon the Bureau of Land Management its obligation to take into consideration the public highway rights that may have been granted by U.S. Revised Statute 2477 ("R.S. 2477") within the San Pedro Riparian National Conservation Area. Although a mention is generally made of rights of way in the Draft Plan and EIS, this

comment addresses the apparent failure to 2 expressly consider the legal significance of R.S. 2477 in the Bureau's scoping activities and deliberations. The Office of the Attorney general requests that the Bureau of Land Management reaffirm and impose upon itself a policy requiring its implementation any of the proposed alternatives in the San Pedro Riparian National Conservation Area Draft Resource Management Plan to be exercised with due consideration of the legal obligations imposed by R.S. 2477.

27. 3-18 Alternatives Comparison Analysis BLM states: "The goal of enhancing riverine geomorphology is to improve stream sinuosity to a level consistent with its stream type." Comment: Examinations of past efforts indicate that the risk of making the river worse instead of better is high when agency personnel attempt to change meander patterns. The number of BLM channel meander projects verses the number of successful BLM channel meander projects should be considered. See Stream Habitat Restoration Guidelines Final Draft Prepared for: Washington State Aquatic Habitat Guidelines Program 2004 at <https://wdfw.wa.gov/publications/00043/wdfw00043.pdf> which uses the following caveat: "Included in the history of human-caused disturbance of stream channels is a record of intervention undertaken to improve aquatic habitat. Among these, in the cases where stream processes were not understood, is a legacy of expensive failure. Most attempts to directly build habitat elements into streams have failed due to a lack of understanding of the dynamic processes that build, maintain, and destroy habitat. Too often, these attempts have further degraded the habitat they sought to restore (emphasis added). Correction/Suggested language: State that project specific NEPA analyses will occur prior to any attempts to change the geomorphology to the San Pedro River within SPRNCA. BLM recognizes that there is a risk that high flows will destroy attempted fluvial geomorphological changes. Dr. David Rosgen or another outside consultant with sufficient subject matter expertise will be utilized to assure BLM personnel have the necessary information to make an informed decision.

As previously highlighted, BLM has an obligation to protect, preserve, and enhance the SPRNCA. As such, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. Just as important, are the placements of different RMZs. For instance, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities. By providing separate recreation areas and trails for specific activities, visitors would be able to engage in their preferred activities without worry of conflict between different uses. This would keep visitors happy and safe while minimizing the impact on the landscape. Finally, separate areas for different activities would allow for easier management within the SPRNCA because visitors would have a better understanding of what activities were being given priority in certain areas.

Management prescriptions can and should be more specifically incorporated for important wildlife movement corridors in the RMP. Prescriptions should include: * Right-of-way exclusion areas. * Route density standards that will be applied to the travel network to reduce habitat fragmentation. (Taos RMP at 13). * Reclamation of redundant roads or roads that no longer serve their intended purpose to achieve road density objectives and reduce habitat fragmentation, while maintaining road network connectivity. (Taos RMP at 79). * Roads or highways crossing public lands would be designed to facilitate movement of wildlife to reduce mortality of wildlife from vehicle collisions. (Lower Sonoran RMP). * Maintenance or expansion of existing roads would incorporate measures to maintain or restore wildlife habitat connectivity and would incorporate, where appropriate, wildlife underpasses or overpasses. (Lower

Sonoran RMP). * No additional fences would be constructed in the migratory corridors except to enhance the viability of big game migration (Pinedale RMP-Trapper's Point ACEC at 2-155).

Moreover, considering foreseeable cumulative impacts-namely that development, including increased water withdrawal, outside the SPRNCA will over time create a net loss of habitat for many SSPs, it is more important that within the SPRNCA the BLM's goal should be no net loss or degradation of habitat, and indeed should be net increase and improvement. The Management Situation Report notes because there are "few major north-south river corridors remaining for migration in the Southwest, increased human activity outside of the SPRNCA creates a state where the habitat within the SPRNCA becomes even more valuable for migrating and nesting birds."

BLM should adopt Alternative D's proposal to nominate all historic properties within ACECs for listing on the NRHP and access historic structures for placing them on the priority heritage asset list.

Regardless of which alternative is ultimately selected, the final RMP should clearly specify that grazing may not be introduced or reintroduced to any part of the SPRNCA without intensive and comprehensive cultural resource inventories conducted in close collaboration with duly designated O'odham and Apache cultural representatives.

BLM should add detailed management prescriptions for the various RMZs, as suggested below:

1. Primitive - are special non-wilderness backcountry areas that serve quiet non-motorized recreation in a primitive setting where visitors may enjoy a less developed recreational experience. These areas generally have sensitive resources; therefore, non-motorized trails in these areas will have a low to medium density.
2. Backcountry - are lands with wilderness characteristics and other highly sensitive ecological areas where there will be no motorized routes or travel permitted. Evidence of administrative control should be little to none. Non-motorized routes are generally undeveloped, and areas are generally accessed by foot or horseback.
3. Backcountry (motorized) - provide routes or loops designated for motorized recreation. In addition to use of ATVs and motorcycles on roads, special ATV width or single-track motorized trails may be developed or designated for the specific use of these machines. Full size passenger vehicles may be restricted on certain trail segments. Routes in these areas should be designated to support long distance recreational travel, geo caching and sightseeing activities by ATV or motorcycle. Administrative control will be at a moderate level, with trail and route markers and designated parking/staging areas. Density of routes may be medium to high in select areas to form loop experiences. Other non-motorized routes may exist in these zones at low densities. Routes for transportation and access may exist at varying densities as determined by need.
4. Rural (or passage zone) - special areas on the urban interface where the primary activities are non-motorized trail activities, yet there is a need for recreational and passenger vehicles to travel through to access other zones, internal trail heads, or for administrative purposes. These areas will have a high level of administrative control, including speed limits, and may further restrict vehicle to travel to only passenger vehicles or authorized uses. These areas are highly visible and serve a variety of non-motorized experiences at medium to high densities often while protecting special resources. Emphasis in these zones is on highly developed, well planned and designed non-motorized trail systems. The density of motorized use routes would be very low. Developing and differentiating trails for separate user groups are among the necessary inclusions to protect recreation resources and avoid conflict, consistent with the agency's regulations. BLM's regulations relating to management of off-road vehicles acknowledge the need to address the manner in which motorized recreation can prohibit other experiences, requiring that both areas and routes for off-road vehicles be located to "minimize conflicts

between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors." 43 C.F.R. § 8342.1.

BLM should set indicators and thresholds for change in RMPs that describe and analyze when an RMP should be adjusted. This will not only create more dynamic and adaptable management plans, but also help create more efficiency in future adjustments to management plans since the agency should be allowed to tier to the analysis already completed. To be meaningful, these triggers should be specific, measurable and enforceable for when a change in management may be necessary.

The following is a proposed framework for adaptive management strategy. The agency should provide all the following components to make the adaptive management plan meaningful and enforceable: * Set specific management goals and objectives, such as biological goals and objectives to show the targeted management. * Identify potential threats to management goals and objectives as well as potential stressors to the system. * Set specific, enforceable and measurable indicators to gauge progress towards goals with timelines for implementation. Adjust management as appropriate when triggers are hit. * Develop a monitoring plan with monitoring protocols, timelines for completing monitoring, and reports on the findings and conclusions. * Provide a range of alternative management scenarios as well as a comprehensive process for additional consultation on adaptive management options when triggers are hit. * Provide for public input, including providing information during data collection, setting triggers, and when change might be necessary to respond to triggers being hit or other unforeseeable factors.

Under the pressures of global change, it must be acknowledged that many objects of conservation are at risk wherever they are found, and the traditional natural resource management paradigm of modifying ecosystems to increase yield must change to a new paradigm of managing wildland ecosystems to minimize loss -specifically loss of the ecosystem composition, structure, and function that yields the benefits we seek from wildlands. Natural resource management must change from a paradigm of maximum sustained yield to a paradigm of risk management. Although there is no widely-accepted method of assessing and managing risk, we recommend breaking risk down into its component parts - vulnerability, exposure, and uncertainty. In the attached recommended approach to addressing climate change in land use planning (Attachment A), we recommend an approach for assessing risk in the planning area as well as an approach for management of that risk for BLM to comply with its legal obligations under laws and regulations.

We recommend using the Lower Sonoran Field Office/Sonoran Desert National Monument example to manage and protect wildlife corridors in the SPRNCA RMP.

BLM should ensure that scenic value is a resource that is conserved and must establish clear management direction describing areas inventoried and possessing high scenic importance with clearly defined objectives that limit surface disturbance within important viewsheds, including: 1. The riparian corridor of the SPRNCA. 2. Lands managed to preserve their natural values, such as primitive recreation areas and lands with wilderness characteristics, should be managed as Class I to "preserve the existing character of the landscape." 3. Lands within popular and easily accessible vantage points should be managed for visual resources, such as VRM Class II to "retain the existing character of the landscape," including clear provisions dealing with right-of-way authorizations and other human disturbance. 4. ACECs and other special management designations and prescriptions should be used to protect scenic landscapes and lookout points within the resource area with stipulations specifically addressing and managing human

development impacts, including VRM Class I to "preserve the existing character of the landscape" or VRM Class II to "retain the existing character of the landscape" as appropriate.

BLM should prioritize cultural resource inventories in the SPRNCA and commit to completing Class III surveys for all types of cultural resources within priority areas in the NCA within a reasonable timeframe.

In line with SPRNCA's enabling legislation, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. BLM should be intentional in the placement of RMZs. For example, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities.

Because of the SPRNCA's unique importance for biodiversity in the region, BLM should follow the mandate of its enabling legislation by managing the SPRNCA to ensure net increase of habitat and SSP populations, and to avoid actions, such as expanding grazing and motorized hunting that would be additional stressors on at-risk species.

BLM should consider a variety of management regimes for lands identified as possessing wilderness characteristics but not prioritized for protection to allow for management of other multiple uses in conjunction with maintaining wilderness characteristics. This could be done thorough a tiered management approach as discussed above. BLM should use this approach and managing accordingly, closing areas adjacent to LWCs to uses, such as off-road travel, that would diminish their wilderness values.

Rather than adopt the preferred alternative, BLM should stick to a management plan like the one currently in place, allowing non-hunters the opportunity to avoid conflict with hunters completely by restricting use of firearms in an area of the backcountry and primitive RMZs. DRMP Fig 2-23, A-24. Thus, opportunities for conflict would be minimized and opportunities for solitude would increase, furthering a primary purpose of the primitive and backcountry RMZs.

All of the Alternatives presented barely consider the potential expanded role of beaver in benefitting water resources, restoring vegetation, and creating aquatic wildlife habitat. This is a serious shortcoming. I urge that the final chosen plan continue to assess the expanded role that beaver can play in improving a number of planning issues.

The DRMP discusses water quality, and notes that some reaches are impaired for dissolved oxygen, E. coli, and dissolved copper. The receipt of municipal wastewater discharge or recharge into the river or aquifer also has potential to introduce chemicals, such as pharmaceuticals and PFAS, for which there are no current standards. This may become an emerging issue, and I recommend that BLM seek continued input from the EPA, USGS, and aquatic toxicologists when monitoring for water quality. It would be easy and comparatively inexpensive to initiate a macroinvertebrate sampling and monitoring program on the river. Macroinvertebrates are sensitive to changes in water quality. Protocols for their monitoring are well established and used by federal agencies. Citizen groups can be trained to conduct this monitoring in partnership with the BLM.

None of the alternatives specifically mention removal of encroaching brush species to improve habitat, decrease erosion, and increase forage to both wildlife and livestock.

EPA also recommends that BLM ensure that its preferred alternative would authorize livestock grazing only to the extent that it would not jeopardize efforts to restore the San Pedro River to proper functioning condition and attainment of water quality standards.

If the BLM staff feels they need to allow some hunting in the SPRNCA so as to carry out the "order" they received...then it should be limited to the Primitive and Backcountry RMZ's of the SPRNCA...far beyond the bullet range of the most visited areas in the SPRNCA.

Based on concerns for public safety and personal experience I really oppose this proposed change and would urge that it be removed from the final plan or at the very least the proposed hunting area be reduced to the Primitive RMZ areas.

There are unsupported statements that both grazing and herbicide use are having a positive impact on the SPRNCA. These allegations must be supported by monitoring reports and peer reviewed scientific analysis. Until monitoring and analysis of the impacts of grazing is completed, the statements made in the Grazing Field Trip report cannot be relied upon to justify the use of herbicides via the RMP. Instead, we recommend the use of herbicides be authorized via future Plan Amendments when and only if such use can be validated as a management tool through a scientific analysis. Herbicides should be used only when and if necessary for management of the SPRNCA and the health of the ecosystem, and never for the benefit of the grazing allotment permittees, nor for the management and/or benefit of livestock.

The DRMP/DEIS contains certain pronouncements that appear to be internally inconsistent and warrant clarification in the final EIS. Importantly, the BLM recognizes that when adopted, the SPRNCA RMP will "recognize all valid existing rights.,⁴ However, this recognition is eroded by management strategies identified for the various alternatives as follows: * Alternative B (Enhanced Multiple Use), C (Preferred Alternative) and D (Restricted Use) contemplate "[e]xisting land use authorizations, including ROWs for utility lines, are limited to and managed in accordance with the valid existing rights granted before the SPRNCA was designated. Maintenance of these facilities would be permitted, subject to compliance with current BLM policies and practices, in such a manner that reduces impacts on SP RNeA resources.,⁵ * Alternatives B, C and D state that "renewals of existing ROWs will be considered on a case-by-case basis, with possible new stipulations to reduce impacts on the conservation values of the SPRNCA.,⁶ * Alternatives B, C and D contemplate "[a]ccess to utilities on existing vehicle routes is an administrative use and would be allowed. Design and maintain vehicular routes for access to correct hazardous or unsafe conditions with the minimum footprint necessary to provide access.,⁷ * Alternatives Band C contemplate the entirety of the SPRNCA becoming a ROW "avoidance area" and Alternative D proposes a ROW "exclusion area.,⁸ 2 E.g., Line No. 1007 (10-3/4" O.D. Tucson-Phoenix Natural Gas Line) comprising 3.64 miles of line within SPRNCA; and Line No. 2019 (6 -5/8" O.D. Tucson to Phoenix Natural Gas Line to Ft. Huachuca Master Meter Station). 3 Importantly, the BLM has acknowledged that the SPRNCA planning area boundary only extends to public lands with SPRNCA (DRMP/DEIS at pg. 1-8) and that it does not have jurisdiction over lands next to the SPRNCA that it does not administer (id. at pg. 1-9). 4 DRMP/DEIS at pg. 1-10. 5 !d. at pg. 2-51 . 6 Id. at pg. 2-49. 7 !d. at pg. 2-50. 8Id. at pg. 2-57. SPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27,2018 Page 3 * Alternatives B, C and D contemplate that "maintenance and upgrades of ROWs would be considered on a case-by-case basis, with special stipulations to protect free-flowing conditions, water quality, tentative classification and ORVs.,⁹ Unfortunately, none of these management strategies appear to recognize the scope of EPNG's rights contained within private and public ROW granting instruments. These rights must be given effect by the

BLM as the successor in interest to the original grantors. The rights of EPNG (and other ROW grant holders for that matter) cannot be classified as "administrative access" or modified unilaterally pursuant to "current BLM policy" or "special stipulations" not expressly contained within the original granting instrument. Accordingly, the description of all of the aforementioned management prescriptions should be modified in recognition of this limitation.

The San Pedro River Riparian Management Plan (the "SPR RMP") and Safford District Resource Management Plan Record of Decision ("Safford RMP ROD") both recognized the existence of EPNG's established ROWs. ¹⁰ In fact, the SPR RMP included a detailed map of the ROWs (Attachment C) and the Safford RMP ROD established five major utility corridors along existing utility lines. In contrast, all of the new alternatives in the DRMPIDEIS contemplate only one established utility corridor within the SPRNCA (along Charleston Road) which does not include long established EPNG ROWS.¹¹ This should be addressed in the final EIS and BLM should establish additional ROW corridors for critical utilities such as the EPNG Line Nos. 1007 and 2019. Further, the BLM's assertion that National Landscape Conservation System ("NLCS") policy prevents BLM from designating new ROW corridors in national conservation areas ("NCAs") is not accurate nor does it recognize prior existing rights granted pursuant to FLPMA prior to the establishment of SPRNCA.¹² As background, Title II of the Omnibus Public Land Management Act (16 U.S.C. § 7202, enacted Mar. 30, 2009) (hereafter the "Act") established the NLCS within the BLM in order to: "[C]onserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations" ⁹ *Id.* at pg. 2-57 thru 2-58. ¹⁰ SPR RMP at pg. 34 (Table 3-1) and Map 3-1 (June 1989); Safford RMP Environmental Impact Statement at pg. 36 (August 1991) and ROD at pg. 6 (September 1992). ¹¹ DRMPIDEIS at pgs. 2-2 through 2-5. ¹² *Id.* at 2-5. tSPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27, 2018 Page 4 Included within the NLCS are all BLM administered National Monuments, NCAs, Wilderness Study Areas, components of the National Trails System, components of the National Wild and Scenic Rivers System, components of the National Wilderness Preservation System and any "area designated by Congress to be administered for conservation purposes." The Act requires that the NLCS shall be managed in accordance with any applicable law (including regulations) relating to any component of the system and "in a manner that protects the values for which the components of the system were designated." It specifically states that nothing in the Act "enhances, diminishes, or modifies any law or proclamation" under which a prior National Monument or conservation area was established or "any provision in [FLPMA]." Following passage of the Act, BLM convened a "summit" of key employees and partner organizations to develop a 15-year management strategy for NLCS lands. The summit was followed by the publication of an order on November 15, 2010 (Order No. 3308) setting forth management policy issued by then-Secretary of the Interior Ken Salazar, which stated in relevant part (emphasis added): "Section 4 Policy. a. The BLM shall ensure that the components of the NLCS are managed to protect the values for which they were designated, including, where appropriate, prohibiting uses that are in conflict with those values. If consistent with such protection, appropriate multiple uses may be allowed, consistent with the applicable law and the relevant designations under which the components were established. b. The NLCS components shall be managed as an integral part of the larger landscape, in collaboration with the neighboring land owners and surrounding communities, to maintain biodiversity, and promote ecological connectivity and resilience in the face of climate change d. Science shall be integrated into management decisions concerning NLCS components in order to enhance land and resource stewardship and promote greater understanding of lands and resources through research and education. . . . f. The NLCS shall recognize the importance of a diversity of viewpoints when considering management options. Accordingly, the NLCS shall be managed from an interdisciplinary perspective. In so

doing, the NLCS shall draw upon the expertise of specialists throughout the BLM, in coordination with the tribes, other Federal, state, and local government agencies, interested local landowners, adjacent communities, and other public and private interests. When seeking these viewpoints, the NLCS must consider the requirements of the Federal Advisory Committee Act, and any other applicable laws and regulations." SPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27, 2018 Page 5 None of these NLCS policies preclude the establishment of ROW corridors in an NCA, particularly when a ROW corridor would be created to protect ROWs pre-dating the NCA and which are critical to utility service of adjacent cities and towns. Valid existing rights for such ROWs must be respected and protected by BLM as part of the RMP. Further, the DOI's participation as a party to the Pipeline Repair MOU and Early Coordination MOU requires that BLM consider the need to protect access to critical utility corridors (even where such corridors are located in special management areas).

HNRCDC proposes BLM either adopt Alternative C as written or further refine the discussion of livestock grazing in the SPRNCA RMP/EIS to include the following alternative refinements: (1) Provide for the activation of all suspended AUMS in the SPRNCA; (2) Provide for flexibility in managing timing and placement of cattle within allotments; (3) Provide for restoration of rangelands to promote rangeland health and sustainability; (4) Provide for large scale science research on range land restoration; (5) Provide for allotment-scale science research with integrated range management; (6) Provide for reseeding using appropriate grasses, forbs, and shrub species; (7) Provide for watershed development by removal of invading woody species that create risky biological monocultures; (8) Provide for development, improvement and maintenance of water facilities; (9) Provide for fuel reductions to reduce fire danger through livestock grazing; and (10) Provide for the multiple-use aspects of the NCA proclamation i.e. it is not to be managed as a national wilderness.

Wildlife and habitat objectives should include managing for species that were extirpated in historical times by over-hunting, blatant eradication, and by the introduction of cattle and suppression of fire that resulted in recent, drastic habitat changes. These species include pronghorn, aplomado falcon and blacktailed prairie dog. Actions to actively manage for beaver habitat in the river should be considered.

BLM should add detailed management prescriptions for the various RMZs, as suggested below: 1. Primitive - are special non-wilderness backcountry areas that serve quiet non-motorized recreation in a primitive setting where visitors may enjoy a less developed recreational experience. These areas generally have sensitive resources; therefore, non-motorized trails in these areas will have a low to medium density. 2. Backcountry - are lands with wilderness characteristics and other highly sensitive ecological areas where there will be no motorized routes or travel permitted. Evidence of administrative control should be little to none. Non-motorized routes are generally undeveloped, and areas are generally accessed by foot or horseback. 3. Backcountry (motorized) - provide routes or loops designated for motorized recreation. In addition to use of ATVs and motorcycles on roads, special ATV width or single-track motorized trails may be developed or designated for the specific use of these machines. Full size passenger vehicles may be restricted on certain trail segments. Routes in these areas should be designated to support long distance recreational travel, geo caching and sightseeing activities by ATV or motorcycle. Administrative control will be at a moderate level, with trail and route markers and designated parking/staging areas. Density of routes may be medium to high in select areas to form loop experiences. Other non-motorized routes may exist in these zones at low densities. Routes for transportation and access may exist at varying densities as determined by need. 4. Rural (or passage zone) - special areas on the urban interface where the primary activities are non-motorized trail activities, yet there is a need for recreational and passenger

vehicles to travel through to access other zones, internal trail heads, or for administrative purposes. These areas will have a high level of administrative control, including speed limits, and may further restrict vehicle to travel to only passenger vehicles or authorized uses. These areas are highly visible and serve a variety of non-motorized experiences at medium to high densities often while protecting special resources. Emphasis in these zones is on highly developed, well planned and designed non-motorized trail systems. The density of motorized use routes would be very low. Developing and differentiating trails for separate user groups are among the necessary inclusions to protect recreation resources and avoid conflict, consistent with the agency's regulations. BLM's regulations relating to management of off-road vehicles acknowledge the need to address the manner in which motorized recreation can prohibit other experiences, requiring that both areas and routes for off-road vehicles be located to "minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors." 43 C.F.R. § 8342.1.

BLM should set indicators and thresholds for change in RMPs that describe and analyze when an RMP should be adjusted. This will not only create more dynamic and adaptable management plans, but also help create more efficiency in future adjustments to management plans since the agency should be allowed to tier to the analysis already completed. To be meaningful, these triggers should be specific, measurable and enforceable for when a change in management may be necessary.

Rather than adopt the preferred alternative, BLM should stick to a management plan like the one currently in place, allowing non-hunters the opportunity to avoid conflict with hunters completely by restricting use of firearms in an area of the backcountry and primitive RMZs. DRMP Fig 2-23, A-24. Thus, opportunities for conflict would be minimized and opportunities for solitude would increase, furthering a primary purpose of the primitive and backcountry RMZs.

Management prescriptions can and should be more specifically incorporated for important wildlife movement corridors in the RMP. Prescriptions should include: * Right-of-way exclusion areas. * Route density standards that will be applied to the travel network to reduce habitat fragmentation. (Taos RMP at 13). * Reclamation of redundant roads or roads that no longer serve their intended purpose to achieve road density objectives and reduce habitat fragmentation, while maintaining road network connectivity. (Taos RMP at 79). * Roads or highways crossing public lands would be designed to facilitate movement of wildlife to reduce mortality of wildlife from vehicle collisions. (Lower Sonoran RMP). * Maintenance or expansion of existing roads would incorporate measures to maintain or restore wildlife habitat connectivity and would incorporate, where appropriate, wildlife underpasses or overpasses. (Lower Sonoran RMP). * No additional fences would be constructed in the migratory corridors except to enhance the viability of big game migration (Pinedale RMP-Trapper's Point ACEC at 2-155).

Because of the SPRNCA's unique importance for biodiversity in the region, BLM should follow the mandate of its enabling legislation by managing the SPRNCA to ensure net increase of habitat and SSP populations, and to avoid actions, such as expanding grazing and motorized hunting that would be additional stressors on at-risk species.

BLM should consider a variety of management regimes for lands identified as possessing wilderness characteristics but not prioritized for protection to allow for management of other multiple uses in conjunction with maintaining wilderness characteristics. This could be done thorough a tiered

management approach as discussed above. BLM should use this approach and managing accordingly, closing areas adjacent to LWCs to uses, such as off-road travel, that would diminish their wilderness values.

BLM should prioritize cultural resource inventories in the SPRNCA and commit to completing Class III surveys for all types of cultural resources within priority areas in the NCA within a reasonable timeframe.

As previously highlighted, BLM has an obligation to protect, preserve, and enhance the SPRNCA. As such, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. Just as important, are the placements of different RMZs. For instance, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities. By providing separate recreation areas and trails for specific activities, visitors would be able to engage in their preferred activities without worry of conflict between different uses. This would keep visitors happy and safe while minimizing the impact on the landscape. Finally, separate areas for different activities would allow for easier management within the SPRNCA because visitors would have a better understanding of what activities were being given priority in certain areas.

Moreover, considering foreseeable cumulative impacts-namely that development, including increased water withdrawal, outside the SPRNCA will over time create a net loss of habitat for many SSPs, it is more important that within the SPRNCA the BLM's goal should be no net loss or degradation of habitat, and indeed should be net increase and improvement. The Management Situation Report notes because there are "few major north-south river corridors remaining for migration in the Southwest, increased human activity outside of the SPRNCA creates a state where the habitat within the SPRNCA becomes even more valuable for migrating and nesting birds."

BLM should ensure that scenic value is a resource that is conserved and must establish clear management direction describing areas inventoried and possessing high scenic importance with clearly defined objectives that limit surface disturbance within important viewsheds, including: 1. The riparian corridor of the SPRNCA. 2. Lands managed to preserve their natural values, such as primitive recreation areas and lands with wilderness characteristics, should be managed as Class I to "preserve the existing character of the landscape." 3. Lands within popular and easily accessible vantage points should be managed for visual resources, such as VRM Class II to "retain the existing character of the landscape," including clear provisions dealing with right-of-way authorizations and other human disturbance. 4. ACECs and other special management designations and prescriptions should be used to protect scenic landscapes and lookout points within the resource area with stipulations specifically addressing and managing human development impacts, including VRM Class I to "preserve the existing character of the landscape" or VRM Class II to "retain the existing character of the landscape" as appropriate.

The following is a proposed framework for adaptive management strategy. The agency should provide all the following components to make the adaptive management plan meaningful and enforceable: * Set specific management goals and objectives, such as biological goals and objectives to show the targeted management. * Identify potential threats to management goals and objectives as well as potential stressors to the system. * Set specific, enforceable and measurable indicators to gauge progress towards goals with timelines for implementation. Adjust management as appropriate when triggers are hit. * Develop a monitoring plan with monitoring protocols, timelines for completing monitoring, and reports on the findings and conclusions. * Provide a range of alternative management scenarios as well as a comprehensive

process for additional consultation on adaptive management options when triggers are hit. * Provide for public input, including providing information during data collection, setting triggers, and when change might be necessary to respond to triggers being hit or other unforeseeable factors.

BLM should adopt Alternative D's proposal to nominate all historic properties within ACECs for listing on the NRHP and access historic structures for placing them on the priority heritage asset list.

In line with SPRNCA's enabling legislation, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. BLM should be intentional in the placement of RMZs. For example, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities.

Under the pressures of global change, it must be acknowledged that many objects of conservation are at risk wherever they are found, and the traditional natural resource management paradigm of modifying ecosystems to increase yield must change to a new paradigm of managing wildland ecosystems to minimize loss -specifically loss of the ecosystem composition, structure, and function that yields the benefits we seek from wildlands. Natural resource management must change from a paradigm of maximum sustained yield to a paradigm of risk management. Although there is no widely-accepted method of assessing and managing risk, we recommend breaking risk down into its component parts - vulnerability, exposure, and uncertainty. In the attached recommended approach to addressing climate change in land use planning (Attachment A), we recommend an approach for assessing risk in the planning area as well as an approach for management of that risk for BLM to comply with its legal obligations under laws and regulations.

We recommend using the Lower Sonoran Field Office/Sonoran Desert National Monument example to manage and protect wildlife corridors in the SPRNCA RMP.

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routes may be medium to high in select areas to form loop experiences. Other non-motorized routes may exist in these zones at low densities. Routes for transportation and access may exist at varying densities as determined by need. 4. Rural (or passage zone) - special areas on the urban interface where the primary activities are non-motorized trail activities, yet there is a need for recreational and passenger vehicles to travel through to access other zones, internal trail heads, or for administrative purposes. These areas will have a high level of administrative control, including speed limits, and may further restrict vehicle to travel to only passenger vehicles or authorized uses. These areas are highly visible and serve a variety of non-motorized experiences at medium to high densities often while protecting special resources. Emphasis in these zones is on highly developed, well planned and designed non-motorized trail systems. The density of motorized use routes would be very low. Developing and differentiating trails for separate user groups are among the necessary inclusions to protect recreation resources and avoid conflict, consistent with the agency's regulations. BLM's regulations relating to management of off-road vehicles acknowledge the need to address the manner in which motorized recreation can prohibit other experiences, requiring that both areas and routes for off-road vehicles be located to "minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors." 43 C.F.R. § 8342.1.

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Rather than adopt the preferred alternative, BLM should stick to a management plan like the one currently in place, allowing non-hunters the opportunity to avoid conflict with hunters completely by restricting use of firearms in an area of the backcountry and primitive RMZs. DRMP Fig 2-23, A-24. Thus, opportunities for conflict would be minimized and opportunities for solitude would increase, furthering a primary purpose of the primitive and backcountry RMZs.

With regard to grazing availability in Alternatives B and C, I believe an added layer of protection should be considered. In both alternatives recommend that the proposed new grazing allotments reflect a responsible and realistic consideration of existing land health and available forage. Within the upland acreage available for grazing (26,450 acres), consider making the initial allotment boundaries and acreage subject to application of the BLM Rangeland Health Standards and Guidelines for Grazing Administration. In other words, let land health standards drive the initial location and extent of new grazing allotments. Plus the new allotments should be designed to facilitate construction of fences that will prevent cattle from trespassing in the riparian area. Where lands in the upland acreage do not currently meet land health standards, subsequent decisions on grazing allotments could be made after vegetation treatments are conducted and native grasses are restored (adaptive management). I believe that responsible grazing can benefit the SPRNCA by the combined efforts of permittees and BLM to improve land health, grass cover, and watershed function. This was made very clear by the March 21, 2014 field trip on range management. This field trip showed that efforts to eliminate invasive whitethorn acacia through herbicide treatments and the resulting restoration of native grasses were very beneficial to the watershed and land health.

On page 2-44, it appears that the SPRNCA is largely open to the discharge of firearms for regulated hunting in Alternatives B and C (with minor exceptions). I believe that additional restrictions may be needed to protect public safety. For example, while regulations ban the discharge of firearms within a quarter mile of developed facilities, I believe BLM should add restrictions to ban firearm discharge within

a reasonable distance from trails or other areas commonly used by visitors (such as the river corridor for birdwatching). In addition, I recommend that BLM coordinate with the Arizona Game and Fish Department to determine whether long guns (rifles) should be banned due to the added risk they pose to visitors. Hunting for small game with shotguns would seem to be more appropriate for the SPRNCA than hunting for big game with rifles.

I suggested in a previous comment letter dated September 27, 2013 that BLM consider designating Back Country Byways within the SPRNCA along existing roads. These would enable visitors to access interior portions of the SPRNCA for hiking, bird watching, picnicking, etc. and enhance visitor enjoyment of the area. As an example, visitors to the Gila Box Riparian National Conservation Area are able to enjoy touring the Black Hills Back Country Byway that is located in the uplands above the NCA. In the existing 1989 SPRNCA RMP, the Preferred Alternative included a planned action to rebuild the San Rafael del Valle road to use as a motorized interpretive route. I believe that action (or designation as a backcountry byway) should be considered again in this new RMP. In addition, there is a section of the powerline road that goes north-south along the east boundary of the SPRNCA between Charleston Road and Hwy 82 that should be considered for use as a backcountry byway. While this road is more primitive, it offers great views of the area and provides visitors a more remote experience for exploring the backcountry in the uplands east of the riparian zone. It also offers improved opportunities for loop hikes in conjunction with the San Pedro Trail. I suggest this route also be considered for designation as a backcountry byway or motorized interpretive route in the new RMP. Also, please bear in mind the concerns expressed by those who are elderly or disabled, i.e., the RMP should consider and support the need of those who must rely on motorized vehicles to access and visit their favorite destinations within the SPRNCA. So, in summary, recommend you include an additional management action for Alternatives B and C (and also in the Transportation and Access section as well) as follows: Designate backcountry byways on existing roads (San Rafael del Valle road and the powerline road at east boundary between Charleston Road and Hwy 82).

We suggested in previous comment letters dated September 22, 2013 and September 8, 2014 that BLM consider designating Back Country Byways within the SPRNCA along existing roads. These would enable visitors to access interior portions of the SPRNCA for hiking, bird watching, picnicking, etc. and enhance visitor enjoyment of the area. As an example, visitors to the Gila Box Riparian National Conservation Area are able to enjoy touring the Black Hills Back Country Byway that is located in the uplands above the NCA. In the existing 1989 SPRNCA RMP, the Preferred Alternative included a planned action to rebuild the San Rafael del Valle road to use as a motorized interpretive route. We believe that action (or designation as a backcountry byway) should be considered again in this new RMP. In addition, there is a section of the powerline road that goes north-south along the east boundary of the SPRNCA between Charleston Road and Hwy 82 that should be considered for use as a backcountry byway. While this road is more primitive, it offers great views of the area and provides visitors a more remote experience for exploring the backcountry in the uplands east of the riparian zone. It also offers improved opportunities for loop hikes in conjunction with the San Pedro Trail. We suggest this route also be considered for designation as a backcountry byway or motorized interpretive route in the new RMP. Also, please bear in mind the concerns expressed by those who are elderly or disabled, i.e., the RMP should consider and support the need of those who must rely on motorized vehicles to access and visit their favorite destinations within the SPRNCA. So, in summary, recommend you include an additional management action for Alternatives B and C as follows: Designate backcountry byways on existing roads (e.g., San Rafael del Valle road and the powerline road at east boundary between Charleston Road and Hwy 82).

RE: Planned Trail RFD Scenario (SPRNCA DRMP Vol I, page 3-2). We strongly support the retention and enhancement/maintenance of all existing trails and the planning for at least (not just) four more miles of trails. Public Law 100-696 is the top-level guidance for the SPRNCA. Section 460xx, Establishment, lists the protection of recreational resources, which include trails, as we understand it. Properly sighted, designed, constructed and maintained trails would not negatively affect the riparian area and the other specific aspects listed in Public Law 100-696, Section 460xx, Establishment. In fact, trails would enhance the protection of the riparian area by concentrating foot traffic in specifically planned areas and thus minimize social trails created by individuals that go everywhere and destroy the landscape. I would also like to point out that the railroad bed that goes through the SPRNCA could at some time in the future be converted into a trail, for example (<https://www.railstotrails.org/>). That is why we recommend that the wording of the Planned Trail RFD Scenario be changed to "At least four miles (1.2 acres) of planned trails are assumed under each scenario...." and that every other area in the document that discusses this topic be adjusted to support this change. Even better, we recommend you include an additional management action for Alternatives B and C as follows: Develop a route for the Sun Corridor Trail through the SPRNCA using existing trails and new trail segments. (Please refer to information provided by Steve Anderson of Pima County Natural Resources, Parks, and Recreation to Francisco Mendoza; also see: <http://www.suncorridortrail.org/>). The exact trail alignment could be identified in an activity level implementation plan. This is a regional non-motorized trail that would greatly enhance recreation in the SPRNCA.

RE: 3.5.2 Public Health & Safety (SPRNCA DRMP Vol I, page 3-146). It was mentioned at the first Sierra Vista public meeting by BLM Gila District Manager Feldhausen that weapon hunting to include bows would follow the state guidance and not be allowed within a quarter mile of structures. That way there was consistency across governmental areas within the state. This is unacceptable from a safety and economic standpoint. According to an AZ Fish & Game representative, "structures" does not include trails. This means hunting could occur on or very near trails and thus greatly increase the chance of trail user injury or death. (Ranchers would also not like this as it endangers their cattle outside the SPRNCA.) In addition, because of the safety issues, there would be less local and non-local visitors, and this negative impact could outweigh any hunting fees collected by the state or BLM. If hunting is allowed, recommend that it only be permitted in areas at least a quarter miles from any structure, parking area, trail or other location where non-hunters normally might be located (such as the river corridor for birdwatching). These areas would have to be large enough to hunt in and be clearly identified on maps and on the ground with restrictions on how many hunters could use them during a hunting season. Areas where hunting is not allowed should also be clearly identified on maps and on the ground. In addition, we recommend that BLM coordinate with the Arizona Game and Fish Department to determine whether long guns (rifles) should be banned due to the added risk they pose to visitors. Hunting for small game with shotguns would seem to be more appropriate for the SPRNCA than hunting for bigger game with rifles.

The Planning Department recommends that the entire management area be closed to hunting. Since the management area is only 2.6 miles in width, user groups would be concentrated into a relatively small recreational area. Such concentration along the San Pedro could create potential safety problems/conflicts between hunters and all other user groups. Designation/posting of hunting areas removed from locations specifically dedicated for developed or dispersed recreation would not prevent hunters from inadvertently entering these high-usage areas. Additionally, it is felt that the BLM does not possess the manpower to intensively manage all proposed hunting areas to prevent such user conflicts from occurring.

NO NUMBER. ES5 Table ES-2 Alternatives need to be modified to include fire use over more acres, instead of herbicide use, which kills all dicots and appears to create monocultures of Lehmann lovegrass in other areas.

The grazing already taking place should continue to be monitored, and the planning surrounding how to further manage the entirety of the SPRNCA land should be easily adaptive to change in climate, water use, and potential geographical changes.

If hunting is expanded, I would recommend at a minimum that these areas be further protected: ?From one-half mile north of the San Pedro House south for two miles, the width of the SPRNCA. ?Fairbank, two miles north from the highway, the width of the SPRNCA. ?The Millville - Charleston Bridge - Charleston townsite area. From one-half mile south of the historic bridge for two miles north, width of the SPRNCA. ?The Hereford Bridge trailhead - at least a mile north and south, width of the SPRNCA. ?The Palominas trailhead - from the highway at least a mile south, width of the SPRNCA. ?All of the other exclusion zones should be extended to a one-half mile radius.

I would suggest adding another category: infrequently visited. This differentiates between sites that are open to public and may be visited from those that are specifically intended for public use. Using these four criteria, I would redo your categorization as follows: i. Scientific. What is there now is, if vague, appropriate. I believe there are other sites that should be included here, but I do not have access to the ASM designations of the sites listed. Some I am aware of that should be listed here (if they are not): Quiburi; Santa Cruz; Fairbank (prehistoric component); Walnut Gulch; Pot Town; the large archaic site near Fairbank; Gaybanipitea; the multiple rock art sites. ii. Experimental. As is. You might want to add the Greene Ranch, Fairbank, and the Escapule Clanton Ranch site, where there are also adobe walls. iii. Infrequently visited. As I envision it, these are sites where public visitation does occur on an infrequent, unorganized basis. Sites I would include here: Contention; Contention railway station; Drew's Station; Little Boquillas Ranch HQ; Boston Mill; Emory City; Charleston; Charleston Cemetery; other Clanton Ranch (Curry Draw); Brunckow's Cabin and associated mining district; both Greene ranch sites; Ochoaville; Lewis Springs; border corrals; Gaybanipitea; Santa Cruz; Quiburi. These sites should be monitored for vandalism and general state and stabilized when their structural integrity is threatened. I do not believe that Brunckow's Cabin, Hereford, Greene ranches, or Lewis Springs should become sites earmarked for visitation. There are artifacts and fragile structures at these sites. iv. Public Use. These are the sites set aside for visitation, with trails and interpretive displays. These are Terrenate, Fairbank, Fairbank Cemetery, Grand Central Mill, Millville, Millville rock art area, Clanton Ranch, Murray Springs, San Pedro House, and the Lehner Site. These sites should be maintained for visitation, with a maintained trail, frequent patrols to monitor the sites, parking, and signage. Clanton Ranch and Lehner are lacking some aspects of this.

Develop avian monitoring metrics that support the avian models developed by Brand, et al (2010 and 2011) linking avian abundance for key species to depth to groundwater and surface water flows.

Use beavers as a natural technique for restoring the stream channel and increasing bank recharge where appropriate.

Consider formally designating Gray Hawk, Yellow-billed Cuckoo, Common Yellowthroat, and Yellow Warbler as indicator species for the cottonwood/willow gallery forest habitats. Densities of cuckoos in prime cottonwood-willow riparian habitat varied from 3.8 individuals per 40 ha in the summer of 1986 to

6.5 individuals per 40ha in the summer of 1987 (Laymon and Halterman. 1989). Surveys conducted between 2001 and 2006 on the San Pedro Riparian National Conservation Area, Arizona found an estimated 60-100 pairs of cuckoos (M. Halterman unpublished data).

Establish avian surveys protocols that will inform the DSS modeling. Identified bird species that are sensitive to changes in available surface water and indirectly the depth to groundwater include Western yellow-billed cuckoo, yellow warbler, lesser goldfinch, song sparrow, and common yellowthroat. Consider other species based upon professional recommendations and research. Kirkpatrick (2008) detected a positive association between total bird relative abundance and the presence and extent of surface water =50 m from bird survey points. Kirkpatrick (2008) detected positive associations between surface water and relative abundance for 4 bird species: Black Phoebe, Vermillion Flycatcher, Northern Beardless Tyrannulet, and White-winged Dove. Yellow-billed Cuckoo, Great Blue Heron, Mallard (Mexican type), Killdeer, and Black Phoebe respond strongly to both vegetation and surface water availability (Brand et al., 2008). Common Yellowthroats are highly associated with cottonwood/willow vegetative structure adjacent to surface water. (Brand, et al., 2011).

In a November 10, 2014 letter (AGFD 2014) regarding SPRNCA travel management scoping, the Department requested motorized routes for public use along the powerline road between Highway 82 and Charleston Road, which is reflected as "Backcountry (Motorized)" in Figure 2-20 Recreation Alternative C. The Department appreciates this consideration in both Alternatives Band C. The Department also requested motorized routes traveling westward off of the powerline road as shown in the figure included with the 2014 letter and shown as administrative vehicle routes on Figure 3-18, Page A-60 of Appendix A in the Draft RMPIEIS. Additionally, the Department requested motorized routes be designated on the existing inventoried administrative vehicle routes (Figure 3-18, Page A-61, Appendix A) traveling south off of Charleston Road along Brunkow Road, continuing into the SPRNCA. Allowing motorized routes in these two areas would provide the recreating public with improved access into the SPRNCA and to the San Pedro River. Alternative B would likely result in conflict between recreationists seeking solitude and quiet recreational experiences along the river, and recreationists seeking motorized access directly to and along much of the river.

Management prescriptions can and should be more specifically incorporated for important wildlife movement corridors in the RMP. Prescriptions should include: * Right-of-way exclusion areas. * Route density standards that will be applied to the travel network to reduce habitat fragmentation. (Taos RMP at 13). * Reclamation of redundant roads or roads that no longer serve their intended purpose to achieve road density objectives and reduce habitat fragmentation, while maintaining road network connectivity. (Taos RMP at 79). * Roads or highways crossing public lands would be designed to facilitate movement of wildlife to reduce mortality of wildlife from vehicle collisions. (Lower Sonoran RMP). * Maintenance or expansion of existing roads would incorporate measures to maintain or restore wildlife habitat connectivity and would incorporate, where appropriate, wildlife underpasses or overpasses. (Lower Sonoran RMP). * No additional fences would be constructed in the migratory corridors except to enhance the viability of big game migration (Pinedale RMP-Trapper's Point ACEC at 2-155).

Because of the SPRNCA's unique importance for biodiversity in the region, BLM should follow the mandate of its enabling legislation by managing the SPRNCA to ensure net increase of habitat and SSP populations, and to avoid actions, such as expanding grazing and motorized hunting that would be additional stressors on at-risk species.

BLM should consider a variety of management regimes for lands identified as possessing wilderness characteristics but not prioritized for protection to allow for management of other multiple uses in conjunction with maintaining wilderness characteristics. This could be done through a tiered management approach as discussed above. BLM should use this approach and manage accordingly, closing areas adjacent to LWCs to uses, such as off-road travel, that would diminish their wilderness values.

Rather than adopt the preferred alternative, BLM should stick to a management plan like the one currently in place, allowing non-hunters the opportunity to avoid conflict with hunters completely by restricting use of firearms in an area of the backcountry and primitive RMZs. DRMP Fig 2-23, A-24. Thus, opportunities for conflict would be minimized and opportunities for solitude would increase, furthering a primary purpose of the primitive and backcountry RMZs.

BLM should add detailed management prescriptions for the various RMZs, as suggested below:

1. Primitive - are special non-wilderness backcountry areas that serve quiet non-motorized recreation in a primitive setting where visitors may enjoy a less developed recreational experience. These areas generally have sensitive resources; therefore, non-motorized trails in these areas will have a low to medium density.
2. Backcountry - are lands with wilderness characteristics and other highly sensitive ecological areas where there will be no motorized routes or travel permitted. Evidence of administrative control should be little to none. Non-motorized routes are generally undeveloped, and areas are generally accessed by foot or horseback.
3. Backcountry (motorized) - provide routes or loops designated for motorized recreation. In addition to use of ATVs and motorcycles on roads, special ATV width or single-track motorized trails may be developed or designated for the specific use of these machines. Full size passenger vehicles may be restricted on certain trail segments. Routes in these areas should be designated to support long distance recreational travel, geo caching and sightseeing activities by ATV or motorcycle. Administrative control will be at a moderate level, with trail and route markers and designated parking/staging areas. Density of routes may be medium to high in select areas to form loop experiences. Other non-motorized routes may exist in these zones at low densities. Routes for transportation and access may exist at varying densities as determined by need.
4. Rural (or passage zone) - special areas on the urban interface where the primary activities are non-motorized trail activities, yet there is a need for recreational and passenger vehicles to travel through to access other zones, internal trail heads, or for administrative purposes. These areas will have a high level of administrative control, including speed limits, and may further restrict vehicle to travel to only passenger vehicles or authorized uses. These areas are highly visible and serve a variety of non-motorized experiences at medium to high densities often while protecting special resources. Emphasis in these zones is on highly developed, well planned and designed non-motorized trail systems. The density of motorized use routes would be very low. Developing and differentiating trails for separate user groups are among the necessary inclusions to protect recreation resources and avoid conflict, consistent with the agency's regulations. BLM's regulations relating to management of off-road vehicles acknowledge the need to address the manner in which motorized recreation can prohibit other experiences, requiring that both areas and routes for off-road vehicles be located to "minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors." 43 C.F.R. § 8342.1.

BLM should set indicators and thresholds for change in RMPs that describe and analyze when an RMP should be adjusted. This will not only create more dynamic and adaptable management plans, but also help create more efficiency in future adjustments to management plans since the agency should be allowed to

tier to the analysis already completed. To be meaningful, these triggers should be specific, measurable and enforceable for when a change in management may be necessary.

BLM should prioritize cultural resource inventories in the SPRNCA and commit to completing Class III surveys for all types of cultural resources within priority areas in the NCA within a reasonable timeframe.

As previously highlighted, BLM has an obligation to protect, preserve, and enhance the SPRNCA. As such, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. Just as important, are the placements of different RMZs. For instance, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities. By providing separate recreation areas and trails for specific activities, visitors would be able to engage in their preferred activities without worry of conflict between different uses. This would keep visitors happy and safe while minimizing the impact on the landscape. Finally, separate areas for different activities would allow for easier management within the SPRNCA because visitors would have a better understanding of what activities were being given priority in certain areas.

Moreover, considering foreseeable cumulative impacts-namely that development, including increased water withdrawal, outside the SPRNCA will over time create a net loss of habitat for many SSPs, it is more important that within the SPRNCA the BLM's goal should be no net loss or degradation of habitat, and indeed should be net increase and improvement. The Management Situation Report notes because there are "few major north-south river corridors remaining for migration in the Southwest, increased human activity outside of the SPRNCA creates a state where the habitat within the SPRNCA becomes even more valuable for migrating and nesting birds."

BLM should ensure that scenic value is a resource that is conserved and must establish clear management direction describing areas inventoried and possessing high scenic importance with clearly defined objectives that limit surface disturbance within important viewsheds, including: 1. The riparian corridor of the SPRNCA. 2. Lands managed to preserve their natural values, such as primitive recreation areas and lands with wilderness characteristics, should be managed as Class I to "preserve the existing character of the landscape." 3. Lands within popular and easily accessible vantage points should be managed for visual resources, such as VRM Class II to "retain the existing character of the landscape," including clear provisions dealing with right-of-way authorizations and other human disturbance. 4. ACECs and other special management designations and prescriptions should be used to protect scenic landscapes and lookout points within the resource area with stipulations specifically addressing and managing human development impacts, including VRM Class I to "preserve the existing character of the landscape" or VRM Class II to "retain the existing character of the landscape" as appropriate.

The following is a proposed framework for adaptive management strategy. The agency should provide all the following components to make the adaptive management plan meaningful and enforceable: * Set specific management goals and objectives, such as biological goals and objectives to show the targeted management. * Identify potential threats to management goals and objectives as well as potential stressors to the system. * Set specific, enforceable and measurable indicators to gauge progress towards goals with timelines for implementation. Adjust management as appropriate when triggers are hit. * Develop a monitoring plan with monitoring protocols, timelines for completing monitoring, and reports on the findings and conclusions. * Provide a range of alternative management scenarios as well as a comprehensive

process for additional consultation on adaptive management options when triggers are hit. * Provide for public input, including providing information during data collection, setting triggers, and when change might be necessary to respond to triggers being hit or other unforeseeable factors.

BLM should adopt Alternative D's proposal to nominate all historic properties within ACECs for listing on the NRHP and access historic structures for placing them on the priority heritage asset list.

