

REFERENCES, ABBREVIATIONS AND GLOSSARY, AND INDEX

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ABBREVIATIONS AND GLOSSARY

ABBREVIATIONS

2D	2-Dimensional
3D	3-Dimensional
AACL	Acceptable Ambient Concentration Levels
AAPG	American Association of Petroleum Geologists
ACEC	Area of Critical Environmental Concern
ACEPM	Applicant Committed Environmental Protection Measures
AMP	Allotment Management Plan
AMS	Analysis of the Management Situation
ANC	Acid Neutralizing Capacity
ANS	Artificial Nesting Structures
AO	Authorizing Officer
APD	Application for Permit to Drill (an oil or gas well)
AQRV	Air Quality Related Values
ARPA	Archeological Resource Protection Act (of 1979)
AUM	Animal unit month
BA	Biological Assessment
BACT	Best Air Quality Control Technology
BCC	Birds of Conservation Concern
BCF	Billion cubic feet (a measure of quantity of natural gas)
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
BOP	Blowout Preventer
BTEX	Benzene, Toluene, Ethylbenzene, Isomers of Xylene
CAA	Clean Air Act (of 1970)
CEQ	Council on Environmental Quality

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (of 1980)
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second (a unit of water flow)
CHL	Combined Hydrocarbon Lease
CMAQ	Community Multiscale Air Quality
CAM _x	Comprehensive Air Quality Model with Extensions
CO	Carbon Monoxide
COA	Condition of Approval
CRMP	Cultural Resource Management Plan
CSU	Controlled Surface Use
CWA	Clean Water Act
DAP	Di-ammonium phosphate
DbA	Decibels
DEIS	Draft Environmental Impact Statement
DFC	Desired Future Condition
DMRA	Diamond Mountain Resource Area
DOE	(U.S.) Department of Energy
DOGMD	(Utah) Division of Oil, Gas and Mining
DOI	(United States) Department of the Interior
dV	deciview
DWSPZ	Drinking Water Source Protection Zone
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPCA	Energy Policy and Conservation Act (of 1975)
EPCRA	Emergency Planning and Community Right-to-know Act (SARA Title III)
EPM	Environmental Protection Measures
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act (of 1973)
ESR	Emergency Stabilization and Rehabilitation

EUR	Estimated Ultimate Recovery
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FLM	Field Land Manager
FLPMA	Federal Land Policy and Management Act (of 1976)
FO	Field Office
FR	Federal Register
FRM	Federal Reference Monitors
GAP	Geographical Analysis Program
GIS	Geographic Information Systems
H ₂ S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
hp	Horsepower (33,000 lb.ft./minute or 745.7 watts)
hr	Hour
IPAMS	Independent Petroleum Association of Mountain States
IRIS	Integrated Risk Information System
KOP	Key Observation Point
KOSLA	Known Oil Shale Leasing Area
kW	Kilowatt
Ldn	Day-Night Sound Level
LEPCs	Local Emergency Planning Committees
Leq	Equivalent Sound Level
LOP	Life of Project
MACT	Maximum Achievable Control technology
MBTA	Migratory Bird Treaty Act (of 1918)
Mcf	Thousand Cubic Feet
MEI	Maximally Exposed Individual
MFO	Moab Field Office
mg/L	Milligrams per Liter

mg/m ³	Milligrams per cubic Meter
MLA	Mineral Leasing Act (of 1920)
MLE	Most Likely Exposure
MMCF	Million cubic feet
MSA	Management of the Situation Analysis
MSDS	Material Safety Data Sheet
MSO	Mexican Spotted Owl
MW	Megawatts
N	Nitrogen
NAAQS	National Ambient Air Quality Standards
NaCl	Sodium Chloride
NAGPRA	Native American Graves Protection and Repatriation Act (of 1990)
NCDC	National Climate Data Center
NEPA	National Environmental Policy Act (of 1969)
NESHAP	National Emission Standard for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NO ₂	Nitrogen Dioxide
NOA	Notice of Availability (published in the Federal Register)
NOI	Notice of Intent (published in the Federal Register)
NOS	Notice of Staking
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRA	National Recreation Area
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRS	natural resource specialist
NSO	No Surface Occupancy (a stipulation on an oil and gas lease)
NSR	New Source Review
NSTC	National Science and Technology (Air Quality)
NTL	Notice to Lessees

NWSRS	National Wild and Scenic River System
O ₃	Ozone
OHV	Off-Highway Vehicle
OSHA	Occupational Safety and Health Administration
P&A	Plugged and Abandoned
PA	Programmatic Agreement
Pb	Lead
PDSI	Palmer Drought Severity Index
PET	Petroleum Engineering Technician
PFC	Proper Functioning Condition (of riparian/wetland areas)
PM	Particulate Matter
PM ₁₀	Particulate Matter (less than 10 microns in diameter)
PM _{2.5}	Particulate Matter (less than 2.5 microns in diameter)
ppm	Parts per million
PSD	Prevention of Significant Deterioration
PUP	Pesticide Use Proposal
RCRA	Resource Conservation and Recovery Act (of 1976)
REL	Reference Exposure Level
RfC	Reference Concentration
RFD	Reasonably Foreseeable Development
RHS	Rangeland Health Standards
RMP	Resource Management Plan (BLM land use plan under FLPMA)
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	Right of Way
S	Sulfur
SARA	Superfund Amendments and Reauthorization Act
SERC	State Emergency Response Commission
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SITLA	(Utah) School and Institutional Trust Lands Administration

SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
SPCC	Spill Prevention Control and Countermeasures
SRMA	Special Recreation Management Area
SSA	Sole Source Aquifer
SSURGO	Soil Survey Geographic (Database)
STSA	Special Tar Sand Area
SUPO	Surface Use Plan of Operations
Sw	Water Saturation
SWReGAP	Southwest Regional Geographical Analysis Program
T&E	Threatened and/or Endangered (species as per ESA of 1973)
Tcf	Trillion cubic feet
TCP	Traditional Cultural Property
TD	total depth
TES	Threatened and Endangered Species
UAAQS	Utah Ambient Air Quality Standards
UBAQS	Uinta Basin Air Quality Study
UDAQ	Utah Department of Air Quality
UDEQ	Utah Department of Environmental Quality
UDOGM	Utah Division of Oil, Gas, and Mining
UDOT	Utah Department of Transportation
UDWaR	Utah Division of Water Resources
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources
UDWS	Utah Division of Workforce Services
UEO	Utah Energy Office
µeq	Equivalent per Liter
UGS	Utah Geological Survey
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture

USDI	United States Department of the Interior
USDOI	United States Department of the Interior
USDOT	United States Department of Transportation
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTAGRC	Utah Automated Geographic Reference Center
UWC	Utah Wilderness Coalition
VFO	Vernal Field Office
VOC	Volatile Organic Compound
VRM	Visual Resource Management
WGFD	Wyoming Game and Fish Department
WIA	Wilderness Inventory Area
WRAP	Western Regional Air Partnership
WRCC	Western Regional Climate Center
WSA	Wilderness Study Area
WSR	Wild and Scenic River(s) (Act of 1973)
ϕ	Porosity
$\mu\text{g/L}$	micrograms per liter

GLOSSARY

Acre-feet: The volume of liquid or solid required to cover one acre to a depth of one foot, or 43,560 cubic feet; measure for volumes of water, reservoir rock, etc.

Active Raptor Nest: A nest documented as occupied by a raptor within the 3-year period preceding proposed construction.

Adsorb: A process by which molecules are taken up on the surface of a solid by chemical or physical action. Large amounts of gases, for example, may be adsorbed on the surface of a porous material such as charcoal.

Affected Environment: The natural, physical, and human-related environment that is sensitive to changes due to proposed actions; the environment under the administration of a land management agency.

Air Dispersion Modeling: A complex computer model that calculates ambient concentrations of air pollutants.

Allotment: A unit of land suitable and available for livestock grazing that is managed as one grazing unit.

Alluvial: Deposited by a stream.

Alluvium: Unconsolidated or poorly consolidated gravel sands and clays, deposited by streams and rivers on riverbeds, floodplains, and alluvial fans.

Ambient Concentration: The mass of a pollutant in a given volume of air. It is typically measured as micrograms of pollutant per cubic meter of air.

Ambient: The environment as it exists at the point of measurement and against which changes or impacts are measured.

Amine Unit: A facility in which "sour" natural gas is contacted with amine solutions to remove hydrogen sulfide and carbon dioxide (thus "sweetening"). The amine solutions react with the unwanted gas constituents to form other compounds that can then be removed.

Ancillary Facility: Additional support structures required to develop the mineral resource. In the case of CBD development, this consists of gas compressor facilities, disposal wells, roads, collection pipelines, and electric transmission lines.

Anhydrite: An evaporite mineral composed of calcium sulfate and found in sedimentary rocks associated with gypsum.

Animal Unit Month (AUM): A standardized measurement of the amount of forage necessary for the sustenance of one cow unit or its equivalent for 1 month. Approximately 800 pounds of forage.

Annulus: The space between the well casing and the boundary of the hole.

Antiquities: A general term for archaeological or paleontological resources that are at least 100 years of age and that tangibly represent or have the potential to yield information on historical or prehistoric cultures, or extinct plants and animals.

Aquifer: A body of rock that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

Area of Critical Environmental Concern (ACEC): Areas within the public lands where special management attention is required to: (1) protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or (2) protect life and safety from natural hazards.

Assemblage: A group of rocks grouped together by age or similar origin.

Authorizing Officer (AO): Person designated by the Agency as being in the position to speak for and commit the agency to action.

Avoidance Area: An environmentally sensitive area designated by the Agency. Authorizations would be granted only in cases where there is a prevailing need and no practical alternative exists, and then only with provisions to protect the sensitive resources.

Background (bg): Area located from 3-5 miles to infinity from viewer.

Background: The viewing area of a distance zone that lies beyond the foreground-middleground. Usually from a minimum of 3 to 5 miles to a maximum of about 15 miles from a travel route, use area, or other observer position. Atmospheric conditions in some areas may limit the maximum to about 8 miles or increase it beyond 15 miles.

Best Management Practices (BMPs): A practice or combination of practices determined by the state to be the most effective and practicable (including technological, economic and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

Big game: Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

Biotic: Pertaining to life and living organisms.

Blow Out Prevention Equipment: A series of valves on the drill rig which can close down the well in the event that the drill bit penetrates extreme pressure zones.

Bond: Financial guarantee to ensure compliance with the Mineral Leasing Act, including complete and timely plugging of wells, reclamation of lands or adversely affected surface waters, payment of royalties, assessments or penalties.

Broadcast Seeding: Distribution of seed by a fan spreader or by hand spreading.

Browse: To browse (verb) is to graze; also, browse (noun) is the tender shoots, twigs, and leaves and shrubs often used as food by livestock and wildlife.

Buffer Strip: A protective area adjacent to an area of concern requiring special attention or protection. In contrast to riparian zones, which are ecological units, buffer strips can be designed to meet varying management concerns.

Candidate Species: Any species included in the Federal Register notice of review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Carbon Dioxide (CO₂): A non-hydrocarbon, corrosive gas that occurs naturally in the gaseous phase in the natural gas reservoir, or is injected into the reservoir in connection with pressure maintenance, gas cycling, or other secondary or enhanced recovery projects.

Casing: A steel pipe which maintains the opening of a drill hole; The act of installing pipe within a well.

Catalyst: A substance that enables a chemical reaction to proceed at a usually faster rate or under different conditions than otherwise possible.

Cation: A positive ion, which in electrolysis, travels to the cathode and is discharged there.

Cavity Pump: A high pressure, low flow positive displacement pump.

Cement Bond Log: A geophysical log which confirms the continuous placement of cement within the annulus of the well, to isolate the formation of interest and to prevent commingling of different aquifers around the casing.

Central Processing Unit: A centralized site where gas compression occurs prior to transport in gas delivery lines.

Central Production Facility: All storage, separation, treating, dehydration, power supply, compression, pumping, metering, monitoring, flowline, and other equipment directly associated with gas wells.

Characteristic Landscape: The established landscape within an area being viewed. The term does not necessarily mean a naturalistic character, but may refer to features of the cultural landscape, such as a farming community, an urban landscape, or other landscape that has an identifiable character.

Clean Air Act: Public Law 84-159, established July 14, 1955, and amended numerous times since. The Clean Air Act: establishes Federal standards for air pollutants emitted from stationary and mobile sources; authorizes states, tribes and local agencies to regulate polluting emissions; requires those agencies to improve air quality in areas of the country which do not meet Federal standards; and to prevent significant deterioration in areas where air quality is cleaner than those standards. The Act also requires that all Federal activities (either direct or authorized) comply with applicable local, state, tribal and Federal air quality laws, statutes, regulations, standards and implementation plans. In addition, before these activities can take place in non-attainment or maintenance areas, the Federal agencies must conduct a Conformity Analysis (and possible Determination) demonstrating the proposed activity will comply with all applicable air quality requirements.

Closed: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

Coalbed: A seam or stratum of coal parallel to the rock stratification.

Code of Federal Regulations (CFR): The official, legal tabulation or regulations directing federal government activities.

Colluvial: Consisting of a mixture of soil and angular fragments of rock which have accumulated at the foot and on slopes of mountainsides under the influence of gravity.

Colluvium: A mixture of soil and angular fragments of rock which have accumulated at the foot and on slopes of mountainsides under the influence of gravity.

Community (plant community): An assembly of plants living together, reflecting no particular ecological status.

Community Types (vegetation): A group of plants living in a specific region under relatively similar conditions.

Compressor: Equipment (electrically or diesel-driven) used to increase the pressure on the produced gas to move it into transmission lines or into storage.

Conditions of Approval: Conditions or provisions (requirements) under which an Application for a Permit to Drill or a Sundry Notice is approved.

Conglomerate: A sedimentary rock comprised of an unstratified mixture or stratified layers of cobbles, gravel, and sand.

Coniferous: Referring to a cone-bearing, usually evergreen, tree.

Criteria Pollutants: Air pollutants for which the EPA has established State and National Ambient Air Quality Standards. These include particulate matter (PM₁₀), nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), and volatile organic compounds (VOC).

Crucial Habitat: Lands on which wildlife or plant species not federally listed as threatened or endangered depend for survival. No alternative suitable habitat is available because of some site limiting factor(s).

Crucial Winter Habitat (Range): Parts of the habitat necessary to sustain a wildlife population at critical periods of its life cycle. This is often a limiting factor on the populations, such as breeding habitat, winter habitat, etc.

Cryptobiotic (Cryptogrammic) Crusts: Biological communities that form a surface layer or crust on some soils. These communities consist of cyanobacteria (blue-green bacteria), micro fungi, mosses, lichens, and green algae and perform many important functions, including fixing nitrogen and carbon, maintaining soil surface stability, and preventing erosion. Cryptobiotic crusts also influence the nutrient levels of soils and the status and germination of plants in the desert. These crusts are slow to recover after severe disturbance, requiring 40 years or more to recolonize even small areas.

Cubic Foot: The volume of gas contained in one cubic foot of space at a standard pressure base of 14.7 psi and a standard temperature base of 60 degrees Fahrenheit.

Cultural Resources: Nonrenewable elements of the physical and human environment including archeological remains (evidence of prehistoric or historic human activities) and sociocultural values traditionally held by ethnic groups (sacred places, traditionally utilized raw materials, etc.).

Cultural Site: Any location that includes prehistoric and/or historic evidence of human use or that has important sociocultural value.

Cumulative Effects: As defined by 40 CFR 1508.7, cumulative effects are the impacts on the environment which result from the incremental impact of the action when added to other past,

present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Decibels (dBA): Units for describing amplitude of sound frequencies to which the human ear is sensitive.

Decommissioning: Generally, the removal of a facility or piece of equipment from service, or a change in status from active to inactive.

Demographic: Pertaining to the study of human population characteristics including size, growth rates, density, distribution, migration, birth rates, and mortality rates.

Desired Condition: Description of those factors which should exist within ecosystems both to maintain their survival and to meet social and economic needs.

Desorb: To restore an adsorbed substance.

Development Well: A well drilled within the known or proven productive area of an oil field with expectation of producing oil or gas from the producing reservoir.

Direct Effects: As defined by 40 CFR 1508.9, these are effects which are caused by the action and occur at the same time and place as the action; Synonymous with direct impacts.

Directional Drilling: The intentional deviation of a wellbore from vertical to reach subsurface areas off to one side from the drilling site.

Discharge: The volume of water flowing past a point per unit time, commonly expressed as cubic feet per second (cfs), gallons per minute (gpm), or million gallons per day (mgd).

Discretionary Closure: Those lands where the BLM has determined that fluid minerals leasing, even with the most restrictive stipulations, would not adequately protect other resources, values, or land uses.

Dispersed Recreation: A general term referring to recreation use outside the developed recreation sites. This includes activities such as scenic driving, hunting, hiking, OHV use, and biking.