In line with SPRNCA's enabling legislation, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. BLM should be intentional in the placement of RMZs. For example, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities.

Under the pressures of global change, it must be acknowledged that many objects of conservation are at risk wherever they are found, and the traditional natural resource management paradigm of modifying ecosystems to increase yield must change to a new paradigm of managing wildland ecosystems to minimize loss -specifically loss of the ecosystem composition, structure, and function that yields the benefits we seek from wildlands. Natural resource management must change from a paradigm of maximum sustained yield to a paradigm of risk management. Although there is no widely-accepted method of assessing and managing risk, we recommend breaking risk down into its component parts - vulnerability, exposure, and uncertainty. In the attached recommended approach to addressing climate change in land use planning (Attachment A), we recommend an approach for assessing risk in the planning area as well as an approach for management of that risk for BLM to comply with its legal obligations under laws and regulations.

We recommend using the Lower Sonoran Field Office/Sonoran Desert National Monument example to manage and protect wildlife corridors in the SPRNCA RMP.

ACEC DESIGNATION: In order to protect and enhance the Saint David Cienega, we recommend adoption of an enlarged (2767 acres) and modified special designation status of the wetland, grasslands, aquatic, riparian, bosque, xeric riparian and surrounding upland habitat in and around the current Saint David Cienega RNA ACEC, as presented in the Draft Resource Management Plan (DRMP), [Table C-3] and [Figure 2-32]. The area of 2767 acres should be designated an ACEC as it meets multiple Relevance Criteria, Importance Criteria, and has a need for Special Management. A holistic, adaptive, science based approach, accounting for as much of the Saint David Cienega and watershed as BLM manages within the SPRNCA should be applied. The area, 2767 acres, are best brought together and managed under a special designation, ACEC, which allows for use of any and all of the best available tools, current and future, active restoration methods may bring to bear, and should receive a special designation, "Saint David Cienega ACEC", managed for the health protection, and enhancement of the flow of spring sources and the surrounding habitat.

In addition to mechanical and other physical treatments, a fire regime should be restored that will enhance habitat restoration and maintain vigorous plant growth. We recommend the BLM initiate research at St. David Cienega to determine what the fire frequency was prior to the 1880s.

FSPR insists that safety prevail over all other considerations and that additional protection is necessary in the high visitation areas of the SPRNCA. We recommend increasing the "Rural" Recreation Management

Zone (RMZ) to a two-mile buffer (adjusting the RMZ shown on Figures 2-20 and 2-21 for Alternatives C and D), and closing the Rural RMZ to hunting, whether using bow and arrow or firearms. We also note that hunting is NOT listed as one of the targeted recreational activities in this RMZ. This RMZ currently represents little more than 5,000 acres in the SPRNCA. Increasing the safety buffer of this RMZ would enhance the visitor experience as well as their safety immensely.

We propose that the following areas with high recreational use be closed to all hunting as an essential safety measure: ? From one-half mile north of Highway 90, the entire width of the SPRNCA, to one-half mile south of Garden Wash on the south. This entire area is heavily used by bird watchers, picnickers, fishermen, families and others. The Friends bring school groups to this area frequently. This extends north of the highway along the river and south as far as Black Phoebe Pond. This is the core recreational area in the SPRNCA, centered on the San Pedro House. There is no rationale we can imagine that would place hunting in this area as a higher priority over the safety of visitors. ? From Highway 82 north to one-quarter mile north of the Terrenate trailhead, encompassing the width of the SPRNCA on both sides of the river. As with the San Pedro House, this area has heavy visitation. The Fairbank Loop Trail, Terrenate Trail, and other trails near Fairbank traverse this area. The Friends conduct tours in this area at times that coincide with hunting seasons. Again, there is no rationale we can imagine that would place hunting in this area as a higher priority over the safety of visitors. ? Near the Hereford Bridge trailhead, from the Del Valle Road on the west to the railroad grade on the east, from one-half mile south of the Hereford Road Bridge to one mile north of the bridge. This is a popular birdwatching and hiking destination. There is also a private residence, an in-holding south of the bridge. ? At the Palominas trailhead, from Highway 92 south to one-quarter mile south of the parking area, the entire width of the SPRNCA on both sides of the river. As above, this is a heavily used area where visitation is encouraged. Visitors should not have to worry about being shot while hiking, birdwatching, etc.

The riparian vegetation associated with these tributary washes include cottonwood/willow associations and sacaton grasslands that should be protected from cattle to avoid soil compaction and erosion. This represents yet another argument for excluding these washes from areas open to grazing. Such areas along washes would not represent a significant amount of acreage, but would be of disproportionate value to wildlife that use these washes as natural movement corridors.

Since fencing could impede the movement of wildlife along these corridors to and from the river, only wildlife-friendly fencing should be used.

Besides concerns for safety, the discharge of firearms, in those areas where permitted by the RMP, should be closed seasonally to avoid harming threatened and endangered wildlife during the breeding season. Take of such species is contrary to the purpose of the SPRNCA. Moreover, the sound of gunfire also can disturb wildlife, causing nest abandonment. This disturbance is shared with humans who will flee areas at the sound of weapons fire - this is not compatible with encouraging multiple uses of the SPRNCA and ruins the visitor experience of equestrians and many other outdoor enthusiasts.

The draft RMP also fails to protect tributary washes like Garden, Hunter and Ramsey/Carr. Besides prohibiting cattle grazing in and near the main stem river channel itself, these washes should be excluded from areas open to grazing too. The presence of mountain lion and black bear in the SPRNCA attests to the value of washes as wildlife corridors between the river and surrounding mountains.

Management prescriptions can and should be more specifically incorporated for important wildlife movement corridors in the RMP. Prescriptions should include: * Right-of-way exclusion areas. * Route density standards that will be applied to the travel network to reduce habitat fragmentation. (Taos RMP at 13). * Reclamation of redundant roads or roads that no longer serve their intended purpose to achieve road density objectives and reduce habitat fragmentation, while maintaining road network connectivity. (Taos RMP at 79). * Roads or highways crossing public lands would be designed to facilitate movement of wildlife to reduce mortality of wildlife from vehicle collisions. (Lower Sonoran RMP). * Maintenance or expansion of existing roads would incorporate measures to maintain or restore wildlife habitat connectivity and would incorporate, where appropriate, wildlife underpasses or overpasses. (Lower Sonoran RMP). * No additional fences would be constructed in the migratory corridors except to enhance the viability of big game migration (Pinedale RMP-Trapper's Point ACEC at 2-155).

Moreover, considering foreseeable cumulative impacts-namely that development, including increased water withdrawal, outside the SPRNCA will over time create a net loss of habitat for many SSPs, it is more important that within the SPRNCA the BLM's goal should be no net loss or degradation of habitat, and indeed should be net increase and improvement. The Management Situation Report notes because there are "few major north-south river corridors remaining for migration in the Southwest, increased human activity outside of the SPRNCA creates a state where the habitat within the SPRNCA becomes even more valuable for migrating and nesting birds."

Because of the SPRNCA's unique importance for biodiversity in the region, BLM should follow the mandate of its enabling legislation by managing the SPRNCA to ensure net increase of habitat and SSP populations, and to avoid actions, such as expanding grazing and motorized hunting that would be additional stressors on at-risk species.

Rather than adopt the preferred alternative, BLM should stick to a management plan like the one currently in place, allowing non-hunters the opportunity to avoid conflict with hunters completely by restricting use of firearms in an area of the backcountry and primitive RMZs. DRMP Fig 2-23, A-24. Thus, opportunities for conflict would be minimized and opportunities for solitude would increase, furthering a primary purpose of the primitive and backcountry RMZs.

BLM should add detailed management prescriptions for the various RMZs, as suggested below: 1. Primitive - are special non-wilderness backcountry areas that serve quiet non-motorized recreation in a primitive setting where visitors may enjoy a less developed recreational experience. These areas generally have sensitive resources; therefore, non-motorized trails in these areas will have a low to medium density. 2. Backcountry - are lands with wilderness characteristics and other highly sensitive ecological areas where there will be no motorized routes or travel permitted. Evidence of administrative control should be little to none. Non-motorized routes are generally undeveloped, and areas are generally accessed by foot or horseback. 3. Backcountry (motorized) - provide routes or loops designated for motorized recreation. In addition to use of ATVs and motorcycles on roads, special ATV width or single-track motorized trails may be developed or designated for the specific use of these machines. Full size passenger vehicles may be restricted on certain trail segments. Routes in these areas should be designated to support long distance recreational travel, geo caching and sightseeing activities by ATV or motorcycle. Administrative control will be at a moderate level, with trail and route markers and designated parking/staging areas. Density of routes may be medium to high in select areas to form loop experiences. Other non-motorized routes may exist in these zones at low densities. Routes for transportation and access may exist at varying

densities as determined by need. 4. Rural (or passage zone) - special areas on the urban interface where the primary activities are non-motorized trail activities, yet there is a need for recreational and passenger vehicles to travel through to access other zones, internal trail heads, or for administrative purposes. These areas will have a high level of administrative control, including speed limits, and may further restrict vehicle to travel to only passenger vehicles or authorized uses. These areas are highly visible and serve a variety of non-motorized experiences at medium to high densities often while protecting special resources. Emphasis in these zones is on highly developed, well planned and designed non-motorized trail systems. The density of motorized use routes would be very low. Developing and differentiating trails for separate user groups are among the necessary inclusions to protect recreation resources and avoid conflict, consistent with the agency's regulations. BLM's regulations relating to management of off-road vehicles acknowledge the need to address the manner in which motorized recreation can prohibit other experiences, requiring that both areas and routes for off-road vehicles be located to "minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors." 43 C.F.R. § 8342.1.

Welch Alternatives - Other BLM should set indicators and thresholds for change in RMPs that describe and analyze when an RMP should be adjusted. This will not only create more dynamic and adaptable management plans, but also help create more efficiency in future adjustments to management plans since the agency should be allowed to tier to the analysis already completed. To be meaningful, these triggers should be specific, measurable and enforceable for when a change in management may be necessary.

BLM should prioritize cultural resource inventories in the SPRNCA and commit to completing Class III surveys for all types of cultural resources within priority areas in the NCA within a reasonable timeframe.

As previously highlighted, BLM has an obligation to protect, preserve, and enhance the SPRNCA. As such, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. Just as important, are the placements of different RMZs. For instance, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities. By providing separate recreation areas and trails for specific activities, visitors would be able to engage in their preferred activities without worry of conflict between different uses. This would keep visitors happy and safe while minimizing the impact on the landscape. Finally, separate areas for different activities would allow for easier management within the SPRNCA because visitors would have a better understanding of what activities were being given priority in certain areas.

The following is a proposed framework for adaptive management strategy. The agency should provide all the following components to make the adaptive management plan meaningful and enforceable: * Set specific management goals and objectives, such as biological goals and objectives to show the targeted management. * Identify potential threats to management goals and objectives as well as potential stressors to the system. * Set specific, enforceable and measurable indicators to gauge progress towards goals with timelines for implementation. Adjust management as appropriate when triggers are hit. * Develop a monitoring plan with monitoring protocols, timelines for completing monitoring, and reports on the findings and conclusions. * Provide a range of alternative management scenarios as well as a comprehensive process for additional consultation on adaptive management options when triggers are hit. * Provide for

public input, including providing information during data collection, setting triggers, and when change might be necessary to respond to triggers being hit or other unforeseeable factors.

BLM should consider a variety of management regimes for lands identified as possessing wilderness characteristics but not prioritized for protection to allow for management of other multiple uses in conjunction with maintaining wilderness characteristics. This could be done thorough a tiered management approach as discussed above. BLM should use this approach and managing accordingly, closing areas adjacent to LWCs to uses, such as off-road travel, that would diminish their wilderness values.

Under the pressures of global change, it must be acknowledged that many objects of conservation are at risk wherever they are found, and the traditional natural resource management paradigm of modifying ecosystems to increase yield must change to a new paradigm of managing wildland ecosystems to minimize loss -specifically loss of the ecosystem composition, structure, and function that yields the benefits we seek from wildlands. Natural resource management must change from a paradigm of maximum sustained yield to a paradigm of risk management. Although there is no widely-accepted method of assessing and managing risk, we recommend breaking risk down into its component parts - vulnerability, exposure, and uncertainty. In the attached recommended approach to addressing climate change in land use planning (Attachment A), we recommend an approach for assessing risk in the planning area as well as an approach for management of that risk for BLM to comply with its legal obligations under laws and regulations.

Regardless of which alternative is ultimately selected, the final RMP should clearly specify that grazing may not be introduced or reintroduced to any part of the SPRNCA without intensive and comprehensive cultural resource inventories conducted in close collaboration with duly designated O'odham and Apache cultural representatives.

BLM should ensure that scenic value is a resource that is conserved and must establish clear management direction describing areas inventoried and possessing high scenic importance with clearly defined objectives that limit surface disturbance within important viewsheds, including: 1. The riparian corridor of the SPRNCA. 2. Lands managed to preserve their natural values, such as primitive recreation areas and lands with wilderness characteristics, should be managed as Class I to "preserve the existing character of the landscape." 3. Lands within popular and easily accessible vantage points should be managed for visual resources, such as VRM Class II to "retain the existing character of the landscape," including clear provisions dealing with right-of-way authorizations and other human disturbance. 4. ACECs and other special management designations and prescriptions should be used to protect scenic landscapes and lookout points within the resource area with stipulations specifically addressing and managing human development impacts, including VRM Class I to "preserve the existing character of the landscape" or VRM Class II to "retain the existing character of the landscape" as appropriate.

BLM should adopt Alternative D's proposal to nominate all historic properties within ACECs for listing on the NRHP and access historic structures for placing them on the priority heritage asset list.

In line with SPRNCA's enabling legislation, BLM should prioritize primitive and backcountry RMZs while minimizing the acreage allowed for backcountry (motorized) and rural RMZs. BLM should be intentional in the placement of RMZs. For example, motorized recreation should not be allowed in riparian areas or near LWCs, as these delicate ecosystems could be damaged by erosion and pollution. Likewise, motorized recreation, hunting, and more primitive forms of recreation should be given separate recreation areas to prevent conflict between different activities.

We recommend using the Lower Sonoran Field Office/Sonoran Desert National Monument example to manage and protect wildlife corridors in the SPRNCA RMP.

There is no mention anywhere in this document regarding a plan to enhance the level of law enforcement around the SPRNCA.

Areas of Critical Environmental Concern

The removal of 3 existing Areas of Critical Environmental Concern (ACECs) and 2 new ACEC designations, affecting 27% of the decision area (p. 233), would degrade values of the SPRNCA in my opinion as a professional wildlife biologist. It's also contrary to the BLM's interdisciplinary review that the 3 ACECs should be expanded and considered for designation, and 2 new areas added (p.228). The RMP fails to explain why it didn't incorporate recommendations from its own experts in the preferred alternative, doesn't document the rationale for eliminating of all ACECs under Alternative C, and doesn't analyzed the impacts of this choice.

A critical aspect of the statutory language cited above is FLPMA's requirement that BLM "give priority" to ACEC designation and protection. 43 U.S.C. § 1712(c)(3). It is unclear why BLM would replace ACECs with a new type of allocation like priority habitat, when the agency already has a legislated planning tool that is sufficient to address specific management concerns.

DEIS states that the BLM interdisciplinary team reviewed BLM-administered lands in the planning area and determined that three existing ACECs should be expanded and considered for designation in this planning process, and the Curry-Horsethief and Lehner Mammoth areas should be considered for ACEC designation because of their cultural, historic, and paleontological values. It also states that not designating any ACECs in Alternative C "could result in degraded ACEC values" (p. 3-134). Given these determinations in the DEIS, EPA recommends that the FEIS provide further information to explain how such degradation would be avoided under BLM's preferred alternative, which includes removal of ACEC designations.

The St. David Cienega RNA ACEC includes 12+ documented cultural sites, with potential for additional sites. There is no demonstration that the 12 known cultural sites are significant (or even register eligible), or how their existence is threatened thus warranting special management attention. Moreover, if cultural sites are known to exist, the area was previously inventoried calling into question the assertion that there are potential undiscovered additional sites. "Relevance" Value - Fish and Wildlife Resources BLM Rationale For Determination Failure to Meet Statutory and Regulatory Criteria for Designation The cienega community represents a semi-natural system. The mere presence of fish and wildlife resources The isolated perennial spring and adjacent small pond at Little is not sufficient. BLM must demonstrate why Joe Spring was used for successful reintroduction of native special management attention is required and endangered fish. In addition, the plant community what irreparable damage to important fish and surrounding the cienega supports a large population of wildlife species is threatened in the absence of monarch butterflies annually. Neotropical migrants, such as establishing the ACEC. Virginia rail, common yellowthroat, and song sparrow, utilize the marshy conditions for nesting. "Relevance" Value - Natural Process or System BLM Rationale For Determination Failure to Meet Statutory and Regulatory Criteria for Designation The cienega vegetation, at the outer edges of chairmaker's An unverified historical record of a single water bulrush occur on less saturated soils, where yerba mansa and umble and assertion of probability of occurrence sedges predominate. On drier sites, alkali sacaton and desert is not evidence of

existing plants or a plant saltgrass are common. Cienega plants with limited community. Further, the mere presence of a distribution in the state include false dandelion and alkali woodlands does not demonstrate the existence of marsh aster. A historical record exists from "St. David" for a natural process or system. Huachuca water umbel, a US Fish and Wildlife Service (USFWS) endangered species. An aquatic herb with a good BLM must demonstrate why an existing plant probability of occurrence in the cienega, this record has not community is important and how it is threatened been recently re-verified. A mesquite woodland surrounds the in the absence of special management area to the north and west. designation. Another woodland consisting of mesquite, buttonbush, and netleafhackberry abuts the cienega area along the south and west most extent of the cienega near the spring and pond. SPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27,2018 Page 8 "Importance" Value - Greater than locally significant qualities, giving special worth, consequence, meaning, distinctiveness, or cause of concern, especially compared to any similar resource. BLM Rationale For Determination Failure to Meet Statutory and Regulatory Criteria for Designation Several cultural sites in the ACEC evidence Mormon migration and settlement in the area. Additional related sites are likely to exist. The St. David Cienega RNA ACEC is also significant globally as one of a few remaining cienegas (of hundreds, historically) in the southwest. Cienegas are extremely rare in southern Arizona and southern New Mexico. Once extensive in the Gila River basin, there are few remaining examples, especially cienegas of this size. No evidence is provided that the cultural sites are of greater than local significance or even register eligible. If there are known cultural sites, the cienega must have been inventoried calling into question the assumption of related sites likely existing. It may be the case that undamaged cienegas are rare and globally significant, but there is no support for an assertion of significance or rarity of a degraded cienega. The St. David Cienega is a partially seasonal wetland with functional at risk (FAR) vegetation, trending downward with a reduction in open water due to declining spring discharge, poor watershed conditions, groundwater withdrawal and climate change exacerbated by historic over-grazing. 19 These conditions do not support an assertion of "global significance" or anything greater than even local significance. "Importance" Value - Qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened or vulnerable to adverse change. BLM Rationale For Determination Failure to Meet Statutory and Regulatory Criteria for Designation While once more extensive, these aquatic communities The conclusion that the cienega community has have diminished substantially in Arizona during the "retained much of its natural character" is wholly past century because of excessive livestock grazing, unsupported and inconsistent with the content of the streambed modifications, ground water pumping, DEIS and related documentation.20 intentional draining, and climatic change. Livestock impacts have persisted since 1988, yet the cienega community has retained much of its natural character.

A critical aspect of the statutory language cited above is FLPMA's requirement that BLM "give priority" to ACEC designation and protection. 43 U.S.C. § 1712(c)(3). It is unclear why BLM would replace ACECs with a new type of allocation like priority habitat, when the agency already has a legislated planning tool that is sufficient to address specific management concerns.

Alternative C includes removal of 3 existing Areas of Critical Environmental Concern (ACECs) and 2 new ACEC designations. This would not support the management objectives in the enabling legislation and conflicts with BLM's own interdisciplinary review that the 3 ACECs should be expanded and 2 new areas added. The RMP doesn't provide a rationale for eliminating the ACECs nor does it explain the impacts of dropping the ACEs and going against the recommendation of its own interdisciplinary team. Alternative D more closely follows BLM's interdisciplinary team's recommendation and supports the establishing legislation.

A critical aspect of the statutory language cited above is FLPMA's requirement that BLM "give priority" to ACEC designation and protection. 43 U.S.C. § 1712(c)(3). It is unclear why BLM would replace ACECs with a new type of allocation like priority habitat, when the agency already has a legislated planning tool that is sufficient to address specific management concerns.

A critical aspect of the statutory language cited above is FLPMA's requirement that BLM "give priority" to ACEC designation and protection. 43 U.S.C. § 1712(c)(3). It is unclear why BLM would replace ACECs with a new type of allocation like priority habitat, when the agency already has a legislated planning tool that is sufficient to address specific management concerns.

It is agreed, according to the PFC Assessment, NRST Assessment, SEAP Studies, 2018 Biebighauser Study for Restoration Proposal, and the ACEC Nomination Form (Table C-3) presented within the current DRMP, that largescale treatment will be necessary to ensure protection of cienega habitat, critical habitat, and habitat for special status species (including insects, and federal waters. The current preferred alternative (C) along with alternatives (B) and (D) allow only for treatment of the area via methods applied to "priority habitat. The term "priority habitat" is not defined by BLM in the DRMP, BLM EA, other public working documents, or by law, beyond Priority Habitat Management Areas (PHMA) as applied in USFWS Greater sage-grouse habitat management plans. There are no PHMA, extant or proposed, for any species mentioned in the DRMP for the SPRNCA. As "priority habitat" is undefined, and the management prescriptions poorly supported; the concept, "priority habitat", fails to provide the protection or enhancement as would a proper ACEC designation for the Saint David Cienega. Alternatives (A) and (D) allow only for treatments which are insufficient, evinced by the deterioration that has occurred under current prescription (A), and documented by the PFC Functioning At Risk rating assigned in recent PFC assessments. Should Alternative (D) be applied to the SPRNCA, the needs of the Saint David Cienega ACEC may not be met as they require "unusual or outside of the normal range of management practices typically used", allowing for mechanical treatments in restoration of the area within the ACEC. The use of mechanical treatments would be considered a temporary disturbance and would not interfere with the long term goals of the ACEC. As described within the DRMP, Page 3-46 " Over time, the vegetation treatments described above would restore the vegetation community and indirectly benefit fish and wildlife by improving habitat conditions and increasing the acres of priority habitats. Vegetation initially removed by the treatment methods would come back as healthy, diverse, and resilient communities.....Wetland function would be restored, and water quality would be improved.....this would increase the extent and condition of riparian-wetland areas, which are important for many wildlife species, including migratory bird, fish, and amphibian species." Page 3-52 "...the potential for long-term improvements to priority habitats would be greater and improvements would occur more quickly".

A critical aspect of the statutory language cited above is FLPMA's requirement that BLM "give priority" to ACEC designation and protection. 43 U.S.C. § 1712(c)(3). It is unclear why BLM would replace ACECs with a new type of allocation like priority habitat, when the agency already has a legislated planning tool that is sufficient to address specific management concerns.

Assumptions and Methodology

There is no explanation for how BLM calculated the new Animal Unit Monthly (AUM) or how those AUM would be used within the area proposed for opening to grazing under the plan. Again, this number came from somewhere, and the BLM should be forthright about what its plans really are for the SPRNCA in

regard to grazing. There is also no analysis of how granting permits for those AUM would enhance the riparian area.

The DRMP/DEIS's assumption that livestock grazing would be limited to 30 percent of perennial grasses (at 3-32) is also contrary to the Babocomari's AMP that allows 50 percent use. Attachment 5 at 4. If the SPRNCA RMP will be reducing the authorized use of the Babocomari allotment, it should also demonstrate through a carrying capacity analysis that the current stocking rate is appropriate.

Many of this documents analysis assume sufficient water resources will be available to maintain the current flora and fauna. This goes against many of the current projections. Recommend a discussion within the Plan that significant changes may occur.

The DRMP/DEIS does not disclose how BLM identified this quantity of water, but using the USGS-supported median rate for beef cattle (12g/day), it would appear that BLM is underestimating the amount of water the 23 new livestock waters (DRMP/DEIS at 3-3) will use for livestock - and lose to evaporation. 12 gallons animal/day $12 \times 30 = 360$ gallons/month (AUM) $3955 \text{ AUM} \times 360 \text{ gallons} = 1,423,800$ gallons direct/average By only estimating 7.4 acre-feet per year, or 2.4 million gallons, the BLM is not accurately factoring in southern Arizona's high upland temperatures (increased evaporation and livestock consumption above average) and water loss from leaking stock tanks, faulty irrigation systems, etc. A much more robust analysis in the PRMP/FEIS is required.

The DRMP/DEIS makes an assumption about the acreage of livestock disturbance around livestock water. DRMP/DEIS at 3-3. It estimates this to be one-fourth acre around each disturbance. Ibid. Nowhere does the DRMP/DEIS describe how BLM came up with this number, but it is inconsistent with the number used elsewhere that a half-mile area centered around livestock waters would have forage reduced by at least 50 percent. DRMP/DEIS at 3-44. This would suggest that the livestock disturbance occurs on more than 502 acres⁵, making the analysis a vast underestimate of livestock disturbance (it currently says only 6 acres total would be disturbed under Alternative C; a minimum estimate using aerial imagery is 6 acres per water development). This assumption of 50 percent utilization around livestock waters is also inconsistent with the assumption elsewhere in the DRMP/DEIS that states livestock grazing utilization would be limited to approximately 30 percent (p. 3-37) or 30 percent of the perennial grasses (p. 3-32). It also confuses the analysis in the DRMP/DEIS about the impacts of grazing on mule deer, which "feed on upland forbs." DRMP/DEIS at 3-49. There is no utilization limit on forbs, and the impacts to mule deer in the uplands are not mitigated by the DRMP/DEIS management parameters.

The level of utilization and the acreage of actual livestock disturbance is an important part of the DRMP/DEIS analysis because of the impacts of sensitive species. For example, the recovery of the southwestern willow flycatcher recommends conservative utilization of herbaceous vegetation in uplands, not to exceed 35 percent (Table 2, Appendix G, 2002 Final Recovery Plan for Southwestern Willow Flycatcher Recovery Plan, a management criteria carried over into the 2012 Gila District Biological Opinion on Livestock Grazing, Attachment 6). So, in reality, if the BLM assumes that there will be a 50 percent utilization level within $\frac{1}{2}$ mile of livestock waters, this means that 11,546 acres⁶ of the uplands will not be managed in accordance with SWWF recovery standards, defying both the provisions of the Endangered Species Act and the mandate to conserve, protect, and enhance the wildlife values of the SPRNCA. T

Comment: This comment, by stating that the RMP is intended to "address" certain matters, is not accurate because it presupposes certain conditions that do not in fact exist. For example, Cochise County's population actually decreased and has leveled out rather than increasing over the past decade. Thus there is not an increased population around the SPRNCA. Moreover, increased population does not correlate to increased water demand, as citizens of Arizona have adopted and implemented water savings practices to substantially decrease water use despite significant population growth. See, e.g., ADWR Annual Report 2018 at p. 9

24. 3-16, Analysis Methods BLM states: "The analysis area for analyzing impacts on water resources is the Upper San Pedro watershed. Indicators of impacts on water resources are the following: *Changes to groundwater supply from pumping *Acre-feet per year of groundwater use *Changes to water quality from erosion *Changes to groundwater supply from recharge enhancement projects *Changes to groundwater supply from river channel improvements *Changes to watershed function from human-made structures from historical land uses *Changes to water resources from prescribed fire *Acres of cottonwood/willow gallery affected by areas available to livestock grazing *Changes to water quality from abandoned mine lands *Miles of 303(d) streams across sensitive soils in areas that would allow surface-disturbing Activities" Comment: Other indicators are excluded from the list. What about rainfall, snowmelt, flood flows, evaporation, and evapotranspiration? The impact of vegetation both within and without the SPRNCA is ignored by the list. Corrected/Suggested language: Add the following to the list of Indicators-Changes to groundwater supply from conservation easements, Changes to groundwater supply from retirement of agricultural wells in close proximity to the SPRNCA, Changes to groundwater supply from vegetation treatments, Changes to groundwater supply from vegetation growth or die off, Changes in annual precipitation

BLM conducted four public scoping meetings in August and September 2013. The meetings were held in Benson (August 13), Tucson (August 14), Sierra Vista (August 21), and Benson (September 12). A total of 46 people participated in these meetings. (The report does not indicate if these were 46 separate individuals or if some individuals attended more than one meeting.) All of Cochise County will be affected by the management of the SPRNCA. With a public attendance of 46 out of a county with a population of approximately 125,000, the input from the scoping sessions clearly cannot represent the public. The only commenting groups mentioned in the report are Friends of San Pedro River, Sierra Club Grand Canyon Chapter, Center for Biological Diversity, and the Huachuca Audubon Society.⁵ These organizations are named as seeking to have the San Pedro River designated as a National Wild and Scenic River System (NWSRS). It is reasonable to assume that with such a low public participation rate the named organizations participated in the 2013 scoping sessions and provided significant input. Comments from these meetings formed the framework for the development of the range of alternatives and the extent of the analysis which informed the development of the draft document.⁶ While the BLM states that it solicited comments from federal, state, and local agencies; Native American tribes; the public; stakeholders; and other interested parties. There is no indication that their efforts were effective. There were only two articles published in the newspapers, one in the Sierra Vista Herald and one in the Benson News Sun.⁷ With only participation by government agencies and environmental groups, the report does not reflect the concerns of the residents of Cochise County.

I began reading the draft document taking notes so that I could comply and give detailed recommendations. While working through the 323 pages of Volume I and the 275 pages of Volume II, it became apparent that specific comments could not be provided because the process and some of the underlying

assumptions were flawed. The information provided in the report is not adequate to determine to what extent corrections of the process and assumptions would affect the draft RMP.

The DRMP/EIS generally assumes (e.g., 3-111) that "development on adjacent land will likely increase demand for access in the SPRNCA from these neighborhoods," and similar assumptions throughout the DRMP/EIS are made without sufficient documentation that demand for recreation will increase. Population in the surrounding county fluctuates and even if it were to steadily increase, increase does not necessarily translate into increased demand.

DRMP quoted statement: "The potential acreage was determined based on existing locations of man-made structures and stream channel condition. Under all action alternatives, exclusive of Alternative A, there would be 50 acres of man-made structures to be removed". How were the "50 acres of man-made structures to be removed" estimated? Safety and the potential for accelerated erosion must be evaluated when considering removal of agricultural dikes, berms, and railroad bank protection structures from the river. Agricultural berms south of State Highway 90 are currently acting as stormwater recharge basins that benefit baseflows. Their removal could result in gully erosion across the abandoned fields down to the river. Removal of railroad bank protection structures from the river could result in undesirable bank migration, negative impacts to highway bridges and compromise the railroad bed's integrity. Extreme caution should be exercised and BLM should detail the possible dangers and why this may NOT be a good idea in the river's mainstem or on adjacent abandoned agricultural fields.

DRMP quoted statement: "The potential project size was determined based on soil types that had the highest potential for infiltration. Under all action alternatives, exclusive of Alternative A, there would be 2,170 acres of recharge enhancement projects". How was the "2,170 acres of recharge enhancement projects" estimated? If the GIS analysis that I left behind was used for this estimate, then it was also based on locations that are favorable for deep percolation - not just "soil types that had the highest potential for infiltration". Groundwater recharge relies on percolation that reaches the water table, not just sacrificial soil infiltration that can be consumed in the root zones.

How was water use estimated for each alternative in Table 2.1? What accepted/standard hydrologic method(s) was/were used for this estimate?

DRMP quoted statement: "The potential project size was determined based on watershed condition and is reflective of priorities described for the RMP alternatives. Under all action alternatives, exclusive of Alternative A, there would be 5,040 acres of erosion control projects". How was the "5,040 acres of erosion control projects" estimated?

27 3-17 Table 3-8 Fort Huachuca How were these figures developed? The document doesn't explain how water use estimates were obtained.

35 3-148 Para 5 Fort Huachuca Is BLM making the assumption that the population of the Sierra Vista area is decreasing or increasing. It seems contradictory in the document. 36 Appendix Appendix E Fort Huachuca Update reference FH INRMP 2001 to 2010.

There is no mention of monitoring vegetation on SPRNCA except for the riparian area (already extensively studied). How will BLM meet the stated objectives for plant communities without vegetation monitoring and why is this not discussed in the draft plan? How will plant communities on upland areas,

mesquite terraces and land treatment areas be monitored? What will be the methods, timing and frequency of vegetation monitoring on these areas?

The plan says that one quarter mile around these sites will be restricted. How does a one quarter mile area protect anyone from firearms able to propel a bullet a mile or more? Further, when I volunteer at the San Pedro House, I send people on hikes to the River and ponds south of the house. All of these would be outside the one quarter mile restricted area. The same is true of Fairbank, a heavily used area where trails and historic features frequently visited would be open to hunting.

Another cause for concern with attempts to remove currently stable shrub habitats in the uplands is the establishment and spread of non-native and invasive Lehman's and Boer's Lovegrass. The draft EIS and appendices offer no clear explanation as to how the additional Animal Unit Months AUM's were calculated for Alternatives B and C. The numbers seem high and may be based on anticipated forage production from nonnative invasive lovegrasses.

Impacts from cattle were insufficiently accounted for the Draft RMP. Impacts were only assessed for areas related to water development. In the preferred alternative, that includes a mere 6 acres of impacted area (1/4 of an acre for each livestock water development) despite an increase of 19,420 acres of added grazing. These water developments, by the way, are features that are not included in the Draft RMP maps. These are the numbers (6 acres or 1/4 acre for each water development) that are used to quantify impacts of grazing on wildlife, vegetation, and other resources in SPRNCA throughout the Draft RMP.

Although studying and proposing a wide variety of management strategies for the SPRNCA is an interesting and necessary exercise, realistically and practically, the realities of budget and staff must enter into the equation. We have watched over the years as the staff of the SPRNCA fell from 10 or more to 8 to 6 until now the Sierra Vista Office is nearly empty with SPRNCA and Las Cienegas sharing 2 people. Without the efforts of dozens of dedicated volunteers of the Friends of the San Pedro most programs would be abandoned. Budgets and staff are unlikely to increase anytime soon, and BLM must do the best with what they have.

Cultural Resources

12. 2-26, Cultural Resources BLM states: Alternative D "Within ACECs, nominate all historic properties for listing on the NRHP and assess historic structures for placing them on a priority heritage asset list." Comment: Historic properties within SPRNCA are ranches. Corrected/Suggested language: The RMP will meet the requirements of the Arizona-Idaho Conservation Act of 1988 (PL 100-696). Section 102 of the Act including managing the conservation area in a manner that conserves, protects, and enhances the scientific, cultural, and educational resources of ranches within the NCA and those with associated AUMs within the NCA. BLM should note that Alternative D does not meet the Congressional intent of protecting cultural resources (ranching).

Anderson's recent research on links between grazing and cultural resources includes data and conclusions relevant to SPRNCA management planning. Anderson assessed cattle grazing effects on 47 cultural resource sites located on diverse grazing allotments on two national forest ranger districts. Fieldwork at each cultural resource site included documentation of artifacts and features and assessment of six interrelated variables: (1) the density of cattle excrement; (2) the depth and length of cattle trails; (3) the depth and extent of cattle wallows at sites with surface water; (4) the condition of all riparian areas or

springs associated with the sites; (5) the condition of fences established to exclude livestock from sites; (6) the types and levels of livestock effects on artifacts and features. Less than nine percent of the sites assessed (4 of 47) showed low or no signs of adverse effects from grazing. Sites associated with riparian areas and surface water had the greatest and most diverse adverse effects.

BLM reports also confirm that livestock and livestock permit programs have significant adverse effects on cultural resources. For example, the Final EIS prepared for the Bodie-Coleville planning units concluded: Livestock use impacts on cultural resources include: displacement (vertical and horizontal) and breakage of artifacts, and the mixing of depositional associations through trampling; destruction or enhanced deterioration of structures and features through rubbing; and an acceleration of natural erosional processes. Plants valued by Native American traditionalists could be trampled or consumed by livestock, adversely affecting plant availability at some locations. For purposes of analysis it is assumed that the impacts of livestock use are distributed in proportion to the actual distribution of livestock, with the most intensive impacts occurring at livestock use concentration areas. Cultural Resources located on lands having erosional or other types of watershed deterioration problems attributed to livestock use impacts are assumed to receive high impacts. Cultural resources are non-renewable, and impacts of livestock use on cultural resources are cumulative (Bodie-Coleville EIS 1982:4-92). Additional adverse effects from grazing include soil compaction, toppling of architectural features, creation of movement corridors, and degradation of springs and streams, all or most of which are themselves cultural resources from the perspective of tribal cultural representatives and others.

I couldn't find any reference in the draft RMP to Amy Sobiech's cultural resources presentation in 2013. At the end, she identifies human impacts to some of cultural sites and lists OHV use, unregulated cattle grazing (I'm aware that BLM is proposing regulated cattle grazing in the Preferred Alternative), and development projects. I think this presentation should be a cited factor in the RMP and EIS. https://eplanning.blm.gov/epl-front-office/projects/lup/36503/44282/47718/Aug17_Forum_CulturalResources.pdf

Not a whit seems to be given to the possible destruction of archeological sites.

The cultural overview and inventory on which this RMP/EIS are based (and the decisions resulting there from) are outdated and inaccurate. Table C-4 states: "The San Pedro River RNA ACEC contains 70+ documented cultural sites that, collectively, span the past 2,000+ years of human occupation in the region." These are serious and critical understatements. Whereas, in fact, the SPRNCA contains hundreds (if not thousands) of documented and undocumented cultural sites that, collectively, span the past 10,000+ years of human occupation in the region. This is important because it makes a difference for interpretation, for the value people place on the suite of cultural resources, and also so that resources and the area as a whole can be appropriately managed.

The portions of these documents that address cultural resources do not specifically address the terminal prehistoric and historic period indigenous resources which are some of the most important and least understood.

Maps showing areas of critical cultural concern might also be drafted for the densest concentrations of important sites of each period or culture group. Why such maps are not included in this RMP/EIS is an astonishing oversight; these RMP/EIS documents cannot be evaluated nor the impacts considered without such knowledge.

the documents do not even acknowledge the Jocome and Jano. These groups are known to have used this area along the river, both because the Spanish documentary record tells of us of their rancherías and lands given them by the Sobaipuri and because I have found and published archaeological evidence of them. Their apparent removal from the immediate area and the wedge driven between them and the Sobaipuri represent a key moment in regional and local history, at least according to contemporary chroniclers. So little is known about them that their study in this area is an imperative research issue. The Apache are barely mentioned and the importance of the San Pedro in understanding their early history (e.g., their presence in the 1200s and 1300s) is not understood or acknowledged by these documents. As a result of my research on the San Pedro and adjacent areas we can now identify sites of these groups (Apache, Jocome, and Jano), but we are still at the beginning of this effort.

Another part of the documents discuss that the goal is to stabilize and rehabilitate sites to preserve cultural values, including the Presidio of Santa Cruz de Terrenate (page 2-25). The stabilization of any site requires an experienced understanding of the site so as not to cause further damage, not to harm its strata, and to not inadvertently remove or alter data. This is dependent upon not using outdated notions about the sequence of occupation at the site and the value and functions of the features there. While this applies to all of these sites listed, Santa Cruz de Terrenate Presidio is one-of-a-kind and so is especially rare and uniquely vulnerable to activities that do not fully consider impacts.

Moreover, many culture groups that are important to the terminal prehistoric and historic periods (my area of specialty) along this portion of the San Pedro are not even mentioned. For one, a single map shows only a generalized plotting of relevant culture groups and includes groups irrelevant to the area while not including those that are fundamental to the cultural identity and history of the river. Figure 3-10 plots the prehistoric culture groups but completely ignores the important terminal prehistoric and historic or so-called protohistoric groups whose sites richly populate this area. (It also ignores the pre-ceramic period groups, such as the Archaic and Paleo-Indian, the latter being so iconic of the SPRNCA area.)

I myself have found several sites in areas previously surveyed by firms and researchers who have minimal experience in the area, including the firm (Archaeology Southwest) the BLM selected as their advisor for this RMP/EIS. As another example, I recorded 11 sites in a mile-long stretch where that company recorded just one. The quality of the management plan will be determined by the quality of input into the cultural resource values being protected.

the area has not been sufficiently surveyed and assessed by archaeologists qualified in the specific periods of concern, in part because research has been mostly discouraged in recent years. Without this baseline knowledge, required by Federal laws, current, cumulative, and future impacts to these resources cannot be properly evaluated. Even areas previously surveyed have produced additional cultural properties (sites and components) both because some have become visible through recent erosion, while others are visible only to those who have sufficient experience in the nature and subtleties of these resources. Some of these resources are especially fragile and difficult for the uninitiated to see, yet they represent some of the most important parts of the area's past.

The RMP and EIS do not exhibit sufficient familiarity with the cultural resources in the SPRNCA. The cultural overview used for the plan is dreadfully out of date. These documents also do not acknowledge or incorporate the many publications that have been written about these resources and this area specifically. As a result, the references cited are woefully out of date and the document does not discuss issues that are of specific relevance to the area. If this were a contractor's or researcher's report it would

be rejected by the BLM. The RMP and EIS do not cite the most recent and relevant literature and inappropriately and incorrectly cite other sources. For example, Table 3-34 uses an extremely outdated chronology. I have run hundreds of chronometric dates on sites on the San Pedro and SPRNCA specifically, and these demonstrate a much earlier presence by all of the so-called protohistoric groups. These have substantial implications for the region with regard to interpretation and management. These dates and the resulting publications completely change ideas about the cultural sequence and processes that characterize the area. It is not possible to manage resources and to put them to their full use in interpretative contexts without proper and the most up-to-date data, data which have now been published and available at least two decades.

An example of the substandard scholarship and also lack of knowledge of the area's resources is that dozens of my own publications that have specific relevance to this area, its history, its people, and its value, management, and interpretation are not cited. The relevance of these omissions is that the issues as presented in the RMP and EIS are shallow and often misdirected, the history has been shown (by abundant evidence) to be wrong, and the facts being cited are out of date. Importantly the true value of the SPRNCA and its resources are not adequately evaluated or incorporated and so the impacts cannot be properly assessed. This leaves the BLM open to law suits, but most importantly, it does not allow sufficient consideration of the nature and degree of potential impacts of current and proposed policies. Also, the BLM cannot know when it is inadvertently causing irreparable damage to sites and fragile components on multiple component sites.

Another example of an out-of-date understanding is that the cultural overview states that the Sobaipuri were pushed out of the San Pedro, whereas, in fact, the point of the published article that is cited in the RMP/EIS is that the Sobaipuri were not pushed out by the Apache.

The fact is that most of the SPRNCA has not been surveyed. The ephemeral nature of most of the sites, from Archaic to proto-historic, is the source of this lack of knowledge. Decisions such as opening the area to grazing, transforming vegetation with heavy equipment, etc., cannot be made without detailed knowledge regarding the resources that are present. Actions such as what are proposed elsewhere in the proposed revised management plan will result in the destruction of these resources, yet the plan is silent on this need.

Unfortunately there are many sites, especially the villages of the Soapuri (sp) people, that have not been fully documented. This document has little information on how these sites would be protected from the damage from grazing and heavy equipment use.

BLM reports also confirm that livestock and livestock permit programs have significant adverse effects on cultural resources. For example, the Final EIS prepared for the Bodie-Coleville planning units concluded: Livestock use impacts on cultural resources include: displacement (vertical and horizontal) and breakage of artifacts, and the mixing of depositional associations through trampling; destruction or enhanced deterioration of structures and features through rubbing; and an acceleration of natural erosional processes. Plants valued by Native American traditionalists could be trampled or consumed by livestock, adversely affecting plant availability at some locations. For purposes of analysis it is assumed that the impacts of livestock use are distributed in proportion to the actual distribution of livestock, with the most intensive impacts occurring at livestock use concentration areas. Cultural Resources located on lands having erosional or other types of watershed deterioration problems attributed to livestock use impacts are assumed to receive high impacts. Cultural resources are non-renewable, and impacts of livestock use

on cultural resources are cumulative (Bodie-Coleville EIS 1982:4-92). Additional adverse effects from grazing include soil compaction, toppling of architectural features, creation of movement corridors, and degradation of springs and streams, all or most of which are themselves cultural resources from the perspective of tribal cultural representatives and others.

Welch Cultural Resources Anderson's recent research on links between grazing and cultural resources includes data and conclusions relevant to SPRNCA management planning. Anderson assessed cattle grazing effects on 47 cultural resource sites located on diverse grazing allotments on two national forest ranger districts. Fieldwork at each cultural resource site included documentation of artifacts and features and assessment of six interrelated variables: (1) the density of cattle excrement; (2) the depth and length of cattle trails; (3) the depth and extent of cattle wallows at sites with surface water; (4) the condition of all riparian areas or springs associated with the sites; (5) the condition of fences established to exclude livestock from sites; (6) the types and levels of livestock effects on artifacts and features. Less than nine percent of the sites assessed (4 of 47) showed low or no signs of adverse effects from grazing. Sites associated with riparian areas and surface water had the greatest and most diverse adverse effects.

There are numerous examples of known fossil, archeological and historical resources in the SPRNCA. There are most certainly additional such resources that are as yet unknown. Grazing, equipment use, drilling, etc could well endanger these resources.

4. I-4, Table I-2 BLM states: "Conservation Values: Culturally important plants and animals, Springs, Traditional cultural properties (TCPs)" Comment: Add ranching as a cultural resource and a conservation value. Corrected/Suggested language: List Ranching as a Cultural Resource and a Conservation Value; carry Ranching as a cultural resource topic through the entire RMP/EIS. See Rangeland Ecology & Management 61(2):137-147. 2008 <https://doi.org/10.2111/07-063.1> Ranching As A Conservation Strategy.

Scientific evidence indicates a positive correlation between vehicle access and cultural resource losses. An independent, peer-reviewed study conducted circa 2010 on Tonto National Forest confirms what cultural resource managers have long-surmised: the likelihood of looting and vandalism to cultural resource increases with proximity to roads and vehicular travel routes.

Because there is no rational or scientific basis for supposing that grazing does anything except damage and degrade riparian areas and almost all types of cultural resources BLM is advised and encouraged to exclude all grazing from all parts of the SPRNCA unless and until a combination of cultural resource inventories and baseline studies, vegetation studies, and tribal consultations result in the identification of pastures where grazing will actually assist in achieving the resource protection goals identified in AICA.

Cultural Resources, Paleontological Resources, and Native American Concerns Within reason, the RMP should seek to preserve and enhance the scientific, educational, and interpretive values of paleontological resources to increase the knowledge of the natural heritage and history of the SPRNCA as well as ensure that significant paleontological localities are adequately protected. Pertaining to cultural and Native American concerns, the RMP should manage appropriate sites for conservation to protect and preserve representative samples of all the cultural resources on the SPRNCA.

It is thus crucial that BLM work with the proper definition and inventory of Cultural Resources in the context of National Conservation Lands. It's also crucial to emphasize that while the BLM's specific ongoing inventory of Cultural Resources from 1988 onward includes historic sites such as San Pedro House,

Brunckow Cabin, Boquillas Ranch and Clanton Ranch, it does not include grazing on the SPRNCA as an inventoried Cultural Resource.

My research indicates that grazing does, in fact, seriously and negatively impact archaeological sites.

Grazing removes ground cover and overgrazing causes erosion which ultimately leads to channel cutting. In fact, my upcoming book on a historical campaign into this area in 1780 provides documentation of this environmental process from back in the 1770s and 1780s when major destruction from livestock grazing and timber harvesting occurred along the San Pedro as a result of the Santa Cruz de Terrenate and Terrenate Viejo occupations.

These grazing areas to be established will mostly be in the uplands where the majority of Sobaipuri and other protohistoric sites occur, many of which have yet to be officially or fully documented. Past experience has shown that the ongoing presence of ranching personnel in sensitive areas will have continued negative impacts.

Today I routinely see the deleterious effects of grazing, including cattle kicking rocks out of house walls (which provides the only evidence of their unobtrusive existence; see attached figure which shows rocks kicked out of house walls and cattle hoof prints impacting a Sobaipuri house), their hooves sinking deeply into cultural strata, and their bedding areas intruding into an destroying cultural strata and surface features.

The sites in question are unique, often one-of-a-kind, and world class but they have not been fully recorded nor have they been collected or studied. This means that as they are accessed, people will pick up artifacts that are rare and are crucial for dating the sites and addressing a host of other research issues.

As noted, many of the sites in the SPRNCA are especially fragile and these will be seriously and irreparably impacted by grazing. One reason for this is because these later sites are so close to the surface, and in many instances, on the surface. This is the case for the most historically important sites in the SPRNCA. I have personally observed and documented whole sections of sites either collapsing into arroyos or washing into erosion channels, often in areas that are devoid of grass and show evidence of recent cattle intrusion (hoof prints and cow pies).

I have attached a map showing how one such distribution might look with reference to Sobaipuri resources (Figure of Sobaipuri areas of critical concern; to be removed from public viewing. Note: this is reconstructed from memory and should be reevaluated with actual site distribution data). Incidentally, these are areas where there is also evidence of old springs and wetlands, so if water table levels were to rise (by decreased groundwater pumping) they might flow once again and therefore should be evaluated on their own merits.

In fact, as it stands, many of the alternatives would allow some of the greatest impacts in these areas with the most fragile, least understood, and most historically important sites. Livestock Grazing Alternative B (Figure 2-15) and Livestock Grazing Alternative C (Figures 2-16 and 3-7) would have lands open to grazing in the densest and most historically important areas for these sites.

These are the most fragile of sites, both because they are near surface and most impacted by cattle grazing, recreational collecting, and other activities, and because many of them represent mobile people with a very light imprint. These also often occur in areas that are most impacted by erosion. Because they left

so little to begin with, these sites are difficult to see and understand and challenging to study, but this does not make them any less important. In fact, since their signature has only recently been defined, they are all the more important because we know so little about them. The Apache, Jocomo, and Jano signatures have been defined since the last RMP was prepared.

In 50 to 100 years nothing will be left of the walls at Santa Cruz de Terrenate Presidio. Trees and brush are breaking the adobe walls apart and rain erodes the adobe walls. Grazing has caused erosion that has exposed the cultural layers on sites and their information content is eroding way and will not be available in a few years. Roads and past grazing impacts have started an erosion process wherein with each storm site elements are being eroded way and their information content lost.