Disposal Well: Any well used for the disposal or air, gas, water or other substance into any underground stratum.

Distance Zones: Areas of landscapes denoted by specified distances from the observer. Used as a frame of reference in which to discuss landscape characteristics or activities of man.

Disturbance: An event that changes the local environment by removing organisms or opening up an area, facilitating colonization by new, often different, organisms.

Disturbed Area: Area where natural vegetation and soils have been removed or disrupted.

Diversity: The distribution and abundance of different plant and animal communities and species within the area covered by a Land and Resource Management Plan.

Drainage: Natural channel through which water flows some time of the year. Natural and artificial means for effecting discharge of water as by a system of surface and subsurface passages.

Drill Bit: The cutting device used to drill a well. It is typically made of hardened steel, and may have industrial grade diamond components.

Drilling Mud: The circulating fluid used to bring cuttings out of the well bore, cool the drill bit, provide hole stability and pressure control. Drilling mud includes a number of additives to maintain the mud at desired viscosities and weights. Some additives which may be used are caustic, toxic, or acidic.

Earthquake: Sudden movement of the earth's crust resulting from faulting, volcanism, or other mechanisms.

Ecosystem: An interacting system of organisms considered together with their environment for example, marsh, watershed, and stream ecosystems.

Ecotone: The boundary or transition zone between adjacent plant communities, often delineating different habitat types.

Effects: Environmental consequences as a result of a proposed or alternative action. Included are direct effects, which are caused by the action and occur at the same time and place, and indirect effects, which are caused by the action and are later in time or further removed in distance but which are still reasonably foreseeable. Also referred to as impacts.

Emission: Air pollution discharge into the atmosphere, usually specified by mass per unit time.

Endangered Species: A plant or animal species whose prospects for survival and reproduction are in immediate jeopardy, as designated by the Secretary of the Interior, and as further defined by the Endangered Species Act.

Endemic: Confined naturally to a particular geographic area; often used in opposition to the word epidemic.

Environment: The aggregate of physical, biological, economic and social factors affecting organisms in an area.

Environmental Impact Statement (EIS): A detailed written statement required by the National Environmental Policy Act when an agency proposes a major federal action significantly affecting the quality of the human environment.

Environmental Justice: Executive Order 12898 (February 11, 1994) mandates Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Ephemeral Drainage: A drainage area or a stream that has no base flow. Water flows for a short time each year but only in direct response to rainfall or snowmelt events.

Erosion: Detachment or movement of soil or rock fragments by water, wind, ice, or gravity. Accelerated erosion is much more rapid than normal, natural or geologic erosion, primarily as a result of the influence of activities of man, animals, or natural catastrophes.

Escarpment: An inland cliff or steep slope, formed by the erosion of inclined strata of hard rocks, or possibly as a direct result of a fault.

Evaporation Pond: An industrial containment area designed to allow briny water to evaporate by using solar energy.

Exclusion Area: An area where no surface occupancy would be allowed. This stipulation would prevent well pads, roads, and/or ancillary facilities from being constructed in specific areas; where rights-of-way, leases, and easements would not be authorized.

Exploration: The search for economic deposits of minerals, ore, and other materials through practices of geology, geochemistry, geophysics, drilling, and/or mapping.

Fault: A fracture in bedrock along which there has been vertical and/or horizontal movement caused by differential forces in the earth's crust.

Faulting: The relative displacement of adjacent bedrock along a fracture.

Fawning Habitat: An area where big game animals usually give birth during a specific time of year.

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 the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

Federal Register: A daily publication, which reports Presidential and Federal Agency documents.

Fisheries: Streams and lakes used for fishing.

Fisheries Habitat: streams, lakes and reservoirs that support fish.

Flaring: The controlled ignition of natural gas at a well head.

Floodplain: That portion of a river valley, adjacent to the channel, which is built of recently deposited sediments and is covered with water when the river overflows its banks at flood stages.

Fluid Minerals: Oil and gas resources.

Fluvial: Comprehensive term for river processes.

Footprint: The actual surface area physically disturbed by oil and gas operations and ancillary facilities.

Forage: Vegetation used for food by wildlife, particularly big game wildlife and domestic livestock.

Forb: A broad-leaved flowering plant.

Foreground: The detailed landscape found within 0 to 0.25-0.50 mile from the viewer.

Foreground-Midground: The area visible from a travel route, use area, or other observer position to a distance of 3 to 5 miles. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape, and vegetation is apparent only in pattern or outline.

Fossil: Mineralized or petrified form from a past geologic age, especially from previously living things.

Frac Fluids: A mixture of water, guar gel, sand and pH and bacterial control chemicals used in the development of a well for fluid extraction.

Fracturing: A method of stimulating well production by increasing the permeability of the producing formation. Fracture fluids which include propping agents such as sand or glass beads are pumped into the formations under extremely high hydraulic pressure. The propping agents facilitate the formation of channels to release water and gas into well.

Fugitive Dust: Airborne particles emitted from any source other than through a stack.

Game Species: Animals commonly hunted for food or sport.

Gas Venting: The release of gas into the atmosphere following well development and prior to successful installation of the collection pipeline system.

Geographic Information System (GIS): A computer system capable of storing, analyzing, and displaying data and describing places on the earth's surface.

Geotechnical: A branch of engineering concerned with the engineering design aspects of slope stability, settlement, earth pressures, bearing capacity, seepage control, and erosion.

Grade: A slope stated in terms of feet per mile or as feet per feet (percent); the content of precious metals per volume of rock (ounces per ton).

Ground Water: All subsurface water, especially that as distinct from surface water portion in the zone of saturation.

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, but they are not considered a land use plan decision unless the plan specifies that they are mandatory.

Habitat: The place or type of site where a plant or animal naturally or normally lives and grows. Includes all biotic, climatic, and soils conditions, or other environmental influences affecting living conditions.

Habitat Diversity: The distribution and abundance of different plant and animal communities and species within a specific area.

Habitat Fragmentation: The process by which habitats are increasingly subdivided into smaller units, resulting in their increased isolation as well as loss of total habitat area.

Habitat Type: The aggregate of all areas that support or can support the same primary vegetation at climax.

Herbaceous: The plant strata which contain soft, not woody, stemmed plants that die to the ground in winter.

High-value winter range: an area that provides for "intensive" use by one or more wildlife species that, due to relatively wide distribution, does not constitute critical values but which are highly important to high-interest wildlife

Hydrogen Sulfide (H₂S): A flammable, poisonous, corrosive gas with an odor suggestive of rotten eggs, which can occur naturally in the gaseous phase in natural gas reservoirs.

Hydrologic Subarea: The contributing watershed to a specific reach of a river.

Hydrology: A science that deals with the properties, distribution, and circulation of surface and subsurface water.

Hydrostatic Testing: Testing of the integrity of a newly placed, but uncovered pipeline for leaks. The pipeline is filled with water and pressurized to operating pressures, and the pipeline is visually inspected.

Impact: A modification of the existing environment caused by an action. These environmental consequences are the scientific and analytical basis for comparison of alternatives. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

Impoundment: The accumulation of any form of water in a reservoir or other storage area.

Indian Tribe: Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status.

Indirect Effects: As defined by 40 CFR 1508.8, these are effects which are caused by the action but occur later in time or are removed in distance from the action, but are still reasonably foreseeable. Synonymous with indirect impacts.

Infiltration: The movement of water or some other liquid into the soil or rock through pores or other openings.

Infrastructure: The basic framework or underlying foundation of a community including road networks, electric and gas distribution, water and sanitation services, and facilities.

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembles to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more disciplines or BLM program interests.

Intermittent Stream: A stream which flows only at certain times of the year when it receives water from alluvial ground water, springs or from some surface source such as melting snow in mountainous areas.

Irretrievable: Applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production.

Irreversible: Applies primarily to the use of nonrenewable resources, such as minerals or cultural resources, or to those factors that are renewable only over long time spans, such as soil productivity and aspen regeneration. Irreversible also includes loss of future options.

Key Observation Point (KOP): Critical viewpoints that are usually along commonly traveled routes or at other likely observation points.

Lambing Habitat: An area where bighorn sheep deliver and nurse young during a specific time of year.

Landform: Any physical, recognizable form or feature of the Earth's surface, having a characteristic shape and produced by natural causes. Includes major features such as plains, plateaus, and mountains, and minor features, such as hills, valleys, slopes, canyons, arroyos, and alluvial fans.

Leasable Minerals: Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, sulphur, potassium, and sodium minerals, and oil, gas, and geothermal.