Their trails become entrenched and in many instances cause erosion channels that then become more entrenched and cut the landscape, initiating a destructive cycle that land managers seem incapable of reversing. This process is similar to that which occurs on two-track roads, because each provides a linear depression that channels seasonal rain flow and then incises the surface.

Scientific evidence indicates a positive correlation between vehicle access and cultural resource losses. An independent, peer-reviewed study conducted circa 2010 on Tonto National Forest confirms what cultural resource managers have long-surmised: the likelihood of looting and vandalism to cultural resource increases with proximity to roads and vehicular travel routes.

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Cumulative Impacts

The DRMP/DEIS does not disclose how the lands surrounding the SPRNCA are managed and the extent of livestock grazing on adjacent allotments. The DRMP/DEIS says that livestock grazing occurs on 277,100 acres of land in the SPRNCA watershed. DRMP/DEIS at 3-5. The DRMP/DEIS does not disclose whether those are BLM-managed lands, the rangeland health conditions of those lands, nor the potential management changes of those lands.

The DRMP/DEIS fails to analyze and disclose the impacts of livestock grazing upstream in the watershed, in Mexico, and assess the lack of regulation on the now-private lands of northern Sonora. The degree to which the habitat in within the SPRNCA becomes irreplaceable depends in part on the rest of the watershed, and the BLM needs to analyze this.

"One of the greatest threats to riparian ecosystems is the increased stress on already scarce water resources caused by the recent rapid population growth in the southwestern United States." Baillie, et al. 2007. Despite this, the DRMP/DEIS is utterly remiss in its analysis of the SPRNCA's current and potential future water supply. The stressor of new and ongoing livestock grazing (and the associated impacts to water, wildlife, and other values) must be weighed cumulatively with the risks facing the basic component of the SPRNCA: water.

The BLM is required to consider the cumulative impacts associated with the SunZia project and how the destruction of habitat and displacement of wildlife in the energy transmission corridor that has been approved affects the importance of the SPRNCA as a refuge for wildlife in the region. The DRMP/EIS should have fully evaluated the potential cumulative impacts of all current, proposed, and reasonably foreseeable projects that will impact the lands and resources traversed by the SunZia power line, including the likeliness of co-location of additional transmission lines in the future, and then disclosed to the public how those impacts alter the relative importance of the SPRNCA as habitat for wildlife in the region. See 40 C.F.R. § 1508.25. While SunZia was approved by a state agency, as the BLM is aware, a cumulative impact is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." *Id.* at § 1508.7, emphasis added. "The point [of a cumulative impacts analysis] is that a large overview should be maintained toward the magnitude of environmental effects, both of the immediately contemplated action and of future actions for which the proposed action may serve as a precedent or have a cumulatively significant impact." *Natural Resources Defense Council v. Callaway*, 524 F.2d 79, 88-89 (2d. Cir 1975).

the BLM did not adequately identify the context and intensity of this project and failed to adequately analyze the cumulative impacts of nearby projects and a recent court decision regarding a massive housing development in the watershed of the SPRNCA. Furthermore, the BLM has failed to adequately consider the impacts of climate change and the significant issues related to the level of groundwater in the project area.

17. 3-4, Table 3.1, Cumulative Impacts BLM states: BLM places CCRN projects in "foreseeable" section exclusively and uses "acres of disturbance" to identify cumulative impact projects. Comment: Certain CCRN projects (the Environmental Operations Park, Three Canyons well retirement and conservation easement, Palominas Recharge Project, and Stage 1 of Horseshoe Draw) are already operational, but all of the CCRN projects are designated in "reasonably foreseeable future actions". Also, "acres of disturbance" is not an appropriate representation of the cumulative impact of the projects. "Disturbance" connotes that each project is disrupting, encroaching or adversely impacting the environment rather than protecting or conserving the area, which is what is accomplished via the CCRN projects. Corrected/Suggested language: The completed, operational projects (the Environmental Operations Park, Palominas Recharge Project, and stage 1 of Horseshoe Draw) should be identified as Past and Present Actions. The contemplated and in process CCRN projects- Bella Vista, Riverstone, Horseshoe Draw Stage 2, and Babocomari can remain in the "foreseeable" area. Replace "acres of disturbance" with "acres encompassed"

35. 3-39, Cumulative Impacts, 2nd Paragraph BLM states: "Human-caused surface disturbances in the watershed would come about from anticipated urban growth, such as the Villages at Vigneto, Tribute, Ventana De Flores, and Bella Vista developments (see Table 3-1). These developments would occupy approximately 18,270 acres; most vegetation in these areas would be removed. Cochise Conservation Recharge Network groundwater recharge sites (13,510 acres) would similarly remove vegetation in the recharge site footprints. These projects would add to the current 36,500 acres of developed areas in the watershed. Additional surface disturbance would increase the potential for weed establishment and spread in the watershed, especially if disturbance were to occur within existing weed infestations." Comment: Upon what information are these claims based? Has BLM reviewed the development plans as to each project site to confirm that "most vegetation in these areas would be removed"? Has BLM reviewed

anticipated landscaping and infrastructure plans with each developer to determine what water conservation and recharge methods are anticipated within each planned development? The County is aware that BLM has not reviewed detailed plans related to each CCRN recharge site, so it is unclear how it is that BLM has concluded that the CCRN recharge sites would "remove vegetation." This section additionally seems to presume that vegetation removal only has adverse impacts rather than the potential for positive outcomes where treatments result in re-introduction of native species that improve infiltration and recharge. As BLM's assertion here appears to be based entirely upon supposition, this paragraph should be deleted. Corrected/Suggested language: Delete this paragraph as inaccurate and/or unsupported.

Cumulative factors causing habitat loss or degradation include urbanization and development, water withdrawal, grazing and recreation and other human activity. Cumulative impacts should be considered on a scale commensurate with the geographic extent of populations or potential populations (in the case of species not now found on the SPRNCA but which could in the future). For wide-ranging, low-density species like jaguar, cumulative effects should be considered over a wide area, including consideration of regional development on U.S. and Mexico federal, state and private lands.

All actions should be considered within a broader geographic context, and this analysis clarified for the public. For example, while limitations on vehicular access and firearm use may be appropriate in some areas of the SPRNCA, there are other nearby BLM lands where recreational vehicle use may be more appropriate.

Border related activities should be analyzed The impact of Customs and Border Patrol/Department of Homeland Security (DHS) infrastructure and operations should be analyzed and mitigation should be included in all of the alternatives. The DHS often has significant funds to support mitigation or restoration of negative environmental impacts related to their activities and infrastructure. Agencies that document the impacts CBP/DHS operations and infrastructure are having on the lands they manage are well situated to receive those funds. In addition, the BLM is obligated to document the cumulative impacts of activities in and around the SPRNCA and to analyze those impacts in the RMP DEIS. We recommend that BLM clearly identify where and how CBP/DHS activities, infrastructure and operations are having impacts on the SPRNCA and identify possible restoration activities that should be considered to mitigate those impacts.

"Housing developments" should include "The Retreat" and possibly other proposed housing subdivisions.

Lomeli Cumulative Impacts By law the cumulative impacts analysis must include past (pre-BLM; before 1988) and present (since 1988) and reasonably foreseeable future impacts of "trespass grazing" as well as permitted grazing. The DRMP mentions the active allotments, but has not accounted for the impacts of past and present grazing trespass. Trespass grazing would NOT have shown up in the current condition, because the Land Health Assessments were only conducted on the permitted allotments - not on rest of the SPRNCA. Trespass grazing has been continually occurring within the SPRNCA since its dedication. Past grazing, (pre-BLM; before 1988) was completely missed and should also be analyzed and addressed in this RMP.

The alternatives proposed for the draft Management Plan are notable for the absence of significant grounding in the fact that the SPRNCA is now virtually a unique riparian ecosystem with the last free-flowing stream in the region. The ecosystem will be increasingly threatened from increases in temperatures and declines in precipitation, and the course proposed by the management plan does not

suggest this ecosystem will survive nor will the primary purposes of the conservation area be achieved. This is a conclusion supported by the background analyses and trends highlighted in the BLMS's MSR. There is substantial information concerning actual and projected trends regarding aridification of the region in the the MSR. The MSR also documents declining trends in the groundwater resources in the region. Trends that are being studied and documented by other analyses such as for the Wilcox basin.

All actions should be considered within a broader geographic context, and this analysis clarified for the public. For example, while limitations on vehicular access and firearm use may be appropriate in some areas of the SPRNCA, there are other nearby BLM lands where recreational vehicle use may be more appropriate.

Cumulative factors causing habitat loss or degradation include urbanization and development, water withdrawal, grazing and recreation and other human activity. Cumulative impacts should be considered on a scale commensurate with the geographic extent of populations or potential populations (in the case of species not now found on the SPRNCA but which could in the future). For wide-ranging, low-density species like jaguar, cumulative effects should be considered over a wide area, including consideration of regional development on U.S. and Mexico federal, state and private lands.

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25 General General Fort Huachuca Effects of climate change is something that should be taken in to consideration in the cumulative impacts sections. 26 3-13 Para 7 Fort Huachuca Both groundwater and surface flow combine to contribute to base flow

24 General General Fort Huachuca Is population growth in Sierra Vista and in Mexico something that should be taken in to consideration in the cumulative impacts sections? I suspect that there are ways to figure out a project population growth in these areas. It seems that since water is the limiting factor for the success of the SPRNCA, populations has to be addressed.

No #. Appendices Figures 3-18 Many portions of the "San Pedro trail system" shown in green, has not been authorized in any NEPA document. Compare with the two SPRNCA trail documents: 1989 San Pedro River Riparian Management Plan and Intermodal Transportation Plan Environmental Assessment. There are site plans for Murray Springs, Millville with local plans for trails , but the extensive trail system shown throughout SPRNCA in green has never been authorized. For example, secondary loop trails north and south of Hwy 92. The trail along the Babocomari, trail north of Hwy 92 to St David, have never been implemented and do not exist, and should be kept that way. The Babocomari very important movement corridor for wildlife. These cumulative effects from unauthorized trails, social trails, and trespass have not been included or analyzed.

In section 3.1.2, the BLM considers the potential of cumulative impacts from foreseeable development scenarios around the SPRNCA. The list includes major developments and ROWs. However, two important issues are not included in either the cumulative impacts or unavoidable impacts in the RMP. First, climate change is not addressed in a meaningful or numeric way. In Southeast Arizona, we are already facing a 17-year drought, record low river flows in the San Pedro, increased fire risk and compounding impacts from the arrival of the Tamarisk Beetle and other invasive species concerns. The BLM needs to consider the many and compounding impacts climate change could have on SPRNCA resources.

All actions should be considered within a broader geographic context, and this analysis clarified for the public. For example, while limitations on vehicular access and firearm use may be appropriate in some areas of the SPRNCA, there are other nearby BLM lands where recreational vehicle use may be more appropriate.

Cumulative factors causing habitat loss or degradation include urbanization and development, water withdrawal, grazing and recreation and other human activity. Cumulative impacts should be considered on a scale commensurate with the geographic extent of populations or potential populations (in the case of species not now found on the SPRNCA but which could in the future). For wide-ranging, low-density species like jaguar, cumulative effects should be considered over a wide area, including consideration of regional development on U.S. and Mexico federal, state and private lands.

Likewise, to limit damage to sensitive habitats BLM should seek an inter-agency agreement with Border Patrol. Cumulative impacts from patrol activities, including offroad and helicopter patrols, off-duty activities and pursuit of illegal migrants, eventually result in environmental damage. Such an agreement should address noise reduction and other impacts like high-intensity lighting within SPRNCA near the border.

All actions should be considered within a broader geographic context, and this analysis clarified for the public. For example, while limitations on vehicular access and firearm use may be appropriate in some areas of the SPRNCA, there are other nearby BLM lands where recreational vehicle use may be more appropriate.

Cumulative factors causing habitat loss or degradation include urbanization and development, water withdrawal, grazing and recreation and other human activity. Cumulative impacts should be considered on a scale commensurate with the geographic extent of populations or potential populations (in the case of species not now found on the SPRNCA but which could in the future). For wide-ranging, low-density species like jaguar, cumulative effects should be considered over a wide area, including consideration of regional development on U.S. and Mexico federal, state and private lands.

it is dismaying to learn that there was no consideration of climate change trends, current and projected impacts, such as decreased recharge and bank storage; decreased, but more intensive flood-events; increased likelihood of fire and insect infestation; and prolonged drought. I suggest a review of the Southwest Climate Assessment that was part of the 3rd National Climate Assessment (2013) and a preview of the 4th National Climate Assessment that is due to be released by the end of this year (www.globalchange.gov). The 2013 Southwest Assessment should suffice with regard to understanding those trends and impacts, as they likely have not changed since 2013 other than an acceleration of the projected impacts.

Was the groundwater recharge occurring at the restored Sierra Ready Mix gravel pits at the confluence Banning Creek and the river accounted for?

The DRMP/DEIS fails to disclose the current number of livestock waters in the SPRNCA

Data and Science

Allington, G.R.H. and T. J. Valone. 2011. Long-term livestock exclusion in an arid grassland alters vegetation and soil. *Rangeland Ecology Management* 64(4):424-428. Changes in soil and vegetation due to livestock grazing are occurring in arid lands throughout the world. The most extreme cases result in desertification, which is seen as largely irreversible, because of altered soil properties. To understand better how long-term livestock removal affects soil properties and vegetation, we compared water-infiltration rates, soil bulk density, and perennial grass cover inside and outside a long-term livestock enclosure in an arid grassland site in southeastern Arizona, United States. The site had not been desertified at the time of this study. Exclusion of livestock for 40 yr was associated with lower bulk density and higher water infiltration in both the dry and wet seasons. Perennial grass cover was higher and two native grasses, *Eragrostis intermedia* and *Bouteloua hirsuta* were significantly more common ($P < 0.05$) in the ungrazed area. These findings parallel our results from a desertified site and suggest that changes in soil physical properties associated with long-term livestock removal are not an artifact of desertification and can take place in a system that has remained in a grassland state. Our data suggest that, although significant changes in species composition have occurred, this grassland is relatively resilient to substantial changes in soil physical properties.

Bahre, C.J. and M.L. Shelton. 1993. Historic Vegetation Change, Mesquite Increases, and Climate in Southeastern Arizona. *Journal of Biogeography* 20: 489-504. Except possibly for increases in woody xerophytes such as mesquite, all of the identified long-term vegetation changes appear to be of anthropogenic origin. Mesquite increases, however, are irregular, show no clear relation to precipitation variations, and are most likely the result of livestock grazing and/or fire exclusion.

Bahre, C.J. and M.L. Shelton. 1996. Rangeland destruction: Cattle and drought in southeastern Arizona at the turn of the century. *J. of the Southwest* 38 (1): 1-22. Recurring droughts and overstocking the open range led to huge cattle die-offs and degraded range conditions during the droughts of 1891-93 and 1898-1904. Since then, because of more efficient transportation, increased supplemental feeding, greater water development, and improved cattle marketing, droughts no longer exact major cattle die-offs on the range.

Belsky, A.J., A. Matzke, S. Uselman. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. *Journal of Soil and Water Conservation*, Vol. 54, pp. 410-431. This paper summarizes the major effects of livestock grazing on stream and riparian ecosystems in the arid West. We focused primarily on results from peer-reviewed, experimental studies, and secondarily on comparative studies of grazed vs. naturally or historically protected areas. Results were summarized in tabular form. Livestock grazing was found to negatively affect water quality and seasonal quantity, stream channel morphology, hydrology, riparian zone soils, instream and streambank vegetation, and aquatic and riparian wildlife. No positive environmental impacts were found. Livestock were also found to cause negative impacts at the landscape and regional levels. Although it is sometimes difficult to draw generalizations from the many studies, due in part to differences in methodology and environmental variability among study sites, most recent scientific studies document that livestock grazing continues to be detrimental to stream and riparian ecosystems in the West.

Bock, C.E., J.H. Bock, W.R. Kenney, V.M. Hawthorne. 1984. Responses of Birds, Rodents, and Vegetation to Livestock Exclusion in a Semidesert Grassland Site. *J. Range Management* 37:239-242. In 1981-82, a protected upland site supported 45% more grass cover, a comparatively mixed group of grass species, and 4 times as many shrubs as an adjacent grazed site. The grazed area supported a significantly higher number of birds in summer, while numbers

did not differ in winter. Rodents were significantly more abundant inside the protected area. Bock, C.E., J.H.Bock. 1993. Cover of Perennial Grasses in Southeastern Arizona in Relation to Livestock Grazing. *Conservation Biology* 7: 371-377. Total grass canopy cover was greater on ungrazed grasslands. Eight bunchgrass species also grew taller on ungrazed areas -- the three tallest species (*Bouteloua curtipendula*, *Bothriochloa barbinodis*, and *Eragrostis intermedia*) showed the greatest increase on ungrazed areas. Two short stoloniferous species (*Hilaria belangeri* and *Bouteloua eriopoda*) were the only taxa substantially more abundant on grazed areas. *Bouteloua gracilis*, the most abundant grass in the region, showed an intermediate response to release from grazing. Livestock grazing appeared to be an exotic ecological force in these southwestern grasslands, and one destructive of certain components of the native flora and fauna. Bock, C.E., J.H. Bock. 1993. Effects of Long Term Livestock Exclusion in a Semiarid Grassland. Pp.123-133 in (P.G.Rowlands, C.Riper III, and M.K.Sogge, editors) *Proceedings of the First Biennial Conference on Research in Colorado Plateau National Parks*. National Park Service, Center for Colorado Plateau Studies, Northern AZ U., Flagstaff. Canopy cover of upland perennial grasses was 61% on the Appleton-Whittell Research Ranch (AWRR) and 41% on adjacent cattle ranches. Peak fall densities of grasshoppers were three times higher on grazed lands. The bunch grass lizard was the most abundant reptile on AWRR and virtually absent on adjacent ranches. Cottonrats, harvest mice, and hispid pocket mice were the most common rodents in ungrazed habitat, whereas deer mice and kangaroo rat predominated in grazed areas. Montezuma quail, Cassin's sparrows, Botteri's sparrows, and grasshopper sparrows were common breeding birds on AWRR, whereas scaled quail, horned larks, and lark sparrows were the most abundant nesting birds on grazed lands. Bock, Carl E. and Jane H. Bock. 2000. Response of Winter Birds to Drought and Short- duration Grazing in Southeastern Arizona. P. 5 in (Linda Kennedy and Stephanie Seltzer, editors) *Audubon Research Ranch 2000*. National Audubon Society Appleton-Whittell Research Ranch. Elgin AZ. 84 pgs. Abstract reports high-density short-duration rotational grazing, coupled with a drought, left the land in a substantially denuded condition through two winters, and this in turn negatively impacted a variety of resident and migratory birds dependent on ground cover and seed production for over-winter survival. Bock, Carl E. and Jane H. Bock. 2000. Vegetative Changes in a Grass/Shrubland after Fifteen Years Without Disturbance. P. 8 in (Linda Kennedy and Stephanie Seltzer, editors) *Audubon Research Ranch 2000*. National Audubon Society Appleton-Whittell Research Ranch. Elgin AZ. 84 pgs. Preliminary results show that from 1985-2000 total shrub densities have decreased on Bald Hill on the Appleton-Whittell Research Ranch and that exotic lovegrasses are spreading significantly but slowly, despite the absence of fire, grazing, or other disturbance. Bock, Jane H., Carl E. Bock. 2002. Wildflowers, Weeds, Precipitation, and Livestock Grazing in an Arizona Grassland. Abstract: *Ecological Society of America 87th Annual Meeting/Society for Ecological Restoration 14th Annual International Conference*. August 4-9, Tucson, AZ. Pg.79. In summer of 2001 when winter precipitation had exceeded 25 cm., wildflower cover equaled that of native grasses and was significantly lower on livestock-grazed areas than on ungrazed native grassland, and much lower still in plantations of exotic African lovegrasses. Results suggest the important positive influence of winter rain on many of the wildflower species, and the negative effects of grazing and exotics. Bock, C., J. Bock, L. Kennedy, and Z. Jones. 2007a. Spread of non-native grasses into grazed versus ungrazed desert grasslands. *Journal of Arid Environments* 71:229-235. Indications are that (1) protection from grazing reduced the rate of exotic invasions into native grasslands; (2) areas deliberately planted with the exotics developed into near monocultures even under livestock exclusion; (3) livestock grazing is an exogenous disturbance to which exotics are better adapted than most native grasses. Brady, W.W, M.R. Stromberg, E.F. Aldon, C.D. Bonham, S.H. Henry. 1989. Response of a Semidesert Grassland to 16 Years of Rest from Grazing. *J. Range Management* 42:284-288. Long-term response to release from grazing included both increases in types of grasses and significant increases in canopy cover for midgrass, shortgrass, shrub, and forb plant groups. Total vegetation cover was not significantly different on the

grazed and ungrazed areas, but cover of midgrasses was significantly different (this difference due to increased cover of plains lovegrass on ungrazed pasture. Data do not support the hypothesis that continued animal impact is necessary to prevent ecosystem deterioration. Bunting, Daniel P. 2012. Riparian Restoration and Management of Arid and Semiarid watersheds. PhD Thesis for the University of Arizona School of Natural Resources and the Environment. Riparian ecosystems are valued for ecosystem services which have impacts on the well-being of humans and the environment. Anthropogenic disturbances along rivers in arid and semiarid regions have altered historical flow regimes and compromised their integrity. Many rivers are hydroecologically deteriorated, have diminished native riparian forests, and are pressured for their water supplies. My first study is founded on the premise that river restoration has increased exponentially with little documentation on effectiveness. We designed a conference to discuss lessons learned from past restoration activities to benefit future efforts. Participants, who included scientists, managers, and practitioners, agreed that creating measureable objectives with subsequent monitoring is essential for quantifying success and employing adaptive management. Attendees stated that current projects are local and have limited funding and time, whereas future efforts must have longer funding cycles, larger timeframes, should contribute to regional goals, and address factors responsible for ecological decline. Bridging gaps among science, management, and policy in the 21st century is a key component to success. My second study focused on the benefits of long-term monitoring of local riparian restoration. Many efforts include revegetation components to re-establish native cottonwood-willow communities, but do not address how high-density establishment impacts vegetation dynamics and sustainability. Over five years, we documented significantly higher growth rates, lower mortality, and higher cover in cottonwood compared to non-native tamarisk. Cottonwood height, diameter at breast height, growth rates, and foliar volumes were reduced at higher densities. Herbaceous species decreased every year but native shrubs volunteered after two years resulting in a reduction of overall plant diversity from 2007-2009 with a slight increase from 2009-2011. My third study focused on improving basin-scale evapotranspiration (ET), a large component of the water budget, to better inform water resource allocation. Coalition for Sonoran Desert Protection. 2001. Livestock grazing and the Sonoran Conservation Plan. Most of the peer-reviewed scientific literature available does not support conservation benefits of livestock grazing. The draft preliminary Plan, for example, emphasizes the use of ranch land as a boundary for urban growth. Ranches may well provide valuable open space. But where livestock grazing contributes to degradation of native ecological conditions and imperilment of species, other means of urban growth control must be utilized, and grazing must be eliminated from the most ecologically sensitive areas. The Coalition acknowledges and encourages the efforts of ranchers to reduce negative effects of livestock grazing and to restore extirpated wildlife. But these cases are exceptions. The compatibility of livestock grazing with conservation of native Sonoran desert ecological conditions and vulnerable species remains unproven. Gebhardt, K., D. Prichard, E. Crowley, and M. Stevenson. 2005. Riparian area management: Riparian and wetland classification review and application. Technical Reference 1737-21. U.S. Department of the Interior, Bureau of Land Management, Denver, CO. BLM/ST/ST05/002+1737. 26 pp. "Classifying riparian vegetation therefore requires a full understanding of species distribution and succession, in relation to environmental parameters and disturbance factors over a large area. Watershed and ecoregion frameworks are complementary. Watersheds provide the framework for determining the land/water associations, and ecoregions provide the framework for extrapolating and reporting this information. As with any procedure, misapplication is likely to occur if the users rely solely on the classification tool or its products and not on the underlying science behind the classification. Users must always place the science in front of the classification and not the other way around. Riparian and wetland systems are dynamic. Mapping and classification often produce only a snapshot that does not represent the dynamics of the system. Hall, John A., Stephanie Weinstein, Cheryl L. McIntyre. 2005. The Impacts of

Livestock Grazing in the Sonoran Desert: A Literature Review and Synthesis. The Nature Conservancy, Phoenix Field Office. Federal Cooperative Agreement No. AAA-02-0005, Task Order AAF-02-0001. 298 pgs. At the request of the BLM, The Nature Conservancy reviewed the literature regarding: (1) the impact of cattle on natural and cultural resources in desert ecosystems, (2) the implications of different grazing management strategies, (3) Sonoran Desert plant community dynamics. The literature does document that livestock grazing can cause adverse impacts, but does not provide sufficient information regarding thresholds of grazing intensity and effect on the ecosystem. Compared to more productive rangelands, both domestic livestock grazing impacts and grazing management strategies are poorly documented for the Sonoran Desert. No currently described approach, including continuous grazing and each of the specialized grazing systems, seems completely applicable to the Sonoran Desert. The study of literature also includes looking at the effects of grazing on plant communities, Saguaro recruitment and survival, other plant species, soils and biological soil crusts, wildlife, and cultural sites. Hereford, R. 1993. Entrenchment and widening of the upper San Pedro River, Arizona. U.S. Geological Survey. Special Paper 282. 46 p. A portion of Arizona's San Pedro River is managed as a National Riparian Conservation Area but is potentially affected by ground-water withdrawals beyond the conservation area borders. We applied an assessment model to the Conservation Area as a basis for monitoring long-term changes in riparian ecosystem condition resulting from changes in river water availability, and collected multi-year data on a subset of the most sensitive bioindicators. The assessment model is based on nine vegetation bioindicators that are sensitive to changes in surface water or ground water. Site index scores allow for placement into one of three condition classes, each reflecting particular ranges for site hydrology and vegetation structure. We collected the bioindicator data at 26 sites distributed among 14 reaches that had similar stream flow hydrology (spatial flow intermittency) and geomorphology (channel sinuosity, flood-plain width). Overall, 39% of the riparian corridor fell within condition class 3 (the wettest condition), 55% in condition class 2, and 6% in the driest condition class. Condition class 3 reaches have high cover of herbaceous wetland plants (e.g., *Juncus* and *Schoenoplectus* spp.) along the perennial stream channel and dense, multi-aged *Populus-Salix* woodlands in the flood plain, sustained by shallow ground water in the stream alluvium. In condition class 2, intermittent stream flows result in low cover of streamside wetland herbs, but *Populus-Salix* remain abundant in the flood plain. Perennial wetland plants are absent from condition class 1, reflecting highly intermittent stream flows; the flood plain is vegetated by *Tamarix* small tree that tolerates the deep and fluctuating ground water levels that typify this reach type. Abundance of herbaceous wetland plants and growth rate of *Salix gooddingii* varied between years with different stream flow rates, indicating utility of these measures for tracking short-term responses to hydrologic change. Repeat measurement of all bioindicators will indicate long-term trends in hydro-vegetational condition. Jones, A. 2000. Effects of cattle grazing on North American arid ecosystems: A quantitative review. *Western North American Naturalist* 60:155-164. A quantitative review was conducted of the effects of cattle grazing in arid systems on 16 response variables ranging from soil bulk density to total vegetative cover to rodent species diversity. Various studies from North American arid environments that used similar measures for assessing grazing effects on the same response variables were used for the review; each study was assigned to serve as a single data point in paired comparisons of grazed versus ungrazed sites. All analyses tested the 1-tailed null hypothesis that grazing has no effect on the measured variable. Eleven of 16 analyses (69%) revealed significant detrimental effects of cattle grazing, suggesting that cattle can have a negative impact on North American xeric ecosystems. Soil-related variables were most negatively impacted by grazing (3 of 4 categories tested were significantly impacted), followed by litter cover and biomass (2 of 2 categories tested), and rodent diversity and richness (2 of 2 categories tested). Vegetative variables showed more variability in terms of quantifiable grazing effects, with 4 of 8 categories testing significantly. Overall, these findings could shed light on which suites of variables may be effectively used by land managers to measure

ecosystem integrity and rangeland health in grazed systems. Kaltenecker, J. H., and M. C. Wicklow-Howard. 1999. Biological soil crusts: Natural barriers to *Bromus tectorum* L. establishment in the northern Great Basin, USA. VIth International Rangeland Congress - Proceedings, Townsville 109-111. In arid and semi-arid lands throughout the world, vegetation cover is often sparse or absent. Nevertheless, in open spaces between the higher plants, the soil surface is generally not bare of autotrophic life, but covered by a community of highly specialized organisms (Fig. 1.1). These communities are referred to as biological soil crusts, or cryptogamic, cryptobiotic, microbiotic, or microphytic soil crusts (Harper and Marble 1988; West 1990). Biological soil crusts are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungi filaments weave through the top few millimeters of soil, gluing loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces (Cameron 1966; Friedmann and Galun 1974; Friedmann and Ocampo-Paus 1976; Belnap and Gardner 1993). These crusts occur in all hot, cool, and cold arid and semi-arid regions. They may constitute up to 70% of the living cover in some plant communities (Belnap 1994). However, biological soil crusts have only recently been recognized as having a major influence on terrestrial ecosystems. Kelt, D. A., and T. J. Valone. 1995. Effects of grazing on the abundance and diversity of annual plants in Chihuahuan desert scrub habitat. *Oecologia* Berlin 103:191-195. We assess the impact of release from cattle grazing on the abundance and diversity of both winter and summer annual plant communities at an upper Chihuahuan Desert scrub site in south-eastern Arizona. In contrast to previous studies, we found that removal of herbivores (cattle) had little impact on ephemeral plant assemblages at our site. The total number of summer annual individuals per quadrat did not differ significantly, but there were significantly more winter annual plants on ungrazed quadrats. The number of species per quadrat, however, did not differ significantly between sites exposed to, or protected from, grazing in either season. Of 79 annual species recorded (34 in winter, 45 in summer), only 2 species, 1 in each season, responded significantly to the removal of cattle: *Stephanomeria exigua* and *Polygala tweedyi* were more abundant on ungrazed plots. Three additional species, *Eriastrum diffusum* and *Cryptantha micrantha* in winter, and *Mollugo cerviana* (summer), approached statistical significance. Differences in the effect of cattle grazing on annual plants between our results and those at other sites in the arid southwest most likely reflect differences in the speed of response by annuals in different areas. Comparisons of this with other studies underscores recent calls for studies at broader spatial and greater temporal scales. Klotz, Jason, and Aregai Teclé. 2015. Restoring the Water Quality of the San Pedro River Watershed. Hydrology and Water Resources in Arizona and the Southwest. Arizona-Nevada Academy of Science. This paper is concerned with restoring the quality of water in some portions of the San Pedro River. There are high concentrations of bacteria in some parts of the San Pedro River. Our aim is to find ways of improving the situation. Specifically, there are two objectives in the study. The first one attempts to identify the possible sources of the bacterial contamination and assess its trends within the watershed. The second objective is to determine appropriate methods of restoring the water quality. The main water quality problem is nonpoint source pollution, which enters the stream and moves along with it. The magnitude of the problem is affected by the size and duration of the streamflow, which brings bacteria-laden sediment. The amount of sediment brought into the system is large during the monsoonal events. At this time, the streamflow becomes highly turbid in response to the organic and inorganic sediments entering the system. Based on research done for this paper, the amount of bacterial concentration is strongly related to turbidity. Best management practices (BMPs) have been designed and implemented to restore the water quality problem in the area. The BMP's consist of actions such as monitoring, educational outreach, proper signage, and other range/watershed related improvement practices. Other issues that contribute to the increasing amount of bacteria that are briefly addressed in this paper are bank and gully erosion, flood control, and surface water and streamflow issues that occur on the stream headwaters. Krueper, D. J. 1993. Effects of

livestock management on Southwestern riparian ecosystems. Bureau of Land Management, San Pedro Riparian National Conservation Area. Riparian habitats historically constituted 1% of the landmass in western North America. Within the past 100 years, an estimated 95% of this habitat has been altered, degraded or destroyed due to a wide variety of land use practices such as river channelization, clearing for agriculture, livestock grazing, water impoundments and urbanization. Many authors now concur that the single most important land management practice impacting western riparian ecosystems has been unmanaged domestic livestock grazing. Over 70% of the western United States is currently being grazed by livestock in habitats ranging from sea level to alpine meadows. Unwise grazing practices have been shown to negatively affect Southwestern riparian vegetative composition, ecosystem function, and ecosystem structure. This has resulted in negative impacts on native wildlife populations including insects, fish, reptiles, amphibians, birds, and mammals. Negative impacts due largely from over a century of heavy domestic livestock utilization in riparian ecosystems has resulted in the decline of many wildlife populations. Studies have shown that up to 70% of avian species in the desert Southwest depend upon riparian habitats for survival at some stage of their life. Over forty percent of Arizona's state-listed bird species are considered to be riparian obligate species. Ninety percent of Arizona's native fish species are now extinct, extirpated, or Federally or state listed. Many other vertebrate species have declined in recent years due to alteration of riparian habitats, and may soon be considered for Federal listing. To prevent future listings and to reverse population declines of sensitive wildlife species, land management agencies need to implement appropriate practices within riparian ecosystems. Krueper, D., J. Bart, and T Rich. 2003. Response of vegetation and breeding birds to the removal of cattle on the San Pedro River, Arizona (USA). *Conservation Biology*, Vol. 17, No. 2: pages 607-615. A before-and-after study from 1986-1990 (Krueper et al. 2003) found that more birds were detected in an area of riparian, mesquite and Chihuahuan desert-scrub in Arizona, USA, after the removal of cattle and the onset of a grazing moratorium in 1988 (average of 221 birds detected/km of transect in 1990 vs. 103 birds/km for 1986). Detections increased for 42 species, 26 significantly, and decreased for 19 species, eight significantly. Only four species in the study showed similar trends in regional Breeding Bird Surveys. Insectivores, granivores, midstory species, upperstory species and riparian species were most likely to increase, and migrants tended to show greater increases than residents. Chihuahuan desert-scrub species showed the smallest increases and were most likely to decline, possibly because the Chihuahuan scrub changed the least with the grazing moratorium. Surveys were conducted three times a month, every month over the study period. La Porte, Ariana. 2017. Masters Thesis for University of Arizona School of Natural Resources and the Environment. Gray Hawk Expansion in the San Pedro River Valley: Diet, Habitat, and Landscape Change. We found that that gray hawks used a wider variety of vegetation types, such as nest trees surrounded by grasslands, and consumed a wider variety of prey than they did in the 1990s, and that productivity remained constant over time. Like many populations at the edge of their range, the gray hawks that initially settled in the San Pedro River valley likely had access to only a portion of the resources that are common at the center of the species' range, and therefore appeared to have a narrower set of diet and habitat requirements than the species as a whole. Areas that are currently being used by gray hawks for nesting (e.g., nest trees surrounded by grasslands) were likely unsuitable in the 1990's because they were then being used for agriculture and grazing. The two chapters of this thesis will be submitted to journals for publication and therefore contain overlapping information. Hoorman, J. and J. McCutcheon. 2012. Negative effects of livestock grazing riparian areas. Ohio State University Extension Fact Sheet. The current environmental focus on controlling nonpoint pollution to protect our surface water has led to the discussion of management of riparian areas. The Environmental Protection Agency states that agriculture has a greater impact on stream and river contamination than any other nonpoint source. Grazing, particularly improper grazing of riparian areas can contribute to nonpoint source pollution. Negative impacts downstream include the contamination of

drinking water supplies (55% of Ohio's drinking water comes from surface water (Brown, 1994)), eutrophication of Lake Erie (Richards et al., 2002), and hypoxia in the Gulf of Mexico (Rabalais et al., 2001). This series of fact sheets looks at the issues of livestock and streams and what livestock producers can do to protect this precious resource. Before we discuss managing grazing livestock to decrease nonpoint pollution, it would be helpful to review the damage livestock can do to riparian areas and surface water. One cannot discuss the effects on streams by grazing livestock without recognizing the interwoven and connected nature of watersheds, riparian zones, streams, and watershed activities. Activities affecting watersheds or riparian zones also affect stream ecosystems directly, indirectly, and cumulatively. Although this series of fact sheets primarily focuses on the riparian areas, it is understated that mismanagement of the land resources in the watershed can have as big an impact on surface water. Mack, R. N., and J. N. Thompson. 1982. Evolution in steppe with few large, hoofed animals. *The American Naturalist* 119:757-772. National Riparian Service Team. 2012. Riparian Conditions Along the San Pedro River: Proper Functioning Condition Riparian Assessment Report. USDI, NRST, BLM, USDA, NRCS. The assessment findings provide evidence that the physical function and ecological health of the San Pedro River through the SPRNCA has improved dramatically since designation, largely due to the 1989 decision to end permitted livestock grazing along the river. Although recovery may have been possible with managed grazing, relief from grazing pressure has allowed development of riparian vegetation and channel characteristics that greatly improve the function and sustainability of the San Pedro River. Continued recovery in all reaches is necessary to meet Congressional direction, but significant positive changes have occurred already. Of the approximately 51 miles assessed, 27.4 miles (54%) were rated as Proper Functioning Condition, and the remaining 23.4 miles (46%) rated as Functional at Risk (FAR). The Functional at Risk reaches were further assigned apparent trend: 8.9 miles showed an upward trend, 10.3 miles showed a not apparent trend, and 4.2 miles (the northernmost reach below St. David's diversion) showed a downward trend. Reach-specific assessment findings, issues and management considerations are discussed in detail within the report. For reaches rated Functional at Risk with either a downward or not apparent trend, the NRST recommends the establishment of a monitoring strategy to measure change over time. Additionally, since St. David is the only reach rated as Functional at Risk (with a downward trend), it requires immediate management action be taken to eliminate those stressors that are within management control. The main impacts limiting the ability of St. David reach to achieve Proper Functioning Condition are the St. David's diversion, livestock grazing and off-highway vehicle use. The latter two uses are currently unauthorized and within BLM management purview to address. One of the major decisions made in 1989 through the SPRNCA's original management plan(s) was to end permitted livestock grazing in areas along the river. As previously noted, this has allowed development of riparian vegetation and channel characteristics that greatly improve the function and sustainability of the San Pedro River. A key finding of this assessment, however, is that while the BLM made efforts to eliminate trespass livestock in the SPRNCA, more needs to be done and State Office support is needed. Livestock use is, to some degree, retarding recovery of sections of the river; unauthorized grazing was found all along the river, but the detrimental impacts wer...[TEXT TRUNCATED, EXCEEDS LIMIT]

I. Albrecht, Eric W., Erika L. Geiger, Andrea R. Litt, Guy R. McPherson, and Robert J. Steidl, 2008. Fire as a tool to restore biodiversity in ecosystems dominated by invasive grasses. Department of Defense Legacy Resource Management Program, PROJECT 03-192 2. Chasey, Richard, 2010. Lehmann Lovegrass (*Eragrostis Lehmaniana* Nees.) Annotated Bibliography.http://researchranch.audubon.org/PDFs/E_lehmanniana_annotated_bibliography_rc_6-3-10.pdf 3. Hamerlynck, Erik P., Russell L. Scott, and Greg A. Barron-Gafford. 2013. Consequences of cool-season drought-induced plant mortality to Chihuahuan desert grassland ecosystem and soil respiration

dynamics. *Ecosystems* 16.7: 1178-1191. 4. Pelletier, Jon D., Mary H. Nichols and Mark A. Nearing. 2016. The influence of Holocene vegetation changes on topography and erosion rates: a case study at Walnut Gulch Experimental Watershed, Arizona. *Earth Surface Dynamics*. 4: 471-488. 5. Southwest Watershed Research Center, Agricultural Research Service, Walnut Gulch Experimental Watershed precipitation gauge network. Watershed 63, rain gauge 1. 6. Western Regional Climate Center, Western US historical summaries, Station 022902, Fairbanks IS

Public submitted two comment matrix items containing information and references for consideration by BLM concerning livestock grazing and recreation. See source PDF pages 19-26 for items.

12. 1.4 Table 1.2 Scientific resources should include type of research not number of research projects.

Notwithstanding the relationship to the riparian areas, the uplands themselves are a critical component of wildlife habitat on the SPRNCA. Upland vegetation is directly related to winter species richness and abundance of avian species. Strong and Bock, 1990. Overgrazing and destruction of grasslands are leading causes of bird imperilment in the southwest, including for many of the species that depend on the SPRNCA. Finch, C. Ed. 2005. Livestock grazing has numerous known impacts to uplands, including the effects of range developments on habitat integrity. Fleischner 1994. The DRMP/DEIS fails to address the suite of impacts to the values the SPRNCA is meant to protect.

there is a lack of analysis of, or even acknowledgment of important species of bats found in the SPRNCA. As the BLM is aware, scientists have been studying bats in the area of the SPRNCA since at least 1980. See comments of Dr. Ronnie Sidner in response to the 1988 proposed RMP for the SPRNCA. The DRMP/DEIS specifically mentions six species of bats and discusses these ecologically important species in a few paragraphs on just 3 pages of the entire DRMP/DEIS, including Volumes 1 and 2. DRMP Vol. 2, Table R-2. "BLM Sensitive Species In addition to federally listed species, BLM sensitive species that may occur on the SPRNCA include two plants, two fish, one amphibian, two reptiles, eight birds, six bats, and one mammal (BLM 2017). See Appendix R for more information on the occurrences and associated priority habitats for these BLM sensitive species." (DRMP Vol. 1, page 3-55) There is only a single citation to a study that discusses bats: Wolf, S. 2008. Charleston- Brunckow Mine Surveys for Bats. Bureau of Land Management, San Pedro Project Office files, Hereford, Arizona. The DRMP/DEIS fails to discuss the pallid bat (*Antrozous pallidus*) or the big brown bat (*Eptesicus fuscus*), two insectivorous bats that have historically occupied maternity roosts along east drainages of the San Pedro River and approximately 2,800 individual bats were banded, recaptured over 20,000 times, and studied between 1990 and 1988. Some individual bats banded in 1980 were still present in the study area in 1988. The pallid bat was known to roost in the Fairbanks headquarters within the SPRNCA boundary. The pallid bat was identified in 1988 as a species suitable for study to determine long-term changes in the area and the impacts to wildlife. Other bat species present in the project area and not discussed in the DRMP/DEIS include Sanborn's long-nosed bat (*Leptonycteris sanborni*), which depends on seasonal production of carbohydrates from specific plants found the Chihuahuan desertscrub and the semi-desert grasslands (i.e., the uplands). The habitat for Sanborn's long-nosed bat was seriously negatively impacted by livestock grazing and associated management to facilitate grazing, yet there is no mention of this 35 species in the DRMP/DEIS and absolutely no analysis of livestock grazing on this species. The DRMP/DEIS fails to acknowledge, much less analyze the impacts plant community alternation has had or will have under any alternative in the project area. As Dr. Sidner noted in 1988, the importance of the SPRNCA to various bat species is obvious from the number of species of bats that were documented in just one-half hour at the BLM Fairbanks

headquarters: three species of Vespertilionidae (*Antrozous pallidus*, *Plecotus townsendii*, and *Myotis velifer*), and one species of Phyllostomidae (*Leptonycteris sanbori*). These and other bat species benefit most from management actions that strongly encourage habitat preservation and natural restoration. The impacts to bats from the proposed vegetation management utilizing herbicides have not been disclosed and it appears this issue has not been considered by the BLM. There has been inadequate discussion of the impact non-native species of plants, spread through livestock grazing, will have on the food sources for bats in the project area. This single paragraph represents the entire analysis available for public review: Improper livestock grazing in areas with bat food plants may adversely affect special status bat species, such as the lesser long-nosed bat, by decreasing food resources and therefore availability of suitable habitat. Concentrated livestock can result in trampling or herbivory of young agaves and cacti, soil compaction, erosion, alteration of plant community species composition and abundance, and changes in the natural fire regime (USFS 2015), all of which would decrease habitat suitability for nectar-feeding bats; however, the 5-year review of the status of the lesser long-nosed bat indicated that livestock grazing is probably not as significant of an effect on lesser long-nosed bat forage availability as previously thought and that livestock grazing carried out under a grazing system that maintains good to excellent range conditions and properly functioning riparian systems would likely not result in take of this species (USFWS 2007)." (DRMP Vol. 1, page 3-60) Managing fire and fires suppression, which can alter native plant communities in the SPRNCA will have negative impacts on bat species, has not been disclosed at all. The BLM has done no analysis of the impacts of the proposed alternatives in terms of the relationship between bats and two key aspects of their habitat - water in the river and vegetation in the uplands. There is no information on how the proposed water developments associated with livestock grazing will impact bat species. While Dr. Sidner's work cited above is from 1988, we note that scientists have continued to study bats in the SPRNCA since that time. It is unclear if the BLM is aware of recent research. Below we provide just a small sampling of peer reviewed literature discussing the importance of the SPRNCA, including the uplands, to bat species. Hagen, E.M., and J.L. Sabo 2012. Influence of river drying and insect availability on bat activity along the San Pedro River, Arizona (USA). *Journal of Arid Environments*, Vol. 84, September 2012, pages 1-8. We evaluated the effects of flow reduction and drying on prey availability and bat activity along a desert river in southeastern Arizona. We sampled bat activity and insect availability during the dry season at perennial and intermittent sites along the San Pedro River. Intermittent sites included both temporally flowing and dry conditions during the study period. Bat activity 36 significantly declined between May and June sampling periods but was not related to whether sites had perennial or intermittent flow. Declines in bat activity corresponded to reductions in insect availability, but only at perennial sites. Bats tracked aquatic insect availability at perennial sites but not at intermittent sites, where insects appear to actively aggregate above localized wet portions of the intermittent reaches. Finally, both bat and insect availability declined to nearly undetected levels when the river dried at 2 of 16 sites in despite increases in terrestrial insect availability. Our results indicate that intermittency affects bat activity indirectly via its effects on prey availability. Seasonal river drying appears to have complex effects on foraging decisions by bats, initially causing imperfect tracking by consumers of localized concentrations of resources, but later resulting in disappearance of both insects and bats after complete drying. See also Hagen 2010. *Spatial and Temporal patterns in insectivorous bat activity in river-riparian landscapes*_Dissertation. Korine, C. et al, 2015. *Bats and Water: Anthropogenic Alternations Threaten Global Bat Populations*. *Bats in the Anthropocene: Conservation of Bats in a Changing World*, pp. 215-241. A recent report on total wetland loss in the USA from 2004-2009, showed a 25 % reduction from the previous reporting period. In addition, a total of 95,000 acres of saltwater wetlands and 265,720 acres of freshwater wetlands were lost (Dahl and Stedman 2013). The situation is exacerbated in the western USA, where livestock grazing has damaged at least 80 % of stream and riparian ecosystems (Belsky and Matzke 1999). The consequences for bats are

illustrated by observed declines in bat activity as related to flow-reduction and drying along the San Pedro River in Arizona. Moreover, these declines corresponded to declines in insect availability at perennial sites and both bat activity and insect activity declined to imperceptible levels in areas where the river dried up (Hagen and Sabo 2012).

36. 3-44, 3rd Paragraph BLM states: "Although the northern Mexican garter snake is thought to be extirpated from the SPRNCA, designated critical habitat for this species exists on the SPRNCA, and the USFWS has observations of northern Mexican garter snake from the SPRNCA (USFWS 2014)." Comment: BLM is incorrect - As of September 6, 2018 critical habitat has not been "designated". See <https://www.gpo.gov/fdsys/pkg/FR-2013-07-10/pdf/2013-16520.pdf> Also see personal communication from Jeff Servoss at USFWS stating "At this time, we are not working on re-proposing a critical habitat rule for the garter snake. Instead, we are focusing on other agency priorities as directed by the current administration." Corrected/Suggested language: The northern Mexican garter snake is thought to be extirpated from the SPRNCA.

AAF has completed a GIS product that shows the results of the work and the positive response of pronghorn antelope populations. The baseline work included an extensive evaluation of existing and suitable habitats for pronghorn antelope in southeastern Arizona. Our work was in coordination with the Arizona Game and Fish Department Tucson Region and the big game program. The results did not identify the San Pedro Riparian Conservation Area (SPRNCA) uplands as suitable habitat. The issues are: The predominate Chihuahuan desert uplands with shallow soils and little evidence that grasslands restoration would be successful. Fragmentation of the connecting corridor to the west by sub-divisions and other human development. Unsuitable habitats in the river flood plain, effectively functioning as a movement barrier across SPRNCA. The Arizona Antelope Foundation recommends removing pronghorn antelope as a wildlife focus species from the RMP. We do not believe the statewide priorities for this species would ever result in serious consideration of a transplant of pronghorn to SPRNCA.

BLM report (Kreuper et al 2003) completely ignored by the DRMP/EIS documents the dramatic improvement in breeding season birds after the removal of cattle from SPRNCA: "In late 1987 cattle were removed from the San Pedro Riparian National Conservation Area (NCA) in Southeastern Arizona (U.S.A.). We monitored vegetation density and abundance of birds during the breeding season during 1986-1990 in riparian, mesquite grassland, and Chihuahuan desert-scrub communities in the NCA. The density of herbaceous vegetation increased four- to six-fold in riparian and mesquite grassland communities. Little change occurred in herbaceous vegetation in desert scrub, or in the density of shrubs or trees in any of the communities. Of 61 bird species for which sufficient data were collected, mean detections per kilometer increased for 42 species, 26 significantly, and decreased for 19 species, 8 significantly. The number of individuals of all avian species detected on surveys increased each year from 103/kilometer in 1986 to 221/kilometer in 1991, an average annual increase of 23% ($p < 0.001$). The largest increases occurred in riparian species, open-cup nesters, Neotropical migrants, and insectivores. Species of the Chihuahuan desert-scrub, in species showed increasing regional trends for the same period, as demonstrated by the North American Breeding Bird Survey; thus, increases on the San Pedro Riparian NCA were likely caused by the change in local conditions, not by regional effects. Our results suggest that removing cattle from riparian areas in the southwestern United States can have profound benefits for breeding birds."¹⁷

No #. 2.20, 2021, Appendix J. Arizona tree frog has never been documented on SPRNCA-remove from list: remove Arizona tree frog in list of priority species. Arizona tree frogs have not been documented on SPRNCA (see Rosen 2005, Corman 1988, and SPRNCA reptile and amphibian list).

8. 1.1, paragraph 4 Number of reptiles and amphibians on SPRNCA: The statement "more than 50 species of reptiles and amphibians should be changed to 67 documented currently or historically, which includes 59 native species and 8 introduced species. See the SPRNCA reptile and amphibian inventory (Corman 1988) and the SPRNCA AMS.

11. 1.4 Table 1.2 Wildlife resources should include vegetation richness, which is a major influence on wildlife species richness. See Qiann 2007 and others.

7. 1.1 paragraph 3 Number of neotropical migrants: The statement that there are 240 neotropical migrants is not supported by the SPRNCA bird list (BLM/AZ/GI-96/006). There are 247 neotropical migrants documented on SPRNCA. Either change to wording to state 247 or "About 250"

9. 1.1, paragraph 4. Number of mammal species on SPRNCA: There have been 86 mammal species recorded on SPRNCA (see Duncan 1989).

Add Partners in Flight Landbird Conservation Plan: 2016 Revision for Canada and Continental United States - This plan is by far the most important reference for bird conservation and protection actions at SPRNCA. <http://www.partnersinflight.org/wp-content/uploads/2016/08/pif-continental-plan-final-spread-single.pdf> The species vulnerability assessments in this publication are more current than the USFWS Birds of Conservation Concern-2008 list. "Among the 86 Watch List species presented in this 2016 Plan Revision, 22 species that have already lost at least half of their population in the past 40 years are projected to lose an additional 50% of their current population within the next 40 years."

Crediting over 400 species of birds to SPRNCA is a bit of an overstatement. eBird records document approximately 300 species. The Arizona Important Bird Area program gives a rough estimate of 100 species of breeding birds and over 250 species of migrant and wintering birds (some of those species also breed at SPRNCA). A more accurate estimate of total bird species would be approximately 300.

On August 14, 2018, using the Arizona Online Environmental Review Tool (ERT) (<https://azhgis2.esri.com>) of the Heritage Data Management System (HDMS), the Department generated two species lists for the SPRNCA. These two lists were compared with the species lists presented in the Draft RMPIEIS and discrepancies were noted as follows: Table 1 (attached), titled Special Status Species and Special Areas Documented within 3 Miles of Project Vicinity, indicates several species that were not included in the Draft RMPIEIS analysis yet are documented as occurring on or near the SPRNCA. SPRNCA RMP and EIS Comments September 27, 2019 Page 3 Table 2 (attached), titled Species of Greatest Conservation Need Predicted within 3 Miles of Project Vicinity based on Predicted Range Models, indicates additional SGCN species the Department requests BLM consider in the analysis. The RMP/EIS analysis includes five species that do not appear on either of the above-mentioned lists indicating the Department has received no documentation of these species' occurrence in or adjacent the project area. They are: *Carex ultra* *Peucea botteri* *arizonae* *Aquila chrysaetos* *Athene cunicularia* *hypugaea* Arizona (Cochise) Giant Sedge Arizona Botteri's Sparrow Golden Eagle Western Burrowing Owl The Department questions the inclusion of the Arizona Tree Frog (*Hyla wrightorum*) as a species under consideration for reintroduction, transplantation, or augmentation as the Department has no records of this species occurring in the project area and the

SPRNCA does not contain Arizona tree frog habitat. If the BLM has occurrence records in the project area, the Department requests such documentation is shared with the Department's Heritage Data Management System. Recommendation: The Department requests adding to the EIS analysis the species indicated in Tables 1 and 2 (attached). Unless the BLM has documentation of the occurrence of the Arizona tree frog on the SPRNCA, the Department recommends removal of this species in the EIS analysis. The HDMS relies upon timely submittals of SGCN occurrence records in order to provide the best scientific data available for users. The Department, therefore, requests the BLM provide occurrence documentation to the Department's Heritage Data Management System for the species referenced above.

Dr. Lacher's analysis indicates that doing nothing is more harmful than an active management approach focusing on conservation and recharge projects, including projects like the Cochise Conservation and Recharge Network that the County and City have championed over the past several years. Corrected/Suggested language: Note that the recent modeling presented to BLM by Dr. Laurel Lacher indicates that a "hands off" approach represented by Alternative D does not present the best option for improving flows within the SPRNCA. Rather, Alternatives B or C, which allow for implementation of a broader array of recharge and other conservation projects have the greatest potential for improving flows of the San Pedro and supporting the riparian habitat in the long term (as "long term" is defined within the RMP).

25. 3-17, Last full paragraph, Alternatives Comparison Analysis BLM states: "Although all the action alternatives would pump less groundwater, Alternative D would decrease the overall need for groundwater pumping, whereas Alternatives B and C would only minimize the amount of water that is pumped through water conservation measures. Consequently, Alternative D would have the greatest impact on improving base flow." Comment: On July 30, 2018, BLM representatives viewed a modeling presentation by Dr. Laurel Lacher comparing various scenarios regarding groundwater use within the Sierra Vista subwatershed. The modeling indicated that an abrupt and complete cessation of all groundwater use within the Sierra Vista subwatershed would not benefit the flows of the San Pedro River for several decades and would actually be more detrimental to the health of the SPRNCA than other water management approaches. Dr. Lacher's findings indicate that a "hands off" approach to water management on the SPRNCA as postulated in Alternative D is not, in fact, an approach that would result in the "greatest potential for improving flows."

Fees charged for forage on private, state and federal lands Source: Arizona Agricultural Statistics (Arizona Agricultural Statistics Service 1999) Private non-irrigated range in 11 Western states Market \$11.90 /AUM Arizona State Land Department lands \$1.95 /AUM Bureau of Land Management or Forest Service lands \$1.35 /AUM *(BLM's rates per AUM: 2017 - \$1.87, 2018 - reduced to \$1.41))

Issues dismissed from detailed analysis

The SPRNCA was established in part to protect the scientific and educational values of the conservation area. P.L. 100-969. Despite the importance of those values, the DRMP/DEIS does not address the potential impacts of the alternatives on the scientific studies presently underway. The DRMP/DEIS should have included a list of the ongoing scientific studies of the river, provided maps of study sites, and evaluated whether the proposed management changes would affect the results of the analysis. Because so few rivers in the southwest are undammed and ungrazed, and so few BLM lands are ungrazed in general, the educational and scientific opportunities of the SPRNCA cannot be overlooked.

We are specifically concerned with two species that are not analyzed in the DRMP/DEIS: jaguars and Mexican wolves. In the case of jaguar, the BLM relies on conformance to the Arizona Standards and Guidelines for Grazing to ameliorate impacts. DRMP/DEIS at 3-138. For the reason elaborated elsewhere in these comments, those guidelines are not sufficient to ensure against harms to 37 this rare and highly imperiled species. Wolves are not mentioned in the DRMP/DEIS. But both of these species can and do exist within the surrounding regions and are affected both directly and indirectly by livestock grazing, not the least impact of which is the potential for non-target take through the activities of Wildlife Services seeking to kill predators at the behest of the livestock industry (e.g. coyotes, mountain lions, bears).

Water Resources Why did BLM not include further analysis of this, the most critical resource issue? Although it is true that "the BLM does not have the authority to develop water usage plans for non-public lands", and that "such authority lies with the local city and county", protection of baseflows and aquifer/groundwater levels is imperative to maintaining the SPRNCA's riparian ecosystem and there is much BLM can and should do to promote better conditions of flow in the subwatershed. Isn't that one of the reasons why BLM participates on the Upper San Pedro Partnership?

The archaeological resources of this area, from the 18th, 19th, and early 20th century, are something that many people find very interesting, but their use and management is given little attention in this draft.

9 1-8 7 Fort Huachuca It seems as if the idea of managing vegetation for water consumption reduction is dismissed. BLM should manage riparian vegetation to reduce water consumption but doesn't have to be done in a short term manner.

Having the ability to eliminate livestock grazing and impoundment as confounding factors in data analysis over the past years has allowed scientists to utilize the SPRNCA to understand the basics of aquatic and riparian flow needs and ecosystem dynamics free from the entanglement of the stressor of livestock grazing. Should grazing be reinstated, this opportunity will be lost.

The San Pedro River and its associated riparian and terrestrial ecosystems has long served as such a laboratory for scientific study. The value of the River, the SPRNCA in particular, to produce information that can inform our species' future should not be taken lightly. Scientists from regional universities, government agencies, and non-profit organizations working in this region have produced over 150 peer-reviewed articles in science and policy journals over the past 25 years (Appendix I). Additional studies have been published in book chapters and reports. Dozens of young scientists have been trained as undergraduate and graduate students along the River and have gone on to have productive careers, representing a solid investment in natural capital.

Because of its large size and status as a conservation area, the San Pedro in the SPRNCA has become the most frequently studied river in the Southwest. The remarkable scientific value of this river accrues from its ungrazed status combined with absence of the large diversion dams that modify so many waterways. The ability to eliminate grazing and impoundment as confounding factors has allowed scientists to utilize the SPRNCA to understand riparian ecosystem dynamics and to examine effects of other regionally important stressors including stream dewatering, drought, and climate change. Studies within the SPRNCA have, to date, yielded valuable information on the environmental flow needs of various taxa and ecosystems, the ecological importance of perennial and intermittent stream flows, and the importance of flooding as an ecosystem disturbance. These and other research opportunities will no longer be available

should grazing be reinstated. Furthermore, these opportunities don't exist elsewhere in southern Arizona, making the SPRNCA a unique and incredibly valuable scientific resource.

Lands and Realty

13. 2-50, Land & Realty BLM states: "A withdrawal revocation action for the Charleston Dam and Reservoir would be forwarded to the Secretary of the Interior for approval to clear the record of this withdrawal that is no longer needed. If the withdrawal is revoked, the land would be managed according to decisions in this RMP." Comment: The Charleston Dam and Reservoir are not discussed in the affected environment section of the document. Corrected/Suggested language: Provide context for the withdrawal and revocation action to inform the reader of the subject matter. Analyze the impacts of the revocation of said withdrawal.

* Aside from the existing Charleston utility corridor (as proposed in Alt. B and C), the entire SPRNCA should be an exclusion zone for new Right of Way permits (Alt. 0). The impacts of road ROW development are well established and would significantly degrade the resources of the NCA. In addition, vegetation management under transmission lines has become a major ecological impact to riparian areas and contributes to both habitat loss and fragmentation. Since the establishment of NERC Standard FAC-003-1 (Transmission Vegetation Management Program), the industry standard has become the clearing of all trees under or near transmission lines. This is particularly likely for tall trees like cottonwood.

If SPRNCA is opened to grazing, wouldn't that be discriminating against farmers who would like to cultivate crops? I. Would the public be allowed to plant gardens on the SPRNCA? Could I graze my horses on SPRNCA?

It doesn't take more than a thunderstorm to blow out a fence or water-gap, or a person with wirecutters to create holes that cattle push through. Those cattle then head for the river, where there is water, shade, and lots of plants to eat. There they stay through the seasons until a busy rancher comes to round them up. So, the preferred alternative will result in many more unauthorized cattle up and down the riparian corridor, and in neighboring sacaton flats and semidesert grasslands outside of the proposed grazing allotments.

Another serious problem with the preferred alternative is the 43 miles of new fencing that BLM will be responsible for maintaining. Where will the funding for that come from, and who has time to do it? There is already a boundary fence around the entire SPRNCA, including several watergaps, that needs regular maintenance.

Lands with Wilderness Characteristics

Manage at least some of the land with wilderness characteristics, although the options seem extreme. Surely there are options between 0 wilderness and 28,000+ acres of wilderness.

BLM should further evaluate and appropriately document its analysis in considering the citizen LWC inventory proposal for Banning Creek, AZ-G022-023, which qualifies as an LWC under BLM Manual 6310 due to its size, naturalness, and outstanding opportunities for solitude or primitive recreation. We request additional information be made available to the public as to why BLM may need the haul road for administrative purposes, as it is currently labeled as a reclaiming non-administrative road and is overgrown and unpassable as documented in the citizen inventory. We also request BLM reconsider managing the

Jaguar area, AZ-G022-022, as an LWC. BLM could acquire the nearby land owned by Union Pacific and manage the Jaguar area as a connected unit to adjacent LWCs.

BLM must adopt meaningful protections in the SPRNCA RMP for wilderness resources as part of its multiple use mission. Additionally, Manual 6320 directs that "an alternative that protects lands with wilderness characteristics must contain management actions to achieve protection." Manual 6320 at .06(A)(2)(d). BLM maintains discretion to set management actions for LWCs that it is managing for the protection of those wilderness characteristics as a priority over other multiple uses. However, BLM should set baseline management actions that will ensure appropriate protection of all LWC units being prioritized for protection of wilderness characteristics. Baseline management must include: closed or NSO stipulation for fluid minerals; no construction or maintenance of roads; closed to renewable energy development; ROW exclusion; closed to solid mineral leasing and saleable minerals; and retain in federal ownership. We support Alternative D's prescription to have all 23,810 acres of identified LWCs to be managed as ROW exclusion areas, closed to motorized and mechanized use, unavailable to livestock grazing, and as VRM Class II. See DRMP, Table 3-45, p. 3.95. From this baseline, BLM can and should consider tailoring management prescriptions to individual units based on specific threats to wilderness values and supplemental values that are present. BLM has done so for other RMPs. For example, the Taos RMP/ROD (NM) contains both general management guidance for protecting wilderness characteristics but also sets specific management prescriptions for each area managed for wilderness characteristics. Approved RMP/ROD at 28-29. In addition, Grand Junction (CO) Proposed RMP identifies specific management objectives and actions for each LWC targeted to the individual values and threats for each unit. Proposed RMP at 2-152-158

Jaguar area, AZ-G022-022. While the citizen inventory for the unit submitted in 2016 is less than 5,000 acres, BLM could easily expand the area by purchasing the private land, offered by Union Pacific, the present owner, that cuts north to south through the SPRNCA. Additionally, with the acquisition of Union Pacific's land, the Jaguar unit could easily be merged into another adjacent LWC unit to satisfy the 5,000-acre requirement. The Jaguar area deserves protection via management for wilderness characteristics, as it is one of the most pristine and well hydrated areas within the SPRNCA.

We are particularly concerned about the preferred alternative's plan to open areas adjacent to LWCs to motorized vehicles. Providing for motorized use in these areas increases the potential to degrade the LWCs that BLM is required to protect and preserve. See DRMP Fig. 2-13, A-14. See DRMP Fig. 2-20, A-21. Opening these areas to motorized use increases the potential for illegal off-road motorized use to occur within the LWCs themselves. These activities undoubtedly increase the potential to damage those wild landscapes.

the agency has chosen under its preferred alternative not to manage those areas in accordance with the LWC classification. The DRMP/EIS offers no reasons for this choice.

In assessing naturalness, BLM's WI Manual requires that noticeable human impacts must be documented and that their cumulative effect must be summarized.²⁶ In addition, some assessment of major outside impact is required. BLM's WI fails to meet either of these required criteria. The WI completed for the Cereus Unit includes only select human imprints and does not include any assessment of major outside impact. ²³ BLM Lands with Wilderness Characteristics Inventory Report (Cereus Unit, Form 2 Current Conditions: Presence or Absence of Wilderness Characteristics). ²⁴ Notably, this textual description (including two miles of EPNG's gas line and would include that portion of the line traversing EPNG's

private land) is inconsistent with SPRNCA Wilderness Characteristics Cereus Unit Map 2 (which visually excludes EPNG's private land and depicts a lengthy break in the two mile pipeline ROW). See Attachment D. 25 BLM WI Manual at pg. 9. 26 BLM policy provides that the work of human beings must be substantially unnoticeable and provides examples of such improvements including: "trails, trail signs, bridges, fire breaks, pit toilets, fisheries enhancement facilities, fire rings, historic properties, archaeological resources, hitching posts, snow gauges, water quantity and quality measuring devices, research monitoring markers and devices, minor radio repeater sites, air quality monitoring devices, fencing, spring developments, barely visible linear disturbances, and stock ponds." BLM WI Manual at pg. 6. SPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27, 2018 Page 11 BLM purports to document human imprints in its Lands with Wilderness Characteristics Inventory Report (Cereus Unit, Table 5).²⁷ Table 5, however, does not include the two miles of EPNG's gas line or meter stations that purportedly "form the northern boundary of the unit" or service roads within the ROWs or the Union Pacific railway improvements along the 7.5 mile western boundary. Similarly, powerlines and phone lines in established ROW corridors along the northern boundary of Highway 82 were excluded from consideration.²⁸ In addition, for those human imprints that were documented in Table 5, BLM concluded (without established precedent) that prevalent features of the historic townsite of Contention and mineral mill structures all with building remnants (along with cemeteries and railroad beds) had cultural resource significance and were thereby excluded from consideration of being "noticeable human impacts." With regard to outside impacts, the WI worksheet contains no analysis of any impacts of human activities outside of the Cereus Unit. At a minimum, BLM should consider the effects of the numerous highways and county roads that surround and bisect the unit and those past, present and reasonably foreseeable future actions identified in the cumulative effects section of the DEIS/DRMP.²⁹ In light of these identified issues, BLM should redo the WI naturalness analysis and consider all relevant human impacts (both within and outside of the unit) as required by its own policy.

BLM policy provides that "if size, naturalness, and outstanding opportunities criteria are met" then BLM should "determine if the area contains ecological, geological, or other features of scientific, educational, scenic, or historical value. „³⁴ BLM's WI for the Cereus Unit states that because the inventory unit is within SPRNCA it contains examples of resource values the conservation area was established for. The WI also includes assertions of presence of riparian areas, vegetation, occupation of threatened and endangered species and significant vegetation types. None of the assertions are, however, supported relative to whether or not those conditions exist within the Cereus Unit. Accordingly, the WI should be redone to document baseline conditions within the Cereus Unit consistent with the information provided in the DEIS and baseline conditions analysis.

BLM's WI with respect to this criterion consists of a single sentence that concludes "the unit's rugged topography and vegetative screening, non-motorized trail access, and distance from access points provide a remote area with low visitor use and outstanding opportunities for solitude.,,³⁰ This conclusion is, however, opposite of the content of the DEIS stating: "The SPRNCA provides opportunities for outdoor recreation in a variety of settings, including the riparian area, river valley, side drainages, and uplands. The climate is cool in the winter and hot in the summer. The area attracts winter visitors from colder regions. The SPRNCA is near I-10 and is easily accessible to regional and out-of-state travelers via State Highways 80, 82, 90 and 92. Several Cochise County roads provide access to the SPRNCA, including Charleston and 27 BLM Lands with Wilderness Characteristics Inventory Report (May, 2016). ²⁸ See DEIS/DRMP at 3-5 (stating that there are 5,120 acres of existing ROWs within SPRNCA and 225 acres of disturbance from existing facilities). ²⁹ DEIS /DRMP at 3-5 (including existing development and grazing in the

watershed, planned housing developments, erosion control and vegetation treatments). 30 BLM Lands with Wilderness Characteristics Inventory Report (Cereus Unit, Form 2 Current Conditions: Presence or Absence of Wilderness Characteristics). SPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27, 2018 Page 12 Hereford Roads. The trail system from SPRNCA was established in 1996 with trailheads and developed recreation sites along all of the public highways. „31 Moreover, the analysis in the WI is even more questionable when compared to the content of Section 3.3.2 of the DEIS which contains multiple pages of analysis of the many types of recreational activities that take place within SPRNCA and portions of the Cereus Unit. The WI also does not consider areas within the unit that may have unique considerations. For example, the entire southern boundary of the Cereus Unit is immediately adjacent to HWY 82 and there is no consideration of what effect that has on solitude relative to the entire southern portion of the Cereus Unit. Further, the WI has no analysis or recognition of the 41 existing campgrounds in SPRNCA, other developed recreation sites, miles of trails systems, administrative and public vehicle routes, livestock grazing and watering, hunting and tourism. At a minimum, some analysis relative to Appendix M (Recreation Settings Characteristics Inventory) in Volume II of the DEIS should be undertaken and the effect of all inventoried recreation sites (including planned trailheads) relative to opportunities for solitude within the unit should be assessed. And most importantly, analysis of how a visitor can avoid the sights, sounds, and evidence of other people in the area to enjoy solitude must be demonstrated.

Primitive recreation opportunities exist where there is a largely natural environment with no facilities and low visitation. The WI states that the Cereus Unit has many trailheads, trail sections and a variety of recreation opportunities which is contrary to primitive and unconfined recreation. Moreover, the DEIS states that only 12,270 of the 55,990 acres within SPRNCA have primitive recreational settings (defined as "remote with access by nonmotorized trail or cross country only and a largely natural environment with no facilities and low visitation,,).32 A review of Figure 3-17 supports the DEIS conclusion and reveals that only nominal portions of the Cereus Unit provide opportunities for primitive recreation (mainly areas along the eastern boundary). 33 In fact, Figure 3 -17 reveals that the substantial portions of the Cereus Unit along HWY 82 are classified as "rural" (defined as not remote and readily accessible from improved roads by all vehicles with a noticeably modified landscape and modern facilities with heavy visitation) which classification is completely inconsistent with the WI conclusion that there are outstanding primitive opportunities. This severe disconnect between the content of the WI, the DEIS and the contrary conclusion that primitive unconfined recreation opportunities exist supporting wilderness designation must be addressed before final publication of the RMP/EIS.

To be eligible for a wilderness designation, areas must be of sufficient size. Generally, the area must be comprised of 5,000 acres of contiguous BLM land. If an inventoried area does not meet this size criteria, it does not contain wilderness characteristics and no further analysis of other characteristics is warranted. The WI findings for the Cereus Unit conclude that the unit is comprised of 5,288 contiguous acres in SPRNCA and 554 acres adjacent, thus meeting the size criteria for wilderness designation. With respect to the 5,288 "contiguous acres" the Cereus Unit is described as: "The northern boundary is approximately two miles of the El Paso Natural Gas Pipeline Right of Way (ROW) (A-22090, 10-foot width), which includes a primitive unpaved service road. The western boundary is approximately 7.5 miles of the patented Union Pacific Railroad ROW, which includes the abandoned railroad bed. The eastern boundary is approximately 6.5 miles of the San Pedro 21 16U.S.C. § 1131 (c). 22 Id. SPRNCA RMP Comments Bureau of Land Management, Tucson Field Office September 27,2018 Page 10 Riparian National Conservation Area (SPRNCA) boundary and adjacent contiguous Bureau of Land Management Land. The

southern boundary is approximately 1 mile of the Sulphur Spring power line ROW (A-22092, 20-foot total width).²³ This boundary delineation includes miles of private land and private right of way which is not eligible for inclusion in making an acreage determination. Specifically, the described unit contains 7.5 miles of private land (Union Pacific patented ROW) along the eastern boundary and a parcel of private land owned by EPNG along the northern boundary of the Cereus Unit.²⁴ In addition, EPNG holds private ROW along the northern boundary of the unit that should also be excluded. In fact, applicable BLM policy specifically requires that developed ROWs should be treated like other impacts and requires the boundary of any unit to be drawn to exclude those ROWs.²⁵ In addition to EPNG's ROW, it is unclear how other developed ROWs in the unit were treated for purposes of determining acreage (e.g., St. David diversion ditch, other power and telephone ROWs etc.). Finally, the inclusion of Union Pacific and EPNG's private land holdings (which are edge and inholdings) in the boundary description call into question the conclusion that the Cereus Unit is a continuous block of BLM land. Accordingly, at a minimum, the width of patented Union Pacific ROW along 7.5 miles of the western boundary, EPNG's private land in Sections 32 and 33 of T18N, R21E (across which the gas line traverses for a distance of 1,202 feet) and all of EPNG's private ROWs of varying widths in Section 33, T18N, R21E (each greater than 10' in width) should be subtracted from the acreage calculation along with any service roads associated therewith.

BLM must adopt meaningful protections in the SPRNCA RMP for wilderness resources as part of its multiple use mission. Additionally, Manual 6320 directs that "an alternative that protects lands with wilderness characteristics must contain management actions to achieve protection." Manual 6320 at .06(A)(2)(d). BLM maintains discretion to set management actions for LWCs that it is managing for the protection of those wilderness characteristics as a priority over other multiple uses. However, BLM should set baseline management actions that will ensure appropriate protection of all LWC units being prioritized for protection of wilderness characteristics. Baseline management must include: closed or NSO stipulation for fluid minerals; no construction or maintenance of roads; closed to renewable energy development; ROW exclusion; closed to solid mineral leasing and saleable minerals; and retain in federal ownership. We support Alternative D's prescription to have all 23,810 acres of identified LWCs to be managed as ROW exclusion areas, closed to motorized and mechanized use, unavailable to livestock grazing, and as VRM Class II. See DRMP, Table 3-45, p. 3.95. From this baseline, BLM can and should consider tailoring management prescriptions to individual units based on specific threats to wilderness values and supplemental values that are present. BLM has done so for other RMPs. For example, the Taos RMP/ROD (NM) contains both general management guidance for protecting wilderness characteristics but also sets specific management prescriptions for each area managed for wilderness characteristics. Approved RMP/ROD at 28-29. In addition, Grand Junction (CO) Proposed RMP identifies specific management objectives and actions for each LWC targeted to the individual values and threats for each unit. Proposed RMP at 2-152-158

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Livestock Grazing

agree with commenters who suggested limiting grazing during migratory breeding seasons, modifying rotations and stocking rates, frequently and regularly monitoring grazing practices, and monitoring the available forage to ensure that preferred species are not declining.

Grazing is available in many areas throughout the area without introducing it into the SPRNCA.

<https://www.sciencedirect.com/science/article/pii/S1550742416300768>

37. 3-57, Wild & Scenic BLM states: "Alternative C Livestock grazing would be authorized in upland portions of the river study corridor but not in the riparian area, except for the Babocomari. Grazing would be managed to protect freeflowing conditions, water quality, tentative classification, and ORVs." Comment: On Page 3-2 BLM states "Under Alternative C, the riparian area would not be available for livestock grazing". How can there be livestock grazing on impaired streams if there won't be livestock grazing in riparian areas? The term riparian is virtually synonymous with streamside. Suggested/Corrected language: Please clarify whether or not there will be livestock grazing within riparian areas of the SPRNCA under Alternative C.

18. 3-11, 2nd Paragraph BLM states: "Grazing animals contribute to nutrient cycling in soils ..." Comment: BLM mentions the nutrient cycling in soil but fails to list other benefits of livestock grazing. Corrected/Suggested language: Add information from Dr. Gary Thrasher wherein within the SPRNCA resulted in lowering the risk of animal diseases from Mexico due to improved fence maintenance. Add information about active ranching guarding against wildfires by reducing fuel loads and the information provided by the Arizona Land and Trust <https://www.landtrustalliance.org/news/ranching-future> as follows: "Ranching and farming throughout the country are essential to maintaining local and regional agricultural economies and preserving rural heritage and culture. For generations, ranchers and farmers have been some of the best land stewards around, and their working landscapes can help sustain plant and wildlife habitat." Add information about BLM recognizing that existing ranches provide a variety of community benefits that also include clean air, water and iconic western views (<https://www.landtrustalliance.org/news/ranching-future>) and why it is important to help Arizona ranchers identify and implement strategies that can help them stay on the land and maintain their operations. Add a statement about how working ranches can safeguard ecosystem services, protect open space and maintain traditional ranching culture (see *Rangeland Ecol Manage* 61:137-147 | March 2008).

In connection with keeping track of the beaver dams, I have seen many areas of the River that most people never see. And, what I have consistently found is cattle grazing at the River. I have supplied the BLM employee charged with keeping cattle within their grazing allotments with video of the cattle, and descriptions of the locations and ear tag numbers of the cattle to no avail. The cattle were never removed. In addition, I have been told by the aforementioned BLM employee to quit pushing it. And, I did quit reporting the cattle since nothing was ever done to remove them. Additionally, I have run into a rancher with his cattle at the River who told me he grazes them there since the grass is better.

Cattle are detrimental to SPRNCA: they consume plants, compact the soil, compete with wildlife, and detract from the visitor experience. Even with the current level of grazing (7,030 acres), cattle wander beyond their area onto the surrounding land. Consider how much worse this problem would be with 26,450 acres open to grazing.

Allowing grazing only on the uplands, as in your preferred alternative C, has no direct effect on reducing the water used by non-native species or by overgrowth of cottonwoods. There is also no direct effect on reducing fuel loads to a manageable level, as evidenced by the past 20+ years of exclusion.

* The Nature Conservancy has a history of supporting livestock grazing in areas where it furthers management goals of a site, where it is compatible with other uses, where it is practical to operate, and where impacts to other key resources are minimal. We own and manage rangelands both with and without cattle operations. We frequently partner with both ranchers and other landowners on restoration and land protection strategies. From our decades of work with federal land management agencies, we also understand the tradeoffs and challenges that come with managing for multiple uses, and have seen that sometimes the best results come from directing different uses onto places where each is most appropriate, rather than trying to accommodate all uses on the same acres.

Grazing and range management * The Conservancy cannot support the expanded grazing proposals within Alternatives Band C. The RMP analyses present no evidence that expanded grazing, as proposed in these alternatives, would further the purpose for which Congress designated the SPRNCA, nor that expanding acres permitted for livestock would be used to move land, water, or recreational resources towards desired conditions described in the draft plan.

Science repeatedly demonstrates that livestock grazing in the arid desert Southwest has adverse impacts on natural landscapes (soil erosion, soil compaction, conversion of healthy grasslands to woody scrub, and reduction of food and cover for wildlife). Removal of cattle from the SPRNCA will help restore these lands.

Buffalo have a different grazing pattern and will not concentrate upon riparian areas. Why not put buffalo on these lands and enhance their conservation too?

There is already ongoing degradation from trespass livestock in the river corridor, and more cows in the area will likely result in even more unauthorized use.

Cows drink from streams, after grazing, and then linger at riparian areas to chew their cuds; an entire herd creating damage by killing riparian grasses and creating mud. Horses have upper and lower incisors that shear off grasses and foliage, allowing them to regrow. Cows have no upper incisors and; therefore, wrap their long tongues around grass and pull on it, often destroying the grass plants.

The United Nations organisation has reported that about two thousand five hundred gallons of water are needed to produce just one pound of beef.

there is virtually no evidence provided by BLM, including background provided by BLM on the management plan development, or it appears in the extensive literature regarding the ecological impacts of cattle grazing on arid and riparian habitats that typify the conservation area.

BLM's definition of AUM is different than the one used by others. (BLM states one cow, others use 1 cow and a calf).

Fees charged for forage on private, state and federal lands Source: Arizona Agricultural Statistics (Arizona Agricultural Statistics Service 1999) Private non-irrigated range in 11 Western states Market \$11.90 /AUM

Arizona State Land Department lands \$1.95 /AUM Bureau of Land Management or Forest Service lands \$1.35 /AUM *(BLM's rates per AUM: 2017 - \$1.87, 2018 - reduced to \$1.41)

There are no studies that show that the land is improved by grazing. The studies that have been done only show that grazing improves grazing land.

Studies have shown that it takes about 40 acres per cow for sufficient food in our semi-desert climate. The current unit allocations indicate that today there are only 12 acres available per Animal Unit Month (AUM) and that would be cut to about six and a half acres under the BLM preferred alternative. How many AUMs are actually grazing on the SPRNCA now?

There is scientific evidence that the E-coli levels in the San Pedro rise dramatically during monsoon season due to many factors ; cow manure is suspected as the main culprit. Almost all the water that falls in the mountains and uplands, several miles away from the river, drains into the San Pedro during heavy rains, carrying impurities from all the higher elevation areas. Keeping cattle away from the immediate area of the river won't help much.

Are there any safeguards to guarantee humane treatment of the cattle, such as additional food, water and shelter?

The former BLM scientist David Krueper, Jonathan Bart (Forest and Rangeland Ecosystem Science Center, USGS) and Terrell D. Rich (U. S. Fish and Wildlife Service) published a 2003 peer-reviewed science paper that showed that the removal of cattle in 1987 greatly benefited the wildlife preserve. The density of herbaceous vegetation increased 4-6 fold in riparian and mesquite grassland communities. The numbers of individual birds found along transects increased by an average of 23%. Take a look at the graph of bird detections after the removal of cattle in Brand's 2009 paper (Brand et al., 2009, p. 165. Notice the increased number of birds after the removal of cattle.

In recent years BLM staff for managing the nature preserve have been reduced and reduced. Before these reductions BLM was already challenged with the task of getting out of the preserve cattle that had gotten in from the limited grazing areas. Increase grazing areas will result in even more cattle getting down to the river. How will BLM deal with the increased number of cattle getting through fences and down to the river given the reduced size of BLM staff?

Increased grazing would require use of heavy equipment and pesticides to make grazing areas suitable for cattle, roads to access pastures would have to be built, and stock tanks put in place.

the Center for Biological Diversity's website has information documenting the harm done by grazing throughout the western states. Quoting from this report, "By destroying vegetation, damaging wildlife habitats and disrupting natural processes, livestock grazing wreaks ecological havoc on riparian areas, rivers, deserts, grasslands and forests alike - causing significant harm to species and the ecosystems on which they depend."

in 2001 the Coalition for Sonoran Desert Protection presented a report to the Pima County Board of Supervisors. The entire report is 54 pages long, so to summarize the findings of the report, I'm quoting from the accompanying cover letter: "...the report reviews the best available scientific information

regarding the effects of livestock grazing on natural resources ranging from riparian areas to living soil to vulnerable species. This review shows that grazing results in significant harm to these resources."

Who will manage the fencing, water needs + roads + who will pay for it?

The DRMP/EIS fails to address one of BLM's own reports (Fredlake 1993) finding that without cattle upland habitat is starting to recover. "Extensive portions" of the historic southern Arizona's desert grasslands have been lost. Historic native grassland communities are exceedingly rare where any recovery and maintenance are clearly consistent with the reasons that Congress established SPRNCA.¹⁵ To this end, it is important to include quotations from Fredlake's own study inadequately quoted in the DRMP/EIS: "Overall the perennial grass component of the upland habitats is increasing throughout the NCA. The response of individual species varies from one site to next. Some areas show no apparent response to ongoing management. However at the majority transects, on a variety of soils and vegetation types, significant increases in perennial grass species have occurred. At present it seems to indicate that upland habitat conditions are improving in the NCA. If present management continues, there is cause for optimism that historic grassland communities may return to significant portions of the San Pedro NCA. Grass cover may increase to a point where prescribed fire can be realistically considered as a management tool on the NCA."¹⁶

Page 3-36 to 3-38. How do you know acres will be improved under additional livestock grazing when the acres open to livestock since 1988 have not been evaluated to see if stable or upward trends resulted using BMP's, vegetation treatments, and adaptive management? These are not new management tools. Ecological states 1-4 and HCPC need explanation in this section or a page reference to the explanation provided.

In addition to the request that the preferred alternative be rewritten it is also my request that livestock grazing never be considered an acceptable action on the SPRNCA in any alternative, at any time. The removal of cattle was one of the several protective and conservative actions carried out upon designation (Fredlake, M., personal communication, May 23, 2008) and should be honored. Studies have proven the many benefits of the removal of cattle from the SPRNCA which includes but is not limited to, the increase in vegetation and avian species (Kruepur, 1993; Krueper et al., 2003). There are also many studies providing evidence of the immense benefits and positive effects to the land which occur with the removal of cattle from areas in arid climates (Allington et al., 2001; Bock & Bock, 1993; Brady et al. 1989; Coalition, 2001). These studies along with original intent, should be more than adequate reason to continue managing the SPRNCA without ever allowing livestock grazing.

Allow grazing, but non within a half mile of the river, period. Grazing around the perimeter would provide some fire protection, if the grazing were managed otherwise for the benefit of the grasslands as a whole.

The draft Resource Management Plan (RMP) proposes the installation of fences to keep cattle out of the river and minimize impacts to the riparian ecosystem, but there have been a number of instances where cattle have escaped and entered the river near the San Pedro House. It sometimes takes a week or more for the rancher to round them up. In less visited areas of the SPRNCA it could take much longer for someone to report the excursions and even longer for the cattle to be removed. Once a decision has been made to allow additional grazing and grazing-related infrastructure (e.g., fences, gates, roads) has been installed it will be very difficult to reverse course. I respectfully request that the issue of increased

grazing be reconsidered and removed entirely from Alternative C or, at a minimum, the areas of proposed grazing be minimized to exclude areas with significant washes that flow into the San Pedro River.

It has been well documented that grazing in arid and semi-arid ecosystems will cause a number of negative impacts including removal of soil crust, compaction of soils, increased soil erosion, decrease in water quality, and will ultimately have detrimental effects on native plants and wildlife.

My understanding of the San Pedro River's water table suggests that increased grazing will have a negative effect on the already endangered water table. As others have pointed out, the intent of conserve, protect and enhance cannot be reached through hunting and increased grazing. The number of rare plants and the risk of soil compaction, erosion and new trail development, suggest that cattle should be removed from, not added to the SPRNCA. The few dollars per year that cattle ranchers pay the BLM/year (if the pay at all) is far less than the tourism benefits (restaurant meals, hotel nights, car rentals, tour operators, gasoline) gained by having locals and out of towners on a healthy SPRNCA.

Finally, I am opposed to more livestock in the Area. Most winters 8 to 10 head of cattle wreck the trails and the stream side shrubs along the River near the San Pedro House for at least a couple of months under the current regime. The cattle the winter before last came from 7 mile away. More cattle means more cattle and there ensuing damage at the River. Furthermore, we do use the first half mile of Garden Wash west of del Valle Road for bird walks and birding frequently and I assume this is in the propose cattle area. Lastly, drilling wells for cattle is a huge waste of precious water.

I also think that vehicles going into the area away from the current trailheads would lead to fires. A BLM intern's truck caught on fire going through high vegetation on del Valle Road a few years ago. Furthermore, fires are permitted throughout most of the year even though there is dry vegetation during most of the year. I believe the night time fire that did serious damage near Black Phoebe Pond about 4 years ago was during a time when fires were permitted. I am not sure about the recent 8 acre fire near Horsethief Wash. Since these fires were not near main roads it was difficult to get fire equipment to the fires.

The DRMP/EIS fails to address how the management category for the SPRNCA's four active grazing allotments were changed from "Improve" to just "Maintain" when the 1992 Safford District RMP and the 1997 biological opinion #2-21-96-F-160 assigned them to the "Improve" category, and assessments for compliance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration have never been fully completed for them?

The DRMP/EIS fails to describe the criteria the BLM would use to identify the upland areas in the SPRNCA that may be made available for grazing under the Preferred Alternative.

The DRMP/EIS fails to identify who will pay for the expensive new fences, and probably some watering troughs, that will need to be built before increased grazing would be authorized in the SPRNCA under the Preferred Alternative.

The DRMP/EIS fails to address appropriate grazing utilization standards for the SPRNCA: Upland utilization standards were not identified in the 1989 San Pedro River Riparian Management Plan, so the standards in the 1987 Eastern Arizona Grazing Environmental Impact Statement (EIS) apply, and they allow annual forage utilization at "moderate levels of 40 and 60 percent" on the uplands. But those aren't moderate levels, as research has shown that moderate forage utilization in the Chihuahuan Desert is about 25 to 35

percent. Furthermore, the SPRNCA's lands aren't common rangeland, but a riparian preserve. The high maximum forage utilization rates identified in the Eastern Arizona Grazing EIS are inappropriate for the SPRNCA. Riparian utilization standards were not identified in the 1989 San Pedro River Riparian Management Plan, and the 1987 Eastern Arizona Grazing Environmental EIS doesn't include any riparian utilization standards whatsoever, so the BLM has no riparian grazing utilization standards for the SPRNCA.

The DRMP/EIS fails to address how the management category for the SPRNCA's four active grazing allotments were changed from "Improve" to just "Maintain" when the 1992 Safford District RMP and the 1997 biological opinion #2-21-96-F-160 assigned them to the "Improve" category, and assessments for compliance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration have never been fully completed for them?

How can grazing be yearlong in the entire grazing area when it is excluded from 1,670 acres from April 1-Sept 1?

38. 3-101 BLM states: "Impacts from making all or portions of individual leases unavailable to livestock grazing on BLM-administered lands would be the loss of available forage and the potential need to locate alternative forage." Comment: The City, County and Hereford NRCD held a coordination meeting with BLM. Gary Thrasher, DMV, went into significant detail about the impacts of making leases unavailable to livestock grazing. This information should be utilized by BLM. Corrected/Suggested language: Impacts from making all or portions of individual leases unavailable to livestock grazing on BLM-administered lands would be the loss of available forage, the potential need to locate alternative forage, fuel load build ups, "animal diseases including but not limited to Foot and Mouth Disease, Vesicular Stomatitis, Fever ticks (Babesiosis), Heartwater, Schmallenberg Virus and other "emerging" cattle diseases that trespass cattle from Mexico could bring in. The US has spent many millions of dollars and 50 years + eradicating Bovine Tuberculosis and Brucellosis. Anthrax is of concern but there still are many areas in the US where it pops up from time to time, so it is not foreign to the US." (Dr. Gary Thrasher, personal communication, 2014). Dr. Thrasher's concerns are mainly related to cattle or other livestock that enter from Mexico when fences are compromised by floods, illegal aliens, or other causes. Without some internal fences and vigilance on the part of ranchers on the U.S. side, these cattle could spread far down the San Pedro River, potentially spreading disease to livestock along the perimeters of the SPRNCA and to trespass livestock within the SPRNCA. Even if trespass livestock from Mexico are kept out, trespass livestock from properties adjacent to the SPRNCA pose a threat to livestock on properties adjacent to the SPRNCA if those trespass livestock come in contact with them. This threat includes both animal diseases and genetic contamination.

Grazing and Fire Prevention The discussions of grazing does mention the advantages and disadvantages of grazing. The draft, however, does not discuss the use of holistic grazing. Holistic grazing techniques are very likely to ameliorate the disadvantages of grazing mentioned in the draft RMP. Furthermore, there does not appear to be any acknowledgment the benefit that grazing can have on fire suppression by reduction of fuel. Grazing has the potential to reduce the cost of fire management.

* The Preferred Alternative C would require a large investment into infrastructure and staffing to open a moderate number of acres to permitted grazing. We are concerned that this investment of funding and staff time would compete with other program areas that are essential to meeting the intent and purpose of the SPRNCA and compete with other valuable and proactive management proposed in the draft RMP. Aside from the upfront cost and staff attention, long-term maintenance of this additional infrastructure

would increase management costs indefinitely, further eroding staff resources to meet all of the purposes identified in the SPRNCA enabling legislation.

* With regards to existing grazing allotments, we agree with the draft plan's recommendation to use an adaptive management approach to modify rotations and stocking rates in response to available forage and ecosystem responses to drought and other impacts, in order to sustain or increase basal area of native grasses and protective cover. Adaptive Management on these existing allotments could also help integrate grazing with the expanded restoration proposed in the Plan, and promote the most effective combination of tools, including erosion control measures, fire, mechanical or chemical treatment, and other measures for improving the productivity and sustainability of existing allotments.

* Unmanaged trespass grazing in SPRNCA is problematic for riparian habitat conditions. The RMP should address ways to improve monitoring and controls on trespass grazing, especially within the riparian zone. Specifically, the RMP should include data on current trespass grazing within the SPRNCA, and required management actions to minimize trespass grazing.

With most issues, striking an appropriate balance in this area is of paramount importance. The RMP should provide for multiple uses by allowing for livestock grazing, while conserving, protecting, and enhancing the conservation values of the SPRNCA. My constituents and I see great value in allowing active and productive livestock grazing practices to benefit riparian habitat and native grasslands and reduce fuel loads.

there is really very little acknowledgement of the potential benefits in using livestock as tools to improve and enhance conditions that are listed as goals and objectives in this draft RMP. Livestock do not just make trails and eat grass. Through various management actions they can be used to heal cut banks and other erosion, manage fuels, control brush, prepare soil for seeding, even spread desirable seed.

Plan C seeks to permit cattle grazing, despite its known negative impacts, such as, denuding of ground cover, with subsequent erosion, increased flash flooding, increasing in orders of magnitude the E. Coli load in the river from waste. The RNCA is for all practical purposes a wildlife refuge, where cattle have no place competing with wildlife for grasses, forbs and (illegible).

Thus, I suggest that grazing be confined to those places it already exists, or barring that, be permitted in a few areas away from the river and definitely away from existing public use areas. This will minimize the amount of effect on the river bank and tourism dollars.

The total contribution of the beef industry to the Cochise County economy is \$59.1 million in output, \$10.3 million in value added, \$7.7 million in labor income, and 289 total jobs (Kerna et al 2014, The Contribution of the Beef Industry to Arizona's Economy: State and County Profiles). Cochise County Impact Type Direct Effect Indirect Effect Induced Effect Total Effect Output \$52,406,567 \$4,454,071 \$2,199,908 \$59,060,546 Value Added \$6,294,084 \$2,638,696 \$1,345,559 \$10,278,339 Employment 234 35 20 289 Labor Income \$6,249,910 \$830,670 \$584,996 \$7,665,577 Source: IMPLAN Group, LLC, 2011

The results of our discussion with our members show: (1) Livestock grazing on SPRNCA is essential to the ranching industry in Cochise County; (2) Ranching is a highly valued culture in the County. It is the base of many community activities and traditions. It also provides social and cultural stability to communities in the County; (3) Ranching is an important part of diversifying the economy of the County; (4) Tourism cannot replace livestock grazing in the SRPNCA without substantial investments by BLM,

local governments, and the private sector into new tourist support infrastructures and services; and (5) SPRNCA is a multiuse National Conservation Area with many defined missions in the proclamation identified in PL 100-696 including, scientific, cultural, recreation and education resource values. Livestock grazing, education and science research can include rangeland restoration and range management research at an allotment scale.

Recommendation: HNRCD proposes BLM either adopt Alternative C as written or further refine the discussion of livestock grazing in the SRPNCA RMP/EIS to include the following alternative refinements: (1) Provide for the activation of all suspended AUMS in the SPRNCA; (2) Provide for flexibility in managing timing and placement of cattle within allotments; (3) Provide for restoration of rangelands to promote rangeland health and sustainability; (4) Provide for large scale science research on range land restoration; (5) Provide for allotment-scale science research with integrated range management; (6) Provide for reseeding using appropriate grasses, forbs, and shrub species; (7) Provide for watershed development by removal of invading woody species that create risky biological monocultures; (8) Provide for development, improvement and maintenance of water facilities; (9) Provide for fuel reductions to reduce fire danger through livestock grazing; and (10) Provide for the multiple-use aspects of the NCA proclamation i.e. it is not to be managed as a national wilderness.

From our ARC visits to the ranch a few years ago I seem to recall you pointing out disheartening gully formation into the uplands, with continuing headcuts and loss of soils into the small washes and then the riparian area. I think you mentioned that a lot of that erosion was due to historic grazing. I can't see how putting cattle back into the system could be done without causing further negative impacts. It would never heal if grazing is allowed.

Alternative C increases the amount of land open to livestock grazing by four times. The Draft RMP does not demonstrate how increased grazing would meet the above listed management objectives. In fact, in my time as a BLM employee, I saw increased grazing downgrading wildlife habitat with near total loss of understory vegetation which is so important to certain species of birds and other wildlife. Poorer habitat for wildlife would result in negative impacts to non-consumptive recreational experiences including bird watching. The SPRNCA is known worldwide for bird watching so every effort should be made to maintain or improve the wildlife habitat that supports this experience. With additional grazing found in Alternative C, habitat would be degraded for wildlife. Alternative D does not include increased grazing so it better supports riparian areas and aquatic wildlife as is recommended in the establishing legislation.

21 2-36 Livestock Grazing Fort Huachuca How is the date range April 1-Sept 1 relevant? Is this for a specific species or for migratory bird season? Why is breeding season a limiting factor for livestock exclusion? HWU doesn't have a breeding season.

22 2-37 Livestock Grazing Fort Huachuca How will trespass livestock be handled? Who will be responsible for fencing breeches onto the Fort's property?

I agree with the removal of the special protection classifications of the areas within the SPRNCA since this will ultimately increase their protection and simplify the management. I appreciate the suggested best option as it allows for looking into the use of the land as a resource. I ask that the study (presented during the conference in Sierra Vista) on the water contamination from cattle grazing be evaluated and investigated prior to any grazing leases being let. At no point should current grazing be curtailed or not renewed. They should remain grandfathered.

b. The preferred alternative should allow for flexible grazing uses to reduce fuel loads on all areas of the Conservation Area, and we suggest that it be allowed on a controlled basis in the area of the Conservation Area lying within the boundaries of the San Pedro NRCD.

The RMP acknowledges the negative effects of grazing. In implementing alternative C, I would assume that it would be done on a trial basis. With regards to vegetation management, only native species should be planted.

If this practice is allowed and ultimately destroys the health of the river and aquifer, surrounding property values will plummet and the housing market will cease and years down the line will the Military want to stay at its Fort Huachuca Post?

SPRNCA currently may seem to have an adequate amount of water in its aquifer, but introducing grazing means the introduction of drinking troughs which in turn takes valuable water out of the this aquifer. At the meeting in Sierra Vista, the BLM acknowledged that they will have to put in 23 of these drinking troughs to accommodate the number of cattle that they may allow on SPRNCA land. These troughs will pump valuable water directly from the aquifer and despite the BLM's insistent claim that they have no rights to touch peoples' wells. This doesn't mean they won't take water from the aquifer which will directly affect the functionality of their wells.

I would wager that the economic benefits from the eco-tourism far outweigh any profit to be made by leasing the land out to ranchers for grazing. Furthermore, if during my first visit to the San Pedro, I had to dodge cattle and cow pies and be aware of hunters and hear ATVs roaring around while I was hiking, I may not have determined this to be a place I would want to return to. Other visitors who I have met were equally disgusted at the thought and agreed they also would think twice about returning here if grazing, ATVs and hunting were part of the equation. As evidence to this was my first visit to Patagonia Lake State Park's "Sonoita Creek Trail" which is also a well-known bird trail in a Riparian setting. As much as I enjoyed the potential birds that bred there or called it their winter home, I spent more time watching where I was walking. The cattle waste was overwhelming (and I grew up on a Midwestern dairy farm). The trail was extremely dusty from the ground being hooved to death by the resident bovine. The cattle being allowed to wade in and loosen their excrement into the creek can't be very good for the health of the creek and ultimately the lake in which the creek empties? Even if cattle are not directly allowed in the San Pedro River itself, there are many studies (cited by others in this forum) that prove the rain run-off from nearby pastures ultimately lead to the river as gravity takes its course. This run-off contains dangerous amount of e-coli bacteria from cattle waste would eventually enter the water flow of the river, which is the final destination of run-off and seep its way into the aquifer. I would be absolutely disheartened, disgusted and enraged if this was also the fate of the San Pedro River.