Lease: (1) A legal document that conveys to an operator the right to drill for oil, gas; (2) the tract of land, on which a lease has been obtained, where producing wells and production equipment are located.

Lease Notice: Provides more detailed information concerning limitations that already exist in law, lease terms, regulations, and operational orders. A Lease Notice also addresses special items the lessee would consider when planning operations, but does not impose new or additional restrictions.

Lease Stipulation: A modification of the terms and conditions on a standard lease form at the time of the lease sale.

Lek: An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

Lithic Scatter: Is a surface scatter of cultural artifacts and debris that consists entirely of lithic (i.e., stone) tools and chipped stone debris. This is a common prehistoric site type that is contrasted to a cultural material scatter, which contains other or additional artifact types such as pottery or bone artifacts, to a camp which contains habitation features, such as hearths, storage features or occupation features, or to other site types that contain different artifacts or features.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Long-Term Impacts: For the purpose of this EIS analysis, long-term effects generally last beyond the construction period.

Mesic: A habitat characterized by moderate moisture and temperature conditions and by a profusion of plant life.

Methane (CH₄): The simplest hydrocarbon; natural gas is nearly pure methane.

Middleground (mg): Area located from 0.25-0.50 to 3-5 miles from the viewer.

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

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

Mineral Materials: Materials such as common varieties of sand, stone, building stone, gravel, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Mineral Materials Act of 1947, as amended. These are also called salable minerals.

Mineral Reserves: Known mineral deposits that are recoverable under present conditions but are as yet undeveloped.

Mineral Withdrawal: A formal order that withholds federal lands and minerals from entry under the Mining Law of 1872 and closes the area to mineral location (staking mining claims) and development.

Minimize: To reduce the adverse impact of an operation to the lowest practical level.

Mitigate: To lessen the severity.

Mitigation: Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice.

Mitigation Measures: Methods or procedures that reduce or lessen the impacts of an action.

Monitor: To systematically and repeatedly watch, observe or measure environmental conditions in order to track changes.

National Ambient Air Quality Standards (NAAQS): The allowable concentrations of air pollutants in the air specified by the Federal government. The air quality standards are divided into primary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public health) and secondary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public welfare from any unknown or expected adverse effects of air pollutants).

National Environmental Policy Act of 1969 (NEPA): An act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding or the ecological systems and natural resources important to the Nation, and establishes the Council on Environmental Quality.

National Register of Historic Places (NRHP): A list, maintained by the National Park Service, of areas which have been designated as being of historical significance.

Native Species: Plants that originated in the area in which they are found, i.e., they naturally occur in that area.

Natural Gas: Those hydrocarbons, other than oil and other than natural gas liquids separated from natural gas, which occur naturally in the gaseous phase in the reservoir and are produced and recovered at the wellhead in gaseous form. Natural gas includes coalbed methane gas.

No Surface Occupancy (NSO): A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

Non-WSA Lands with Wilderness Characteristics: Lands that (1) generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially

unnoticeable; (2) have outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) have at least five thousand acres of land or are of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic, or historical value. Non-WSA lands with wilderness characteristics will be addressed in planning and includes size, the appearance of naturalness and outstanding opportunities for solitude or primitive and unconfined recreation. These characteristics are considered and managed collectively.

Noxious Weeds: A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

Occupied Habitat: An area occupied by a species during the development of this EIS.

Off-Highway Vehicle (OHV): Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

One-Hundred-Year Flood: A hydrologic event with a magnitude that has a recurrence interval of 100 years.

Operator: Any person who has taken formal responsibility for the operations conducted on the leased lands.

Ozone: A molecule containing three oxygen atoms (O₃) produced by passage of an electrical spark through air or oxygen (O₂).

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are important for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Perennial Stream: A stream or reach of a stream that flows throughout the year. Permeability – The capacity of a soil or groundwater aquifer to transmit water.

Perennial: A plant whose life cycle lasts longer than two years. The tops of herbaceous perennials die down at the end of the growing season, buds, roots, and underground portions persist.

Permeable: The property or capacity of a porous rock, sediment, or soil to transmit a liquid.

pH: The negative log₁₀ of the hydrogen ion activity in solution; a measure of acidity or basicity of a solution.

Physiographic: Pertaining to the genesis and evolution of landforms.

Pipe Stringing: Linking casing together to form a continuous string to the target formation. Twenty-foot lengths of casing are screwed together.

PM₁₀: Airborne suspended particles with an aerodynamic diameter of 10 microns or less.

PM_{2.5}: Airborne suspended particles with an aerodynamic diameter of 2.5 microns or less.

Porosity: The voids or openings in geological materials.

Prevention of Significant Deterioration (PSD): A regulatory program under the Clean Air Act (P.L. 84-159, as amended) to limit air quality degradation in areas currently achieving the National Ambient Air Quality Standards. The PSD program established air quality classes in which differing amounts of additional air pollution are allowed above a legally defined baseline level. Almost any additional air pollution would be considered significant in PSD Class I areas (certain large National Parks and Wilderness Areas in existence on August 7, 1977). PSD Class II areas allow that deterioration associated with moderate, well-controlled growth (most of the country). Although Class III areas would generally allow planned individual growth, no Class III areas have been established.

Produced Water: Formation water pumped during the development of a gas well.

Production Well: A well drilled in a known field that produces oil or gas.

Productivity: In reference to vegetation, productivity is the measure of live and dead accumulated plant materials.

Project Area: The area of land upon which an operator conducts mining operations, including the area needed for building or maintaining of roads, transmission lines, pipelines, or other means of access.

Raptor: Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, and eagles.

Reasonably Foreseeable Development Scenario (RFD): The prediction of the type and amount of oil, gas and other mineral activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

Recharge: Replenishment of the water supply in an aquifer through the outcrop or along fracture lines.

Reciprocating Pump: A pump with a plunger that moves up and down in the well bore. The plunger has a valve in it that opens on the downstroke and closes on the upstroke thus mechanically lifting water or gas in the well.

Reclamation: The process of restoring disturbed areas using any of several methods; recontouring, spreading topsoil or growth medium, seeding, and planting, among others.

Recontouring: Restoration of the natural topographic contours by reclamation measures, particularly in reference to roads.

Record of Decision (ROD): A document signed by a responsible official recording a decision that was preceded by the preparing of an environmental impact statement.

Recreational River Areas: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Relict: A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed. [a remnant of pristine natural vegetation]

Reserve Pit: A pit prepared on a well pad prior to drilling to use for waste water retention, evaporation and disposal. Waste waters will have a fine solids component.

Reserves: Identified resources of mineral-bearing rock from which the mineral can be extracted profitably with existing technology and under present economic conditions.

Residuum: Unconsolidated material which accumulates by weathering of parent material in place.

Resources (geologic): Reserves plus all other mineral deposits that may eventually become available – either known deposits that are not recoverable at present, or unknown deposits, that may be inferred to exist but have not yet been discovered.

Right-of-Way (ROW): A ROW grant is an authorization to use a specific piece of public land for a specific project, such as roads, pipelines, transmission lines, and renewable energy and communication sites. The grant authorizes rights and privileges for a specific use of the land for a specific period of time.

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, adjacent 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—Properly Functioning Condition (PFC): Riparian/wetland areas are in PFC when adequate vegetation, landform, or woody debris is present to: dissipate high-energy water flow, filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks; develop diverse fluvial geomorphology (pool and channel complexes) to provide habitat for wildlife and support greater biodiversity

Rock Art: Petroglyphs or pictographs.

Roosting: To rest or sleep in a roost. A bird will typically use the same roost over an extended period of time.

Rutting Habitat: An area where big-game species engage in breeding activities during specific times of the year.

Scoping: The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and public viewpoints.

Section 106 Compliance: The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the Federal Government be reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

Section 7 Consultation: The requirement of Section 7 of the Endangered Species Act that all federal agencies consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action might affect a federally listed species or its critical habitat.

Sediment Load: The amount of sediment (sand, silt, and fine particles) carried by a stream or river.

Sediment: Soil or rock particles that have been transported to stream channels or other bodies of water. Sediment input comes from natural sources, such as soil erosion, rock weathering, agricultural practices, or construction activities.

Sedimentary: Rock formed from fragments of pre-existing rocks (e.g. sandstone) or by precipitation from solution (e.g. limestone).

Seismic: Seismic waves are shock waves or vibrations usually generated by an earthquake. In oil and gas exploration, seismic waves are generated by creating vibrations at the ground surface. These are reflected by the various layers of rock beneath the ground and measured at the surface. Computer analysis enables a cross-section of the rock layers to be constructed thus revealing potential mineral deposits.