Grazing should never occur in the riparian corridor. This includes along the Babocamari River or elsewhere in SPRNCA. The negative impacts of grazing will not only occur within the areas on the map in figure 2-16, but will also extend into other riparian areas, threatening the persistence of cottonwood-willow forests. This will be caused by increases in the numbers of unauthorized cattle that will end up inhabiting the riparian zone.

"Grazing prevents blazing" is one of the tag lines for some grazing proponents, but taking fire off the landscape is terribly misguided. Fire, including prescribed fire and wildland fire, is one the most important management tools BLM has for managing not just grasslands, but also riparian areas and wetlands (Webb

2017), all of which occur in SPRNCA. I believe this, along with other fuel treatments, is a key tool for managing priority habitats, and reducing fire risk where unplanned fires could threaten people, property, or ecosystem function. Grazing is not a replacement for fire. Fire is a natural disturbance process that provides many unique benefits to ecosystems.

Increased grazing would have negative ecological impacts on erosion, riparian forests, aquatic environments, and grasslands, most of which has not been accounted for in the Draft RMP. The BLM has drafted this plan in a manner that ignores the realities of drought and climate change, and how these stressors amplify impacts from resources uses. Alternatives B, C, and D collectively lack a vision for managing this important river the 21st century. Therefore, I provide several recommendations for how BLM might manage for the persistence of priority habitats, and how it can build on the great accomplishments of staff and volunteers who have worked for 30 years to conserve, protect, and enhance a rare river in the desert. They include not increasing uses of SPRNCA that cause damage to sensitive ecosystems and the experience of quiet solitude (grazing, ORV use, hunting) and promoting special designations, such as wilderness, ACECs, and wild and scenic rivers.

Historic overgrazing and drought in the San Pedro River valley led to soil compaction, loss of topsoil, channel downcutting and other forms of erosion that led to a lowering of the water table (Bahre 1991; Sayre 2011). Of the 245 million acres managed by BLM, 155 million (63%) are managed for grazing. In contrast, there are 4,114,743 acres (0.017%) of BLM lands with NCA or similar designations that are supposed to protect and enhance resources (<https://www.blm.gov/about/what-we-manage/national>; <https://www.blm.gov/node/9974/>). Furthermore, there are 78,198 acres (0.0003%) of BLM lands in Riparian NCAs. Let the SPRNCA continue to be a place of exceptional biodiversity and keep cattle off of it.

Impacts from cattle were insufficiently accounted for the Draft RMP. Impacts were only assessed for areas related to water development. In the preferred alternative, that includes a mere 6 acres of impacted area (1/4 of an acre for each livestock water development) despite an increase of 19,420 acres of added grazing. These water developments, by the way, are features that are not included in the Draft RMP maps. These are the numbers (6 acres or 1/4 acre for each water development) that are used to quantify impacts of grazing on wildlife, vegetation, and other resources in SPRNCA throughout the Draft RMP. These numbers are tiny. Where is the accounting for erosion caused by cattle trails that turn into gullies? What about the trampling of vegetation and erosion along the Babocamari River where grazing would be allowable in the stream and riparian zone?

Among the proposals outlined in the alternatives, several stand out as counter to the establishing legislation and stated mission of the SPRNCA. One of the most dramatic recoveries on the river has been a result of the grazing moratorium. Despite the ongoing problem of trespass cattle, the understory and wildlife diversity recovery has been impressive and well-documented. Dave Krueper's research on the recovery of bird species after cattle were largely removed is proof enough of the impact of grazing on the diversity for which the riparian area was protected. We are particularly qualified to comment on this since we conducted a MAPS (Monitoring Avian Productivity and Survivorship) bird banding project from 1996-2001 on the San Pedro River south of the SPRNCA in Mexico where cattle are allowed on the river. The difference in vegetation and bird diversity is remarkable. No one would be going to the San Pedro in Mexico for hiking, birding or nature study.

New Alternative

Of the four proposed alternative plans, Alternative D comes the closest to how the SPRNCA should be managed. I say closest in the sense that even Alternative D does not go far enough to protect and enhance the river (as the legislation mandates).

I beg you to consider an alternative-an enhanced version of Alternative D that would provide greater protection to this precious resource in Cochise County.

Fully protect the river with something even stronger than Alternative D, and thank you for your efforts.

I would reject all four alternatives in the Executive Summary and introduce a stand along RMP for the SPRNCA that 1) designates the entire conservation corridor with protective status (WSR, ACEC, and/or Wilderness) 2) eliminates all grazing including retiring the existing four allotments, 3) denies any future ROWs, 4) limits most vehicular access, 5) prohibits hunting, target shooting, and trapping, and 6) only actively manages vegetation (removal, herbicide treatments, prescribed fire, restoration, etc.) if there is pre and post-monitoring for efficacy of those treatments; and if there is current, peer-reviewed scientific support to substantiate the use of those treatments.

If grazing is allowed, ranch vehicles should be excluded from use of the Del Valle road, which is heavily used by hikers, mountain bikers, and others. Use of what are now closed roads by a larger volume of ranch employees will discourage their use by hikers, bikers and equestrians. Fences will restrict hiking access.

At a minimum, if grazing is expanded, it should exclude the major washes coming into the river: Garden, Ramsey, Government, Willow, and others. These washes are a critical part of the riparian habitat and grazing them will eliminate them as tributaries and migration routes for wildlife.

Should hunting be expanded, I recommend that these areas be excluded. i. San Pedro House. This is the most heavily used area in the SPRNCA. The proposed revised plan would allow hunting within a quarter mile of the house itself. This is absurd. The river is roughly one quarter mile away. The ponds, which are heavily visited, are about one-half mile away. Thus, hunting would be allowed in the same areas frequented by bird watchers, hikers, fishermen, picnickers, etc. I propose that an exclusion area be created that runs from one-half mile north of Highway 90, the full width of the SPRNCA, south to one half-mile south of Black Phoebe Pond. This would encompass the heavily used area and create at least a modicum of safety for those unsuspecting recreational users in the area. ii. Fairbank. This is the second most used area. It is crisscrossed by trails that are used by hikers, horseback riders, birdwatchers, and others. One quarter mile from Fairbank leaves most of the trails, the river, and other heavily used areas open to hunting and a safety hazard for visitors. I propose an exclusion that runs from one half mile south of Highway 80 to one mile north of Terrenate, running the width of the SPRNCA. In this area are Fairbank, Terrenate, the trail to Terrenate, the Fairbank Cemetery, the Fairbank Loop Trail, the marked trails from Fairbank to the river, the corral, the pump house, and the railroad berms and bridges that attract visitors. The river itself is an attraction in this area, with people walking down from Fairbank or scrambling down to it from the highway. Leaving this area open to hunting creates an unnecessary safety hazard for those visiting the area. iii. Millville Trailhead. The Millville and Rock Art Discovery Trail is a 1.5 mile loop trail leading from the parking area. The Charleston townsite and Charleston cemetery are in the same area. The Charleston Road bridge and the river on either side are visited frequently and used by families as an access point to

the river. The Millville trail is heavily used, and ghost town aficionados are frequent visitors to the other sites. This area is heavily wooded and the terrain is rugged. It would be nearly impossible for a hunter to see people or vice versa. I recommend this area be excluded, demarked: the width of the SPRNCA, from one-half mile south of the historic bridge north for 2 miles. This would encompass all of these heavily used areas. iv. Hereford Trailhead. The trailhead at the Hereford Bridge is another frequently used area. Birdwatchers and hikers park here to walk north on the BLM trail that follows the river. I propose a closed area that runs from one-half mile south of the Hereford Road bridge (there is a private residence right on the river here, too), to one mile north of the bridge, the entire width of the SPRNCA. Leaving this area open to hunting creates an unnecessary safety hazard for those visiting the area. v. Palominas Trailhead. As with the other areas, users visit this trailhead to hike, birdwatch, take pictures, and visit the river. I propose a closed area that runs from Highway 92 south for one mile, the width of the SPRNCA. Leaving this area open to hunting is creating an unnecessary safety hazard for those visiting the area. vi. These recreational facilities should have their exclusion zone extended to one-half mile or more: 1. Escapule Wash trailhead. This area is used heavily, to include hikers going to the Clanton Ranch site, which should have a one-fourth mile exclusion. 2. St. David Cienega. 3. Contention City. The Contention train station should have a one-fourth mile exclusion 4. Lehner Ranch Site. 5. Murray Springs should have a one mile exclusion, given its size and heavy visitation. 6. Lewis Springs.

While Alternative D does increase protections, the false compromise of the other alternatives, including excessive harmful activities, sets Alternative D up for failure as an acceptable option. While we see possibilities in excluding all of the most harmful activities such as off-road-vehicles and livestock grazing from all alternatives and selecting appropriate management tools from several alternatives, the way the current alternatives are presented to the public leaves little room for discussion and true compromise. We suggest the BLM draft a new alternative that properly considers which management options are truly going to improve the riparian habitat of the SPRNCA and exclude any outside preference for heavy resource use.

We actually need an Alternative E that focuses on greater protection.

We agree with elements of Alternative C but other elements will not meet the primary purposes of the SPRNCA as stated in the enabling legislation (Public Law [PL] 100-696, November 18, 1988). The SPRNCA was established to "protect the riparian area and aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the public lands surrounding the San Pedro River..." We are suggesting that the combination of elements from the different alternatives that best meet the intent of the NCA designation be considered as an alternative hybrid. [NEW ALTERNATIVE SUGGESTED IN ATTACHED DOCUMENT]

It appears that BLM failed to cover the full scope of alternatives with regard to hunting. For example, there is no legal reason that prevents BLM from specifying for Alternative D that SPRNCA is closed to hunting everywhere (as with grazing). Meanwhile, Arizona State law only protects people in occupied structures by closing areas to hunting within ¼ mile of such structures. It does not offer the same protection to people in occupied vehicles on state highways and other roads, nor to the thousands of visitors on trails who join interpretive walks or the school children who make field trips to these popular destinations within the SPRNCA. But the same safety considerations logically should apply to them too.

I am proposing another alternative, which emphasizes resource protection and conservation, no increase in livestock grazing and designing compatible recreational opportunities. This is similar to Alternative D, but Alternative D does not define "limited" which should have stakeholder input.

After reviewing this document I do not feel that any of the alternatives, including the proposed alternative, adequately follow the BLM's directive to "conserve, protect and enhance the riparian area and the aquatic, wildlife, archaeological, paleontological, scientific, cultural, educational, and recreational resources of the conservation area."

A, B and C will require more monitoring and patrol. Who will do this? If nothing else, please try come up with a compromise between Alternatives C & D

3. Revise/rewrite the report to preserve the San Pedro River as it currently is rather than making improvements.

We would prefer to see more discussion of an alternative that would be somewhere between C and D, providing more management components, where appropriate, always within the context of what is best for preserving and protecting this special area.

Public Health and Safety

Should hunting areas be expanded, I would caution that public safety would be an issue and could potentially jeopardize the economic benefits mentioned above.

So would it be a safe place for birders, hikers and school children with Hunters in the SPRNCA? I think not

see the attached Glyphosate_Herbicides_Exposure.PDF for health and environmental risks associated with Glyphosate based herbicide use. The article from Biomedical Central, Environmental Health 2016, outlines how Glyphosate Based Herbicides (GBH): ? Is shown to be hazardous with exposure to humans and laboratory animals ? Is creating glyphosate resistant weeds ? Provokes oxidative damage in rat liver and kidneys. ? Is correlated with an increase in frequency of serious, chronic kidney disease in male agricultural workers. ? Predicted to disrupt endocrine signaling systems ? implicated in heightened risk of developing non-Hodgkin's Lymphoma ? is "a chelating agent with potential to sequester essential micronutrient metals such as zinc, cobalt and manganese. This property of GBHs can alter the availability of these micronutrients for crops, people, wildlife, pets, and livestock." ? Is "probably carcinogenic to humans" according to the World Health Organization's International Agency for Research on Cancer.

Recent court cases support the mounting evidence that these herbicides are not safe. (<https://www.theguardian.com/business/2018/aug/10/monsanto-trial-cancer-dewayne-johnson-ruling>) The
4

there are already so many areas that are open to hunting, particularly with so much national forest land in the county. But there are very few areas that are safe for hikers and dog-walkers during that season.

The agency's Preferred Alternative C creates a big problem. With the predominant recreational activities coming from hikers, birdwatchers, picnickers, and other tourists in the narrow corridor, averaging only about 3 miles wide, the discharge of firearms creates a safety hazard. The dense riparian vegetation often

makes it difficult to see human visitors, placing them at risk of being struck by a stray bullet. Table 3-66 on page 3-149 shows 0.8% of visitors participating in hunting. The discharge of firearms also is directly disruptive to wildlife, wildlife observation, and in-the-field education.

Hunting and trapping can discourage those visitors who come for birding, hiking and other non-consumptive uses. They may fear being shot or having their dog get caught in a trap.

As shown in the following chart from the State of Washington hunter safety course bullets from handguns and rifles can travel a long distance.

Another serious concern is the safety risk of opening up high visitation areas near the San Pedro House and Fairbank Townsite to hunting with firearms or bows.

This plan only restricts the activity from a one-quarter mile radius around a small number of recreational sites. It would allow hunting along the river in the heavily used area at the San Pedro House, the Fairbank Loop Trail, the trail to Terrenate and other areas frequented by bird watchers, hikers, horse-back riders, fishermen...everyone using the public lands for recreation. We have significant concerns about the safety of this approach, though we are not opposed to the safe extension of hunting into other areas.

Also, per one BLM official, there is one AZ Game and Fish officer assigned to the San Pedro. That is not nearly enough to handle a drastic increase in hunting, especially near populated areas. I suggest increasing the number of officers to at least six full time to handle the demand.

Public Safety -- Comparing Figures 2-23 and 2-24, Discharge of Firearms, it is clear to me that there would be great potential compromise of public safety if hunting were mixed with current popular activities such as hiking and bird-watching in the southern part of the SPRNCA, as would be allowed if Alternatives B or C were adopted rather than Alternative D.

As for hunting, public safety needs to remain the number one priority. Given the level of visitation we have in the SPRNCA, hunting should be kept away from all trails and roadways used by our visitors. I suggest limiting hunting to Primitive and Backcountry RMZs and ensuring signage to warn visitors that these areas are used for hunting.

The noise of gunshots is frightening to almost any normal human being as well as other animals. C. There is also a major concern of accidentally shooting people or cattle.

Do we have to wait for a child or adult to be accidentally shot by a hunter to realize that increased hunting is dangerous to our children and to our adults? Birdwatchers and other nature lovers and people who just like to hike wander throughout the preserve and will be in danger of being shot due to increased hunting.

Alternative C opens the area to hunting and, for safety reasons, I would be much less apt to go to the SPRNCA for hiking or birding if hunters are there.

10 1.9, 3-16 | Fort Huachuca The increase in livestock is a management action proposed by BLM that would affected the spread of animal diseases and possibly zoonotic diseases.

We cannot imagine, for example, bringing school children as we now do to explore the San Pedro environment if in the future under the Preferred Alternative they would be endangered by gunfire within

our riparian area. How would BLM with its few officers and extremely limited budget be able to monitor the safety and regulate the appropriate use of firearms or maintain the fencing for grazing or monitor off-road activity?

Hunting, which is now restricted to certain remote areas of the SPRNCA, would now be permitted throughout the area, except within a quarter of a mile of occupied areas such as San Pedro House and the Fairbank Historic Townsite, potentially putting hikers, equestrians, and school kids on field trips within range of hunters. Is the BLM planning to put up signs at trail heads suggesting that those using the trails wear florescent orange vests to keep them safe from hunters who might mistake them for deer?

Alternative C would follow the Arizona Game and Fish requirement that forbids discharge of firearms within one-quarter mile of an occupied structure. That would potentially expose hikers, bikers, horseback riders, and anyone else enjoying recreational opportunities within the SPRCA to a stray bullet or a case of "mistaken identity" if a hunter mistakes a dog or a horse for a deer.

This plan only restricts the activity from a one-quarter mile radius around a small number of recreational sites. It would allow hunting along the river in the heavily used area at the San Pedro House, the Fairbank Loop Trail, the trail to Terrenate and other areas frequented by bird watchers, hikers, horse-back riders, fishermen, school groups...everyone using the public lands for recreation. This is a serious safety risk!

Furthermore, all calibers of rifles cited in a Maryland Hunter Ed Course (Kalkomey Enterprises, see www.hunter-ed.com) have maximum projectile ranges for lead bullets that exceed not just ¼ mile, but ½ mile - and most by more than two miles. These additional safety concerns should be addressed in the RMP.

Purpose and Need

The BLM Adopted an Impermissible Purpose and Need Statement The Council on Environmental Quality (CEQ) regulations direct an EIS "...shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR 1502.13). The CEQ regulations also direct that EAs "...shall include brief discussions of the need for the proposal..." (40 CFR 1508.9(b)). The BLM's approach to SPRNCA management gets it wrong right out of the gate at the "Purpose and Need" statement. The BLM claims that the DRMP is needed because, "the BLM committed to evaluating the effects of livestock grazing on the SPRNCA for the portions of the SPRNCA that were not acquired through the land exchange." DRMP/DEIS at I-2. The BLM intended 22 to reassess grazing throughout the SPRNCA including on the lands included in the land exchange. The MOU states, "unless the land is to be dedicated to a use that would preclude grazing..." which leaves the grazing on the four added allotments an open question to be answered by this RMP. By defining the need improperly, the basis of the DRMP/DEIS analysis is flawed. The Purpose and Need Statement continues, "this RMP evaluates the effects of livestock grazing on the SPRNCA; this is to determine where and how livestock grazing could be compatible with the values of the NCA." DRMP/DEIS at I-3. The question to be answered is "If livestock grazing could be compatible with the values of the NCA" and then, "If so, where and how and why?" The DRMP/DEIS doesn't sufficiently assess the "if" question or identify a "need" other than BLM said it would. But there is no "need" to graze the SPRNCA; regional livestock operators have adjusted to the SPRNCA being ungrazed since 1989 and there is no evidence that any social or economic need is unmet by this restriction. This then begs the question of "why" graze in the SPRNCA, especially in light of the extraordinary resource values, numerous imperiled species, and irreplaceable scientific opportunities

of the area. We note that the 1989 RMP for the SPRNCA detailed its purpose and need was to, "define a land use plan that will protect and enhance the riparian ecosystem. The plan will also be consistent with the multiple use mission of the BLM. Because of the sensitive nature of the riparian ecosystems BLM will stress certain traditional multiple-use activities and prohibit others." SPRNCA EIS at 3. This is a more appropriate statement than the current DRMP/DEIS includes. The narrowness with which the need is defined clearly predicted the outcome, which violates NEPA. 40 C.F.R. § 1502.13. The DRMP/DEIS is structured in such a way that belies the agency's bias and limits a full and fair consideration of a range of alternatives. For example, the BLM identifies its only goal for the livestock grazing program as "Manage livestock grazing in a manner consistent with other multipleuse needs and other desired resource condition objectives to ensure that they are compatible with the established conservation values," pertaining to Alternatives B and C. It considers this goal "n/a" to the status quo and then identifies "Do not authorize livestock grazing on the SPRNCA," as the only goal for Alternative D. DRMP/DEIS at 2-34. This is the only issue in the entire plan with tripartite goals, and it doesn't even make sense. "Do not authorize livestock grazing on the SPRNCA" is not a goal, it's a management action. The "No Grazing" alternative is the only alternative that is consistent with managing for the compatibility of conservation values. Similarly, the plan splits the "objectives" for livestock grazing into, for example, "Maintain productive, diverse upland and riparian and wetland plant communities of native species," and "Do not authorize livestock grazing on the SPRNCA." Objective 3, DRMP/DEIS at 2-34. This objective could be met by Alternative D, and a full and fair NEPA analysis would have revealed that. Instead, by simply stating that the objective is "Do not" rather than assessing the action as something that could meet the universal objective of vegetation diversity, the BLM skews the analysis away from comparing the various alternatives on equal footing. Additionally, Objective 3 is entirely applicable under Alternative A (page 2-34) where Alternative A would allow the continuation of the current livestock grazing regimes.

I'm against the digging of wells and alterations of the landscape. It is in direct contrast to your mission statement of preservation for future generations.

The purpose and need statement never mentions why the SPRNCA was established. It simply says that it is time to address the management of all resources. Although the designation of the SPRNCA was for the restoration and management of the riparian ecosystem, alternatives seem primarily focused on a range of grazing strategies. To graze or not to graze seems to be the primary driver in the development of the alternatives for managing the San Pedro National Conservation Riparian Area. The incorporation of the newest scientific information and management techniques for the purpose of maintaining and improving the integrity of riparian ecosystems somewhat lacking in the alternatives. It's either active management including grazing or passive management and no grazing.

The purposes of the SPRNCA RMP are to guide the management of BLM-administered lands on the SPRNCA and to provide a framework for future land management in the decision area. It considers the requirements of the enabling legislation (Public Law [PL] 100-696, November 18, 1988)..... Comment: The use of the word considers implies that complying with PL100-696 is optional. The primary purpose of the RMP should be to meet the requirements of the enabling legislation to "protect the riparian area and aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the public lands surrounding the San Pedro River..."

The DRMP/EIS fails to present an accurate and legally defensible "purpose and need." The DRMP/EIS states that the "purpose and need" for the RMP is "to guide the management...and to provide a framework for

future land management...[while] [I]t considers [emphasis added] the requirements of the enabling legislation..." This statement is not correct. The "purpose and need" cannot just "consider" the requirements of AICA. It must obey it.

Recreation and Hunting

Allow only pedestrian, horseback, and bicycle (not within the floodplain) penetration beyond the parking lots.

More firearms are inconsistent with most other recreation. While hunting is appropriate in other areas, I agree with the commenters who suggested that hunting should not be allowed in the SPRNCA, due to conflicts with other uses, public safety issues, and protection of special status species.

Throughout the comment period and at multiple public meetings, BLM stressed its reliance on the "facts" and the need for the public to submit substantive comments. But the BLM cannot overlook the emotional response people have to the SPRNCA and the visceral disgust of the majority of the public for the proposed changes. While these reactions are hard to quantify, it is worth noting that the recreational values of the SPRNCA - a value protected under the enabling legislation - is entirely subjective. Without systematic and quantitative surveys determining what people love about the SPRNCA, the BLM must take the outrage and disbelief about the preferred alternative to mean that increased livestock grazing isn't it.

2. As the founder and former leader of the Friends of the San Pedro River Equestrian Team, and as a local equestrian, I am in favor of keeping all current equestrian access points and trails open to the public, for both recreational and educational values.

More firearms are inconsistent with most other recreation. While hunting is appropriate in other areas, I agree with the commenters who suggested that hunting should not be allowed in the SPRNCA, due to conflicts with other uses, public safety issues, and protection of special status species.

We do not bird only within a quarter mile of developed sites. How will our safety be secured if SPRNCA is opened to hunting? We can not successfully bird wearing reflective or neon clothing.

Analyzing the effects of recreation on grazing is totally backwards and makes me wonder who has undue influence on the process of developing these plans. There is no section of the effects of grazing on recreation, which is a LEGITIMATE use of SPRNCA.

Fencing would also impede hiking, birding, and back woods camping.

Grazing also affects the recreational use of walking trails. I have personal experience of grazing interfering with enjoying birding trails at Patagonia Lake and even causing personal danger.

While not opposed to lawful hunting on public lands, it is very disappointing that Alternative C would open most of SPRNCA to hunting. It greatly detracts from the experience of visiting an area when there are concerns that hunters are in the area. Realizing that the vast majority of hunters are conscientious, it is still unsettling when walking through an area where hunting may actively be taking place. The sound of gunfire while hiking through an area is also disturbing and discourages multiple uses in these areas. This is particularly important in heavily visited areas such as near the San Pedro House, Fairbank, Hereford Bridge, etc.

Opening additional areas of SPRNCA to hunting greatly also increases the chances that areas within the SPRNCA may become the sites of recreational target shooting. Just as importantly, the sound of gunfire not only impacts people, but negatively impacts wildlife. I respectfully request that the BLM reconsider and continue to exclude existing areas of SPRNCA from hunting.

Charleston Bridge has poor access to the river for many people as the trail is steep and yet young folks seem to find a way to go party at that site and leave all their trash, beer cans, bottles, waste and containers behind.

I am also opposed to opening the area to trapping. Dogs, children, and adults wade the River almost daily. Moreover, trapping ignores the success of the reintroduction of beavers to slow the River's flow.

Thousands of birders use the area during October through December and they would be well advised to stay away during hunting deer hunting season. As far as the Wednesday Bird Walks are concerned, it would be very difficult to schedule the walks only during the off periods for hunting season. One of the primary reasons for the success of the bird walks is that tourists soon get the word that they are every week. In addition, I believe most visiting birders would skip the San Pedro entirely upon on hearing that it was open for deer hunting. They would not want to take the risk of getting shot when there are other places to go. And people do get shot. I came close to getting shot by kids when I was a kid hunting and also as an adult by a kid being introduced to pheasant hunting by his father. The boy decided to keep the safety off to make sure he was quick enough to get a shot at the next pheasant and his gun went off accidentally. In addition, a hunter hunting without permission was shot on my land in Iowa by a fellow hunter. And, finally there is a reason that there is a deer hunters insurance company, people do get shot.

The undesirable aspect of Alternative C, which would affect me the most would be allowing hunting in the area near the San Pedro House. Deer seasons are on and off from October through December at a minimum. Deer rifles carry a mile at a minimum and the Mesquites, Johnson Grass, which is over 10 feet high in many locations, as well as other vegetation make allowing hunting within a couple of miles of the San Pedro House downright dangerous to anyone else trying to use the area.

Increased grazing could potentially erode some of the non-consumptive recreational opportunities by the understory vegetation which would in turn decrease bird habitat and degrade bird watching opportunities.

Hunting is intrusive. The noise from guns destroys the experience of hikers, birders, and families enjoying the area.

ES-3, Table ES-1, Issues 8 and 10 BLM states: "8.How can the BLM manage the demand for increased access and different recreation experiences while furthering the primary purposes for which the conservation area was designated?" & "10..... Where can the BLM allow land use authorizations on the SPRNCA, while furthering the primary purposes for which the conservation area was designated?" Comment: Since "recreational" is one of the nine designated purposes of SPRNCA in the Arizona-Idaho Conservation Act of 1988 (PL 100-696) (the "Act"), the reference to "primary purposes" is confusing. The reference to "primary" should be removed in general, as BLM has acknowledged that it is obligated to equally weigh, and thus must take a balanced approach to management in supporting the 9 purposes detailed within the Act. Corrected/Suggested language: Remove the word "primary" from the table entirely, and instead just refer to the "purposes" for which SPRNCA was created.

AAF supports the expanded opportunities for motorized travel in the uplands and allowing of firearms discharge as described in Alternative “C” (Preferred Alternative). There are excellent small game (quail and rabbits), and also deer and javelina hunting opportunities in the uplands. We would suggest that the river bottom have a larger buffer for no firearms than is proposed in Alternative “C”. A buffer around the trail that parallels the river should be included in the no firearms discharge zone.

By allowing hunting throughout the SPRNCA, BLM would not only cause conflicts between visitors seeking out different recreation opportunities, but it would increase the risk of harm to visitors. Increased risk of conflict between visitors would be highly detrimental to the sense of solitude visitors would feel in the primitive and backcountry RMZs; hunters would be worried about their quarry being frightened off by hikers while hikers would be concerned with the noise pollution from gunshots.

The areas around San Pedro House and Fairbanks are some of the very few areas with trails that are accessible to walkers. Both areas have a few miles of maintained trails that are heavily used year-round by the walking and biking community. Opening these two pedestrian-friendly sanctuaries to hunting is unnecessary and is a gross imbalance in accessibility to our public lands.

Edwardson Recreation/Hunting The regions closed to hunting in Figure 2-23 are too small. For example, the trail from Murray Springs to Horsethief Draw and the San Pedro house should be protected. All areas along the river and washes that cross the San Pedro Trail should be closed to firearms.

Hunting with firearms is particularly inappropriate in a popular and relatively narrow strip of land like the SPRNCA that includes backcountry and primitive camping and hiking and is flanked by residences. In addition to being a significant safety hazard, it is a source of particularly obtrusive noise (auditory pollution), not just interfering with but in effect negating any sense of quietude or solitude a visitor may have enjoyed; and may confront wildlife enthusiasts in particular with a disconcerting, sometimes visceral and repulsive experience of mayhem and destruction in conflict with the purpose of their visit and some of their deepest values.

I suggest that the back country and more remote areas be opened for hunting, and the more populated ones be closed for hunting

Opening the entire San Pedro Area to hunting will increase the potential for hunting incidents.

Though some members of the public suggest replacing livestock grazing on the SPRNCA with tourism revenues, that would require substantial investment by the BLM, local governments, and the private sector. The type of tourism would need to be changed to include a significant increase in destination tourism to use the resources and values of SRPNCA to sustain the economy of Cochise County. Tourist visitations in the County are dependent upon fuel cost, income levers, and exchange rate. Therefore, tourist visitations are variable.

My primary concern (I many other concerns) is that hunting could be allowed in the entire SPRNCA. Big game hunting seasons occur during late summer and fall. These are months of high river visitation. As I group lead it would be difficult to have walk participants on the trails. WOULD I personally, or the FSPR, be responsible if someone on my walk was injured due to an erratic shot by a hunter? Would walks/hikes not be allowed in the fall season, which is the most pleasant season to be on or near the river? Also, I checked the hunting regs for Arizona and rabbit hunting is allowed all year. It would be just as easy for a

rabbit hunter to hit a walker or bird watcher as it would for a big game hunter. Please reconsider your hunting alternatives to allow year round access to all the SPRNCA trails.

To allow hunting in this area, would be detrimental to bird watching. Birders are not accustomed to encountering hunters on the same trails, or hearing gunshots while birding. These two activities are not compatible.

as the restoration projects take effect, then more development will make sense. Still, however, that development should be both secondary to conservation and focused on recreational and historical/archeological efforts.

By allowing hunting throughout the SPRNCA, BLM would not only cause conflicts between visitors seeking out different recreation opportunities, but it would increase the risk of harm to visitors. Increased risk of conflict between visitors would be highly detrimental to the sense of solitude visitors would feel in the primitive and backcountry RMZs; hunters would be worried about their quarry being frightened off by hikers while hikers would be concerned with the noise pollution from gunshots.

Fences disrupt recreation (which is the idea behind multi-purpose/multiple use.

No real explanation of the amount or type of recreational use.

There is no signage indicating that hunting is allowed and to be careful where you go.

According to the logs from the San Pedro House, birders make up 47% of the primary purpose of visiting the SPRNCA and another 43% say birding is secondary, while fewer than 1% are here for hunting. Obviously we should be putting more emphasis on the 99% who are here for reasons other than hunting.

The distance of firearms use from public areas is insufficient, especially with modern weaponry. Our nature trails are outside the ¼ mile limit from structures, which is the current rule. Are we restricting public access to the Kingfisher and Black Phoebe Ponds during hunting seasons (which include every month of the year)?

BLM used Orr and Colby but did not include facts such as, 87% of visitors were interested in "birding" and 65% of visitors were interested in "birding and natural areas": 52% were return visitors.

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33 3-120 Para 4 Fort Huachuca Will no vegetation treatments actually contribute to positive recreational outcomes?

Another concern that was brought up that I would like incorporated into the updated plan is firearm use. It was stated that this is the only BLM managed area that does not allow for firearm use. I do not recall if that was within Arizona managed areas or throughout BLM as a whole. I know this is an emotional issue

for some, but it was stated that there has not been a gun safety issue in the rest of the BLM areas that allow for it.

BLM needs to protect and preserve the last free-flowing river in Southern AZ. Not only because it's the right thing to do, but also because the recreational opportunities (hiking, birding) it provides support the area economically.

Adult animals that survive hunting can be affected by experiencing mental stress and disruption to the social structure if they are a species that live in a group. We know hunted populations of deer have significantly greater flight responses than non-hunted populations which suggests that hunting is stressful to the surviving animals. Hunting with firearms and dogs close to native animals and livestock can also disturb them and cause fear. They can be wounded by stray bullets or injured if they try to flee the area. Hunting dogs that are not adequately trained or controlled, or that escape, could also attack native and farm animals. Excerpted from *Hunting and Animal Welfare*, <http://kb.rspca.org.au/afile/531/156/1/> When hunting and trapping are allowed, the potential for identifying poachers is decreased. In addition, hunters and trappers can mistakenly take down unintended animals. The ecosystems within the SPRNCA lack the resiliency to recover from mistakes or intentional poaching. Following is an article documenting a killing of an endangered local jaguar. https://tucson.com/opinion/local/conservationists-the-death-of-the-jaguar-yo-oko-isa/article_d8b946da-5674-5f17-b2b6-bce82ee725d9.html This single death could make the difference in whether or not this species survives in the United States or at all.

Hunting/Trapping and Fishing Hunting/Trapping "Although some hunters may have the skills, knowledge and motivation to minimize the suffering of their prey, many do not and it is inevitable that some animals will endure pain and distress. With some hunting activities and practices the potential for significant suffering is extremely high, for example where animals are injured but are not retrieved, where dogs are used and are not controlled properly, where hunters lack technical skill, where killing methods do not cause rapid death, or where dependent young are left abandoned. Current regulations and enforcement regimes do not prevent these things from occurring - they are an inevitable consequence of recreational hunting activities." Excerpted from the Royal Society for the Prevention of Cruelty to Animals (RSPCA): http://kb.rspca.org.au/What-is-the-RSPCAs-view-on-recreational-hunting_531.html Hunting not only affects the target animal that is killed or wounded by a bullet, arrow or knife. It can also have a significant negative impact on other animals, particularly dependent young. If hunters do not find and euthanase the dependent young of shot females, they are left to fend for themselves. Depending on their age, orphaned young can suffer and die from starvation, dehydration or predation. Maternal deprivation is a significant stressor in many species and even if orphaned individuals survive the initial acute stress of lack of nutrition, changes in physiology and behaviour can have a detrimental effect on their growth and development. Excerpted from *Hunting and Animal Welfare*, <http://kb.rspca.org.au/afile/531/156/1/> and http://kb.rspca.org.au/how-does-hunting-affect-other-animals_534.html

Hunting: I support an increase in areas that can be hunted but would restrict firearms hunting in areas of the heavily used trails. Some areas could be designated to shotgun only during bird seasons

13. 1.4 Table 1.2 Recreation resources should include quality of experience, not number of users and access to sites.

I am a private citizen who enjoys the solitude, surroundings, hiking opportunities and wildlife in the SPRNCA. The introduction of cattle and firearms into this area would severely impinge on enjoyment of these quiet activities.

Opening increased acreage to grazing and to shooting will negatively impact the experience of those visiting the San Pedro Riparian Area. Increased allowance of hunting will also endanger visitors, volunteers and maybe even BLM staff. I urge BLM to consider that the original SPRNCA enabling legislation did not call for multiple use of the land, and to leave well enough alone with regard to grazing and shooting.

If hunting is allowed, I will no longer feel safe to be on the SPRNCA.

In the Introduction and Chapter 3, Recreation, BLM recognized the SPRNCA's designation as a Globally Important Bird Area (IBA). However, the impacts of this status and the unique benefits it brings to the SPRNCA are not included in the RMP analysis. First, the SPRNCA is an IBA for: 1) Species of Conservation Concern (Western Yellow-billed Cuckoo, Cassin's and Botteri's Sparrows) and a migration bottleneck for spring warblers such as the Wilson's and Yellow Warblers, and the Olive-sided Flycatcher 2) Species in rare/unique habitat (i.e. Riparian) 3) Raptors/breeding (Gray Hawk, Mississippi Kite) The SPRNCA is an important research and survey location. The quality of these surveys and continued use of the SPRNCA as a birding destination and research location are dependent on a healthy riparian habitat. In section 3.3.2, the BLM states, "outdoor recreation opportunities similar to those available on the SPRNCA are also available on National Forest System lands in the surrounding mountains, on Arizona State Trust lands on the bajada slopes, and other BLM-administered lands outside the SPRNCA." While this may be true for some recreation, it is not the case for the riparian birding that occurs at the SPRNCA and for the IBA status for those specific riparian species. The BLM cannot assume that recreation and the species dependent on the SPRNCA will move to upland areas.

Myself, my family, and my friends enjoy the San Pedro Riparian National Conservation Area for her solitude, tranquility, hiking, backcountry camping, birdwatching, photography, wildlife sighting, botany, and wild opportunities. These opportunities would be altered forever if the BLM preferred alternative (as it is written now) becomes a reality and this would surely be a great tragedy of our time. It is my wish that my granddaughter can grow up learning and communing with nature on the San Pedro Riparian NCA just as she has done for the first year of her life. She should continue to have a place where she can go and be with nature, without the worry of gun fire from hunters or contaminated water from livestock waste. To have a place of true tranquility with minimum human disturbance is not a gift but a necessity for the human spirit to survive... All people need the wonderful San Pedro Riparian National Conservation Area as a place of untethered beauty to exist, for their survival and for their growth as human beings.

For thirty years the River has been managed passively and is healing as a result. Reversing the management at this point goes against the law as well as the hard work which many people have done over the years to designate and protect the SPRNCA. As part of the original intent in establishing the SPRNCA, was for it to be a wildlife refuge (M. Gregory, personal communication, September 9, 2018). This is what it has become with passive management through protection and conservation. Therefore, to honor the work that has been done and to honor the land itself, hunting should be completely banned on the SPRNCA. This will allow for the animals to live in peace and for the original intent, the land and the people who enjoy tranquil recreation, to be honored.

By allowing hunting throughout the SPRNCA, BLM would not only cause conflicts between visitors seeking out different recreation opportunities, but it would increase the risk of harm to visitors. Increased risk of conflict between visitors would be highly detrimental to the sense of solitude visitors would feel in the primitive and backcountry RMZs; hunters would be worried about their quarry being frightened off by hikers while hikers would be concerned with the noise pollution from gunshots.

Whatever economic gain may be realized by allowing more grazing will inevitably be off-set by the loss of revenue from the burgeoning Cochise County eco-tourism industry if conservation values are compromised. Tourists who are visiting to see rare bird species only found in the U.S. in the SPRNCA and other borderland areas of the Southwest are not coming to see cattle grazing. Furthermore, there are plenty of dude ranches locally that cater to such tourists. With the presence of more cattle, the visitor experience will be diminished by cow pies, offending odor, pest insects and invasive, introduced plants, water pollution, access restricted by fencing, and nuisance vehicular traffic. Opening the SPRNCA to grazing will directly harm this burgeoning industry within the SPRNCA, where bed and breakfasts, nature tour operators, annual festivals and other activities are growing rapidly as birdwatching increases in popularity.

By allowing hunting throughout the SPRNCA, BLM would not only cause conflicts between visitors seeking out different recreation opportunities, but it would increase the risk of harm to visitors. Increased risk of conflict between visitors would be highly detrimental to the sense of solitude visitors would feel in the primitive and backcountry RMZs; hunters would be worried about their quarry being frightened off by hikers while hikers would be concerned with the noise pollution from gunshots.

Another concern is the expansion of hunting on the SPRNCA. BLM is rightly concerned about public safety as was evident in the quick action at the San Pedro House concerning the hazard presented by the aging cottonwood trees. To then propose opening to hunting areas that are used by school field trips, hikers, birders, and dog walkers seems short-sighted. To be clear, we are advising the BLM by this comment that expanding the hunting area poses a serious public safety risk for which they may be held liable. Again, hunters in Arizona comprise less than 5% of the population, much fewer than hikers, photographers and birders. The BLM website states that 99% of BLM land is open to hunting. Do we really need to add to that? The current hunting boundaries seem to work fine for everyone, why change them?

All around the SPRNCA, signs posting the use regulations are faded, sun blasted, shot with holes, bent, blocked by overgrown vegetation or otherwise rendered invisible / easily ignored by violators. How the BLM can consider letting more traffic in to trample the wildlife is beyond me when they can't even monitor and manage conditions as they are now.

Bicycles Studies have shown that the physical damage bicycles do to the environment is comparable and at times less than that done by pedestrians, depending on terrain, soil, and the skill of the cyclist. See <https://www.lib.washington.edu/msd/norestriction/b67566091.pdf> and Environmental Impacts of Mountain Biking: Science Review and Best Bicycles within the NCA should be limited to roads outside of LWC as per the definition of uses within wilderness. They should also be prohibited from footpaths to avoid conflicts with pedestrian use. They should be allowed on all existing access roads, (excluding those roads that are reclaiming). Alternative D recommends no bicycles in LWC within the SPRNCA. Bicycle use should be limited to designated roads and prohibited from footpaths.

Use of drones The recreational use of drones over the SPRNCA is not compatible with the enabling law nor the policies of the NCL. Drones are disturbing to wildlife and to humans alike. (See *How Drones Are Affecting Wildlife in Surprising Ways*, <https://news.nationalgeographic.com/2015/08/150825-drones-animals-wildlife-bearsscience-technology/>) However, there may be certain applications for which limited drone use for conservation purposes might be allowed. Alternative D does not address the use of drones in the SPRNCA. Drone use should be addressed and restricted to limited uses that support the values for which the SPRNCA was created.

Resources

The DRMP/DEIS fails to identify management options in light of the ongoing long-term drought and the DRMP fails to identify management alternatives that would allow for managing resilient ecosystems to act as mitigation of the impacts of long-term drought.

The maps provided, especially those identifying areas available for livestock grazing, are not detailed enough to allow the public to analyze the potential impacts of livestock grazing, nor allow the public to determine whether the BLM analysis is adequate. Important features such as xeroriparian areas, ephemeral washes, cienegas, springs, archeological and paleontological sites are not marked on the maps, obscuring the overlay of the proposed action onto these critical features of the SPRNCA. As an example of the inadequacy of the maps, at the public meetings for the SPNRCA RMP DEIS, Scott Feldhausen repeatedly stated that under Alternative C livestock would be excluded from riparian areas. Had the maps provided in the DEIS identified riparian areas and existing and potential livestock allotments it would show that under all alternatives there are allotments where livestock grazing would (and currently does) occur in riparian areas. By not providing outlines of the actual allotment boundaries overlaid on the maps of habitat types, the public doesn't know the current extent of grazing occurring in the SPRNCA and the potential impacts to wildlife habitat.

The DRMP/DEIS admits that livestock grazing on the Babocomari River would be exempted from the preferred alternative's blanket prohibition on riparian use. DRMP/DEIS at 2-35. But it fails to describe the extent to which grazing occurs on the Brunchow Hill allotment, an aspect of current management disclosed by the 2012 Biological Opinion (FWS 2012)⁴ and other documents.

the DRMP/DEIS fails to disclose the effects that livestock grazing are already having on the SPRNCA. For example, by combining all four allotments and classifying the current soil conditions by total acres (Table 3-5, page 3-10), the BLM is not sufficiently breaking out the impacts by area or distinguishing the predicted impacts of continued grazing. It is also admitting that it would be allowing severe erosion hazards to exist under the status quo and increase under the preferred alternative, in direct contravention of the management standard the SPRNCA enabling legislation prescribes.

The negative impacts of livestock grazing in riparian areas have been well 4 documented. Poff, et al. 2011, Kovalchik and Elmore 1994. The scientific literature reveals that livestock grazing negatively affects water quality and seasonal quantity, stream channel morphology, hydrology, riparian zone soils, instream and streambank vegetation, and aquatic and riparian wildlife. Belsky et al. 1999, Ohmart 1996, Elmore and Kauffman 1994. Invertebrate and small mammal habitat is improved by livestock exclusion from riparian areas. See, e.g. Herbst 2011, Hayward et al. 1997. While the historically degraded riparian conditions of the SPRNCA certainly stem from centuries of unmanaged grazing, there is no evidence that introducing livestock grazing to riparian systems improves the ecological function of these areas.

The BLM must analyze how the impacts of grazing are and will be exacerbated by climate change, which is already affecting the hydrology of Arizona and the desert southwest. The recently issued Fourth National Climate Science Special Report concludes, based on extensive evidence, that it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century. Among other things, the Report documents annual trends toward earlier spring melt and reduced snowpack, which are already affecting water resources in the western United States. These trends are expected to continue, potentially leading to chronic, long-duration hydrological drought before the end of this century. The conclusions of the Fourth National Climate Science Special Report corroborate prior findings about the impacts of climate change on water resources in the western United States. For example, Garfin et al. (2013) found that droughts in parts of the U.S. Southwest will become hotter, more severe, and more frequent (high confidence), resulting in water deficits in excess of those during the last 110 years (high confidence). Scholarship concludes, "in the U.S. Southwest, ... the risk of a decade-scale megadrought in the coming century is ... at least 80%, and may be higher than 90% in certain areas. The likelihood of longer-lived events (35 year) is between 20% and 50%, and the risk of an unprecedented 50-yr megadrought is non-negligible under the most severe warming scenario (5%-10%)." See Dixen et al. 2009. There is compelling scientific evidence that the American Southwest will experience changes in climate extremes over the next century. Projected changes in climate parameters (and the level of 39 confidence in the projections) for the Southwest Border Region include increases in: average annual temperatures (high level of confidence of occurrence), average summer temperatures (high); average annual maximum temperatures (medium-high); annual number of days with maximum temperatures > 100° F (medium high); heat wave duration (high); and drought (high), coupled with decreasing annual precipitation (medium-high). Climate change is likely to significantly affect: the dynamics of stormwater and groundwater recharge systems (primarily through changes in the quantity and quality of available groundwater); stream flow, especially summer base flows; aquatic and wetland biogeochemical processes; and ultimately the health of riparian areas and wetlands and the animals that depend on these habitats, particularly in the arid Southwest. Higher temperatures and reduced precipitation will further stress groundwater levels. As EPA previously stated: The [Southwest] region's water supplies are already constrained under current climate conditions. Water allocations in the region, some of which were agreed upon almost a century ago, have become difficult to meet. Meanwhile, groundwater pumping is already lowering water tables. Future climate change is projected to worsen these conditions. Increasing temperatures are projected to further reduce snowpack, which will lead to reduced streamflows, especially in the spring. Hydrologists have already identified climate change as a clear and present threat to the San Pedro River. Meixner et al (2016) studied the implications of climate change on eight aquifers in the southwest United States, including in particular the San Pedro basin. They found that existing data demonstrate that groundwater recharge in the San Pedro basin will decrease from between 30% to 100% over the next 100 years. A recent study of the Colorado River confirmed that that continued climate warming will reduce flows along that river. See Udall 2017. The study documents the impacts of prolonged drought on the river and concludes that future climate change impacts on the Colorado River flows will be much more serious than currently assumed, especially if substantial reductions in greenhouse gas emissions do not occur. These results apply equally to streams across the desert Southwest, such as the San Pedro River. We note that BLM relies heavily on recharge strategies for addressing the San Pedro water deficits. In public meetings BLM staff referred to mesquite removal as an opportunity for recharge projects, and we find "recharge" too broad a category to support or oppose, and ask that what will constitute recharge efforts be clearly articulated. That said, and without more detailed information about what may be considered a recharge project, we feel in general that recharge projects are unlikely to be appropriate within the boundaries of the SPRNCA. We are not supportive of

removal of mesquite bosque under the guise of aquifer recharge, and effluent recharge involving earthworks would be too disruptive to be appropriate on the SPRNCA, but may be conducted off the SPRNCA to benefit the river. Moreover, BLM's discussion of recharge while simultaneously preferring an alternative that increases water withdrawal for livestock seems ill-considered. The BLM must analyze the cumulative impacts (including to wildlife; see Beschta et al 2012 and 2014) of grazing in light the reasonably foreseeable effects of climate change.

The DRMP/DEIS does not include any discussion of the well-documented incidents of trespass livestock and fails to analyze the existing, ongoing impacts of that trespass and fails to analyze the anticipated and likely impacts of future trespass livestock under all alternatives. The DEIS fails to identify an adaptive management plan to address the well-documented and highly-likely to recur livestock trespass. The lack of disclosure and assessment skews the baseline being presented to the 30 public; limits the ability to adequately assess past, present, and reasonably future impacts; and is inconsistent with the basic tenets of NEPA. The BLM also has not analyzed how it would address and manage the unauthorized and permitted livestock, and the likely compounding effects of its preferred alternative.

The cessation of livestock grazing on some reaches of the San Pedro has probably increased the abundance of small mammals that require dense vegetation. Soykan, et al. 2009. The substantial increase of plant cover at low height intervals that followed the removal of livestock on the upper San Pedro likely has substantially increased the abundance of small mammal species that prefer cover characteristic of grassland or riparian woodland habitats. Soykan, et al. 2009, citing Duncan 1988, Krueper et al. 2003. The DRMP/DEIS posits, "In areas where grazing is properly managed, impacts would be limited" and cites to Smith (2014) for support. DRMP/DEIS at 3-48. Smith (2014) is an unpublished white paper prepared by a consultant for the Hereford Natural Resource Conservation District in support of its position that livestock grazing should be permitted within the SPRNCA. See Smith 2014. Because the DRMP/DEIS statement is not a direct quote from the paper, it's difficult to interpret where the BLM sources this. While Smith lists basic principles of grazing management including appropriate stocking rates, frequency of grazing, season of use, and distribution of grazing as components of grazing plans that can help reduce the harms of grazing use, no management scheme completely eliminates the harms of livestock grazing, let alone satisfies BLM's obligation to conserve, protect, and enhance the values for which the SPRNCA was designated, particularly here, where the BLM is contemplating increased levels of grazing in the project area.

we have identified the multiple incidents of trespass from the Lucky Hills Allotment that the BLM is aware of and has failed to account for in the DRMP/EIS which we are including as Attachment 8. This attachment also includes photos we received from the BLM as part of our FOIA request that clearly demonstrate the significant impacts trespass livestock have on the SPRNCA.

BLM appears to take the position that it can distinguish between the management of riparian areas and "upland" areas, a term it has yet to define. The entire SPRNCA, however, must be managed holistically as a unified riparian area given the influence of the adjacent uplands on the riverine habitat. BLM has not identified any basis or criteria for identifying upland areas that would be available to grazing under the Preferred Alternative.

BLM's attempt to carve out "uplands" also runs contrary to the scientific evidence establishing the dynamic relationship between these areas and the San Pedro River. As documented by Stromberg et al. 2010, the SPRNCA is a dynamic system where the riparian vegetation and vegetated floodplain has been expanding.

Geomorphological changes are occurring, vegetation is trapping sediment and building banks, floodwater storage is increasing, and a healthier riparian environment has developed in the past 30 years. Fogg, et al. 2012. The vegetation communities of the SPRNCA are largely dependent upon a depth-to-groundwater gradient, and the BLM's assumption that some areas are "upland" and some are "riparian" is inadequate to address the natural progression of a recovering riparian corridor. Scientists predict that sacaton grasslands could transition to wetter and hydric sites in the future. Ibid. By assuming that the boundaries between "riparian" and "upland" are fixed, the BLM is fundamentally misunderstanding the dynamism of these ecosystems, and in so doing, failing to protect SPRNCA as required by the enabling legislation. The agency must account for this dynamism in its assessment of potential impacts, and the potential for livestock grazing to become a limiting factor in the recovery (i.e. enhancement) of the SPRNCA at large.

BLM's attempt to dissect SPRNCA up into riparian areas and upland habitat overlooks the cross-cutting presence of xeroriparian washes. These ephemeral washes carry surface runoff and sediment from the mountains down to the San Pedro River. They are a critical component of the riparian system and traverse the entire width of the SPRNCA. Levick et al. (2008) provide a comprehensive review of the ecological and hydrological importance of such systems, which provide important habitat also for many plant species (not just riparian-dependent species), refugia for plants and animals in times of drought (and climate change), a source of water for upland wildlife, and migration/dispersal corridors. They are also a critical component of the wildlife habitat the SPRNCA provides. Hardy et al. 2004, Krausman et al. 1985. BLM has not demonstrated how its concept of "upland" habitat respects the integrated nature of mesic riparian areas across SPRNCA.

Ecological implications of climate change in the Southwest include long-term shifts in vegetation patterns, a change that the DRMP/DEIS does not analyze. Garfin et al. (2013) indicated that significant land cover changes are likely. Cold-tolerant species may, indeed, move upward or die, but the same is true for precipitation-dependent species at lower elevations in desert and grassland areas. Moreover, it is likely that all life forms (including shrubs, herbaceous perennials, and annuals), not just trees, will also be affected. In a study in the Finger Rock Canyon Drainage, Santa Catalina Mountains, Crimmins et al. (2009) found that about 20% of species showed upward movement in flowering (a proxy for range changes) over a twenty-year period. Such change was seen in all life forms across the entire elevation gradient of more than 4100 feet. The fact that 80% of species have not shown upward movement may indicate that they cannot adapt quickly enough to changing climatic conditions or that they are well-adapted to long-term climate variability. In the latter case, abrupt, widespread change affecting a significant portion of vegetative communities would likely occur if the climatic threshold is crossed-e. g., minimum precipitation requirements are not met (see National Research Council 2013). The resilience of the SPRNCA will be sorely tested under these scenarios, and the BLM's plan should decrease anthropogenic stressors within its control.

The SPRNCA itself provides a robust record of improvement following livestock exclusion. From riparian canopy forest recovery to the increases in avian abundance, the scientific analyses of post-grazing effects in the SPRNCA form a strong record of the benefits of livestock exclusion. See Attachment I, Annotated bibliography of SPRNCA science. A letter from regional scientists attests to the strength of these changes, but BLM has thus far ignored the opposing science that they've received. See Stromberg et al. 2018, Comments on the SPRNCA DRMP/DEIS.

Through a FOIA request, we have identified BLM documents indicating livestock are causing degradation in the uplands, causing impacts to the riparian areas, and livestock are trespassing in riparian areas: From the 1997 Coordinated Management Plan (CMP) for the Lucky Hills Allotment (10,252 BLM acres, 1,729 acres in SPRNCA): the range condition ranged from poor to excellent, mostly poor along drainages, fair on hills, good to excellent found in areas that haven't been grazed in some time (Attachment 7, page 3). Off-road vehicle use, shooting, and vandalism were identified as a problem in 1997 (Id. page 4). There were no riparian acres within SPRNCA for the Lucky Hills allotment, but the uplands are "directly adjacent to the San Pedro River and their management can affect the watershed2 (Id. page 4.) At that time, "Cattle getting into the river and being lost due to dense vegetation [was] a problem." So much so that "[a] community roundup of the cattle in the river once a year [was] proposed." Goals for the CRMP were to maintain a self-sustaining economically feasible ranching operation; improve overall range condition to Good or Excellent; monitor the effects of the management program to document changes in the condition of the resources, and make necessary changes if goals are not being achieved." (Id. page 5.) Objectives were to limit average use of perennial grass species to 30-60 percent of the current growing season's production; install new fences and water developments (Id. page 5.) Monitoring is required every other year, usually in the fall, to ensure success of the management plan (Id. page 6.) From the Babocomari River PFC checklist, 10/24/2013 (file TFO-JRS-03.pdf, Attachment 4): Upland watershed is contributing to riparian degradation; "many young trees being grazed" or "being heavily grazed" and "cattle trailing appears to have cut off channels, Johnson grass very prevalent in many areas where trees and deer grass are expected to be. Trampling further loosened soil for erosion where cover was poor. Desiccation of banks due to ground water extraction will lessen the ability of vegetation to cover the banks and floodplain over time. It is likely having an effect already." (See page 2, #11.) "Cut-off channels forming along cattle trails...some head cuts are 1.5 feet deep." From the St. David Cienega PFC checklist 5/10/2013 (file TFO-JRS-05.pdf, Attachment 9): The upland watershed is contributing to riparian degradation. "Watershed highly degraded with active head cuts in drainages adjacent to wetland patches. Uplands are shrub invaded, lack grass cover, and being developed outside the NCA." (See page 2.) The natural surface or subsurface flow patterns are altered by disturbance, which includes trails created by cows. (See pages 1 and 2). Sacaton grassland is heavily degraded and eroding. (See page 2.) "Excessive sediment deposition from poor watershed condition and risk of head-cutting at southeastern end." (See page 2.) The status as of May 10, 2013 was Functioning-at-Risk with a downward trend and livestock use was contributing to the nonfunctional condition.

The DRMP/DEIS fails to adequately analyze and disclose the effects of the preferred alternative's inclusion of 43.8 miles of new fencing to support livestock operations. DRMP/DEIS at 3-3. Fencing has direct and indirect effects on the movement of wildlife, including perch sites for raptors, as well as impacts to recreational and scenic values that the DRMP/DEIS has not discussed.

The BLM's Proper Functioning Condition rates the portion of the river in the Brunchow allotment as functional-at-risk with a downward trend due, in part, to livestock grazing. Attachment 10 at 11. The Land Health Evaluation doesn't distinguish whether this is currently authorized livestock grazing or trespass grazing, but it is clear that the BLM needs to consider this adverse impact. The 2012 BiOp for livestock grazing on the Gila District discusses that livestock within the SPRNCA are having some effects through trampling and habitat damage and that conditions upslope may be affecting potential flycatcher habitat. BiOp at 74, Attachment 6. It describes conditions on the Brunchow Hill allotment's BLM lands as "needing improvement." Ibid. The current preferred alternative doesn't provide for that improvement, and instead would lead to degradation on other lands in the SPRNCA. Nor does the current DRMP/DEIS provide a

sufficient monitoring plan or strategy to ensure that livestock grazing impacts wouldn't harm the SPRNCA values. The 1990 Babocomari AMP pledges that range utilization monitoring will be performed twice a year. 1990 Babocomari AMP at 6, Attachment 5. This has apparently never been done. If past is precedent, the BLM will not keep its commitments to review the impacts of livestock on the SPRNCA.

There is no consideration in the RMP for the dual impacts of long-term drought and (scientifically substantiated) climate change.

the alternatives did not address future issues such as water, increasing drought, higher soil surface temperatures, higher low temperatures, and depletion of the aquifer without which there will be no river. Since we are planning for the future these concerns are paramount.

The introduction of cows will increase e-coli in the river, harm aquatic life, decrease the number of birds, cause further erosion that still is not completely healed, decrease the number of mammals, as cows also eat forbes once they are done with the grass.

Historically, livestock grazing has greatly impacted the San Pedro River and surround rangeland. This is documented in several papers and studies. Page 107 of "A History of Land Use and Natural Resources in the Middle San Pedro River Valley, Arizona" by Nathan Sayre, describes a historical scenario which we would greatly want to avoid. (See: Sayre, Nathan F. "A History of Land Use and Natural Resources in the Middle San Pedro River Valley, Arizona." *Journal of the Southwest*, vol. 53, no. 1, 2011, pp. 87-137. JSTOR, JSTOR, www.jstor.org/stable/23337327.) What's more, the article found here (Krueper, David, et al. "Response of Vegetation and Breeding Birds to the Removal of Cattle on the San Pedro River, Arizona (U.S.A)." *Conservation Biology*, vol. 17, no. 2, 2003, pp. 607-615. JSTOR, JSTOR, www.jstor.org/stable/3095378) details how grazing impacts wildlife species.

We are extremely concerned about the lack of information related to climate change in the DRMP. BLM has a legal duty to address the impacts of climate change both from land management actions and to the resource area in the RMP/EIS. There is a global scientific consensus that human-induced climate change is currently altering the landscape and ecological functions at an unprecedented rate. According to the U.S. Climate Change Science Program, the Southwest landscape could be greatly transformed due to drought, wildfire, invasive species, and rising temperatures. The planning area is undoubtedly experiencing the real effects of climate change and will continue to experience these impacts during the 20-year period that the RMP is in effect. Seager et al (2007) projects a transition to a sustained drier climate that begins in the late 20th and early 21st centuries in the southwestern United States and parts of northern Mexico where the American Southwest experiences a severe drying. Seager explains the drying that is imminent or already under way is unlike any climate state we have seen in the instrumental record. It is also distinct from the multidecadal megadroughts that afflicted the American Southwest during Medieval times. The most severe future droughts will still occur during persistent La Niña events, but they will be worse than any since the Medieval period, because the La Niña conditions will be perturbing a base state that is drier than any state experienced recently. See Seager et al (2007). In addition, Nguyen et al. (2014), in "Long-term decrease in satellite vegetation indices in response to environmental variables in an iconic desert riparian ecosystem: the Upper San Pedro, Arizona, United States", state: The Upper San Pedro River's riparian forest is threatened by diminishing groundwater and surface water inputs, due to either changes in watershed characteristics such as changes in riparian and upland vegetation, or human activities such as regional groundwater pumping... Many cases of deterioration are due to direct impacts on river systems such as diversion of water for human use, flow regulation and introduction of invasive species (Poff et al., 1997)...

Concerns about the health of the riparian forest are partly due to an observed decrease in flows in the river over the past century (Thomas and Pool, 2006). Groundwater contributions to the river base flow (estimated as the lowest 7-day flow period of the year) decreased by 66% from 1942 to 2000 (Miller et al., 2002; Thomas and Pool, 2006), and in 2005, the US Geological Survey stream gauge (09471000) at Charleston in the SPRNCA recorded zero flow over a 7-day period for the first time since it was installed in 1904 (Mac Nish et al., 2009). Similar flow reductions did not occur in other southeastern Arizona and southwestern New Mexico rivers over the same period (Thomas and Pool, 2006). ...possible causes for flow reductions (include) lowering of groundwater levels near the river through regional pumping to support population growth in the watershed (Serrat-Capdevila et al., 2007; Mac Nish et al., 2009). Stromberg et al. (2009a) predicted that successional changes will take place on the river, with the bands of cottonwoods and willows narrowing due to lack of overbank flooding. They also predicted that ageing stands of cottonwoods would be replaced by other patch types such as mesquites and grasslands. Our analysis supports these predictions and demonstrates that these processes are already underway. ... Depth to water table... increased between 2005 and 2012. ... Mean DTW is currently between 2 and 3m, sufficient to sustain cottonwoods and willows (Stromberg et al., 1996; Snyder and Williams, 2000; Williams and Scott, 2009), but if the recent trend of increasing DTW continues, those trees can be expected to eventually decrease in the riparian zone (Stromberg et al., 1996, 2006, 2009a,b). Mac Nish et al. (2009) showed that 50 years of groundwater pumping has created a basin-wide cone of depression of the regional aquifer that they suggested was a key cause of base flow decline in the river. ...future research should continue to focus on the relationship between regional pumping, flows in the river and the health of the riparian forest in SPRNCA.

BLM's current proposal to open the majority of the SPRNCA to grazing and firearm use is not consistent with landscape-level management and conserving the healthy riparian ecosystem that SPRNCA was designed to protect.

The one main theme is that the grazing be managed so cattle don't destroy the area. Rather than submitting articles about eco-tourism vs. gazing, here is one study of a ranch in Montana that makes it work for both sides. It is not as detailed as you may want, but it gets the idea across: <https://www.nwf.org/en/Magazines/NationalWildlife/2014/DecJan/Conservation/Sustainable-Ranching>.

If this upland grazing option under Alternative C is implemented, cattle would be the source of fecal contamination of the water resources. Fecal matter would runoff and deposit undesired nutrients in the stream and produce algae overgrowth. Upland cattle would be a never-ending source of exotic or noxious plants and seeds. Trespass cattle would be a constant threat and management problem for short-staffed BLM range personnel. Further, the infrastructure needed to support grazing in the uplands will extend to impacts caused by off-highway and infrastructure support vehicles. This infrastructure will adversely impact recreational visitation. For example, installation and maintenance of fences creates roads and trails that recreationists will use to explore and traverse the landscape. Biodiversity and abundance in the fragmented patches will decrease. Soil mobilized by cattle and increased traffic will be displaced into washes. These soils will wash into the river. The sediment will choke fish and other aquatic wildlife. The inevitable trespass cattle that get into the riparian zone will trample soils and vegetation, and consume the most nutritious sedges, cattails, and saplings. Identifying cattle brands on trespass cattle and locating the cattle owner is very difficult. Even if reported to BLM range staff, the removal of cattle often takes many days and requires additional intrusion by wranglers into the riparian area. This entire cascade of negative effects will be the predictable consequence of authorizing grazing in the uplands of SPRNCA.

The San Pedro River and surrounding area has sustained the adverse impacts from grazing for more than a century. Historians and hydrologists say that the condition of the San Pedro River of today is vastly different than the rather open cienega-like condition of the river valley prior to European settlement of the West. Impacts include soil loss, severe gully formation on the uplands, expanding head cuts on innumerable unnamed small tributaries, and entrenchment of the main channel.

As the agency is well aware, the scientific evidence for climate change and its effects is voluminous and growing (see, eg, Connor Nathan et al, Past and Future Global Transformation of terrestrial Ecosystems under Climate Change, *Science* 31 August 2018: vol. 361, issue 6405, pp.920-923, DOI: 10.1126/science.aan5360). Although the DRMP/EIS does occasionally note potential problems of climate change (eg, at 3-14 regarding shift in rain patterns; 3-62, in relation to the Northern Mexican Garter Snake; 3-64, 3-76 regarding fire regimes; 3-105 re grazing), for the most part it isn't mentioned in the document but, again as noted, only in the excised AMS and AM sections.

In a similar vein, the DRMP/EIS says (B-10) that "Riparian areas, floodplains, and wetlands will be managed to protect, improve, and restore their natural functions to benefit water storage, groundwater recharge, water quality, and fish and wildlife values. All management practices will be designed to maintain or improve the integrity of these high priority values." And under "Priority Wildlife Habitat and Species Management" (B-9), the DRMP/EIS says management "will not jeopardize the continued existence of federally listed threatened or endangered plant or animal species or destroy or adversely modify critical habitat." But these imperatives simply cannot be accomplished with the proposed expansion of grazing; as the DRMP/EIS notes in passing (C-2), "trespassing livestock" are already a problem in the St. David Ciénega (see 3-20 where it is noted that Alternative D would improve water quality by eliminating livestock [now present] within the riparian area"); and it is well-known that broken fences frequently occur elsewhere in the SPRNCA. Furthermore, the preferred alternative would set aside 7.4 acre-feet of groundwater per year for livestock use (Table 3-8, 3-17), hardly compatible with "management. . .to benefit. . .groundwater recharge."

Although the DRMP/EIS repeatedly refers to the Land Health standards and guidelines as some kind of assurance that that cattle are not an ecological menace, it also finds that although "fundamentals of rangeland health" should "address ecological components that are affected by all uses of public rangelands, not just livestock grazing," that the final BLM (BLM 1997) standards and guidelines "are limited to grazing administration" (H-1). Furthermore, to date the agency has applied those standards not to all the areas it would open to grazing but only to the four grandfathered allotments. The final RMP/EIS should specify that the agency will go beyond its truncated 1997 standards and guidelines to establish and seek to meet viable parameters for health of all SPRNCA rangelands, not just those proposed for or currently subject to grazing; and should certainly apply those standards and guidelines to any lands before grazing is permitted, in the event that contrary to these comments and the law the agency decides to allow grazing.

Why are Climate Change and Drought not addressed in the DRMP? Climate change is already affecting temperature regimes and precipitation patterns and is bound to exacerbate all water and vegetation concerns. "Global mean surface temperature predictions for 2046-2065 range between an increase of 1.0°C (1.8°F) and 2.0°C (3.6°F). For the years 2081-2100, the projected global mean surface temperature increase is between 1.0°C (1.8°F) and 3.7°C (6.7°F)". (IPCC 2013).

The SPRNCA has never really been free of livestock. Trespass cattle are continually commonly observed as are the impacts and other signs of their presence.

Although globally precipitation is projected to increase, precipitation amounts in mid-latitude arid and semi-arid areas are projected to decline (Stocker et al. 2013). In the most recent IPCC report, extreme precipitation for the mid-latitudes is expected to increase in intensity (IPCC 2013). Dominguez et al (2012) indicates that winter mean precipitation will decline while winter extreme precipitation events will intensify for the Southwest U.S. The El-Nino Southern Oscillation (ENSO) is a major contributor to natural climate variability, particularly in the Southwest. The ENSO variability is predicted to intensify in the future; although there is low confidence on what the regional effects of this intensification will be (IPCC 2013). For the Upper San Pedro Basin, no trend in annual precipitation has been distinguished (Hereford 1993). Pool and Coes (1999) noted a slight decrease in wet season (June-October) precipitation at the Tombstone station for period 1897 to 1997. When including 3 other stations with the available time period of 1956-1997, Pool and Coes (1999) again noted decreasing wet season precipitation amounts, and also an increase in winter (November- February) precipitation. Thomas and Pool (2006) also noted that when precipitation trends are analyzed monthly and seasonally, there is a decreasing trend for the month of July and the summer season (July- August) for the period of 1913-2002 at the Tombstone station.

Recreation pressure has already been impacting cultural and paleontological resources as well watershed and floodplain conditions through wildcat trails, (some entrenched and becoming overflow channels), unauthorized vehicular entries and equestrian trespass onto cultural and paleontological sites.

The monitoring history presented for the existing allotments does not indicate if the few key areas that were monitored are on BLM land, on or off the SPRNCA, or on Arizona State Trust land, or private lands that are managed in conjunction with BLM lands.

This EIS make it abundantly clear that increasing grazing would be detrimental to the attainment of desired conditions.

When the SPRNCA was first established, the BLM had a range rider who maintained fences and patrolled for trespass cattle. That position is long gone and there is no indication that BLM will have the resources to ensure that cattle do not stray into sensitive areas or that seasonal grazing rotations are adhered to if Alternatives B or C are implemented. The more cattle legally allowed within the SPRNCA, the greater the problem of unauthorized use will be.

This EIS is incomplete without an in-depth analysis of the impact of climate change upon the SPRNCA and the RMP needs to contain goals, objectives and practices that will enable the BLM to manage for resiliency to this as well as the other threats mentioned.

there is no comparison between grazed lands and the ungrazed lands inside the SPRNCA to inform the reader about changes in ecological site conditions that have occurred in these last three decades without grazing. The analysis fails to demonstrate how grazing will meet the legal mandate to protect the riparian area and aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resource of the public lands surrounding the San Pedro River. In fact, it clearly demonstrates that grazing will be detrimental to the achievement of this mandate.

We are extremely concerned about the lack of information related to climate change in the DRMP. BLM has a legal duty to address the impacts of climate change both from land management actions and to the resource area in the RMP/EIS. There is a global scientific consensus that human-induced climate change is currently altering the landscape and ecological functions at an unprecedented rate. According to the U.S.

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7 ES2, 1-2 Para 2 Fort Huachuca Unclear where the portions of the SPRNCA are that are being referenced with regards to the evaluation of effects of livestock grazing (possible map?)

15 2-4 2nd bullet Fort Huachuca Doesn't seem consistent with what the analysis section concluded about livestock grazing which states that there will be impacts.

d. Improvements in the Northern areas of the SPRINCA should emphasize reduction of fuel loads, groundwater recharge, reduction of silt loads and erosion, and preserve the natural qualities of the area.

The one main theme is that the grazing be managed so cattle don't destroy the area. Rather than submitting articles about eco-tourism vs. gazing, here is one study of a ranch in Montana that makes it work for both sides. It is not as detailed as you may want, but it gets the idea across: <https://www.nwf.org/en/Magazines/NationalWildlife/2014/DecJan/Conservation/Sustainable-Ranching>.

Many scientific studies urge land managers in arid and semi-arid regions to reduce or eliminate livestock grazing as a means of counteracting the adverse effects of increasing climatic aridity. Water is a critical ecological element in drylands, and livestock (in terrestrial uplands and riparian lowlands of the watershed) are well known to influence the hydrologic cycle. If the new Record of Decision for the RMP authorizes continued or increased levels of livestock grazing, there will be adverse impacts not only to water quantity but to water quality, as well. Not only would water be diverted to stock ponds that would otherwise be available to other organisms, but the actions of the cattle would compact soils (inducing more runoff and less infiltration) and reduce the abundance of the streamside plants which function to improve water quality.

The RMP/DEIS has not provided a scientific foundation for the proposed decisions. In our March 20, 2018 letter, we noted that if continued livestock grazing on the SPRNCA was recommended in any alternative, we expected the BLM to make publicly available all range science purporting to show that livestock grazing conserves, protects, and enhances the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the public lands. This information is not available on the project website and we can find no references in the RMP/DEIS to support livestock grazing as a conservation measure. Without this information in the project record and readily available for public review, the BLM cannot consider introducing or continuing to allow livestock grazing in the SPRNCA.

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Alternative C would open the San Pedro to environmentally destructive acts that is against the whole preis of the Bureau of Land Management. I am urging you to rethink plan C because of impacts it would have on the land, diversity of plant species and animals as well as the quality and quantity of water.

In an analysis of peer-reviewed literature examining the effects of grazing on riparian habitats in the arid West, Belsky et al (2009) found evidence for harmful effects of grazing on multiple aspects of water quality, stream channel morphology, hydrology, soils, and vegetation. For example, nutrient overloading in the river can create low oxygen conditions that are detrimental to aquatic life. Nutrient overloading on SPRNCA could result from a combination of more authorized cattle access nearer the river, in the river, and in washes where feces will get flushed into the river during rainstorms, and from the increases in unauthorized cattle in the river corridor as they live and defecate there.

Greenhouse gas emissions have led to rapid changes in global climate (IPCC 2014). In the Southwest, maximum temperatures increased over the 20th century, and minimum temperatures increased even more (Garfin et al. 2013). Trends show that we are likely headed for hotter and increasing drought (Garfin et al. 2013; Seager et al. 2007). Riparian ecosystems in the Southwest are vulnerable to climate change

because warming leads to less water available for plants and wildlife in environments that are already water-limited. This could increase the risk of other undesirable conditions such as the spread of non-native plants and altered fire regimes (Webb 2017). In this Draft RMP, BLM has the opportunity and social responsibility to address climate change through science-based adaptive management, and by minimizing greenhouse gas emissions.

It doesn't take more than a thunderstorm to blow out a fence or water-gap, or a person with wirecutters to create holes that cattle push through. Those cattle then head for the river, where there is water, shade, and lots of plants to eat. There they stay through the seasons until a busy rancher comes to round them up. So, the preferred alternative will result in many more unauthorized cattle up and down the riparian corridor, and in neighboring sacaton flats and semidesert grasslands outside of the proposed grazing allotments.

The Draft RMP recognizes cottonwood-willow forests and aquatic environments as priority habitats, yet the BLM impacts assessment does not cover the impacts of several more cattle in these priority resources of SPRNCA.

The published science repeatedly demonstrates that livestock grazing in the arid Southwestern U.S. has adverse impacts on natural landscapes, for example erosion, soil compaction, conversion of healthy grasslands to woody scrub, and reduction of cover and food resources for wildlife. The BLM report by Krueper, et al. 1993 (*Effects of Livestock Management on Southwestern Riparian Ecosystems*) and the report by Krueper, et al. 2003 (*Response of Vegetation and Breeding Birds to the Removal of Cattle on the San Pedro River, Arizona in Conservation Biology*) document such impacts in the SPRNCA itself prior to 1988 and the value to native birds of restoring these lands by removal of cattle. In the book *Ecology and Conservation of the San Pedro River* (edited by Stromberg), Brand and co-authors wrote a chapter about breeding and migratory birds. Pages 164-167 document what happened in a study area along the river after the removal of cattle in late 1987. Herbaceous vegetation substantially increased. The numbers of breeding, spring, and fall migratory birds increased dramatically. Likewise, there is an adverse impact of livestock grazing on the abundance of reptiles. Grazing can reduce forage for insects, creating resource scarcity for lizards and some small snakes. It may also reduce forage for small mammals and birds, decreasing their food supply and negatively impacting snakes that feed chiefly on lizards and rodents. *Livestock Grazing and the Sonoran Desert Conservation Plan, A Conservation Perspective* presented May 2001 by the Coalition for Sonoran Desert Protection to Pima County, AZ further describes the adverse impacts of livestock grazing on arid landscapes according to the best available science.

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Social and Economic

It is irresponsible to tout the income from increased grazing rights in SPRNCA as a reason for increasing the amount of land available for grazing while ignoring the far greater economic benefits from tourism. Grazing degrades the landscape and makes it less attractive to birders and hikers who come from all over the world (and bring money into the local economy) to visit our wonderful riparian area.

Potential social and economic effects of climate change should include decreased surface water quality (see Garfin et al. 2013). It should also be stated that the potential decrease in forage and water available for livestock could require significant decreases in stocking numbers which could negatively affect the economic viability of ranching. Reduction of forage and water for wildlife could negatively affect other

human uses such as hunting and bird watching. Another potential social effect would be the need to limit recreational uses to protect natural resources (including air quality).

I also did not see any data or evidence supporting the premise in the plan of "increased demand for access" to SPRNCA. Since 2010, Cochise County has lost population so the idea that there is increased demand for access does not seem plausible. Sierra Vista's population, the most populous in the county, since the 2010 Census has dropped by an estimated 2.7% (Arizona Office of Economic Opportunity, 2017). Are there visitor records to support the premise of increased demand for access in SPRNCA?

the SPRNCA is also one of the most important economic resources in the valley. The passive tourist dollars generated from cultural and natural resource tourism are substantial. The community has yet to fully capitalize on this resource but its potential to the community as an economic foundation is real and this benefit is directly tied to the original SPRNCA designation.

Recreational users currently support 188 jobs and generate \$4,752,000 in labor to local communities annually, while livestock grazing supports 1 job and generates \$11,000 annually. The increased livestock grazing under alternative C would bump this up to only \$75,000. How can BLM justify all the expense and effort in providing fences, vegetation management, and administrative costs in exchange for such a small economic return?

Destructive activities that endanger its environment such as an introduction of grazing, any increased motorized use, any use of destructive measures such as herbicides, heavy equipment etc endanger its value as an international flyway. Cochise County provides ample area for off road riding, hunting, grazing, etc without introducing such activities into the SPRNCA. The minimal amount of money that grazing and hunting will bring into the economy pales with comparison to dollars brought in by birding and tourism.

Alt. C benefits a small number of ranchers who are already being subsidized by taxpayers. This analysis lacks a realistic portrayal of costs and benefits

39. 3-161, First sentence on the page BLM states: "The factors identified in RFFAs (Table 3-1) affecting socioeconomics include county and city land use plans that outline continued growth and local masterplanned communities, which would continue to increase demand for use and pressure on resources on the SPRNCA." Comment: What "resources" are being referenced here? Is this a reference to increased staffing needs due to increased demand for recreation from new residents? Additionally, the continued growth plans are tempered by the County's conservation planning measures, including its requirement that developments demonstrate an adequate water supply. The County is one of only two non-Active Management Area counties in the State to have adopted and implemented such requirements, which ensure that developers demonstrate 100 years of water available to satisfy the needs of the community. These measures provided an added means of ensuring that such developments will not result in undue pressure on SPRNCA resources. Corrected/Suggested language: Clarify this section. If the reference to resources does relate to water or habitat pressures, BLM should note the protective measures in place by local authorities that evaluate potential resource pressures before developments are allowed to proceed.

We must recognize that western beef only supplies about 5% of US beef.

The economics of having a globally important avian migration sanctuary on the doorsteps of Sierra Vista cannot be understated. These monies far outweigh the pittance that Cattle Ranchers pay to the Federal Government to run cattle on Federal land.

Ranching contributes to the \$23 billion dollars agriculture provides to the states economy. It also provides support to a myriad of directly and indirectly related businesses in the small towns across the county, not to mention the effect on families who work the land. As the number of those directly involved in production of food shrinks and the demand for food grows, we cannot afford to lose any farmers or ranchers on a local, national, or global scale.

11. Explain how the comments were used to determine the final resource management plan. In other words, did governmental entities comments have more or less impact than individual comments, did local residents have more or less impact than non-local individuals, did environmental groups have more or less impact than local residents, what impact was given to economic well-being and social justice?

The following data is from World Population Review. Year Population Growth Growth Rate 2017 124,756 -599 -0.48% 2016 125,355 -729 -0.58% 2015 126,084 -970 -0.76% 2014 127,054 -2,278 -1.76% 2013 129,332 -2,494 -1.89% 2012 131,826 -1,126 -0.85% 2011 132,952 1,170 0.89% 2010 131,782 34,158 34.99% The BLM report seems to be overly optimistic about population growth in Cochise County. Arizona as a whole is experiencing population growth. Cochise County is experiencing depopulation. As early as May 2014 the Arizona Daily Star ran an article "Percentage population loss in Cochise County is most in US." There have been other more recent articles in the popular press such as "County population down in 2017," by Dr. Robert Carreira.¹²

1. Revise/rewrite the report after carefully reviewing if BLM's actions with have a disproportional affect on any population in the watershed. 2. Revise/rewrite the report correcting the assumptions regarding population growth.

4. Develop and include in the RMP a clear process for public involvement that is open and understandable by the general public.²³ 5. Clearly define and include in the RMP how BLM is going to assist and cooperate with local governmental units and the general public in meeting BLM's mandate for the SPRNCA. 6. Revise/rewrite the report to lay out a plan to use market forces rather than bureaucratic systems to encourage water conservation.

BLM points to two pending housing developments - for 28,000 homes and the other for 7,000 homes. Both developments have been in process for years. The time horizon for these developments is 30 years and will not have a significant impact within the next five years. It is unclear if the planned developments will actually occur or if they will occur with a reduced number of residences. Even if both developments are fully completed, it does not mean that the housing units will be occupied by new residents and the population increase. It is likely that the new homes will be occupied by a combination of current and new residents. For there to be an actual population growth in-migration must exceed the out-migration. This has not been the trend over the last six years. In Cochise County, new houses have been built, sold, and occupied at the same time that the population has declined. While the new housing stock has increased the population of the county has decreased. How can this occur? People are moving up - improving the quality of their house. They are moving from manufactured houses or apartment rentals into a new house.

Population Growth The report assumes that there will be continuing population growth based on the past historical growth rate. The report does not adequately take into account current trends. In recent years the county has faced population declines. The population peaked approximately in 2012 and has been steadily declining. There are no foreseeable changes that would turn around a declining population. The primary economic engine of the area is Fort Huachuca. Significant growth in military spending would be required for the installation to increase the number of people employed on the base. The area demographics are changing. Younger people are leaving the county for employment opportunities elsewhere and older people are moving into the area for retirement due to lower cost living, lower state income taxes, and the climate. The City of Sierra Vista development strategy targets retirees encouraging them more to Sierra Vista.

Should the court grant BLM the water it wants, the result will affect residential wells. Any closure or restriction of water usage will reduce property values. Any such reduction could result in bankrupting persons living on fixed-incomes. No environmental justice was considered for the fixed-income population that will be affected by the Bureau's management of the SPRNCA.

The second issue is that BLM's complete failure to address a significant issue brought up during the scoping sessions. During these sessions it was "noted that there are populations in the regions that are on limited budgets and impacts on these populations should be addressed in the RMP."⁹ BLM did not consider the impact on the population with limited budgets. Rather, BLM looked at Tombstone and Bisbee and recognized that these two communities "have substantial low-income populations. Bisbee and Tombstone will be considered low-income environmental justice populations of concern in assessing [environmental justice] impacts."¹⁰ However, since "Cochise County and all communities in the planning area were less ethnically and racially diverse than the comparison population of the state"¹¹ BLM decided not to consider the impact of the proposed management plan on those in the community living on fixed incomes. This issue was raised during the scoping session and completely ignored. Many of the residents adjacent to or near the SPRNCA are retirees living on fixed income.

Weighing of Comments The Bureau of Land Management held four meetings regarding the draft resource management plan. Three were in Cochise County and one in Tucson. During the discussion of the process and how comments would be handled it was stated that if there were similar comments, they would count as "one" comment. This was clearly to prevent petitions, or mass mailings in support of or against any specific recommendation. This position is completely justifiable. All comments should not carry the same weight as the Bureau considers modification of the draft resource management plan as it moves toward a final plan. Comments from individuals closer to the SPRNCA should weight more heavily than those at a great distance. For example, a comment from a property owner who abuts the Conservation Area should carry more weight than someone from Tucson. This is because the person who is next to BLM's land is going to bear more of the impact and cost of BLM's actions. The development of a final resource plan is not a democratic action-those with the most votes wins. Rather, BLM should be looking out for the common good. A common good that provides the best outcome for everyone consistent with the enabling legislation.

The DRMP/EIS economic analysis is incomplete and unconvincing on these points and here as elsewhere, the bias in favor of the livestock industry is overt. For example, while it may be true, as is commonly said, that all small operators in the livestock business (ie, typically those with under 2000 acres) are economically marginal, the industry's assertions and the agency's apparent agreement that the four

SPRNCA ranchers (whose operations are not identified as to large or small) would be forced out of business if they lost their leases is questionable on several grounds. For instance, neither the AMS nor the DRMP/EIS adequately explains the figures they present (e.g., ARS Table 3-46, 3-99; ARS Table 2.4.3), which indicate that at least some of the four ranchers have sufficient non-SPRNCA grazing land to not suffer financial disaster if their leases were ended (as is to be expected in light of the Base Property Requirements for BLM lessees, which all four ranchers meet, including that "the [base property] must have the capability to produce crops or forage that can be used to support the livestock authorized for a specified period of time").

And of course, neither bird watchers nor wildlife enthusiasts nor backcountry hikers are looking for, or are overjoyed to find, a cow or its residual effects. More weight should be given in the DRMP/EIS economic analysis to the negative effect of cattle encounters on typical SPRNCA "customer" satisfaction.

Socioeconomics The SPRNCA provides great value to the local and regional economy. The management of the SPRNCA affects the economic viability as well as provides a rich cultural resource to the people in the area and the numerous visitors who enjoy this amazing resource. The federal government must coordinate and cooperate with state and local governments to preserve the economic, cultural, and environmental treasure that is the San Pedro Riparian National Conservation Area. Multiple use of public managed lands is and has been the goal of the lands in and around the Upper San Pedro River.

The total contribution of the beef industry to the Cochise County economy is \$59.1 million in output, \$10.3 million in value added, \$7.7 million in labor income, and 289 total jobs (Kerna et al 2014, The Contribution of the Beef industry to Arizona's Economy: State and County Profiles). Cochise County Impact Type Direct Effect Indirect Effect Induced Effect Total Effect Output \$52,406,567 \$4,454,071 \$2,199,908 \$59,060,546 Value Added \$6,294,084 \$2,638,696 \$1,345,559 \$10,278,339 Employment 234 35 20 289 Labor Income \$6,249,910 \$830,670 \$584,996 \$7,665,577

This would cause the tax burden to increase, the fact that lead bullets are still being touted clearly indicates the Federal agency's commitment to the cattlemen's Assoc. & NRA rather than the environment to which it purports to conserve, protect & enhance.

a relatively trivial number of potential Animal Unit Months, 592; supporting the equivalent of one job, with an estimated economic impact of around \$11,000. p. 3-150. To suggest, as you do, that the loss of this very small potential component of the local ranching economy threatens the very existence of that community is an insult to all of the people who do actually work in this industry.

The draft management plan needs to assess the economic benefits and stresses to the SPRNCA in projecting management regimes for the future. For example the completion of the Villages at Vigneto development will impose huge impacts on the region, including expanded recreational demands on the SPRNCA. How will the new management plan be designed to respond to those changes? To be clear, while BLM has limited ability to affect such development, it does have the capacity to consider those realities in designing a management plan that is focused and committed to the primary purposes of the conservation area; i.e. to protect the riparian area, and the aquatic, wildlife, archaeological, paleontological, scientific, cultural, educational, and recreational resources of the public lands surrounding the San Pedro River in Cochise County, Arizona.

Just one small portion of this industry (birding) is worth in excess of \$1.5 billion dollars and the SPRNCA is a key element to this industry. To trade this very high value for cows worth a few thousands of dollars would be very foolish.

public land cattle grazing is a high cost to the taxpayer, increases demands for administration oversight, requires substantial infrastructure and has a high probability of failure to meet grazing standards.

Any data, based on population growth, should be disregarded because it has been proven to be way off. Our population has not increased - in fact it has decreased.

How much, if any, consideration was given to the impact on the economy of the surrounding area?

Who is going to pay for installing signage, fences for grazing, monitoring the usage of ORVs, cattle grazing and hunters? C. Has BLM calculated how much additional manpower will be needed?

has the plan looked at the eventual loss of revenue if area birders and Eco tourists from across the country were to feel unsafe or unwelcome here and decide to go elsewhere?

New fencing (43.8 miles) will be constructed to control grazing under Alternative C. The current cost for fencing (federal fence contracts) is \$10,000 dollars per mile for a total cost of \$438,000. This is sure to increase with increasing steel costs and inflation over time. Twenty three new livestock water developments are proposed in Alternative C. An average cost of \$20,000 per development is probably a low figure considering the costs of the pumping plants, pipelines, storage tanks and troughs which will be needed, even if some existing wells are used. New wells, fully equipped, will be much more. Using this figure the total cost for livestock water development is about \$460,000 dollars. Again, this cost will increase over time.

The infrastructure and vegetation treatment costs associated with Alternative C is about 4.2 million dollars. This amounts to over \$14,700 per cow unit (300 additional cows). You can purchase grazing leases on Arizona State Trust Land for much less than that amount. Using the 2018 federal land grazing fee of \$1.47 per animal unit month, 300 additional cows on SPRINCA will return \$5300 per year to the US Treasury. That is an extremely low return on investment for the taxpayers of this country.

As far as any potential economic benefit from grazing in the SPRNCA, I'd like to cite a report prepared by the University of Arizona in 2002, Nature-Oriented Visitors and Their Expenditures: Upper San Pedro River Basin. Again, summarizing from this report, "On an annual basis, non- resident visitors to Ramsey Canyon and the SPRNCA spent an estimated \$10.1 to \$16.9 million in the local area, increasing total economic output in the study area by \$17.0 to \$28.3 million, and generating 350-590 jobs."

If grazing is once again allowed in the SPRNCA and over time has a negative effect on eco-tourism locally, any potential economic benefit from grazing would be more than wiped out, and the number of visitors to the SPRNCA, currently estimated to be about 100,000 per year, would dwindle to a handful.

The Rivers is a very popular area for visitors to Cochise County and contributes towards eco-tourism. If people feel endangered that will have a negative impact on the economy.

I am a resident of Cochise County writing to ask that the proposed RMP alternative D be adopted. Option D will have the most favorable impact for the local economy, where many small businesses profit from the bird watching on the San Pedro, a nationally recognized destination for birders. Although there is a mystique here in southern Arizona about ranching, I urge BLM to take economic facts, rather than the mythology, into account. Birding generates about \$25 million in annual revenues for Cochise County, while the facts indicate increased grazing may generate only about \$1 million.

A Tucson Audubon study conducted in 2013 showed that in 2011 nearly \$24 million in retail sales, \$7.6 million in wages, and over \$3 million in state and federal tax revenues were generated in Cochise County that year by these eco-tourists. Add to this money spent by other tourists, and you have one of the major industries of our area.

A 2013 Tucson Audubon study showed that in 2011 tourists in Cochise County generated \$24.1 million in retail sales, \$7.6 million in wages, and \$3.3 million in state and federal tax revenues.

Aside from my personal concerns, there are larger issues. The SPRNCA is critical to the survival of migrating birds and other wildlife. Furthermore, it draws people from around the globe - people who leave their tourist dollars in Cochise County. Surely BLM should be managing the land for the benefit of wildlife and the local economy, not for cows, nor for hunting, which is better done farther away from where non-hunters are likely to go.

Another RMP failure is the lack of any examination and quantification of the impacts of each of the 4 Alternatives and their respective Goals, Objectives and Management Action both on amount of water use within SPRNCA and on the economies, water availability and property of surrounding landowners and communities. While quick to point to regional groundwater pumping as potentially adversely impacting streamflows within SPRNCA in the future, the RMP completely fails to examine the potential adverse impacts of actions within SPRNCA on the lands and people surrounding SPRNCA. Thus, the draft RMPIES constitutes an incomplete and inadequate environmental impact study.

The SPRNCA supports world-class birding. Southeast Arizona is in the top three destinations for birding in the United States according to American Bird Conservancy. In 2016, over 45 million people participated in birdwatching. It is consistently the most popular form of wildlife watching nationwide (86 million people participate in all wildlife watching). The total economic impact of wildlife watching in the country was \$75.9 billion, an average of \$1,193 per spender (Fish and Wildlife 2016). In Arizona, the most recent numbers are from 2011 and show an economic impact of \$1.4 billion (Fish and Wildlife 2011). Over \$24 million of that impact was in Cochise County (Tucson Audubon Society 2013). For the SPRNCA we have older but more locally appropriate data for the impacts of birding in the SPRNCA. In the 2002 study by Orr and Colby, "on an annual basis, non-resident visitors to Ramsey Canyon and the SPRNCA spent an estimated \$10.1 to \$16.9 million in the local areas, increasing total economic output in the study area by \$17.0 to \$28.3 million, and generating 350-590 jobs." We can see from this study that a large portion of the economic impact from wildlife watching in Cochise County appears to occur close to the San Pedro. Results from the National survey show an increase in both the number of wildlife watchers and the total economic impact of wildlife watching from 2011 to 2016. While we do not have more recent data for Arizona and Cochise County as of the release of this Draft Resource Management Plan, it is reasonable to predict an increase in those numbers according to the National data. The SPRNCA is an internationally recognized Important Bird Area (<https://www.audubon.org/important-bird-areas/san-pedro-riparian-national-conservation-area>) and an IUCN Category V. Protected Landscape (see

<https://protectedplanet.net/san-pedro-riparian-national-conservation-area>). Not only does the SPRNCA offer an economic value to the region, the experiences and connections people have to the SPRNCA no matter where they live means that this place is unique and special to people all over the world. When you read the comment book or the review sections on Trip Advisor you see comments from people traveling to this unique destination and expressing their love and appreciation for this protected area (see https://www.tripadvisor.com/Attraction_Review-g31357-d103016-Reviews-or10-San_Pedro_Riparian_National_Conservation_Area-Sierra_Vista_Arizona.html for a snapshot of the national and international interest in the SPRNCA). As recognized in the FWS national report on the economic impact of outdoor recreation, birding makes up the largest portion of the non-consumptive, wildlife-watching portion of recreation. In the SPRNCA, birding is also by far the most popular form of recreation as recognized in section 3.5.3. Therefore, the economic effect provided by birding and wildlife watching should be one of the primary considerations for economic impact to the SPRNCA. It is important to restate that this economic impact is directly tied to the health of the riparian ecosystem.

The potential to select more compatible, ecotourism-based recreation and land use is not explored enough in the BLM's draft RMP, especially as compared to the extensive inclusion of grazing. While such activities as camping, hiking, archeological exploration and even groundwater storage are proposed in the draft RMP, their impacts and potential have clearly not been as thoroughly researched as has increased grazing. The potential to support an ecotourism-based economy, where there are fewer trades-offs required between resources users, should be part of this RMP. In a study of values and the willingness to pay for a healthy riparian ecosystem, Colby and Orr found that, overall, people were willing to pay between \$2.769 million dollars in one-time donations in order to help maintain a healthy riparian ecosystem. This study exemplifies the values associated with those visiting the SPRNCA to bird and nature watch. The connection to place is strong and people are willing to help pay to protect this ecosystem. While this study is hypothetical, the results should be included in the consideration of management choices for the SPRNCA as it underlines the strength of the values associated with the SPRNCA and the potential economic power of those interested in protecting the SPRNCA.

According to the Tucson 6 Audubon Society in their July-September 2013 Vermilion Flycatcher newsletter, "An estimated 44,000 people a year visit the San Pedro River, and Cochise County benefits to the tune of \$24 million a year from wildlife watchers according to a new survey." Southwick Associates produced that survey which uses Arizona data from the U.S Fish and Wildlife Service (FWS). These values should be reflected in the management strategies that BLM develops for its preferred alternative.

Grazing also benefits a very small number of local ranchers. I do not believe their needs/wishes outweigh those of the public that enjoy recreation in the SPRNCA. It could well be that any potential financial gain to local ranchers will be more than offset by losses from current earnings by those associated with the burgeoning Cochise County eco-tourism industry.

Economically, increasing grazing on the Conservation Area makes no sense. Many of the interior fences have been removed, and to achieve the stated management of grazing only the uplands will require tens of thousands of dollars to build fences and water features away from the river. This will benefit only a few lessees who will pay less than five cents a day per animal unit to utilize the public land that belongs to us all. In contrast, The Southeastern Arizona Bird Observatory pays six dollars a day per person to take hikers on guided tours where every effort is made to minimize our impact. Wildlife watching is a billion-

dollar industry in Arizona, and Cochise County and the San Pedro River are at the heart of that tourism industry. To jeopardize that to benefit a handful of ranchers is foolish at best.

Soil Resources

The DRMP/DEIS contains unsupported statements such as, "Livestock hoof action can also improve soil health," and "Grazing animals contribute to nutrient cycling in soils by depositing nutrient-rich urine and feces." DRMP/DEIS at 3-10,11. Without citing to peer-reviewed science that is specific to the soil conditions at the SPRNCA, these types of aspirational statements cannot be taken seriously. Also, the DRMP/DEIS utterly neglects to account for the adverse effect of all that nutrient-rich urine and feces when it washed downslope into the riparian areas. The DRMP also states that organic components from urine and feces can build soil organic matter, resulting in improved structural stability and increased water infiltration rates and water-holding capacity. DRMP/DEIS at 3- 11. The NEPA analysis fails to compare these alleged benefits with the benefits of allowing vegetation, litter, and soil bacteria to remain undisturbed. The DRMP/DEIS also failed to assess how this "nutrient cycling" is coupled with bacterial loading and how the alternatives are likely to affect the San Pedro's water quality conformance. Moreover, if the BLM is going to address nutrient cycling from livestock use, it should also analyze and disclose the extent to which livestock grazing removes important nutrients from the landscape. By using vegetation resources to grow cattle, and then transporting the cattle and their remains off of the landscape, the BLM is effectively mining soil minerals and changing the soil chemistry of the SPRNCA over time. The urine and feces inputs do not offset this impact. The BLM's analysis of the economic impacts of livestock grazing fails to assess the viability of the grazing allotments/permits without the SPRNCA acreage. While pro-industry organizations may wish to portray current grazing on the SPRNCA as integral to the operations, it is not clear the extent to which the BLM portions of the permits are essential.

The BLM's own words regarding the damage done to areas of soil susceptible to erosion by livestock grazing and the soil compaction that accompanies it sort of belies their claim that the hooves are also forming pockets for seeds & water & "helps soil erosion?" And quite frankly, the idea that cattle manure & urine contributes to soil organic matter & "water-holding" capacity is a bit far-fetched considering the damage done to riparian areas with manure & urine run-off!

* Abandoned agricultural fields have unique restoration needs and may require an expanded set of restoration tools in addition to those described in All. C, e.g. allowing for ephemeral flows in channels and sediment transport from the tributary drainages where fields still remain blocked by berms, dikes and diversions.

* Appendix I: "Watershed Improvement Techniques" should contain more robust guidance in terms of land management approaches capable of improving land health for tributary systems and uplands. The information pertaining to regional groundwater infrastructure recharge projects should be addressed in a separate Appendix, as was previously mentioned, as the most robust projects are typically highly engineered "bricks and mortar" infrastructure projects to induce infiltration and recharge at specific facility locations, such as the Sierra Vista Environmental Operations Park, and are not associated with land health and land management activities. In addition, all future Implementation-level plans that address groundwater recharge (such as effluent and stormwater recharge infrastructure) need to be addressed separately from watershed health projects related to surface water and soil management (such as seeding, mulching, planting, trincheras and other structures designed to manage erosion and sedimentation) to ensure that both types of goals are considered thoroughly. Lastly, in analyses and BMPs, clearer distinctions should also

be made between actions intended to increase regional groundwater availability versus land management actions designed to stabilize soils and slopes.

I firmly believe that the RMP needs to include an erosion control plan that identifies soil stabilization opportunities and methods. A preferred method would be to maintain or improve ground cover that protects sensitive soils and prevents accelerated erosion. Additionally, the RMP should strive to conserve, protect, and enhance proper functioning watershed conditions to help maintain groundwater levels and base flows on the SPRNCA.

Since the slope analyses from Table 3-2 and Table 3-3 also carry into the remaining environmental impacts, it's not clear how respective uncertainties may play out in evaluating environmental impacts of new activities. Can you clarify what resolution data was used for the analysis and any uncertainties regarding the same?