Sensitive Species: All species that are under status review, have small or declining populations, live in unique habitats, or need special management. Sensitive species include threatened, endangered, and proposed species as classified by the Fish and Wildlife Service and National Marine Fisheries Service.

Short-Term Impacts: For the purpose of this EIS analysis, short-term impacts are generally defined as those that would occur during the construction period.

Shut In: Refers to a well that is completed, is shown to be capable of production in paying quantities, and is not presently being operated.

Significant: An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, wither beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

Slope: The degree of deviation of a surface from the horizontal.

Special Status Species: Includes proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM State Director–designated sensitive species (see BLM Manual 6840, Special Status Species Policy).

Species of Special Concern: A native species whose population is low and limited in distribution or has suffered significant reductions because of habitat loss.

Species: Organisms that successfully reproduce among themselves and cannot reproduce successfully with other organisms.

Stipulations: Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all Federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

Strata: An identifiable layer of bedrock or sediment; does not imply a particular thickness of rock.

Strip topsoil: To salvage a specific depth of topsoil with a scraper, dozer, or grader for use in future revegetation of the site.

Substrate: Material consisting of silts, sands, gravels, boulder and woody debris found on the bottom of a stream channel.

Surface Disturbance: Activities that normally result in more than negligible disturbance to public lands and that accelerate the natural erosive process. These activities normally involve use and/or occupancy of the surface, cause disturbance to soils and vegetation, and are usually caused by motorized or mechanical actions. Surface disturbance may result from activities using earth-moving and drilling equipment; geophysical exploration; off road vehicle travel; vegetation treatments; the use of pyrotechnics and explosives; and construction of facilities like powerlines, pipelines, oil and gas wells, recreation sites, livestock facilities, wildlife waters, or new roads. Surface disturbance is not normally caused by casual use. Activities that are not typically surface disturbing include, but are not limited to, proper livestock grazing, cross-country hiking, minimum impact filming and vehicle travel on designated routes.

Sustainability: The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

Target formation: The geological association of rocks which contain the exploitable mineral reserves.

Threatened Species: Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the Federal Register.

Timing Limitation Stipulation: A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

Total Dissolved Solids (TDS): Total amount of dissolved material, organic or inorganic, contained in a sample of water.

Total Suspended Solids (TSS): Amount of undissolved particles suspended in liquid.

Transmission pipeline: A pipeline larger than gathering or collection pipelines, typically larger than 10 inches diameter, for transporting oil or natural gas over long distances.

Turbidity: A fisheries measurement of the total suspended solids in water expressed as nephelometric turbidity units (NTU).

Two-Phase Separator: A basin which accommodates the separation of different density fluids, in this case gas and produced water.

Valid Existing Rights: Valid existing rights are legal rights to use the land that were in existence prior to implementation of the decisions in the RMP. The most significant types of valid existing rights are oil and gas leases, potash and salt leases, mining claims, and right-of-way authorizations. The oil and gas leasing stipulations specified for specific areas in the RMP

would not apply to existing leases. These existing leases would be subject to the specific lease stipulations that were applied under the previous land use plan. An existing right-of-way would only be subject to the specific terms and conditions that were applied when it was authorized even if it is located within a right-of-way exclusion or avoidance area specified under the RMP.

Vegetation: All of the plants growing in and characterizing a specific area or region; the combination of different plant communities found there.

Vegetation Type: A plant community with distinguishable characteristics described by the dominant vegetation present.

Visual Resources: The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Waiver: Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

Water Quality: The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Watershed: All lands, which are enclosed by a continuous hydrologic drainage, divide and lay upslope from a specified point on a stream.

Wetlands: Areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wilderness Study Area (WSA): A designation made through the land use planning process of an area found to have wilderness character as described in Section 2C of the Wilderness Act of 1964.

Wildland Fire: Any nonstructural fire, other than prescribed fire, that occurs in the wild land.

Winter Range: The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover.

Withdrawal: An action that restricts the use of public lands by removing them from the operation of some or all of the public land or mining laws.

Woodland: A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves; all western juniper forestlands are classified as woodlands, since juniper is classified as a noncommercial species.

Workover: Well maintenance activities which require onsite mobilization of a drill rig to repair the well bore equipment (casing, tubing, rods, or pumps) or the wellhead. In some cases, a workover may involve development activities to improve production from the target formation.

INDEX

-A-

abandonment, ES-5, ES-6, 1-9, 2-1, 2-8, 2-10, 2-11, 2-15, 2-20, 2-24, 2-26, 2-27, 2-34, 2-35, 2-38, 2-41, 2-43, 2-44, 3-3, 4-69, 4-162, 4-177, 4-183, 4-245, 4-324, 4-325, 4-365, 4-366

ACEC, *see* Area of Critical Environmental Concern, 4-134, 4-139

Advisory Council on Historic Preservation, 1-9

aggradation, 4-125

Air Quality, ES-3, ES-11, 1-5, 1-7, 1-10, 2-9, 2-51, 3-2, 3-3, 3-7, 3-18, 4-4, 4-6, 4-13, 4-14, 4-16, 4-26, 4-29, 4-30, 4-31, 4-42, 4-55, 4-74, 4-253, 4-329, 4-330, 4-331, 4-352, 5-4, 5-5

alluvium, 3-37, 3-38, 3-45, 3-46, 3-47, 3-48, 3-61, 3-72, 3-73, 3-97, 3-107

alluvium, 4-263

Application for Permit to Drill (APD), ES-8, ES-13, 1-2, 1-8, 1-9, 2-7, 2-10, 2-17, 2-20, 2-28, 2-39, 4-1, 4-109, 4-151, 4-255, 4-260, 4-261

aquifer, 3-107, 3-108, 4-263

Area of Critical Environmental Concern (ACEC), ES-6, ES-7, ES-9, 2-33, 2-36, 2-41, 2-42, 2-60, 2-64, 2-65, 3-53, 3-66, 3-67, 3-68, 4-94, 4-99, 4-100, 4-103, 4-105, 4-107, 4-109, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-138, 4-139, 4-140, 4-141, 4-142, 4-143, 4-144, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-152, 4-328, 4-356, 4-357, 4-368, 4-369, 4-370

-B-

Bald eagle, ES-6, 1-8, 2-31, 2-71, 3-84, 3-85, 3-88, 4-135, 4-140, 4-143, 4-147, 4-149, 4-179, 4-180, 4-198, 4-199, 4-210, 4-211, 4-222, 4-233, 4-234, 4-238, 4-239

Best Management Practices, ES-3, 1-5, 2-22, 2-50, 4-177, 4-178, 4-238

Big free-tailed bat, 2-70, 3-81, 4-174, 4-175, 4-196, 4-197, 4-208, 4-209, 4-220, 4-232

Black-footed ferret, 3-69, 3-81

Bluehead sucker, 2-72, 3-87, 3-121, 4-182, 4-200, 4-212, 4-224, 4-236

Bonytail chub, 2-69, 3-76, 3-77, 3-121, 4-166, 4-167

Book Cliffs, ES-10, 3-1, 3-30, 3-44, 3-49, 3-61, 3-69, 3-70, 3-101, 3-106, 3-119

borehole, 2-20

Burrowing owl, 3-83, 3-87, 4-175, 4-176, 4-177, 4-197, 4-198, 4-209, 4-210, 4-221, 4-232, 4-233

-C-

Candidate species, 3-41, 3-69, 3-73, 3-75, 3-76, 4-154, 4-166, 4-190, 4-194, 4-202, 4-206, 4-214, 4-218, 4-226, 4-230, 5-4

carbon monoxide (CO), 3-18, 4-55

carrying capacity, 3-43, 3-114, 3-115, 4-293

casing, 2-19, 2-20, 2-21

cementing CEQ Regulations, 2-20

Clay reed-mustard, 2-29, 2-67, 3-69, 3-70, 4-154, 4-155, 4-156, 4-191, 4-202, 4-203, 4-214, 4-226

Coalbed methane (CBM), 4-364, 4-366, 4-373, 4-374

Code of Federal Regulations (CFR), ES-2, 1-3, 2-2, 2-3, 2-4, 2-7, 2-8, 2-9, 2-10, 2-12, 2-27, 2-32, 3-74, 4-4

colluvium, 3-45, 3-47, 3-48, 3-61

Colorado pikeminnow, 2-69, 3-76, 3-77, 3-121, 4-134, 4-139, 4-166, 4-170

Colorado Plateau, ES-10, 3-1, 3-82, 3-83, 3-84, 3-85, 3-86, 3-92, 3-93, 3-94, 3-95, 3-96, 3-101, 4-243, 4-244, 4-245, 4-247, 4-248, 4-249, 4-250, 5-2

completion activities, 4-6, 4-177

compressor, ES-6, ES-7, ES-8, ES-9, 2-15, 2-33, 2-36, 2-39, 2-42, 3-18, 3-51, 4-10, 4-22, 4-87, 4-325, 4-326, 4-365, 4-371