In part, slope is used to determine soil susceptibility to wind and rainfall erosion. On page 3-7, the report notes: "The analysis assumes that as slopes approach 30%, the risk of soil instability following disturbance increases, particularly if cover, structure, permeability, or bulk density has been altered (Monsen et al. 2004). Only 1,160 acres (2 percent of the decision area) have steep slopes (38% slope grade)." However, Table 3-2 suggest there are "0" acres of "high" soil susceptibility to rainfall erosion on BLM administered lands. It is unclear why steep slope areas (1,160 acres) are not considered highly susceptible to erosion from rainfall, particularly in the lowlands of the SPRNCA where soils are relatively loose and absent of bedrock. Are these areas already captured under the high susceptibility rating for wind erosion, and/or relative potential erosion from roads and trails?

ADEQ is not clear on the resolution of elevation data used for the slope analysis, or what impact this may have on identifying areas having a grade greater than 30%. ADEQ is concerned about nickpoints or headcuts not being identified or captured if coarser data was used (i.e. 30m), and thus potentially opening respective areas to new activities that might compound erosion in the watershed via selection of a new management plan, which in turn could impact existing water quality impairments.

Soil Quality impacted by grazing -- Section 3.2.2, Alternatives Analysis Comparison states, "Only Alternative D would decrease the area of sensitive soils disturbed by livestock grazing". Also, from the same section, "Alternative D would have no impacts on soils susceptible to erosion from grazing, because livestock grazing would not occur under Alternative D".

Rapid channel adjustments are natural episodic changes in fluvial geomorphology. Channel meandering and widening are examples of relatively quick locally occurring natural riverine adjustments. These should be recognized as a part of natural channel evolution and not interfered with; unless special issues or conditions are present such as threatened infrastructures.

Erosion could be expected to increase as grass cover on the tributary watersheds decreases in response to less precipitation and higher temperatures predicted as part of climate change. "By all indications, the San Pedro River is no longer incising and is aggrading by building a floodplain and by narrowing its channel. In the context of channel evolution, those are favorable signs indicating that some reaches have achieved Proper Functioning Condition while others are moving in that direction. Consequently, the NRST recommends against using active restoration practices in the San Pedro River channel, such as induced

meanders. Sound riparian management and passive restoration practices should be adequate to facilitate completion of the channel evolutionary process. (NRST November 2012).

With the new plan calling for increased livestock grazing in upland areas with soils that have a severe susceptibility to erosion caused by grazing is wrong headed. This would have major impacts on water quality within the San Pedro River. A healthy river relies on a healthy watershed!

Cattle use likely would compact soils, increase rates of runoff, increase sedimentation, increase channel erosion and deteriorate channel stability.

4 General General Fort Huachuca Document doesn't address erosion control

Vegetation treatments using herbicides on the Chihuahuan desert shrub in some areas may actually increase erosion by killing the plants that will be able to survive over time.

The draft EIS and RMP further points out that the soils in the uplands vegetation communities are fragile and prone to erosion. Grazing and mechanical vegetation treatments will exacerbate soil erosion that will adversely affect water quality. There is no detailed analysis to assess how much of the Chihuahuan desertscrub community on SPRNCA has fragile soils and what percent has a trend toward soil stability and return of understory native grasses.

Where is the accounting for erosion caused by cattle trails that turn into gullies?

What about the trampling of vegetation and erosion along the Babocamari River where grazing would be allowable in the stream and riparian zone?

Historic overgrazing and drought in the San Pedro River valley led to soil compaction, loss of topsoil, channel downcutting and other forms of erosion that led to a lowering of the water table (Bahre 1991; Sayre 2011).

Special Designations

As for "Transportation," on page 2-46 under "Land Use Allocations," #2, I respectfully request that the Alternative D option is used instead of Alternative C for that specific item. I have experienced primitive land, specifically along the SPRNCA, that is used by vehicles and seen how it negatively impacts the surrounding life, as well as the view. While it is important to have a few vehicular primitive roads and trails available for rare use in such occasions of emergency or to improve habitat through research and restoration, it is not necessary to have OHV in the SPRNCA for any reason under the enabling legislation. So, I request Alternative D in this matter, in order to adhere to the legislation as well as to protect those species whose homes are around these primitive roads and trails.

"Layering" is planning. Under FLPMA's multiple use mandate, BLM manages many different resource values and uses on public lands. Through land use planning BLM sets goals and objectives for each of those values and uses, and prescribes actions to accomplish those objectives. Under the multiple use concept, BLM doesn't necessarily manage every value and use on every acre, but routinely manages many different values and uses on the same areas of public lands. The process of applying many individual program goals, objectives, and actions to the same area of public lands may be perceived as "layering". BLM strives to ensure that the goals and objectives of each program (representing resource values and uses) are

consistent and compatible for a particular land area. Inconsistent goals and objectives can lead to resource conflicts, failure to achieve the desired outcomes of a land use plan, and litigation. Whether or not a particular form of management is restrictive depends upon a personal interest or desire to see that public lands are managed in a particular manner. All uses and values cannot be provided for on every acre. That is why land use plans are developed through a public and interdisciplinary process. The interdisciplinary process helps ensure that all resource values and uses can be considered together to determine what mix of values and uses is responsive to the issues identified for resolution in the land use plan. Layering of program decisions is not optional for BLM, but is required by the FLPMA and National BLM planning and program specific regulations.

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Travel Management

I also think that vehicles going into the area away from the current trailheads would lead to fires. A BLM intern's truck caught on fire going through high vegetation on del Valle Road a few years ago. Furthermore, fires are permitted throughout most of the year even though there is dry vegetation during most of the year. I believe the night time fire that did serious damage near Black Phoebe Pond about 4 years ago was during a time when fires were permitted. I am not sure about the recent 8 acre fire near Horsethief Wash. Since these fires were not near main roads it was difficult to get fire equipment to the fires.

Since one of the purposes of the legislation setting up SPNCA was for recreational use I would like to see the opening of EXISTING roads to recreational vehicular traffic. Depending on the road conditions, individuals or groups such as jeeping groups could be issued permits to drive on existing roads--no off roading. The roads would not have to be opened during sensitive times and permits could be issued by lottery if there was too much traffic.

As for “Transportation,” on page 2-46 under “Land Use Allocations,” #2, I respectfully request that the Alternative D option is used instead of Alternative C for that specific item. I have experienced primitive land, specifically along the SPRNCA, that is used by vehicles and seen how it negatively impacts the surrounding life, as well as the view. While it is important to have a few vehicular primitive roads and trails available for rare use in such occasions of emergency or to improve habitat through research and restoration, it is not necessary to have OHV in the SPRNCA for any reason under the enabling legislation. So, I request Alternative D in this matter, in order to adhere to the legislation as well as to protect those species whose homes are around these primitive roads and trails.

Any new roads within the SPRNCA should be limited to the greatest extent possible, vehicle travel within the SPRNCA should be limited to the greatest extent possible, and off-road vehicles should not be allowed anywhere within the SPRNCA.

Land designations and other allowable uses * Any uses of natural resources, or impacts to them, that could result in significant damage to the ecological values or conditions of within the SPRNCA should not be allowed. This would include new road construction among other uses.

* We recognize that this RMP will only make area allocation travel management decisions, not detailed travel management decisions. However, those area allocations, such as Recreation Management Zones and Lands with Wilderness Characteristics, should be analyzed for resource impacts. One type of impact not addressed is the risk of wildfire due to road access and backcountry vehicle use. Any increases in vehicular access routes could exacerbate the possibilities for the unintended ignition of wildfires. It has long been recognized that roadside fires comprise a high percentage of all man-caused fires, and frequently spread to grassland and forestland (Wilson 1979, Johnson 1963). Such fires could have severe impacts on riparian communities, so this impact should be evaluated for each area allocation.

Access and Recreation A strong consensus of my constituents and others support an RMP that designates the 55,990-acre SPRNCA as an Extensive Recreation Management Area (ERMA), with different zones to achieve different objectives. This objective includes allowing some limited use of Off-Highway Vehicles (OHVs). This necessitates improving access to the St. David Cienega and SPRNCA to meet the needs of users. Maintenance and requested improvements to highways, turning lanes, and parking areas will facilitate future regional travel demand and growth.

I suggest that if off-road vehicles are allowed on the San Pedro for recreation, law enforcement should be increased dramatically and BLM coordinate with the Border Patrol. It would be a good idea to stop and search off-road vehicles as well. Naturally, the law enforcement officers should have their own off-road vehicles.

The various discussions in this draft regarding Off-Highway Vehicles (OHV), (see p. 3120 and elsewhere) would appear to be resolved by the express language of the legislation. Section 460xx-1 (b) also states that: Except where needed for administrative or emergency purposes, the use of motorized vehicles in the conservation area shall only be allowed on roads specifically designated for such use as part of the management plan prepared pursuant to Section 460xx-2 of this title.

It is a well-known fact that off-road vehicles cause erosion. Why in heaven's name would we want to allow it within the SPRNCA, especially when vehicular traffic was partially responsible for the deteriorated

condition of the area before 1988? B. ORVs are also very noisy which would disturb wildlife, campers and other visitors. C. They raise dust which coats plant life and restricts its growth.

Increased roads will disrupt wildlife and pose potential dangers to birdwatchers who wander throughout SPRNCA.

Allowing driving on the unpaved berm area would create a quagmire during the monsoon area, as well as a possible range fire due to truck catalytic converters coming in contact with Sacaton or Johnson grasses in the dry season. Furthermore, cattle cannot be contained and prevented from wandering off toward the river. This would create erosion and pollute the stream with droppings. It will lead to the destruction of willows and cottonwood from cattle eating the bark. Birds and other wildlife habitat would be impacted.

The one thing that I specifically do not believe should be incorporated into the SPRNCA is ATV use. I believe that this function could be facilitated on other less sensitive BLM managed land rather than within the SPRNCA managed areas.

Above are problems if OHV users were to follow all rules and restrictions. However, further environmental degradation and destruction would occur if there were non-compliant OHV users. Degradation and destruction would expand to plant life and soils. Following is another excerpt from Environmental Effects of Off-Highway Vehicles on Bureau of Land Management Lands: A Literature Synthesis, Annotated Bibliographies, Extensive Bibliographies, and Internet Resources <https://pubs.usgs.gov/of/2007/1353/report.pdf> page xii: "OHV Effects on Soils and Watersheds The primary effects of OHV activity on soils and overall watershed function include altered soil structure (soil compaction in particular), destruction of soil crusts (biotic and abiotic) and desert pavement (fine gravel surfaces) that would otherwise stabilize soils, and soil erosion. Indicators of soil compaction discussed in the OHV effects literature include soil bulk density (weight per unit of volume), soil strength (the soil's resistance to deforming forces), and soil permeability (the rate at which water or air infiltrate soil). Generally, soil bulk density and strength increase with compaction, whereas permeability decreases with compaction. As soil compaction increases, the soil's ability to support vegetation diminishes because the resulting increases in soil strength and changes in soil structure (loss of porosity) inhibit the growth of root systems and reduce infiltration of water. As vegetative cover, water infiltration, and soil stabilizing crusts are diminished or disrupted, the precipitation runoff rates increase, further accelerating rates of soil erosion." "OHV Effects on Vegetation Plants are affected by OHV activities in several ways. As implied above, soil compaction affects plant growth by reducing moisture availability and precluding adequate taproot penetration to deeper soil horizons. In turn, the size and abundance of native plants may be reduced. Above-ground portions of plants also may be reduced through breakage or crushing, potentially leading to reductions in photosynthetic capacity, poor reproduction, and diminished litter cover. Likewise, blankets of fugitive dust raised by OHV traffic can disrupt photosynthetic processes, thereby suppressing plant growth and vigor, especially along OHV routes. In turn, reduced vegetation cover may permit invasive and/or non-native plants- particularly shallowrooted annual grasses and early successional species capable of rapid establishment and growth-to spread and dominate the plant community, thus diminishing overall endemic biodiversity." There is no legitimate justification for discretionary recreational motor vehicle use within the SPRNCA. It conflicts with the values for which the SPRNCA was created. If the SPRNCA were intended to be primarily a recreation area, then it would have been designated as a National Recreation Area as opposed to a National Conservation Area.

Motorized vehicle use Discretionary motorized vehicle use within the SPRNCA is incompatible with the SPRNCA's ecological values. The following excerpt is from, Cumulative and Universal: ATV Impacts on the Landscape and Wildlife: [https://www.isoheg.mn/materials/16_Mtg/DEC_14_2016_ORV_WHITE_PAPER_Backcount ryHuntersAnglersofAmerica.pdf](https://www.isoheg.mn/materials/16_Mtg/DEC_14_2016_ORV_WHITE_PAPER_Backcount%20ryHuntersAnglersofAmerica.pdf) "The impacts of ATV use on wildlife cannot be overstated. Similar to the effect of ATV travel on the physical environment (Meadows et al. 2008), ATV travel can disproportionately alter animal behavior relative to more traditional forms of off-road recreation due to the distances motorized vehicles can travel in a single day (Hershey 2011). Alterations in animal behavior may result in displacement from preferential habitat, increases in home range and daily movement patterns (Nicholson et al. 1997), reductions in the time spent feeding, and increases in daily travel time (Naylor et al. 2009). Increases in the size of summer home range and increasing daily movement can detrimentally impact energy budgets that are critical for building fat and energy reserves (Cole et al. 1997)."

No #. The motorized public access propose proposed in Alt B/C/D is not possible at the northernmost section along Escalante and Carey Roads as this private property.

Use of heavy equipment to modify the landscape would damage the fragile environment and speed up desertification. Herbicides should not be used to destroy mesquite forests in order to create "palatable" (i.e. things cattle like to eat) grasses.

Tribal Interest

The tribe would disagree with the report that there are "no specific impacts on tribal interests have been identified within the planning area." See SPRNCA Draft Resource Management Plan, Vol. 1, 3-143, ¶4, June, 2018). This ignores general tribal concerns that impacts on archaeological resources could adversely affect tribal interests. Given the lack of prior consultation as referred to in the plan, the full extent of the adverse impacts on tribal concerns is not fully known. Given the number of archaeological sites and potential traditional cultural properties involved, it is essential that procedures for tribal notice to be expressly provided and followed. It is therefore requested that the plan outline an ongoing procedure for regularly meeting and consulting with affiliated tribes to cooperatively plan to avoid or mitigate the impact of use planning that would adversely affect tribal interests.

The Pascua Yaqui Tribe objects to the Plan to the extent it asserts that only the Hopi and Tohono O'odham Nations claim an affiliation. See Draft Resources Plan and Environmental Impact Statement (Vol.1, 3-141, ¶1, June, 2018), herein after referred to as the "SPRNCA Draft Resource Management Plan." The tribe therefore requests that the plan be amended to include the tribe as a tribe asserting a cultural affiliation.

Vegetation

2. Allow use of herbicides to control Johnson grass. There is no other "light on the land" way to deal with this aggressive threat to the river flow itself, as well as trail use.

Of the 34,450 currently unallotted acres with ecological data, less than 18 percent is in Historic Climax Plant Community (HCPC) and over 13 percent is in the highest level of "large departure" from HCPC. DRMP/DEIS at 3-37. Of the 7,030 acres currently grazed, the BLM lacks condition scores for 1630 acres, or nearly one-fourth of the lands at issue. Ibid. Of the 5,400 grazed acres for which BLM has no condition scores, 18 percent is in HCPC and approximately 19 percent is currently "large departure" from HCPC.

Ibid. This suggests that the grazed lands are in worse condition overall than the unallotted lands, and we note that the DRMP/DEIS itself admits that in upland communities that are highly departed from HCPC, "even low utilization may cause adverse impacts on vegetation." Ibid. Despite this, the DRMP/DEIS's Alternatives A-C would allow large areas of already degraded lands I [I] Tracking # AZ-18-012, BLM-2018-00503. We attempted to follow up on our request with the BLM on August 10, 9 on the Lucky Hills and Three Brothers allotments to continue. Id. at 3-38. The DEIS admits that resting areas in poor health from livestock grazing would help move lands towards PFC and HCPC. Ibid. This is consistent with the definition of "Enhance," above.

One small statement in the DRMP/DEIS acknowledges that the tributaries' development into true riparian areas will be impaired by the preferred alternatives; the document admits that grazing in riparian vegetation would occur in cottonwood/willow communities along ephemeral tributaries to the San Pedro. DRMP/DEIS at 3-20. The DRMP minimizes the impact of this by saying that it would only occur in 0.1 percent of the decision area (notable, not the habitat type), but fails to analyze and disclose whether it would also prevent the development of additional cottonwood/willow communities by suppressing riparian vegetation and/or withdrawing water in these areas.

The agency admits removing riparian vegetation is inconsistent with conservation such values, but fails to acknowledge that livestock grazing in riparian areas removes vegetation and thus will be inconsistent with the values for which the SPRNCA was protected.

Livestock promote the spread and colonization of alien plants, which can increase fire frequencies. Billings 1990, Billings 1994, Rosentreter 1994, Belsky and Gelbard 2000, Kimball and Schiffman 1993. Disturbance is a reliable indicator of alien dominance in vegetation composition, and livestock grazing is a significant disturbance. Brooks and Berry 2006. Further, weed invasions are strongly associated with livestock watering sites. Brooks et al 2006. And, the BLM hasn't analyzed the cause and effect relationship of livestock grazing with the woody vegetation the DRMP/DEIS plans to "treat." See, e.g. Bahre and Shelton 1993.

2. The extent and quality of riparian habitats continue to decrease, with associated losses of biodiversity that cause failed ecosystem functioning and impairs the ability of riparian areas to provide ecosystem services. Several different economic models demonstrate that the monetary value of maintaining hydrologically adapted riparian zones is significant, and that riparian zones provide at least \$10,000 per acre of value.

3. Riparian buffer zones that are variable rather than fixed, and that are hydrologically adapted to the river region are the most protective, productive, and cheaper⁵. 4. Ecosystem services are now well accepted as part of management strategies. Riparian zones provide water purification, retention of nutrients, habitat availability, connectivity allowing movement of organisms through the river network, pollution retention, and microclimate control.

As for vegetation, I noticed that on "Wetland Vegetation" there is a phrase on p. 2-16, Objective 2: "Manage for a mixture ecological sites..." I would like to see these words on p. 2-17, Objective 3, and I would like it to read: "In the Chihuahuan desert scrub vegetation community, manage for a mixture of ecological sites to increase species of native annual and perennial herbaceous plants, creating necessary habitat for every animal species other than cattle, who will thrive there, based on ecological site potential." I am concerned under Alternative C, the uplands would be open to grazing. Whether that happens or

not, either way, I am perturbed to see the word “palatable” in 2 out of the 3 objectives for the uplands and question whether the RMP has the best interest of the SPRNCA or the cows in mind. Further, I would like to see an Objective 4 that reads “There is emphasis on improving the upland ecosystem to increase biodiversity on the SPRNCA, through developing more habitat for species other than cattle.”

The DRMP/EIS fails to describe the criteria the BLM would use to identify the upland areas in the SPRNCA that may be made available for grazing under the Preferred Alternative.

30. 3-20, Last Paragraph BLM states: "Alternatives B and C would have 34 miles of impaired streams in areas with livestock grazing." Comment: On Page 3-2 BLM states "Under Alternative C, the riparian area would not be available for livestock grazing". How can there be livestock grazing on impaired streams if there won't be livestock grazing in riparian areas? The term riparian is virtually synonymous with streamside. Suggested/Corrected language: Please clarify whether or not there will be livestock grazing within riparian areas of the SPRNCA under Alternative C.

29. 3-20, 3rd Paragraph BLM states: "Under Alternative C, grazing in riparian vegetation would occur in cottonwood/ willow communities along ephemeral tributaries to the San Pedro River, 0.1 percent of the decision area, to minimize livestock impacts on priority habitats." Comment: On Page 3-2 BLM states "Under Alternative C, the riparian area would not be available for livestock grazing". Suggested/Corrected language: Please clarify whether or not there will be livestock grazing within riparian areas of the SPRNCA under Alternative C.

15. 3-3, First sentence, last full paragraph on page County/City BLM states: "The BLM has not undertaken vegetation treatments in the past 10 years..." Comment: The County and City understood that BLM has recently (or is about to) undertake vegetation treatment to remove Tamarisk that pose a disease and/or fire safety risk to the area. The County and City also understand that BLM has completed vegetation treatments on select Cottonwood trees where they posed a threat to safety. Corrected/Suggested language: If BLM has completed vegetation treatments, please note it.

32. 3-22, First paragraph BLM states: "Erosion and overland runoff from the tributary watersheds are expected to increase as vegetation decreases in response to land uses and urbanization. High sediment yields can overwhelm riparian communities and degrade water quality." Comment: Based upon Laurel Lacher's 2017 modeling, full CCRN build-out, which includes use of run off from developments such as the planned Tribute community, will sustain flows of the San Pedro river for the next 75 years exclusive of other conservation efforts. The ameliorative effect of these projects should be noted as well as the potential negative impacts otherwise emphasized by these cumulative effects section. Corrected/Suggested language: "Erosion and overland runoff from the tributary watersheds could increase as vegetation decreases in response to land uses and urbanization. High sediment yields can overwhelm riparian communities and degrade water quality. BLM is aware of local efforts to ameliorate or eliminate these potential impacts, including community planning to reduce erosion run-off as well as landscaping emphasizing maintenance of open spaces as well as heightened rain water capture via construction of swales and other landscaping and planning measures to improve infiltration and recharge within the County. Additionally, urbanization can support largescale aquifer recharge projects that sustain river flows. Dr. Lacher's 2017 modeling includes the anticipated construction of a recharge project at the site of the proposed Tribute housing development. The recharge project would recharge hundreds of acre-feet per year, and and is anticipated, per Dr. Lacher's modeling, to have a positive impact upon baseflows within the SPRNCA for decades."

Grazing or partial grazing will destroy the native vegetation and resulting wildlife - destroying and compromising a unique ecosystem.

* We appreciate the Plan's emphasis on active restoration measures for uplands and would like to see the plan prioritize areas where desired conditions are not met, focusing first on the contributing watersheds of the NRST "functional-at-risk" reaches, and other places where important values are at stake. These measures could include erosion control, prescribed fire, targeted use of herbicides or mechanical treatments, mulching and/or reseeded (similar to Alternative C). We appreciate the addition of specific management objectives for Chihuahuan Desert scrub and semidesert grasslands (common to Alternatives B, C, 0; Table 2.54, IV, B). Recognizing the value of these communities for overall watershed function and wildlife habitat, and the challenges of maintaining anyone plant functional group through extended drought, we would recommend broadening these objectives slightly to include key forage and cover plants for priority wildlife species, overall cover and diversity of native plants, and soil health as described in Arizona Standards and Guidelines for rangeland Health.

* To enable the full build out of the proposed recharge network, the future effluent produced by larger municipalities in the subwatershed, such as (but not limited to) Sierra Vista and Bisbee, will be essential water sources for use by near stream recharge facilities, as proposed by the CCRN. Since effluent represents the largest source of water for aquifer replenishment in the region, the BLM should support the development of long term agreements with partners that can ensure the physical and legal availability of effluent for near stream aquifer recharge purposes.

* In the interest of having shared goals and desired conditions drive management actions, all management and restoration measures, vegetation treatments, and grazing allotments should require quantitative monitoring metrics to determine status and trends with respect to the desired conditions for any given area within SPRNCA. These measures should include clear indicators of how well resource condition goals in both riparian and upland settings are getting met, should be practical to collect and interpret, and need to be most directly relevant to informing key management decisions for all of the Alternatives presented. Only Alternative 0 describes this type of monitoring and adaptive management to ensure that through time, the most effective methods get used more often.

Similarly, Table 2.5.5.B gives the impression that mechanical or more than minimal passive and manual methods would not be available for restoration of farmland under Alternative D, but this is not so. As the abstract at the beginning of the DRMP/EIS says, Alternative D would "emphasize resource conservation. . .while focusing on natural processes and passive resource management"; it would not preclude the methods of Alternative C, which would utilize "active resource management to minimize impacts." As usual, the distinction here is one of focus, degree and emphasis, not either-or, but the language and formatting of the DRMP/EIS gives the impression that Alternative D would not "minimize impacts" or, in general, be effective.

The concern of the DRMP/EIS with species composition (and effects of grazing) in the grass/forb/woody plant interface of the SPRNCA uplands should have been informed by and reflect such findings as that "increasing aridity will reduce the number of herbaceous (and total) plant species within riparian zones. . .and drive shifts from perennial. . .grasses and forbs to annuals" (Stromberg et al, Riparian Vegetation and Ephemeral Streams, Journal of Arid Environments [Dec. 2016]). Instead, the DRMP/EIS merely (and arbitrarily) has chosen a species composition model as a restoration benchmark that selects for vegetation

favorable to livestock, and a period in history before changing climate conditions and grazing led to increasing shrub presence.

Such extensive manipulation, although it may not technically meet the definition of type conversion (palatable grass dominance being, according to the DRMP/EIS, a natural potential for upland systems), nonetheless would be a drastic intervention in the natural ecosystem and effect a dramatic alteration of the habitat of numerous native species. While under Alternatives B and C it would be done explicitly to provide forage for cattle, the DRMP/EIS does not state why it might be done under Alternative D (and it is hard to see why conversion to "palatable" grasses would be done under a no-grazing alternative or for fire management that prefers to reduce fine fuels); but under any alternative, it would constitute a savaging of the SPRNCA's primary purpose.

The DRMP/EIS grazing proposal presents a number of contradictory management goals and options. For instance, under "Vegetation Resource Management" (B-10), the DRMP/EIS says rangeland "plant communities will be managed to protect, improve, and restore communities to provide wildlife habitat and non-consumptive use." This management directive is directly contrary to the proposal for expanded grazing-especially in important scrub and semidesert grassland communities where proposed conversion from natural to "palatable" species cannot but conflict with protection and non-consumptive use.

Similarly, the DRMP/EIS should have taken into account recent documentation that wetlands like the St. David Ciénega and other wetlands on the SPRNCA are not only affected by climate change but are effective sinks for greenhouse gases (cf. Moomaw et al: What the world needs now to fight climate change-more swamps; <https://voxpulisphere.com/2018/09/34135>).

return to Historic Climax Plant Community (HCPC) for semidesert grassland means shrub removal, as earlier the DRMP/EIS indicated that woody plant landscapes should be "restored" to grasses ("palatable" implied). But this is a highly debatable (and debated) position, which the agency cannot defend without a thorough analysis of global climate change and its effects on the SPRNCA (so-called "unnatural encroachment" being seen by many scientists as a natural progression of from herbs to woody plants in response to a warming climate regime). Such analysis is, of course, largely and conspicuously absent from the DRMP/EIS, and the AMS (not in the DRMP/EIS proper, but relegated, as noted above, to a separate website), though it acknowledges climate change, does not present strategies for addressing the changing conditions the AMS cites.

Fish and Wildlife Habitat and Vegetation I agree with a number of my constituents who recommended using a combination of tools such as: controlled burns and chemical treatments to remove noxious and invasive species from the riparian habitat. BLM must manage nonnative grasses to prevent them from spreading to lands outside the SPRNCA and from competing with the Huachuca water umbel.

The only weak point in 'alternative D' is that it allows for herbicide use and mesquite removal. I would like to think that this could be stricken from 'alternative D' in order to better protect this fragile ecosystem.

your team has been given some misinformation that appears in and below table 3-12. A 2012 study claims trampling by cattle and over usage of forage have caused stream bank damage and loosened soil causing erosion. It also claims cattle have caused the young cottonwoods to be shrubby. This is in direct opposition to the studies we have done in conjunction with the NRCS. Attached are some of the photo points from

the NRCS. The complete file is available at the Douglas office of the NRCS. None of the above conditions existed in 2012 and do not exist today.

Hoover Vegetation Cattle like to graze in moist areas and will prefer the riparian areas to more open dry land.

ADEQ observes that respective activities in the USPR watershed result in recruitment of non-native Lehmann lovegrass- a low nutrient feed for livestock. Discussions with Michele Girard (retired National Forest Service) suggest that Lehmann's lovegrass may actually increase evaporation and reduce infiltration, in addition to impacting the diversity of small mammal populations. Michele also informs us that native grasses are selectively consumed by cattle giving Lehman's a competitive advantage. We have requested references.

It is not the mesquite that has sucked up all the water. Mesquite are quite hardy and take minimal water to raise. We have bushes and trees on our property that my husband has trimmed and pruned to grow nicely. He has never watered them. The monsoon rains are all they require every year just like a lot of desert plants. It is the cottonwood trees in the SPRNCA along the river that drinks up all the water. We don't want you using herbicide in this area and killing our trees because you have mistaken the mesquite for the water usage and the cottonwoods are the culprits.

The vegetation treatments as described in this DRMP/EIS are problematic for several reasons. Although precise acreages are stated for various treatments, it is unclear where individual treatments would be implemented so it is difficult to assess whether a specific treatment is appropriate for a given site. It has been demonstrated repeatedly in this region (i.e. Fort Huachuca, Las Cienegas NCA) that removal of native, woody vegetation often results in rapid invasion by Lehmann lovegrass, an aggressive non-native that does not provide good habitat for native species.

It was not convincingly explained in the DRMP/EIS why conversion of land dominated by native woody species and habitat for a multitude of native animals should be converted to what will likely become a near monoculture dominated by a non-native grass and inhabited by few native animals. Overall, the vegetation treatments seem to be primarily directed at providing additional forage for livestock, not additional or enhanced habitat for native species.

DRMP quoted statement: "Conversely, resting areas in poor land health from livestock grazing would help increase land health and move vegetation communities toward HCPC or PFC". Grazing "rest" doesn't always work. Many historically compacted areas in the SPRNCA (and elsewhere) actually need soil disturbance to revegetate and recover.

"Manage 40,310 acres of upland vegetation toward restoring the perennial native grass component to address shrub encroachment." A "sea" of *Acacia neovernicosa*, tarbush (*Flourensia cernua*) and other shrubs. Near Lewis Springs. Aug 2018. The statement is ecological nonsense on several levels. Above: a typical landscape of the SPRNCA where shrubs are not just "encroaching," they are dominating, and far beyond being managed for. The uplands are already lacking a perennial grass component and it is impossible to restore the perennial native grass component and graze cattle. A similar argument can be made critical of Objective 2: "In the grassland vegetation community, maintain or enhance density, vigor, cover, and species richness of palatable native perennial grass, shrub, and forb species based on ecological site

potential." Palatable species cannot be "enhanced" in areas where they do not exist, and even if there were relict patches, palatable species do not thrive while being grazed out.

Sections of river terrace in the Fairbank area, for example, where tamarisk has been removed, have left large swaths of bare, sandy alluvium and piles of course, woody debris. Was there a plan for restoration once the tamarisk was gone? Stumps had been treated with herbicide but were growing back soon after. Are cottonwoods expected to magically recolonize areas they are ecologically unsuited for in the first place? The point being, of course, that the BLM should actively manage vegetation only if there is an outcome that is reasonable and achievable - when there is a follow up effort to rehabilitate and restore with appropriate natives. If not, removal for the sake of removal does more harm than good, destroying valuable habitat.

Current monitoring is not sufficient to inform adaptive management practices.

I am a rancher and I know that cattle are not discriminatory about where they walk, or what they eat. Their droppings will bring in foreign vegetation, their movement will disrupt natural patterns of wild life which can be hunted outside the area. Introduction of a non native species always has an impact, and often the second and third order effects are unknown.

19 2-18 Vegetation Communities Fort Huachuca Under alternatives B, C, and D #2 is actually the same.

The habitat is crucial for all the flora and fauna that call it home.

An alternative treatment for mesquite that was not even discussed in the draft plan is the use of selective cutting and treatment of cut stumps with herbicide. This method is very selective, much less intrusive and not much more expensive than mechanical control. It has been used to good effect on Las Cienegas NCA. Ground disturbance is minimal. This method is more time consuming but that may allow BLM to budget for and complete retreatments when needed. Why was this method not included as a tool for mesquite management?

In mesquite removal areas the re-invasion by mesquite happens quickly. Re-treatment is often needed within 6-8 years to control young plants and seedlings released by the treatment. At present BLM has 3000 acres of upland mesquite treatments on Las Cienegas NCA which began in 2008. Some of these areas have significant mesquite re-invasion that is already at a threshold (height) level where inexpensive selective control is needed right now. As plants become taller than 6 feet re-treatment becomes much more invasive and expensive. BLM proposes to treat 6100 acres of mesquite with mechanical means on SPRNCA under the preferred alternative. When BLM cannot maintain the expensive treatments on Las Cienegas how does the agency propose to do it on SPRNCA?

Vegetation treatments in the Chihuahuan desert shrub type will be affected by specific location on SPRNCA and the potential of soils and climate to favorably respond to treatment. The area around Fairbanks, AZ and to the north has low average annual precipitation. A weather station maintained at Fairbanks from 1902-1973 shows a mean annual precipitation of 11.92 inches (5). On the Walnut Gulch Experimental Watershed (WGEW) a rain gauge is located two miles east of Fairbanks at the terminus structure for WGEW. Rain gauge #1 has operated from 1955-2018 and mean annual precipitation at this location is 11.47 inches (4). The break between desert shrub and desert grassland communities around the world at our latitude is at 12 inches of mean annual precipitation. The northern area of SPRNCA is

below this threshold. Temperatures in the region have increased over the past 50 years further reducing soil moisture available for plant use. Down-cutting of the San Pedro River in the early 1900s resulted in valley side erosion that has affected all rangeland and woodland on SPRNCA. Many of the upland ecological sites now occur in eroded states that may not have the potential to change positively with vegetation treatments (3).

In the draft plan, BLM shows precise figures for the amount of land involved in vegetation treatments (fire, mechanical and herbicide) however maps showing the location of planned vegetation treatments for various alternatives are not included in the draft plan or appendices. Why not? It is difficult to comment on the use of these practices except in generalities, without knowing their locations.

Large land treatments applied in the Chihuahuan desert shrub near Tombstone and along highway 90 to the west are increasingly dominated by Lehmann lovegrass. This is good for the ranchers involved as forage production has increased tremendously but it is negative for retaining diversity of native plants and animals (1, 2).

The herbicide used in the Chihuahuan desert shrub (tebuthiuron) kills dicotyledon plants with the exception of mesquite and cacti. It does not kill monocotyledon plants (grasses). The herbicide is not selective for species like creosotebush - whitethorn and kills nearly all other shrubs and forbs. Some locations in this vegetation type have valuable sub-shrubs like false mesquite (*Calliandra*), ratany (*Krameria*), twinberry (*Menodora*), *Dalea* and *Zinnia* species as well as a host of perennial forbs used by a great variety of creatures. Tebuthiuron kills them all. Tebuthiuron remains active in the soil for several years and can kill seedlings of beneficial shrubs and forbs trying to recruit back into the plant community. How will BLM meet the stated objectives for the Chihuahuan desert shrub plant community under these circumstances? Objectives include increasing the species richness and vigor of native perennial grasses, sub-shrubs and forbs in the plant communities. Why were these risks / factors not addressed in the discussion of plan alternatives?

Seeds from nearly all plants species in the watershed can reach the San Pedro River via runoff water. This includes weedy and noxious species in the urban areas of Sierra Vista and Tombstone. The risk is high that the severe disturbance associated with mechanical treatments can result in dominance of invasive species not limited to African lovegrasses.

No #. River reaches during 2018 were dry prior to monsoon that are normally wet. Compare prior year wet dry maps to 2018 when available. At least 2 Huachuca water umbel populations dry and dead in these dry reaches during 2018. Fort scheduled to survey umbel in Sept-Oct 2018. Compare last year's umbel surveys (last one in 2015) with results from fall 2018 to see if dry river reaches resulted in mortality of umbel populations. Cattle grazing and use of water for livestock is not compatible with PL 100-696 to conserve, protect and enhance the riparian area and associated values if the river is going dry already from drought and climate change. Adding more stressors to the system (cattle) won't help. Removal of 0.03 cfs by cattle would result in even more dry river reaches and serious effects to umbel.

No #. 2.20 Add Wright's marsh thistle to list of priority species. This species is already listed on page 2.20.

Scientists have evidence to believe woody plants began displacing grasslands as a result of overgrazing, but has since been propelled by changing climate... Mesquites waste more water, but they can access it much

better," Barron-Gafford said. "Their roots are always out there and they find it, allowing them to bypass the grasses' evolutionary advantage. These deep-rooting shrubs and trees are accessing deeper water that was previously unavailable to drive plant biology in this area... encroachment of woody plants onto former grasslands exposes the area's semi-arid landscape to a higher risk of irreversible desertification." <https://uanews.arizona.edu/story/mesquite-trees-displacing-southwestern-grasslands>

Grazing has been found to be a threat to grasslands, as grazing cows eat pods dropped by mesquite tree and spread their seeds in their defecation. This leads to the perfect environment for a mesquite tree to grow. Mesquite trees out perform grasses in water consumption, as their roots reach deeper into the ground, consuming precious groundwater.

Latta, et al. 1999 is a poor reference; it is not peer reviewed and is not a credible source for historic grasslands conditions. The statement in this publication that is quoted on page 146 that "The San Pedro, Sulphur Springs and San Simon Valleys were once vast seas of Semidesert Grassland,..." has no reference of source. A more credible source is Gori, D.F., and C.A.F. Enquist. 2003. An Assessment of the Spatial Extent and Condition of Grasslands in Central and Southern Arizona, Southwestern New Mexico and Northern Mexico. Prepared by The Nature Conservancy, Arizona Chapter. 28 pp. This document should also be a primary source for determining site potential for grasslands restoration on SPRNCA. A very important component of this study and associated GIS map is the identification of former grasslands that have crossed an ecological threshold. These vegetation communities will most likely be non-responsive to restoration efforts and should be managed as Chihuahuan desert scrub and closed to livestock grazing for a very long time (40+ years) to allow natural regeneration of native grasses and forbs. (Gardner 1950; Glendening 1952; Smith and Schmutz 1975; Hennessy et al. 1983; Roundy and Jordan 1988; Valone et al. 2002). None of SPRNCA is mapped today as native or exotic grasslands with less than 10% shrub cover in this report. 49,382 acres is mapped as former grasslands with shrub cover >35% and 2,476 acres as exotic grasslands with 10-35% shrub cover.

The Draft RMP (page 3-25) describes the remaining semidesert grasslands within SPRNCA as fingers confined to drainages within the Chihuahuan desert scrub. The location and scattered distribution of remnant grassland is likely to make it vulnerable to overuse by livestock in proportion to availability within a grazing pasture.

The semidesert grassland type in SPRNCA described in this document as being narrow fingers interspersed within the Chihuahuan desert scrub type, primarily in drainages. It is unclear what would be "treated" on 40% of this habitat under alternatives B and C and for what objectives.

Previous efforts to restore fully realized disclimax shrub land to grasslands by BLM Safford District in the 1970's and 1980's have been unsuccessful. Further, projections of a warming climate will favor shrub establishment, particularly legumes such as mesquite and acacia, over grasses. The abstract from the Roundy and Jordan 1988 study near Bowie, Arizona concludes with "Vegetation development after disturbance by grazing or rootplowing is primarily by woody plant rather than herbaceous vegetation."

The draft EIS and RMP fail to reference recent assessments of grasslands in southeastern Arizona, most notably Gori, D.F., and C.A.F. Enquist. 2003. An Assessment of the Spatial Extent and Condition of Grasslands in Central and Southern Arizona, Southwestern New Mexico and Northern Mexico. Prepared by The Nature Conservancy, Arizona Chapter. http://azconservation.org/dl/TNCAZ_Grasslands_Assessment_Report.pdf This report maps the Chihuahuan desert scrub on SPRNCA

as "former grasslands that have crossed an ecological threshold and will be non-responsive to restoration efforts and should be managed as Chihuahuan desert scrub and closed to livestock grazing for a very long time (40+ years) to allow natural regeneration of native grasses and forbs."

The description of the semidesert grassland makes no mention of nonnative lovegrasses (p 3-24). Absence or presence of non-native lovegrass and at what levels should be included in the baseline description. The expansion of these grasses is of concern and management that would promote that expansion should be avoided.

A very important component of this study and associated GIS map is the identification of former grasslands that have crossed an ecological threshold. These vegetation communities will most likely be non-responsive to restoration efforts and should be managed as Chihuahuan desert scrub and closed to livestock grazing for a very long time (40+ years) to allow natural regeneration of native grasses and forbs. (Gardner 1950; Glendening 1952; Smith and Schmutz 1975; Hennessy et al. 1983; Roundy and Jordan 1988; Valone et al. 2002). None of SPRNCA is mapped today as native or exotic grasslands with less than 10% shrub cover in this report. 49,382 acres is mapped as former grasslands with shrub cover >35% and 2,476 acres as exotic grasslands with 10-35% shrub cover.

Because the Chihuahuan desert scrub community is relatively stable and studies have demonstrated that conversion to grasslands is not successful (Roundy and Jordan 1988), this vegetation type needs to be handled with care. Livestock exclusion has allowed for establishment of a diversity of desert shrubs, half shrubs and forbs. Herbicide treatment would kill these non-target plants and adversely affect the biological diversity. Use of prescribed fire should be the preferred management tool. Mechanical treatments may very well cause accelerated soil erosion, defeating the purpose of SPRNCA.

Latta, et al. 1999 is a poor reference; it is not peer reviewed and is not a credible source for historic grasslands conditions. The statement in this publication that is quoted on page 146 that "The San Pedro, Sulphur Springs and San Simon Valleys were once vast seas of Semidesert Grassland,..." has no reference of source. A more credible source is Gori, D.F., and C.A.F. Enquist. 2003. An Assessment of the Spatial Extent and Condition of Grasslands in Central and Southern Arizona, Southwestern New Mexico and Northern Mexico. Prepared by The Nature Conservancy, Arizona Chapter. 28 pp. This document should also be a primary source for determining site potential for grasslands restoration on SPRNCA.

How do you know acres will be improved under additional livestock grazing when the acres open to livestock since 1988 have not been evaluated to see if stable or upward trends resulted using BMP's, vegetation treatments, and adaptive management?

Grazing and removal of fire in SPRNCA grasslands will promote mesquite encroachment in to grasslands, and loss of grassland plants and wildlife. In the Draft RMP, semidesert grasslands and big sacaton grasslands are priority habitats. In sections 3-24 and 3-25 of the Draft RMP, it is acknowledged that these habitats occurring in SPRNCA are the remnants of what were once widespread vegetation types prior to historic declines. However, the preferred alternative would open many of these grasslands to grazing (figures 2-4, 2-16). That is counterproductive to the protection, conservation, and enhancement of these dwindling habitats.

Livestock grazing may favor tamarisk over cottonwoods and willows because the latter are more palatable (Racher and Britton 2003; Stromberg et al. 2010). Increasing tamarisk dominance has been linked to

increases in fire frequency and severity, which can hasten the decline of cottonwood-willow forests (Webb 2017). Along with altered hydrological regimes, land conversion to agriculture, and drought, changing fire regimes are contributing to the widespread die-off of cottonwood-willow forests across the Southwest (Webb 2017). The loss of cottonwood seedlings and saplings that, if not eaten or trampled, would otherwise recruit on the river could impact habitat structure for wildlife, including species of special concern, and the fate of cottonwood-willow forests on SPRNCA.

While far better than Alternative C, Alternative D still allows extensive herbicide use and mesquite removal in an apparent preparation for opening up the entire SPRNCA to cattle grazing at some time in the future.

As a resident of Cochise county living at the junction of E side Middle March Pass and the Dragoon Foothills, I am surrounded by open grazing lands and leases. The cattle have destroyed the native vegetation, much up the waterways and reek havoc on personal property. They have killed off the desert willows and other trees growing in washes. They eat every herbaceous plant so we see few wildflowers. They eat down the mesquite preventing tree formations. The yucca are eaten to nubs...so no flowering stalks, they trample the fragile ground during monsoon season. Cattle permanently alter the native habitat.

Visual Resources

The Visual Resource total for Alternative B, C, & D is 55,990 on table ES-2 yet Alternative A's total is 25,990. A difference of 30,000. The Visual Resource total for Alternative B, C, & D is 55,990 on table 2.5.9.C yet Alternative A's total is 43,870. A difference of 17,880. Please verify that these tables are correct and make any necessary adjustments.

Livestock will ruin the natural beauty. And what will it do to native wildlife? I don't want to see or smell livestock when I'm trying to enjoy nature.

Water Resources

Many pesticides could also be used, degrading the quality of the water in the river, thus directly affecting the entire county.

The DRMP does not specifically account for the water quality impacts of livestock grazing on the SPRNCA, although it does admit that Alternative D would have the fewest impacts on reducing groundwater and degrading water quality. DRMP/DEIS at 2-61. The DRMP/DEIS does admit that the reach of the San Pedro from the Babocomari River to Dragoon Wash is listed as impaired under the Arizona DEQ due to E. coli exceedances. DRMP/DEIS at 3-15. The Babocomari grazing allotment authorization includes grazing in the riparian areas of the Babocomari River, and would continue to under the preferred alternative. DRMP/DEIS at 2-35. The DRMP/DEIS fails to analyze and disclose how livestock grazing - a primary source of E. coli - would contribute to the impaired water quality of this reach. As explained in further detailed below, this is inconsistent with the agency's duties under the Clean Water Act and the Wild and Scenic Rivers Act. A comprehensive list of references on livestock impacts to water quality is attached here. Attachment 18.

It is unclear why the DRMP/DEIS asserts that Alternative C would have less impacts from grazing on water quality than Alternative A. DRMP/DEIS at 3-20. Alternative C increases livestock grazing in the SPRNCA, potentially diminishing stream flows through water withdrawal for livestock water, increasing the potential

for fecal coliform inputs, and certainly affecting the frequency of livestock use of the river corridor, despite the pledges to keep cattle out of the riparian areas. This would seem to increase the impacts of grazing to water quality, not diminish it, as the DRMP/DEIS suggests.

As stated in the proposed plan, flows in the San Pedro River have been declining. But the plan only states that BLM's actions may include efforts to maximize water availability for the BLM's goals to conserve, protect, and enhance the conservation values.

The extent of impacts from current groundwater pumping for livestock use on BLM lands is not disclosed, or whether the existing 1.1 acre-feet are pulled from close to the surface waters of the river. The DRMP/DEIS says there are currently zero livestock grazing waters or grazing water disturbance in the SPRNCA, which is not accurate.

Grazing is a detriment to all of the purposes of this legislation, especially because grazing would use more of the water resources and would increase the level of pollution of the San Pedro River.

One of the water management goals (pg 2-10) is to reduce or prevent contamination. The main source of contamination is run-off. Allowing grazing on any part of SPRNCA will further contaminate the river

In several places of the document (2-11.3 and 4, 2-36) the plan is to increase water pumping. Yet on page 3-15 the document states "changes in near-stream pumping can affect river conditions on much faster timescales than pumping at greater differences".

the final EIS and subsequent RMP must include watershed data pertaining to possible long-term effects on the "living" Kartchner Caverns.

I am part of the San Pedro Water Sentinel program. We monitor water from the River monthly from March through October to provide data on the state of the River to ADEQ and Sierra Club our organizing body. One of the parameters we measure is E. coli levels. What we are finding is that E. coli levels rise to 7-8 times acceptable levels in the Hereford/Casa de San Pedro area during the first large runoffs during monsoon in July/August. It has been concluded that this is due to the livestock in the area. A concern is that if cattle are reintroduced to other areas that these high E. coli levels will be seen in large stretches of the San Pedro water. Please contact ADEQ for more detailed information.

Grazing allotments are often treated with herbicides and pesticides—do we really want that in the water, not only filtering down to the aquifer, but that is water depended on by all the wildlife in the area.

has the impact of pumping water for Livestock Grazing been analyzed to the impact on water flow in the river?

Introducing wells to support grazing would further imperil our limited water resources.

My concern is for the ability of the area to grow and that private wells will not be metered or shut down.

I strongly believe that Alternative C should NOT be considered, due to the likelihood that it will cause animal waste to contaminate the already dwindling water supply, as well as negatively impact wildlife in the area.

22. 3-14, Groundwater, Last sentence of first paragraph BLM states: "Discharge from the groundwater system occurs at springs, as base flow along the river, by consumption from riparian vegetation, and from well pumping." Comment: Statements like this are in dispute in the SPRNCA Adjudication. This statement is not necessary to the RMP. Corrected/Suggested language: Delete this sentence. Replace with: "Discharge from the groundwater system within the regional aquifer occurs at a variety of points due to a variety of processes-some natural, some human-influenced."

8. 2-9, Table 2.5.3, Objective 2 BLM states: As to "Objective 2" "Conserve, protect, and enhance proper functioning watershed conditions to help maintain groundwater levels and base flows on the SPRNCA." Comment: Only "groundwater" and "baseflows" are mentioned. It seems that ensuring adequate water would be the goal, regardless of the legal categorization. Corrected/Suggested language: Replace reference to "groundwater" with "water." Replace "base flows" with "flows"

14. 2-62, Table 2-1 BLM states: That Alternative 4 presents the "fewest" "Impacts on reducing groundwater and degrading water quality" Comment: On July 30, 2018, BLM representatives viewed a modeling presentation by Dr. Laurel Lacher comparing various scenarios regarding groundwater use within the Sierra Vista subwatershed. The modeling indicated that an abrupt and complete cessation of all groundwater use within the Sierra Vista subwatershed would not benefit the flows of the San Pedro River for several decades and would actually be more detrimental to the health of the SPRNCA than other water management approaches. Dr. Lacher's findings indicate that a "hands off" approach to water management on the SPRNCA is not, in fact, an approach that would result in the "fewest" impacts on groundwater declines or reductions. To the contrary, Dr. Lacher's analysis indicates that doing nothing is more harmful than a management approach focusing on conservation and recharge projects, including projects like the Cochise Conservation and Recharge Network that the County and City have championed over the past several years. Corrected/Suggested language: Designate Alternative D as "Moderate" or higher, as recent modeling presented to BLM by Dr. Laurel Lacher indicates that a "hands off" approach to water management does not, in fact, present the "fewest" impacts on water quantity within the SPRNCA. Consider designating Alternatives B or C as the "fewest" because recharge and other conservation projects that could be implemented via those Alternatives have the greatest potential for improving flows of the San Pedro and supporting the riparian habitat in the coming decades. As the "long term" within the RMP is defined as approximately 20 years, the timeframes evaluated by the RMP do indicate that Alternatives 2 and 3, which allow for the greatest support of CCRN and other recharge and conservation projects present the "fewest" impacts.