Conditions of Approval, ES-1, ES-13, 1-2

crucial deer winter range, 3-118, 4-316, 4-317, 4-329

Cultural Resources, ES-4, ES-11, 1-5, 1-7, 1-9, 2-3, 2-4, 2-28, 2-50, 2-52, 3-2, 3-27, 3-28, 3-30, 3-33, 3-67, 4-4, 4-56, 4-57, 4-60, 4-74, 4-132, 4-136, 4-141, 4-144, 4-147, 4-150, 4-152, 4-322, 4-328, 4-356, 4-357, 4-358, 4-364, 4-368, 4-369, 5-4, 5-5

Cumulative Effects, ES-12, 1-7, 3-122, 4-2, 4-3, 4-16, 4-29, 4-169, 4-170, 4-183, 4-322, 4-323, 4-327, 4-329, 4-330, 4-331, 4-332, 4-333, 4-334, 4-335, 4-336, 4-337, 4-338, 4-339, 4-340, 4-341, 4-342, 4-343, 4-344, 4-345, 4-346, 4-351, 4-352, 4-356, 4-357, 4-358, 4-359, 4-360, 4-361, 4-364, 4-365, 4-366, 4-367, 4-368, 4-369, 4-374, 4-378, 5-5

Cuttings, 2-19, 2-20, 4-263

-D-

Dakota-Glen Canyon aquifer, 3-107, 3-108

Deer, 2-59, 2-66, 2-78, 2-80, 2-82, 3-53, 3-68, 3-85, 3-113, 3-114, 3-115, 3-116, 3-117, 3-118, 3-119, 3-120, 3-121, 4-98, 4-102, 4-104, 4-106, 4-108, 4-135, 4-137, 4-138, 4-142, 4-145, 4-148, 4-150, 4-288, 4-289, 4-290, 4-291, 4-292, 4-293, 4-294, 4-295, 4-296, 4-299, 4-300, 4-302, 4-303, 4-305, 4-306, 4-307, 4-308, 4-309, 4-310, 4-311, 4-312, 4-313, 4-315, 4-316, 4-317, 4-329, 4-365, 4-378

Desolation Canyon, 2-84, 3-40, 3-49, 3-50, 3-51, 3-53, 3-74, 3-78, 3-108, 3-109, 3-122, 4-94, 4-318, 4-319, 4-320

Diamond Mountain Resource Area (DMRA), 1-1, 3-52, 3-67, 3-68, 3-106, 4-132, 4-134, 4-142, 4-145, 4-148, 4-150, 4-316

Dinosaur National Monument (DNM), 3-40, 3-49, 3-77, 5-1

directional drilling, ES-5, ES-8, ES-11, ES-12, 2-8, 2-27, 2-39, 2-62, 4-1, 4-9, 4-12, 4-113, 4-115, 4-116, 4-151, 4-251, 4-260

Displacement, 4-68, 4-153, 4-154, 4-164, 4-173, 4-174, 4-176, 4-178, 4-179, 4-182, 4-183, 4-188, 4-287, 4-293, 4-294, 4-295, 4-296, 4-299, 4-317, 4-377

Division of Oil, Gas, and Mining (Utah) (UDOGM), ES-8, 1-9, 1-11, 2-1, 2-8, 2-23, 2-24, 2-39, 2-47, 4-1, 5-1

Division of Oil, Gas, and Mining, 1-9, 1-11

drilling fluids, 2-5, 2-20, 2-53, 4-62, 4-65, 4-67, 4-358, 4-359

drilling, ES-5, ES-6, ES-7, ES-8, ES-9, ES-11, ES-12, 1-1, 1-4, 1-9, 1-11, 2-1, 2-5, 2-8, 2-15, 2-17, 2-19, 2-20, 2-21, 2-22, 2-26, 2-27, 2-30, 2-32, 2-34, 2-37, 2-39, 2-40, 2-41, 2-42, 2-43, 2-47, 2-50, 2-53, 2-62, 2-74, 3-82, 3-103, 3-104, 3-105, 3-110, 4-1, 4-6, 4-9, 4-12, 4-16, 4-22, 4-59, 4-62, 4-65, 4-66, 4-67, 4-69, 4-79, 4-81, 4-85, 4-91, 4-94, 4-97, 4-98, 4-101, 4-103, 4-105, 4-107, 4-111, 4-112, 4-113, 4-114, 4-115, 4-117, 4-123, 4-128, 4-133, 4-134, 4-135, 4-136, 4-139, 4-140, 4-141, 4-142, 4-143, 4-144, 4-145, 4-147, 4-148, 4-149, 4-150, 4-151, 4-153, 4-169, 4-177, 4-195, 4-207, 4-219, 4-226, 4-230, 4-241, 4-249, 4-250, 4-251, 4-253, 4-254, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260, 4-261, 4-263, 4-265, 4-266, 4-273, 4-276, 4-278, 4-279, 4-281, 4-282, 4-286, 4-288, 4-293, 4-313, 4-316, 4-317, 4-318, 4-358, 4-359, 4-366, 4-367, 4-370, 4-374, 4-376

Duchesne County, ES-1, ES-11, 1-1, 1-4, 1-9, 1-11, 2-14, 2-24, 3-1, 3-38, 3-39, 3-44, 3-48, 3-49, 3-52, 3-55, 3-56, 3-57, 3-58, 3-59, 3-60, 3-69, 3-70, 3-72, 3-73, 3-79, 4-74, 4-80, 4-111, 4-112, 4-113, 4-114, 4-115, 4-327, 5-1, 5-3

dust, ES-3, 1-5, 1-9, 2-6, 2-17, 2-19, 2-25, 2-56, 2-67, 2-68, 2-74, 3-18, 3-71, 4-6, 4-55, 4-57, 4-59, 4-80, 4-82, 4-83, 4-154, 4-155, 4-156, 4-157, 4-158, 4-159, 4-160, 4-172, 4-191, 4-192, 4-195, 4-203, 4-204, 4-207, 4-208, 4-215, 4-216, 4-219, 4-227, 4-228, 4-231, 4-238, 4-242, 4-246, 4-248, 4-249, 4-250, 4-251, 4-253, 4-356, 4-357

-E-

Elk, 2-59, 2-66, 2-79, 2-83, 3-20, 3-51, 3-68, 3-113, 3-114, 3-115, 3-117, 3-118, 3-119, 3-120, 4-29, 4-32, 4-33, 4-34, 4-35, 4-36, 4-43, 4-44, 4-45, 4-46, 4-47, 4-48, 4-98, 4-102, 4-104, 4-106, 4-108, 4-135, 4-137, 4-138, 4-142, 4-145, 4-148, 4-150, 4-288, 4-289, 4-290, 4-291, 4-292, 4-294, 4-295, 4-299, 4-301, 4-302, 4-304, 4-306, 4-307, 4-309, 4-310, 4-312, 4-313, 4-314, 4-316, 4-330, 4-332, 4-333, 4-334, 4-335, 4-336, 4-342, 4-343, 4-344, 4-347, 4-348, 4-349, 4-350, 4-351, 4-365, 4-378

Endangered Species Act (ESA), 1-8, 2-12, 3-66, 3-67, 3-69, 3-76, 3-79, 3-80, 3-84, 3-88, 4-4, 4-132, 4-134, 4-153, 4-154, 4-159, 4-160, 4-190, 4-202, 4-214, 4-225, 4-237, 5-1

Endangered species, ES-5, 1-6, 1-8, 2-12, 2-29, 2-69, 2-72, 3-41, 3-66, 3-69, 3-70, 3-73, 3-76, 3-77, 3-78, 3-81, 3-88, 4-4, 4-134, 4-139, 4-153, 4-154, 4-157, 4-166, 4-167, 4-168, 4-169, 4-170, 4-190, 4-194, 4-195, 4-202, 4-206, 4-207, 4-214, 4-218, 4-219, 4-226, 4-230, 4-237, 4-238, 4-240, 4-241, 4-271, 5-1, 5-4

endangered, 1-8

endemic, 3-77, 3-78, 3-79, 3-119

Energy Policy and Conservation Act (of 1976), ES-2, 1-3

Environmental justice, 4-4

Environmental Protection Agency (EPA), ES-12, 1-10, 2-2, 2-8, 2-9, 2-20, 2-23, 2-32, 2-47, 3-5, 3-24, 3-25, 4-2, 4-7, 4-8, 4-10, 4-11, 4-17, 4-18, 4-19, 4-20, 4-21, 4-22, 4-23, 4-26, 4-28, 4-31, 4-112, 4-134, 4-269, 4-352, 5-1

erosion, ES-4, ES-6, 1-6, 2-5, 2-9, 2-11, 2-17, 2-49, 2-63, 2-81, 3-18, 3-62, 3-63, 3-64, 3-65, 3-70, 3-71, 3-97, 3-106, 4-3, 4-55, 4-59, 4-80, 4-92, 4-117, 4-118, 4-119, 4-120, 4-122, 4-123, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-130, 4-131, 4-154, 4-157, 4-165, 4-169, 4-242, 4-245, 4-251, 4-266, 4-267, 4-268, 4-269, 4-275, 4-284, 4-285, 4-328, 4-365, 4-367, 4-372, 4-374, 4-375, 4-376

Evacuation Creek, 3-70, 3-79

Excavation, 1-10, 1-11, 2-28, 2-49, 4-57, 4-117, 4-356, 4-357

-F-

Federal Land Policy and Management Act (FLPMA), ES-2, ES-13, 1-2, 1-3, 1-4, 4-5
 Federal Onshore Oil and Gas Order No. 2, 1-4
 Federal Onshore Oil and Gas Order No. 3, 1-4
 federally listed, 2-12, 3-66, 3-69, 3-70, 3-72, 3-73, 3-76, 3-77, 3-78, 3-113, 4-132, 4-134, 4-139, 4-153, 4-154, 4-182, 4-190, 4-200, 4-202, 4-212, 4-214, 4-224, 4-226, 4-236, 4-237
 Ferruginous hawk, 2-30, 2-31, 2-71, 3-81, 3-84, 3-87, 4-177, 4-178, 4-183, 4-198, 4-210, 4-221, 4-222, 4-233, 4-238, 4-239
 fire, ES-11, 2-7, 2-20, 2-28, 2-74, 3-2, 3-58, 3-74, 3-75, 3-95, 3-98, 4-112, 4-247, 4-248, 4-249, 4-250, 4-253, 4-329, 4-352, 4-356, 4-363, 4-366, 4-368, 4-371, 4-372, 4-373, 4-377
 Flannelmouth sucker, 2-72, 3-87, 3-121, 4-168, 4-182, 4-200, 4-212, 4-224, 4-236
 floodplain, 2-70, 2-78, 3-34, 3-77, 3-78, 3-104, 3-105, 3-109, 3-112, 4-93, 4-106, 4-108, 4-130, 4-165, 4-166, 4-167, 4-168, 4-170, 4-183, 4-194, 4-195, 4-206, 4-207, 4-218, 4-230, 4-238, 4-240, 4-272, 4-273, 4-275, 4-276, 4-277, 4-278, 4-280, 4-282, 4-283, 4-285, 4-286, 4-377
 forage, 2-56, 3-43, 3-81, 3-117, 4-68, 4-82, 4-83, 4-85, 4-86, 4-98, 4-164, 4-176, 4-185, 4-186, 4-245, 4-287, 4-293, 4-294, 4-328, 4-329, 4-361, 4-362, 4-363, 4-368, 4-371, 4-372, 4-373, 4-375, 4-377
 fossils, 2-29, 2-57, 3-35, 3-44, 3-46, 3-48, 4-87, 4-89, 4-90, 4-91, 4-92
 Four Mile Wash, ES-6, ES-7, ES-9, 2-16, 2-33, 2-36, 2-42, 2-75, 3-28, 3-100, 3-104, 3-110, 3-112, 4-72, 4-73, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260, 4-273, 4-275
 fugitive dust, 1-9

-G-

gathering lines, ES-5, ES-6, ES-7, ES-9, 2-15, 2-21, 2-32, 2-36, 2-41, 4-1
 Gilsonite, 2-53, 3-36, 3-37, 3-106, 3-109, 3-118, 4-61, 4-62, 4-63, 4-64, 4-65, 4-66, 4-67, 4-327, 4-358, 4-359
 Golden eagle, 1-8, 2-30, 2-72, 3-84, 3-87, 3-88, 4-180, 4-199, 4-211, 4-222, 4-223, 4-234, 4-238, 4-239
 Graham's beardtongue, 2-66, 3-79, 3-80, 4-136, 4-142, 4-145, 4-148, 4-150, 4-172, 4-208, 4-219
 grazing allotment, 3-41, 3-43, 4-82
 grazing, ES-11, 2-54, 3-2, 3-39, 3-40, 3-41, 3-43, 3-50, 3-69, 3-70, 3-73, 3-74, 3-76, 3-79, 3-80, 3-82, 3-92, 3-95, 3-99, 3-100, 4-74, 4-82, 4-83, 4-328, 4-356, 4-361, 4-363, 4-365, 4-367, 4-369, 4-371, 4-372, 4-373, 4-378
 Greater sage-grouse, ES-6, 2-28, 4-164, 4-329, 4-371, 4-378

Green River Formation, 1-1, 3-34, 3-36, 3-37, 3-38, 3-48, 3-70, 3-79, 3-107, 4-88
 Green River, ES-1, ES-3, ES-5, ES-6, ES-7, ES-8, ES-9, ES-11, 1-1, 1-5, 2-15, 2-22, 2-33, 2-35, 2-36, 2-41, 2-47, 2-58, 2-64, 2-66, 2-69, 2-75, 2-77, 2-77, 2-81, 3-1, 3-18, 3-29, 3-34, 3-36, 3-37, 3-38, 3-40, 3-41, 3-42, 3-48, 3-51, 3-52, 3-53, 3-63, 3-66, 3-67, 3-68, 3-69, 3-70, 3-72, 3-73, 3-74, 3-76, 3-77, 3-78, 3-79, 3-81, 3-85, 3-86, 3-88, 3-89, 3-90, 3-100, 3-101, 3-102, 3-103, 3-104, 3-105, 3-106, 3-107, 3-109, 3-110, 3-111, 3-112, 3-116, 3-119, 3-121, 4-72, 4-76, 4-77, 4-78, 4-84, 4-87, 4-88, 4-93, 4-94, 4-97, 4-102, 4-104, 4-106, 4-108, 4-110, 4-124, 4-126, 4-127, 4-128, 4-131, 4-133, 4-134, 4-135, 4-138, 4-139, 4-140, 4-142, 4-143, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-152, 4-157, 4-160, 4-161, 4-165, 4-166, 4-167, 4-168, 4-169, 4-170, 4-181, 4-182, 4-183, 4-194, 4-195, 4-206, 4-207, 4-218, 4-219, 4-230, 4-238, 4-240, 4-241, 4-253, 4-255, 4-257, 4-258, 4-259, 4-260, 4-261, 4-265, 4-266, 4-267, 4-268, 4-269, 4-270, 4-271, 4-272, 4-273, 4-275, 4-276, 4-277, 4-279, 4-280, 4-281, 4-282, 4-283, 4-285, 4-286, 4-297, 4-298, 4-328, 4-362, 4-365, 4-369, 4-370, 4-375, 4-376
 groundwater, 2-5, 2-76, 3-76, 3-107, 3-108, 4-263, 4-276, 4-278, 4-281, 4-282, 4-284, 4-285, 4-286, 4-288, 4-298, 4-303, 4-306, 4-313, 4-374, 4-376

-H-

habitat fragmentation, 2-59, 2-69, 2-72, 3-71, 3-75, 3-79, 3-80, 3-81, 3-82, 3-91, 3-116, 3-117, 3-118, 3-119, 4-98, 4-110, 4-137, 4-142, 4-145, 4-148, 4-150, 4-153, 4-154, 4-156, 4-158, 4-159, 4-161, 4-163, 4-164, 4-171, 4-172, 4-173, 4-174, 4-176, 4-179, 4-182, 4-188, 4-190, 4-192, 4-195, 4-198, 4-202, 4-204, 4-207, 4-208, 4-210, 4-214, 4-216, 4-219, 4-222, 4-225, 4-227, 4-228, 4-231, 4-233, 4-236, 4-237, 4-241, 4-245, 4-287, 4-288, 4-299, 4-300, 4-301, 4-302, 4-309, 4-312, 4-317, 4-319, 4-320, 4-370, 4-377
 high-value range, 4-328
 hikers, 3-53, 4-95
 Humpback chub, 2-70, 3-76, 3-77, 3-78, 3-121, 4-166, 4-167
 hunting, 2-3, 2-59, 3-28, 3-29, 3-39, 3-49, 3-51, 3-53, 3-60, 3-116, 3-119, 4-93, 4-97, 4-98, 4-153, 4-176, 4-288, 4-294, 4-295, 4-297, 4-317, 4-365, 4-377
 hydraulic fracturing, 2-21, 2-22, 3-107
 hydrocarbon, 2-20, 2-24, 3-34, 4-167, 4-168, 4-271