9. 2-10, Table Water Management Goals BLM states: As to "Goal 1" "Provide a base flow sufficient for SPRNCA management purposes." Comment: Only "baseflows" are mentioned. It seems that ensuring adequate water flows, or just adequate water to fulfill minimum management necessities would be the goal, regardless of the underlying source or legal categorization. Using broader terminology would seem to open up additional options at the implementation phase, which the County and City understand to be a benefit at the RMP stage. For example, perhaps BLM determines ten years from now that a project utilizing effluent would be extremely beneficial for flows of the SPRNCA. But, under Arizona law, effluent is not groundwater (see *APS v. Long*). Does the restrictive wording of this Goal preclude or erect unnecessary hurdles before an otherwise beneficial project? Corrected/Suggested language: Replace "base flows" with "flows" or "waters"

Corrected/Suggested language: Consider moving the "Analysis Methods" starting at p. 316 (with changes suggested by County/City) to the beginning of the section so the reader understands the methods and assumptions BLM is applying. The "Water Resources" section should be re-written to address the goals of the RMP-to establish management options for the SPRNCA-rather than the phrasing utilized at this time, which indicates a desire to use the draft RMP to gain a tactical advantage in on-going litigation. Alternatively, at the outset of the section, BLM should note that its descriptions and asserted understanding of the condition of surface and groundwater within the SPRNCA as detailed in the "Water Resources" section is the subject of dispute in on-going litigation, and that BLM's assertions in the "Water Resources" section are based upon positions that it has asserted in that on-going litigation.

16. 3-4, Recharge Enhancement Projects RFD Scenario BLM states: "The potential project size was determined based on soil types that had the highest potential for infiltration. Under all action alternatives, exclusive of Alternative A, there would be 2,170 acres of recharge enhancement projects" Comment: Can BLM clarify what it considers to be a "recharge enhancement project"? Are these essentially any project that may enhance recharge-so anything from well retirement, to vegetation treatments to more structured recharge projects like those within the CCRN? The County and City do not seek to confine BLM to identified projects, but rather want the public to have the benefit of some examples of "recharge enhancements" that BLM has in mind. It appears that BLM has at least some specific project ideas, as it designates acres for "recharge enhancement" in Table 3-4. Corrected/Suggested language: Please add to this paragraph to provide examples of what BLM has considered with respect to the 2,170 acres of "recharge enhancement projects" so the public has a better idea of what BLM is contemplating.

21. 3-14, Surface Water, Current Conditions, entire section BLM states: Whole "current conditions" section related to surface water. Comment: How does this information relate to management under the RMP? The statements in this section are contested in the SPRNCA Adjudication. Corrected/Suggested language: Delete this entire section and replace with- "Although information varies, certain data BLM has reviewed indicates a potential decrease in river flows due to a variety of causes in the reasonably foreseeable future. Management alternatives geared at improving flows of the river are thus included within each Alternative."

26. 3-17, Acre feet per year of Groundwater Use, Table 3-8 BLM states: BLM quantifies groundwater use within this Table, and appears to limit the quantification to areas within SPRNCA. Comment: This section is confusing because BLM discusses water at the larger aquifer scale throughout other sections, but then appears to confine its analysis to amounts within the SPRNCA in this section. Corrected/Suggested language: Please clarify that this section limits calculations of groundwater use to areas entirely within the SPRNCA and explain why BLM believes it appropriate to narrow the analysis here, but not elsewhere when discussing water within the RMP.

28. 3-20, 2nd Paragraph BLM states: "Depending on the season and intensity, livestock grazing in riparian areas has the potential to degrade water quality by reducing vegetation cover, affecting stream bank stability, and increasing nutrients and fecal coli-forms. Removal of streamside vegetation by foraging or trampling can expose soils, thus making them more susceptible to wind and water erosion. It can also reduce streamside shade coverage and thus increase water temperatures (Platts 1991)." Comment: Platts 1991 publication is irrelevant and should be deleted. First - BLM is not proposing grazing within riparian areas, which was the subject of Dr. Platts' article. Second, the limiting factor for the cold-water Idaho trout Dr. Platts studied was not lack of water, which is the primary limiting factor related to warm water

Arizona fish within the SPRNCA. Suggested/Corrected language: Delete references to trout streams from Platts 1991 and add relevant Arizona warm water fisheries science from Neary, Daniel G.; Medina, Alvin L.; Rinne, John N., eds. 2012. Synthesis of Upper Verde River research and monitoring 1993-2008. Gen. Tech. Rep. RMRS-GTR-291. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 296 p. Add language from Neary et al (2008) wherein the authors describe limiting factors for Arizona native fishes. In particular, they document the fact that Arizona native fish benefit from unstable stream banks when predatory nonnative fish are present, which is the case within SPRNCA. Add citation from page 244: "Weedy aquatic species tended to increase while species associated with stable streambanks decreased. The weedy aquatic species crowd out native herbaceous plants and may provide increased cover for predatory nonnative fish. The changes may also induce channel narrowing retention of organic sediments that decrease the quality of habitat for native fishes."

33. 3-22, Second paragraph BLM states: "Efforts to continue that trend and to near-increase stream managed aquifer recharge may further protect SPRNCA base flows in the future" Comment: Based upon Laurel Lacher's 2017 modeling, which is cited earlier in the same paragraph in this section, full CCRN build-out will sustain flows of the San Pedro river for the next 75 years exclusive of other conservation efforts. This should be made explicit to provide appropriate context of cumulative effects discussed in this section. Corrected/Suggested language: "Efforts to complete the CCRN system of managed aquifer recharge projects will, according to Dr. Lacher's 2017 modeling, further protect SPRNCA base flows for approximately 75 years. These efforts, coupled with other conservation measures within the SPRNCA and greater region, would aid significantly in sustaining the flows and riparian habitat of the SPRNCA."

5. 1-8, Section 1.4.2: Water Resources Water Resources BLM states: BLM notes it does not consider the following in the RMP, and explains its rationale as follows-"Water usage plans for Sierra Vista that allow the river to keep flowing and adoption of a balanced water budget by the city, county, and the Upper San Pedro Partnership. Rationale-The BLM does not have the authority to develop water usage plans for non-public lands. Such authority lies with the local city and county." Comment: As the County and City are cooperating agencies, BLM is not entirely deprived of the ability to participate in or at least comment upon water policy and conservation activities of local agencies. Additionally, pursuant to 43 USC § 1712(c)(9), BLM must be familiar with local agency policies and regulations in order to coordinate as required by Section 1712(c)(9). Corrected/Suggested language: Add a sentence at the end of the "Rationale" section noting that "BLM has, and will continue to, work with and, to the extent possible, seek funding to support local agencies in promoting water and conservation policies and projects that will support the purposes of the SPRNCA."

19. 3-13, 3.2.3, first sentence BLM states: "This section focuses on surface water, water quality, and groundwater..." Comment: What about other types of waters. "Developed" waters, effluent, stormwater, urban enhanced run-off, etc? Corrected/Suggested language: "This section focusses on waters within SPRNCA"

20. 3-13 through 3-15, 3.2.3, entire "Water Resources" section BLM states: Entire Section titled "Water Resources" Comment: BLM representatives stated publicly, and the RMP states as well that the RMP is not concerned with and is a separate matter from the on-going SPRNCA adjudication. However, as presently written, the entire "Water Resources" section contains numerous statements that are in dispute in the SPRNCA adjudication. The County and City are concerned that Sections such as this one are (hopefully unintentionally) aimed at generating a tactical advantage in the on-going SPRNCA adjudication

rather than serving to fulfill the basic purpose of the RMP, which is to identify and create a framework for implementing BLM's management obligations relative to the SPRNCA.

23. 3-14, through 3-15 Groundwater, Current Conditions, entire section BLM states: Whole "current conditions" section related to ground water. Comment: How does this information relate to management under the RMP? The statements in this section are contested in the SPRNCA Adjudication. These assertions are not necessary for the RMP. Corrected/Suggested language: Delete this entire section and replace with- "Based upon the BLM's current understanding of hydrogeology of the regional aquifer, including the area underlying the SPRNCA, the Alternatives presented within the RMP support management measures aimed at measures that are anticipated to maintain flows of the river, promote health of the riparian habitat, and address water quality concerns. Such management efforts must, where possible, extend beyond SPRNCA's geographical boundaries, which require communication and collaboration with local agencies. Conservation measures by Fort Huachuca, the City of Sierra Vista, and Cochise County have reduced per capita water usage. Continuation of basin-wide conservation measures and implementation of aquifer recharge projects, such as the CCRN projects identified in the cumulative effects section, are necessary for long-term sustainability of the water and riparian resources of the SPRNCA"

According to the new plan, the BLM would increase livestock grazing in upland areas with soils that have a severe susceptibility to erosion caused by grazing, which would then have impacts on water quality within the San Pedro River.

In the DRMP, Section 3.4.2, page 3-31, the middle paragraph states "The San Pedro River channel sinuosity has changed little since the area was designated ..." This paragraph seems to imply some urgency to managing the meandering process through mechanical means. I think the NRST 2012 report is more opposed to active induced meanders. See NRST report pages 52-53 "Issues" and "Management Considerations"; and page 283, "Channel Evolution." Instead, I believe the recommendation is for "[s]ound riparian management and passive restoration practices..." The implication of my comment is that a lighter, passive approach may produce the desired meandering and stream sinuosity. The role of strategically placed tree plantings and beaver should be considered as a means to achieve restoration, depending on specific geomorphologic conditions.

If Alternative C is adopted, cattle will use an estimated 7.4 acre-feet of water per year, 46.8% more water than would be used if cattle were not present. This is water that the struggling San Pedro River can't afford to lose.

Planning without Water Developing a resource management plan for a river without any discussion of water. Does not make any sense. Water rights are currently being adjudicated; however, there is no discussion of how water will be used, the actions that BLM could take to improve water conservation in the watershed, what BLM could do to reduce water usage by non-native invasive plants (in particular mesquite)²¹, or cooperation with the local communities to encourage conservation.

A Free-flowing River The report consistently talks about the San Pedro River as free flowing. The report states: The San Pedro River is free flowing and is considered perennial, with intermittent stretches . . .¹⁴ "Free Flowing" is used over 30 times in Volume I and over 20 times in Volume II. Merriam- Webster defines free-flowing as "characterized by easy freedom in movement." This does not describe the San Pedro River. A more accurate description would be "a creek interspersed with dry areas that runs freely

during monsoon." The continuously calling the San Pedro River "free-flowing" is a gross misrepresentation of the river and leaves in the readers mind a river which has water consistently flowing with minor area where the water does not flow. While the San Pedro River should be preserved, it is important to be clear about the nature of the river to preserve. There are a lot of myths that circulate about the San Pedro River. One myth. is that steamboats plied the river. Another myth. is that the river was so wooded settlers cut down trees along the bank to build houses. These, and other "facts" about the river are myths at best or manufactured lies at worse.

A reading of the history of the river disproves these myths. It is important to know the history of the condition of the river. While BLM has a responsibility to protect the river, it does not have a responsibility to improve the river. Only with a proper understanding of the past can one determine what is to be preserved and what can reasonably be protected. The San Pedro River is generally free flowing during monsoon. It is not always free flowing. During dry months large sections of the river are without flowing water. Some sections are without any water. This has been the way the river has been, and it is the way the river is today. Attempts to make the river a free-flowing river is not preservation, it is human intervention. Many of the RMP proposed actions to improve the SPRNCA are a desire to conform mother nature to man's will.

A Missed Opportunity BLM missed an opportunity to pull the entire community together toward better utilization of the available water resources in support of SPRNCA. The process of drafting this revised RMP to replace the Safford District RMP (BLM 1992, 1994) for the San Pedro Riparian National Conservation Area (SPRNCA) was not used to educate the community. The BLM apparently has not considered allowing market forces to work for the preservation of the San Pedro river. The Bureau's bureaucratic mind-set is probably best summed up by an article published September 1983 in the Wall Street Journal "Water Needn't Be a Fighting Word" by Terry L. Anderson which included the following passage: Water shortages in bureaucratic systems have long been a source of conflict. State is pitted against state and region against region in the political struggle. Mark Twain said, "Whiskey is for drinking-water is for fighting." The fight will continue as long as water is allocated by politics instead of the market.²²

An important factor in water usage in the watershed is not just the number of people. Rather, it is land use. The report does not take into consideration land use when discusses water usage and the increasing cone of depression. With a declining population, more residential land might be converted to agricultural usage. Agriculture uses significantly more water than residences. Conversion from residential to agricultural use could have significant impacts on the management and preservation of the SPRNCA. Residents in some areas of Cochise County are already experiencing dry wells because the land is used for pecan farming, a use that requires vast quantities of water.

Because Alternative C would result in an increase in acreage available for livestock grazing, EP A recommends that the FEIS provide further information to clarify the factors that led to its identification as BLM's preferred alternative, and to explain how the adverse impacts of increased grazing would be avoided or mitigated under that alternative.

* Existing and proposed hydrologic monitoring programs should be analyzed for their statistical power to detect trends, and ability to anticipate any subsequent adverse impacts to resources, and inefficient programs should be modified or abandoned.

* In addition to natural recharge processes, managed aquifer recharge (MAR) approaches have been a successful strategy used throughout the world to increase groundwater availability in urban and metropolitan areas where significant pumping occurs (Dillon et al. 2010, Medgal et al. 2014, Bouwer, 2002). Within the Sierra Vista Subwatershed, the broad spatial extent of the regional cone of depression has been defined by regional groundwater monitoring efforts (Schmerge, 2009), and the regional cone of depression was found to extend 6 miles in northeast-southwest orientation, and 8.5 miles northwest-southeast in 2006. The USGS estimates that approximately 600,000 acrefeet of groundwater storage loss has occurred in the aquifer since pumping began in the 1940's (Pool and Dickinson 2007). No one water management strategy can completely address this longterm, cumulative loss of groundwater storage. In addition, the full impacts to the SPRNCA's nearstream groundwater levels and baseflows are still in the future and will likely occur even if all pumping stopped today, due to significant lags in groundwater responses that take years, decades and in some instances, centuries to fully express themselves (Leake, et al. 2008). The BLM should not assume that the relatively small increase in stream bank recharge proposed in Alternatives B and C of the RMP will be sufficient to address this urgent and sizable challenge. However, a MAR approach has the potential to store much larger volumes of water at the regional scale, as has been done elsewhere (Bouwer 2002, Megdal 2014). The BLM should show more direct support and engagement for this larger scale, more systematic recharge approach that is capable of providing benefits at an appropriate scale for the water availability problem.

* Large magnitude flood events continue to provide significant volumes of recharge within the San Pedro's alluvial aquifer-this relationship has become apparent when the length of pre-monsoon surface water flows almost doubled in the SPRNCA, and persisted, for several months after the floods of 2001 and 2014, as quantified by wet dry mapping within the SPRNCA (Turner and Richter 2011). While the widespread inundation of the floodplain surface allows for a tremendous increase in infiltration and recharge rates for this system, only a relatively small increment of increase in infiltration rates would be expected as a function of increased (artificial) sinuosity of the active channel. In addition, during larger magnitude events, the floodplain terraces outside of the active channel would continue to be inundated regardless of the active channel platform, and therefore, recharge from the larger events would likely not be significantly different than current conditions, even if channel sinuosity changes were artificially made. The ability of the existing floodplain to accept large magnitude floods is an important function of the system and should be specifically acknowledged in the RMP as a fundamental, natural recharge process. Any flood flow impoundments within or upstream of the SPRNCA would also have tremendous impacts on ecologic, hydrologic and geomorphic function and that should be clearly stated within the RMP.

* The USGS MODFLOW model (Pool and Dickinson 2007) has been used along with other technical tools by partners in the Upper San Pedro to design a network of recharge projects capable of effectively sustaining and/or improving alluvial groundwater elevations and San Pedro River baseflows along 25 miles of the SPRNCA for several decades (Lacher 2013, Lacher 2014, Lacher 2018), to protect the SPRNCA from the expanding cone of depression in the regional aquifer. These modeling scenarios helped to inform the acquisition of over 5,000 acres of lands adjacent or near the SPRNCA, previously slated for residential development, that were instead acquired as recharge and/or hydrologic protection sites. By 2018, seven aquifer recharge locations were acquired by the Cochise Conservation and Recharge Network (CCRN), with three recharge infrastructure projects are currently under operation. As of 2017, the CCRN's current projects have retired or precluded approximately 3,000 AFA of near stream groundwater pumping, and in addition, recharged approximately 3,000 AFA of stormwater or treated effluent at their project sites. CCRN members include Cochise County, the cities of Sierra Vista and Bisbee, the Hereford

NRCD, and The Nature Conservancy. The CCRN project locations are outside of the SPRNCA's boundaries, yet based on hydrogeology characteristics and groundwater flow paths, are located to best serve the long-term water needs of the riparian corridor itself by allowing for significant volumes of aquifer storage and buffering in the most strategic locations. Taken together, the projects could create a fairly continuous recharge mound along the west side of the SPRNCA, capable of isolating the riparian corridor from the impacts of the regional cone of depression for several decades (Lacher 2017). However, the CCRN network cannot be fully developed without full support and engagement from the BLM. The draft RMP does not specifically commit BLM toward active collaboration for this effort. Furthermore, the RMP instead identifies the CCRN projects as 13,510 acres of "cumulative impacts to SPRNCA" in Table 3.1, listing them along with housing developments, utilities, and vegetation treatments. It is clear that the imperative need for aquifer replenishment at the scale being proposed by the CCRN has not been fully acknowledged by the BLM as an essential component to protect, restore or enhance the hydrology of the SPRNCA. The RMP should include a clear commitment from the BLM to actively assist with the development of CCRN's managed aquifer recharge projects, at a scale that can meet the SPRNCA's long-term water needs, by fully engaging their staff who are in a position within the agency to commit resources and guide regional water management decisions on behalf of the agency.

Historic, large magnitude flood events have had a tremendous and lasting impact on the geomorphology of the Upper San Pedro River, and moderate floods continue to play an important role in forest stand destruction and recruitment. The intense floods over 100 years ago initiated deep channel incision, and subsequent floodplain widening, which continued until approximately 1955 (Hereford, others). Through aerial photo series, Stromberg et al. (2010) documented that from 1955-2003 the bare alluvium within the floodplain, generated during floodplain widening, was colonized by stands of Fremont cottonwood and Goodding willow, which tripled in abundance during that period. Since then, younger stands of trees have recruited episodically on narrow bands lining the active channel in response to high winter runoff. Nothing in this research suggests that a more meandering channel could be sustained as part of a new geomorphic equilibrium within the floodplain, or that the stabilization of stream banks to increase sinuosity is warranted to enhance riparian recruitment. Cottonwood willow riparian forests are known to recruit seedlings on freshly deposited alluvium associated with meandering, braided, and compound channel forms (Scott, et al. 1997, others). The emphasis on "good meanders" is inappropriate for this system and should be removed from the RMP.

Protection offlood flows * Stromberg and many others have documented the essential role that flood flows play in driving succession for the Fremont cottonwood and Goodding willow forest, mesquite bosque, and other streamside habitats found in the SPRNCA (Stromberg et al. 2007, Stromberg et al. 2009, Stromberg et al. 2010). The Conservancy provided a technical memorandum to the BLM Gila District (Richter, 2017) that stated "(CCRN) facilities are being designed to enhance near-stream groundwater elevations to support base flows while Simultaneously allowing for a relatively 'natural', or predevelopment, flood flow regime." The technical tools that were used to design stormwater recharge projects in this manner were described in the memo. The RMP should ensure that all future stormwater recharge projects continue to be designed in such a balanced manner, so that aquifer recharge efforts do not impede natural flood flows to the system.

Riverine geomorphology * The Conservancy supports Alternatives A and 0 in terms of prescribing no management measures that would alter the current geomorphic processes of the river. * The Conservancy does not support the proposal for "enhancing riverine geomorphology and bank recharge to protect base

flow values through structural and nonstructural approaches" as proposed in Alternatives Band C. The RMP fails to provide adequate documentation to substantiate the following assertions: 1) That it is feasible to increase the existing sinuosity of the river's channel, given its current geomorphic stability and the likelihood that large magnitude flood events would subsequently straighten the channel again. 2) That inducing additional sinuosity to the San Pedro River will significantly benefit riparian forest recruitment rates. 3) That inducing additional sinuosity to the San Pedro River will significantly increase aquifer recharge or improve groundwater storage.

* Hydrologic monitoring programs should include adequate staff time to not only analyze data, but also to report results and share information on a regular basis to interested partners and stakeholders, including the Technical Committee of the Upper San Pedro Partnership. There has been a lack of adequate staff to consistently fulfill these partnership and outreach functions for many years. An analysis of staffing needs will be essential to ensure that hydrologic monitoring and management needs are met, regardless of fluctuations in annual budgets.

* In Appendix I: Watershed Improvement Techniques (and recharge enhancement projects), the recharge projects being planned on the west side of the river are being developed and managed by the Cochise Conservation and Recharge Network, and are not "Laurel Lacher projects." These MAR projects are essential for protecting the SPRNCA's alluvial groundwater levels and baseflows over the next several decades, and will require the direct support and engagement of the BLM to be successful. The technical tools that have been collaboratively developed to assess groundwater sustainability through the Upper San Pedro Partnership and others (Lacher et al. 2014) as well as the most recent monitoring results for indicators of groundwater sustainability (Gungle 2016) and some of the MODFLOW scenario results for future regional water management alternatives, should be presented in a separate Appendix that address groundwater management.

Hydrologic and riparian monitoring * The consistent collection of long-term hydrologic data provides an essential foundation for understanding the complex hydrologic system associated with the San Pedro River and its associated groundwater dependent ecosystem. The Upper San Pedro Partnership has provided a venue for collaboration and integration of regional hydrologic monitoring efforts within the Sierra Vista Sub-watershed since 1998. The primary agencies that have made contributions to these monitoring programs, in addition to the BLM, include the USGS, ARS, ADWR, Cochise County, DoD and TNC. The Nature Conservancy has also served as the lead coordinator of the wet/dry mapping project each year to quantify the length of perennial surface flows within the entire bi-national San Pedro River Basin. Both existing condition and trend data should be used to characterize hydrology, and to describe the affected environment in the RMP NEPA document. We recommend BLM utilize the suite of sustainability indicators identified by the USGS (Gungle et al. 2016), in collaboration with local partners, as a framework for their future hydrologic monitoring programs. To enable the success of future hydrologic monitoring programs, the BLM will need to allocate the necessary funding and staffing to implement such a monitoring program for the SPRNCA. This should include agency funding for the operation of the USGS streamgages located within the SPRNCA, as well as the other key indicators that make up this framework.

* The associated references cited for these assertions in the RMP include only one unpublished report, a peer-reviewed paper for addressing restoration of rivers in Vermont, and one student's Master's Thesis. However, extensive hydrologic, geomorphology and riparian ecology studies specifically conducted within the SPRNCA, offer a wealth of information that should instead be used to inform floodplain management

decisions (e.g., Stromberg 2007, Webb and Leake 2005, Leenhouts et al. 2006, Hereford and Betancourt 2009, Huckleberry et al. 2009)

Water Management Measures The rare and unique streamside habitats of the SPRNCA depend upon adequate water availability, as has been documented many times in the scientific literature (e.g., Leenhouts et al. 2006, Stromberg and Tellman 2009). Specifically, the hydrologic regime that supports these riparian and wetland communities can be characterized in terms of the flood flows, base flows, and groundwater elevations required to sustain plant communities and long-term ecosystem health. The RMP needs to more clearly address the management approach that the BLM will pursue to ensure that all three of these aspects of the hydrologic regime are adequately protected into the future. These management measures need to be both clearly defined as part of a revised preferred Alternative, as well as the Best Management Practices that will help to ensure water availability for the SPRNCA. The Conservancy offers the following specific recommendations for water management measures:

No new wells. The San Pedro River is already extensively overdrawn and suffering severe declines. Pumping more water out of the system for livestock is an unreasonable and inefficient use of precious resources.

The DRMP/EIS limits the objective of altering riverine morphology to enhance stream sinuosity (and potentially increase number and viability of ciénegas) to Alternatives B and C, but reasons for excluding that objective from Alternative D are not explained.

Suggestions to address concerns include constructing retention basins, diversion structures and artificial recharge basins to slow and retain storm water runoff and to recharge the aquifer. BLM should analyze the direct, indirect, interdependent, and interrelated impacts of BLM parcels next to the SPRNCA on its desired water quantity and quality.

In a coordination meeting between the BLM and the Herford NRCD a prominent BLM employee admitted the improvement on the Bobocomari was better than almost any other part of the SPRNCA. This statement is on tape. I would also like to refer you to Dr. Holly Rictor, PhD., of the Nature Conservancy, who is very aware of the conditions on the Bobocomari. Table 3-46 refers to a 2013 assessment on the Bobocomari. I spent a lot of time with the assessment team and I was of the understanding the Bobocomari was never formally studied although they were very supportive of the work I was doing on the Bobocomari. I was unaware of any study in 2012. I am making these statements only to correct the record.

We have been consulting with Dr. Richard Hawkins (Professor Emeritus, University of Arizona School of Natural Resources) for feedback on effectiveness of vegetation treatments in offsetting runoff and erosion. Dr. Hawkins pointed us to a paper entitled "Site and Cover Effects on Event Runoff, Joranda Experimental Range, New Mexico" published in May, 1998 in *Rangeland Management and Water Resources*, American Water Resources Association. We recommend the BLM review this paper as it relates to hydrologic response of grass vs. scrubland cover based on empirical data. Specifically, the paper notes that "cover management for grassland sites has a more profound effect on hydrologic response, and thus priority attention is required in management." This means that new vegetation treatments coupled with livestock introduction requires very careful long-term management, or the BLM risks rapid reversal of the benefits realized by the BMP.

The report also notes: "E. coli levels are highest in samples taken during flood events, when turbidity is highest. This is attributed to runoff carrying excess amounts of E. coli laden sediment from the watershed. DNA tests of E. coli have shown that sources of E. coli are both human and bovine (Coronado Resource Conservation and Development 2013)." In this context, ADEQ is interested in understanding with how new permitted activities may further compound these impairments, possibly by increasing sedimentation and/or sources of E.coli to the San Pedro River via tributary/stormwater inputs.

In support of our efforts, please note that we have significant volumes of water quality and macroinvertebrate data collected for the reach that runs through the SPRNCA, and are prepared to make this data and supporting GIS layers available to the BLM upon request.

Pending selection of a management plan, we understand BLM may increase livestock access within the SPRNCA. Please consider the current impairment of the San Pedro River for E.coli when making this decision. Specifically, published research shows that the bacterial pollution potential of bovine fecal deposits is significant. A study entitled "Fecal Coliform Release Patterns from Fecal Material of Cattle" by Richard Thelin and Gerald Gifford published in the Journal of Environmental Quality (Vol 12, no 1, January-March 1983) examined the magnitude of fecal coliform from bovine fecal deposits that were rained on by a rainfall simulator. Of interest, fecal deposits of 5 days or less released fecal coliform concentrations into water on the order of millions per 100 ml, and deposits as old as 30 days produced concentrations on the order of 40,000 / 100 ml. The fecal coliform test is really an examination of E.coli since this organism, like the pathogens Salmonella and Shigella, is an inhabitant of the intestinal tract of man and other mammals. In this context, an increase in source material or contaminated runoff reaching the San Pedro River may have an impact on the USPR water quality impairment ADEQ is trying to resolve at this time.

There must be an agreement between the United States/State of AZ regarding the water flowing north from Mexico. The BLM should review any documents regarding the flow allowed from Mexico. We do not have the water resources that Idaho has. How can you make any improvements to the SPRNCA where there is not the water available.

First, the BLM has no idea how much water is available in the river, which is actually no more than a creek because the water is held up in Mexico. It may have more water during the monsoon; however, that is not the time to measure.

Water Usage and Quality -- As stated in Section 3.2.3, Alternatives Analysis Comparison, "Alternative D is projected to use the least groundwater". This is also supported by Table 3.8. Also stated in this section, "Alternative D would improve water quality compared with Alternative A by eliminating livestock grazing within riparian areas". Additionally, from Section 3.2.3, Conclusions, "Alternative D would have the fewest impacts on reducing ground water supply and degrading water quality".

* DRMP quoted statement: "Goodrich et al. (2008) suggest that decreases in runoff are more likely a result of changes in high-intensity rainfall events in at least one tributary watershed." * DRMP quoted statement: "Hereford and Betancourt (2009) note that peak flows have decreased since 1955, possibly because of increased vegetation cover in the upland watersheds and widening of the entrenched channel." Both of these studies address reductions in surface runoff and peak flows which occur in response to rainfall events in the contributing watershed(s). They do not address baseflow reductions which depend on groundwater inputs from the regional aquifer. This important distinction should be emphasized so readers are not confused and misled. Baseflows in the San Pedro River have been reduced due

groundwater diminishment from over-withdrawals. According to USGS studies, precipitation inputs are not the reason for baseflow declines. (See previous FOR THE RECORD comments on Issue I: Water Resources).

DRMP quoted statement: "Because flows in the San Pedro River have been declining, the BLM's actions may include efforts to maximize water availability for that purpose." This statement avoids mentioning the reason for the declining baseflows; and fails to specify that baseflows are declining; not flood flows.

"The tendency of the San Pedro river to become more deeply entrenched, narrower, and somewhat less sinuous as it traverses northward through the SPRNCA, may be, in part due to the decidedly convex nature of the longitudinal profile." (Jackson 1987). Each tributary contributes naturally regulated flows of water, sediment, and nutrients, and provides temperature buffering and biotic diversity. "Let the water do the work", (Bill Zeedyk, and Van Clothier, 2009) start small (baby steps), start upstream, (tributaries before mainstem), think of phased-in rather than "one shot" approaches, use stair-step or depth/width ratios methods or software for structure spacing and placement, monitor & adjust. As a general rule-of-thumb, watershed restorations conventionally start at top of watershed/channel to secure stabilized conditions of upstream areas/reaches that drain onto and affect the worksite. Beaver dams are beneficial to the river's geomorphologic processes. Small man-made structures to help reinforce beaver dams may be acceptable in carefully selected locations and situations, but there is a higher risk that river floods could destroy them.

Introduction of structures and/or channel modifications/restorations should be considered in the tributaries only at this time; not in the San Pedro River. Only non-structural approaches should be considered for the river's mainstem at this time. Each tributary should contribute naturally regulated flows of water, sediment and nutrients to the river and provides temperature buffering and biotic diversity. Healthy tributary watersheds and riparian ecosystems help preserve the river's perennial nature by improving the form and timing of water and sediment flows within the valley. All vegetated drainages play an important role in maintaining proper hydrologic function and a dynamic ecosystem equilibrium capable of supporting a healthy riverine riparian environment and a viable economy.

Overland runoff from the tributary watersheds can be expected to become even flashier as vegetative cover continues to decrease in response to certain land uses, urbanization, and climate change predictions of hotter temperature and less rainfall.

The timing and form of hydrologic events and processes is just as important as estimates of flow quantification. The beaver (*Castor Canadensis*) is often referred to as "Nature's Hydrologist", because they very effectively "Slow the Flow". Beavers only decelerate and do not stop or accelerate flows in headwater channels. Beavers thus increase base flows and decrease peak flows; exactly what the river needs. Healthy tributary watersheds and riparian ecosystems help preserve the river's perennial nature by improving the form and timing of flows within the valley.

Widening of the entrenched river channel does NOT decrease peak flows. A wider bottomwidth decreases flow depths and flow velocities in the river channel. Peak flow is a rate of flow (e.g. cubic feet per second). It is a function of the contributing watershed - not of the conveying channel. The following two DRMP statements accurately describe the groundwater situation in the Sierra Vista Subwatershed and the SPRNCA: * DRMP quoted statement: "Groundwater extraction in the Upper San Pedro Basin has captured water from the regional aquifer that would have contributed to the San Pedro River as base

flows and riparian evapotranspiration (Corell et al. 1996)." * DRMP quoted statement: "Modeling by Pool and Dickinson (2007), updated by Lacher (2011, 2017), indicates that this capture will continue to increase in the future because current recharge, both natural and artificial, is not able to offset the groundwater pumping demand".

According to USGS studies, precipitation inputs are not the reason for these declines. Since there is no evapotranspiration from dormant riparian vegetation in the winter, evapotranspiration is not the cause for these baseflow declines either. Reduced groundwater gradients and the cone of depression are much more likely the reason for these steady baseflow declines. Long-term over-drafting of the regional aquifer is capturing groundwater flows that would otherwise reach the river. All groundwater modeling studies report continued groundwater gradient declines and a large and continually expanding cone of depression. The latest groundwater modeling studies verify declining groundwater inputs to the river. Spring flows, seep flows and wetlands within the SPRNCA are also experiencing declines. Groundwater levels in wells and the water table in the regional aquifer have been declining since pumpage of the basin began and are expected to continue to decline as existing pumpage continues and the number of uses continues to increase with population. There were a total of 8,737 wells in the Upper San Pedro Basin in 2012. The number of groundwater wells in the Upper San Pedro Basin increased by 77 percent from 1990 to 2012. The regional water table has dropped significantly where long-term over-drafting has and continues to occur.

Why is there not much mention of regional growth in the Sierra Vista subwatershed and the demand for housing which have contributed to a decrease in the availability of water resources?

"By all indications, the San Pedro River is no longer incising and is aggrading by building a floodplain and by narrowing its channel. In the context of channel evolution, those are favorable signs indicating that some reaches have achieved Proper Functioning Condition while others are moving in that direction". (NRST November 2012).

The water budget is not a good indicator of the stresses on the local groundwater system or riverine baseflows because of the distance of the Tombstone stream gage from Sierra Vista and the expanding cone of depression and because of its inherent subjectivity and uncertainties.

DRMP quoted statement: "Urban development would be a notable source of vegetation and surface disturbance (which can affect water resources) because of the size of the area affected. Erosion and overland runoff from the tributary watersheds are expected to increase as vegetation decreases in response to land uses and urbanization. High sediment yields can overwhelm riparian communities and degrade water quality". This is already occurring from several Sierra Vista urbanized watersheds, (Miller, Moson/Escapule, Coyote Wash, etc.). Several episodes of accelerated erosion, road cutting (Del Valle & Moson), excessive sedimentation, and sediment mounds at tributary confluences affecting river morphology have occurred in recent years.

"Although, prior to the 1880s, the San Pedro River through much of the SPRNCA was a cienega; it is currently evolving from a major period of channel incision where it was transformed into a high-energy, confined river system." "The San Pedro River is geomorphologically young, as evidenced by its low sinuosity and the presence of only a few large mature meanders." (Hereford 1993).

The condition of tributary watersheds must be addressed first to achieve a dynamic equilibrium and appropriate rates of water and sediment contributions to the river. The river is not likely to develop new meanders as long as it has to use its energy to balance any excessive tributary sourced sediment. Sinuosity ratios must be in balance with channel widths and depths. Because the river is entrenched most large floods are contained within its incised banks. And because of the vast difference between its diminishing base flows and the magnitude of large floods, any structures designed for inducing meandering would likely be destroyed during peak flooding.

Why is there no notable mention or emphasis of the groundwater depletions which pose the biggest threat to the river and the riparian ecosystem of the SPRNCA?

as the restoration projects take effect, then more development will make sense. Still, however, that development should be both secondary to conservation and focused on recreational and historical/archeological efforts.

Water that would be required to support livestock would be better used to maintain or increase river flow.

Aridification of the SPRNCA and the surrounding area should be the guiding issue in developing the new management plan. The current threats to the conservation area, some of which can be mitigated and others may not, strongly suggest that the management plan should not in any way include activities that increase adverse impacts on the SPRNCA, and that all management efforts should be focused on the primary purposes of the conservation area as established by the Arizona-Idaho conservation act, and maintaining its riparian values. Any activities that would not contribute to those goals and hinder their achievement should simply not be allowed, and FSD believes relevant law not only supports such a course, but would prohibit otherwise.

The San Pedro River is already extensively overdrawn and suffering severe declines. Pumping more water out of the system for livestock is an unreasonable and inefficient use of precious resources.

Average water consumption of cows is approximately 10 gals per day (1 - 2 gallons per day per 100 pounds of cow). This amounts to about 3,600+ gallons per year per cow. We already have a water shortage. If we allow water to be pumped within the SPRNCA for private ranchers' cows, how can we justify water restrictions of others in order to claim enough water to support the river?

Surely BLM staff are aware of the bacterial problems that occur in the river, promoted to a significant degree by the current presence of cattle. Adding more cattle will just degrade the river.

I especially urge you to not allow more wells in the area. This will further deplete the water table, which is critically low. Diverting San Pedro water for more cows is unreasonable and shortsighted considering the pervasive drought throughout Arizona and the Southwest.

c. We feel that BIM groundwater projects used in combination with projects in the planning stages by the San Pedro NRCD could enhance groundwater recharge, reduce erosion, enhance the original vegetative populations while reducing the invasive species. These projects would be mutually beneficial to the SPRINCA and the areas of the San Pedro NRCD within and adjacent to the project areas.

Without a fully-functioning watershed, beginning with the uplands covered by the NCA, this whole ecosystem would be imperiled. Thus, adding new grazing allotments and wells to serve livestock anywhere in the NCA would undoubtedly harm streamflows and be a major step backwards in the protection of the San Pedro riparian system.

Additionally, allowing grazing throughout most of the SPRNCA would potentially lead to increased levels of harmful bacteria such as *E. coli* due to manure being washed into the river during the monsoon season. Looking at the BLM map for Alternative C showing areas to be opened to grazing, grazing areas appear to be perilously close to the river. The San Pedro Water Sentinels already find dangerous levels of *E. coli* in the river during the monsoons in the area of the current grazing allotments. More grazing would lead to more contamination of the San Pedro River.

No #. 3.17 Table 3.8 Alternative C proposes total AUMs at 3955 (Section 2.5.11). If correct, the 24.9 acre-feet of water use from livestock given in Table 3.8 is potential loss of 0.03 cfs in the watershed. The USGS gages on the SPRNCA at Palominas (54 year period of record), Charleston (105 year), Tombstone (40 year), and the Babovomari (18 year) documented a median and mean cfs of 1.7 and 3.3, 18 and 108, 12 and 71, and 0.67 and 3.2, respectively over their period of record. Data available at www.nwis.waterdata.usgs.gov. Proposed new pastures for cattle are located in these areas of the San Pedro and Babocomari where gages are also located. The potential loss of 0.03 cfs would occur in relation to the proposed pastures and same location as gages. Loss of any cfs to cattle is not compatible with PL 100-696.

The water needed to support the introduction of cattle could be better put to use in maintaining the flow of the river and resupplying the aquifer.

The upland areas to be opened to grazing are directly linked to the riparian area. Runoff from uplands will find its way to the river, bringing with it urine and feces and the chemicals proposed to convert the wild chaparral to rangeland. Desert washes that begin in the mountains flanking the river traverse these uplands. Grazing in these areas will remove the vegetation that is accumulating there and as a result retaining runoff and recharging the aquifer. These washes will instead become drainage ditches rapidly moving water to the river, water that is down-cutting and eroding the landscape as it goes, that will quickly pass downstream. Rapid runoff will cause erosion of the washes, removing the natural water storage that vegetated washes provide. The watershed is not just the river, it is also composed of these washes.

The RMP impermissibly brushes aside managing riparian habitat to reduce water consumption reasoning "Removing riparian vegetation to a level that could increase streamflow over the short term would not be in alignment with the conservation values for which the SPRNCA was established." Page I-8. This rationale misses on three critical points. First, it focuses solely on the short term and not on long term reduction of water consumption. Second, it ignores the possibility that water conservation actions today and over the long-term beyond that set forth in the draft RMP may actually result in enhanced riparian habitat in the long-term. Third, this region has limited rainfall and water resources and is suffering a significant drought that may worsen and re-occur in the long-term. The RMP must review alternative goals, objectives and management actions that consider these factors.

The largest contributors to *E. coli* contamination of the water are human and bovine. How will additional numbers of cattle on the watershed resolve this problem? It seems more likely that *E. coli* sediment runoff would increase under Alternatives B and C.

We recommend utilizing the Stromberg Riparian Condition Class system and integrating the extensive hydrological and geomorphologic information that has been assembled for the Sierra Vista sub-watershed over the years. Proper Function Condition (PFC) for each of the 14 segments needs to reflect the depth of scientific information available for the watershed and that each segment should be evaluated in the context of the geomorphologic and known hydrologic potentials for the segment. Most importantly, the PFC analysis should minimize the use of best professional opinion and substitute available data and other objective information wherever possible. The PFC process should include the development of concise metrics for assessment of trend and what specific data should be collected to ascertain trends and segment objectives.

The 4.2 mile reach of the San Pedro River near Saint David is rated as FAR (functional at risk) in a downward trend with contributing factors being water diversion, livestock grazing and OHV use. Livestock trampling, trailing, and heavy foraging are identified factors affecting a FAR rating and downward trend on lower Babocomari River. This data does not support expanded livestock grazing on SPRNCA.

I took part in the Wet/Dry mapping of the river for several years - so I know that in June, many miles of the river bed are completely dry. Putting in 23 new wells for livestock grazing is completely irresponsible!

BLM's impact assessments should include drought and climate change. Drought or heavy rainfall could amplify the negative impacts from grazing and increased OHV use proposed in the preferred alternative. The San Pedro valley has already seen the impacts of drought combined with overgrazing (Bahre 1991; Sayre 2011). It was a nightmare for people, grasslands, the river, and cattle. The erosive effects are still easily observed in upland areas on SPRNCA. The last thing SPRNCA needs are uses that significantly increase erosion, like grazing and ORV use. Greenhouse gas emissions have led to rapid changes in global climate (IPCC 2014). In the Southwest, maximum temperatures increased over the 20th century, and minimum temperatures increased even more (Garfin et al. 2013). Trends show that we are likely headed for hotter and increasing drought (Garfin et al. 2013; Seager et al. 2007). Riparian ecosystems in the Southwest are vulnerable to climate change because warming leads to less water available for plants and wildlife in environments that are already water-limited. This could increase the risk of other undesirable conditions such as the spread of non-native plants and altered fire regimes (Webb 2017). In this Draft RMP, BLM has the opportunity and social responsibility to address climate change through science-based adaptive management, and by minimizing greenhouse gas emissions.

In an analysis of peer-reviewed literature examining the effects of grazing on riparian habitats in the arid West, Belsky et al (2009) found evidence for harmful effects of grazing on multiple aspects of water quality, stream channel morphology, hydrology, soils, and vegetation. For example, nutrient overloading in the river can create low oxygen conditions that are detrimental to aquatic life. Nutrient overloading on SPRNCA could result from a combination of more authorized cattle access nearer the river, in the river, and in washes where feces will get flushed into the river during rainstorms, and from the increases in unauthorized cattle in the river corridor as they live and defecate there.

Existing retention dams on both sides of the river south of hwy 92 have been breached. What plans will allow future aquifer recharge?

Wild and Scenic Rivers

Similarly, the agency has recognized that several river segments qualify for Wild and Scenic River classes, and has indicated which classes would be designated under which alternatives and where, but has not stated why the classes would be appropriate under one alternative but not another.

Wildland Fire and Fuels Management

The Preferred Alternative is insufficient in allowing open fires. Open fires magnify the risk of human caused fires. They also increase the likelihood that campers will use downed or even standing limbs to build fires. Dead wood provides organic matter needed for wildlife and stream channel formation. In the NCA where the goal is to enhance the vegetative cover and preserve habitat the presence of open fires would not support the purpose of the NCA. I recommend that the agency's final determination here be Alternative D on the issue of campfire.

* The BLM should explore opportunities to share staff or other resources with the USFS or local fire districts to implement prescribed fires that accomplish ecological restoration goals, reduce hazardous fuel loads at wildland/urban interface, and provide training opportunities across jurisdictional boundaries.

Graham Wildland Fire and Fuels Management * While full fire suppression measures may be necessary in parts of the SPRNCA where the urban/wildland interface occurs, other more remote areas such as the extensive grasslands south of Highway 92 would likely benefit from prescribed fire. Prescribed burn units in these types of areas may be effective if carefully planned and executed. We appreciate seeing this option included in Table 2.54 IV, 0, for Alternatives B, C, and D.

No #. 2.22, 2.23 Wildland fire management should include prescribed fire: There is an objective to "recognize fire as a natural process in fire-adapted ecosystems and use it to achieve objectives for other resources." However, there are no objectives, land use allocations, or management actions and allowable uses that address prescribed fire and these should be added. The following habitats on SPRNCA would benefit from prescribed fire: Chihuahuan desert scrub (Ahlstrand 1982), sacaton, cienega, semidesert grassland. Prescribed fire should be the preferred method for grassland restoration instead of broadcast herbicide use. Use of tebuthiuron has resulted in mass movement of herbicide and widespread off-target loss of vegetation (Eddy County NM).

Fuel load above floodplain is uncontrolled and presents significant fire hazard to your neighbors. What will you do to minimize this hazard?

The fire ladder along the sides of the river bed is uncontrolled. Wildfire can easily "crown" in these areas. What remediation or control plan do you presently have? What future goals do you have to effectively control these fires in the tall cottonwood areas?

Your immediate interface with your neighbors presents a significant fire hazard. Do you have any plans to coordinate some control measures?

BLM proposes changing its fire management policy and switching to an emphasis on fire suppression. DRMP/DEIS at ES-5. This requires prioritization of human uses above those for which the NCA was designated--riparian areas, wildlife, etc. DRMP/DEIS at 3-66. The agency must analyze whether continuing and increasing livestock grazing will cause or contribute to fire activity and suppression efforts, which could harm--rather than protect and conserve--the values for which the NCA was designated.

ten plus years of fuels have accumulated. Reducing that threat will require significant resources. Highly recommend the BLM go into some detail as how they plan to accomplish this.

I. As the founder and former leader of the San Pedro River Firewise Community, and as a 25 year resident of the urban/wildland interface zone, I am in favor of active management of the SPRNCA for fire prevention, including prescribed fire, mowing, grazing and other appropriate interventions. In fact, the firewise plan developed for the "gap" in cooperation with the Bureau of Land Management, Palominas Fire Department and other government agencies, specifically requires fuel reduction along the river in the urban/wildland interface, including mowing of buffer zones in the riparian areas such as at the Highway 92 bridge and at the end of Waters Road. A copy of the plan can be obtained from the Palominas Fire Department.

I also think that vehicles going into the area away from the current trailheads would lead to fires. A BLM intern's truck caught on fire going through high vegetation on del Valle Road a few years ago. Furthermore, fires are permitted throughout most of the year even though there is dry vegetation during most of the year. I believe the night time fire that did serious damage near Black Phoebe Pond about 4 years ago was during a time when fires were permitted. I am not sure about the recent 8 acre fire near Horsethief Wash. Since these fires were not near main roads it was difficult to get fire equipment to the fires.

During dry spells firearm discharge can initiate fires.

Table 3-21, Acres affected by Firebreaks. The counts shown in the table don't seem to add up to the total acreages shown. When I add them, the new acreage totals are quite similar for the 3 action alternatives: 480; 510; 510 acres.

I also have concern that if too much camping is allowed there may be a comparable increase in human caused fires.

Grazing presents a number of other explicit management conflicts on the SPRNCA. For instance, while an increase of palatable grasses is proposed to benefit ranchers at the expense of brushy vegetation, the potential for wildfire, a major concern in a SPRNCA increasingly encroached upon by human residences, would likely be increased. As the DRMP/EIS correctly notes, "reduction in grasses may result in decreased potential for fire ignition and spread, due to a lack of fine fuels" (3-64), but "removal of shrub communities in favor of grasslands could. . .result in long-term increases in fine fuels, which may increase the potential for fire spread and increased fire size" (3-66).

The DRMP/EIS clearly notes that "management actions" for Alternative D in Table 2.5.4 on Vegetation Management (2-13) would allow fire and herbicides in grassland and Chihuahuan Desert Scrub for invasive species, and herbicides and heavy equipment in the riparian community, but Table 2.5.6 on Wildland Fire and Management (2-23) says only that under Alternative D "In areas managed to protect wilderness characteristics. . .the minimum actions needed to suppress a wildfire" would be used, giving the impression that in such areas the minimum actions would be inadequate because they would not include heavy equipment. The disinformation is explicit in section 3.2.7 on Wildlands Fire and Fuels Management (3-67/68), where the veracity of the text turns on ambiguities in interpretation of the word "restricted": The ability to apply standard suppression methods would . . .be restricted in areas where wilderness characteristics are to be protected and Alternative D. Indirect , low-impact strategies and tactics would be applied, which would lead to a higher possibility of allowing a greater [3-68] number of acres to burn

in these areas. . . . [and] a decreased level [of protection] under Alternative D due to limitations on methods of treatment. But these denigrations of Alternative D are misleading (if not deceptive), since BLM Manual 6340 (2012) states explicitly that "under Section 4(d)(1) of the Wilderness Act. . . such measures may be taken as may be necessary in the control of fire."

In regard to fire management, the "light on the land" Alternative D approach is typically unfavorably contrasted to Alternatives B and C under which mechanical equipment is routinely used for fire management. For example, the DRMP/EIS says (3-3) that Alternative D "assumes that only prescribed fire would be used as a vegetation treatment" and later in the same chapter (3-67) that "the ability to maintain effective firebreaks may be reduced under Alternative D, where only hand treatments are permitted"; and again (3-68), that under Alternative D there would be a "decreased level" of protection. These contradictory shorthand comparisons (which turn on the ambiguity of terms like "assumes" and "may be") leave the public reader with the impression that Alternative D would not provide adequate protection. But in fact, under BLM SOP the same methods of fire management would be available as under C and D. The difference is one of emphasis or degree, not kind, and under many circumstances they would be identical.

Fire Management As with vegetation management, prescribed burns to reduce fuel load to inhibit catastrophic wildland fires are essential. The fire management program would manage all fires in accordance with resource management objectives established in this RMP based on current conditions and fire location. Firefighter and public safety is the first priority in all fire management and suppression. A response can vary from aggressive, initial, and direct action to indirect actions, based on firefighter and public safety. The RMP must tailor strategies and tactics to address areas of resource concerns. I suggest a fire management plan to restore grassland habitats.

Livestock grazing may favor tamarisk over cottonwoods and willows because the latter are more palatable (Racher and Britton 2003; Stromberg et al. 2010). Increasing tamarisk dominance has been linked to increases in fire frequency and severity, which can hasten the decline of cottonwood-willow forests (Webb 2017). Along with altered hydrological regimes, land conversion to agriculture, and drought, changing fire regimes are contributing to the widespread die-off of cottonwood-willow forests across the Southwest (Webb 2017). The loss of cottonwood seedlings and saplings that, if not eaten or trampled, would otherwise recruit on the river could impact habitat structure for wildlife, including species of special concern, and the fate of cottonwood-willow forests on SPRNCA.