-K-

Key Observation Point (KOP), 2-75, 3-103, 3-104, 3-105, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260

-L-

leases, ES-1, ES-2, ES-3, ES-5, ES-6, ES-7, ES-8, ES-9, ES-12, ES-13, 1-1, 1-2, 1-3, 1-4, 1-5, 1-9, 2-1, 2-15, 2-27, 2-32, 2-33, 2-36, 2-39, 2-41, 2-75, 3-35, 3-37, 3-66, 3-67, 3-122, 4-1, 4-61, 4-62, 4-132, 4-134, 4-135, 4-255, 4-327, 4-328, 4-358, 4-359, 4-373

Lek, ES-6, ES-7, ES-9, 2-33, 2-36, 2-41, 2-69, 3-75, 4-162, 4-163, 4-164, 4-193, 4-194, 4-205, 4-217, 4-228, 4-229, 4-240, 4-329

Lewis' woodpecker, 3-86, 4-181, 4-182, 4-200, 4-212, 4-223, 4-224, 4-235

liners, 2-19, 2-23, 2-25, 4-263

livestock, ES-11, 2-2, 2-32, 2-54, 2-55, 3-2, 3-39, 3-40, 3-41, 3-42, 3-43, 3-50, 3-69, 3-73, 3-76, 3-80, 3-82, 3-92, 3-99, 3-100, 4-4, 4-68, 4-74, 4-82, 4-83, 4-85, 4-86, 4-242, 4-322, 4-328, 4-329, 4-356, 4-359, 4-360, 4-361, 4-363, 4-364, 4-365, 4-367, 4-368, 4-369, 4-371, 4-372, 4-373, 4-374, 4-375, 4-377, 4-378, 5-4

Lower Green River, ES-6, ES-7, ES-9, 2-33, 2-35, 2-36, 2-41, 2-64, 2-66, 3-66, 3-67, 3-68, 3-70, 3-108, 3-109, 4-133, 4-134, 4-135, 4-138, 4-139, 4-140, 4-142, 4-143, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-152, 4-328, 4-365, 4-369, 4-370, 4-375

-M-

Mexican spotted owl, 2-30, 2-69, 3-73, 3-74, 4-154, 4-161, 4-162, 4-184, 4-193, 4-204, 4-205, 4-217, 4-228, 4-239

Middle Green River, 3-78

migratory birds, 1-8, 2-7, 2-72, 3-89, 3-91, 4-153, 4-185, 4-188, 4-190, 4-201, 4-202, 4-213, 4-214, 4-225, 4-236, 4-237, 4-377

mitigation, ES-4, ES-12, ES-13, 1-2, 1-5, 1-7, 2-6, 2-24, 2-62, 2-68, 2-69, 2-75, 3-45, 3-46, 3-47, 4-2, 4-3, 4-55, 4-56, 4-59, 4-60, 4-67, 4-80, 4-81, 4-85, 4-87, 4-88, 4-89, 4-92, 4-99, 4-105, 4-109, 4-113, 4-116, 4-130, 4-131, 4-133, 4-134, 4-135, 4-139, 4-141, 4-142, 4-143, 4-144, 4-145, 4-147, 4-148, 4-149, 4-151, 4-152, 4-153, 4-155, 4-157, 4-159, 4-160, 4-162, 4-165, 4-166, 4-167, 4-170, 4-171, 4-172, 4-175, 4-176, 4-177, 4-179, 4-180, 4-181, 4-182, 4-191, 4-193, 4-194, 4-198, 4-199, 4-200, 4-201, 4-205, 4-206, 4-210, 4-211, 4-212, 4-213, 4-215, 4-216, 4-217, 4-221, 4-222, 4-223, 4-224, 4-227, 4-228, 4-229, 4-233, 4-234, 4-235, 4-236, 4-237, 4-238, 4-239, 4-240, 4-241, 4-242, 4-250, 4-254, 4-255, 4-256, 4-260, 4-261, 4-268, 4-284, 4-298, 4-316, 4-320, 4-364

-N-

National Ambient Air Quality Standards (NAAQS), 2-51, 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, 4-14, 4-15, 4-16, 4-26, 4-27, 4-30, 4-31, 4-37, 4-38, 4-39, 4-40, 4-41, 4-42, 4-331, 4-337, 4-338, 4-339, 4-340, 4-341

National Register of Historic Places (NRHP), 2-28, 3-32

Native American, ES-4, ES-11, 1-5, 1-7, 3-2, 3-27, 3-28, 3-30, 3-55, 3-56, 4-4, 4-56, 4-60, 5-1

natural gas, ES-1, ES-2, ES-5, ES-6, ES-7, ES-8, ES-9, ES-11, ES-12, 1-1, 1-3, 1-4, 2-1, 2-15, 2-21, 2-28, 2-32, 2-36, 2-38, 2-41, 2-53, 2-82, 3-18, 3-34, 3-55, 3-56, 3-109, 3-113, 3-116, 4-1, 4-3, 4-61, 4-64, 4-65, 4-66, 4-67, 4-87, 4-89, 4-93, 4-94, 4-96, 4-97, 4-98, 4-99, 4-100, 4-101, 4-102, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-110, 4-167, 4-240, 4-256, 4-257, 4-261, 4-263, 4-265, 4-270, 4-271, 4-272, 4-273, 4-275, 4-277, 4-278, 4-279, 4-280, 4-281, 4-282, 4-283, 4-284, 4-285, 4-287, 4-288, 4-293, 4-297, 4-299, 4-303, 4-306, 4-307, 4-310, 4-313, 4-323, 4-356, 4-357, 4-358, 4-359, 4-364, 4-365, 4-366, 4-371, 4-372, 4-374, 4-375, 4-378

Nine Mile Canyon, ES-3, ES-4, ES-6, ES-9, ES-11, 1-5, 2-33, 2-36, 2-41, 2-52, 2-55, 2-57, 2-58, 2-58, 2-65, 2-76, 2-77, 2-78, 3-1, 3-28, 3-32, 3-34, 3-35, 3-38, 3-40, 3-49, 3-50, 3-51, 3-52, 3-53, 3-66, 3-67, 3-68, 3-73, 3-74, 3-81, 3-101, 3-102, 3-103, 3-104, 3-106, 3-109, 3-110, 3-111, 3-112, 3-116, 3-119, 3-121, 4-57, 4-58, 4-59, 4-72, 4-73, 4-75, 4-77, 4-78, 4-93, 4-94, 4-95, 4-96, 4-97, 4-100, 4-101, 4-102, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-110, 4-115, 4-135, 4-136, 4-137, 4-141, 4-142, 4-144, 4-145, 4-147, 4-148, 4-150, 4-152, 4-160, 4-161, 4-168, 4-240, 4-253, 4-255, 4-256, 4-258, 4-259, 4-260, 4-268, 4-270, 4-271, 4-272, 4-275, 4-277, 4-279, 4-281, 4-282, 4-283, 4-297, 4-322, 4-328, 4-329, 4-356, 4-357, 4-360, 4-364, 4-365, 4-366, 4-369, 4-370, 4-376, 5-2

Nine Mile Creek, ES-11, 2-58, 2-77, 2-78, 3-1, 3-73, 3-106, 3-109, 3-110, 3-111, 3-112, 3-121, 4-97, 4-102, 4-104, 4-106, 4-108, 4-110, 4-136, 4-141, 4-144, 4-148, 4-150, 4-168, 4-240, 4-268, 4-270, 4-271, 4-272, 4-275, 4-277, 4-279, 4-281, 4-282, 4-283, 4-297, 4-376

nitrogen dioxide (NO₂), 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, 4-14, 4-15, 4-16, 4-27, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-39, 4-40, 4-41, 4-42, 4-332, 4-333, 4-334, 4-335, 4-336, 4-337, 4-338, 4-339, 4-340, 4-341

Non-WSA Lands with Wilderness Characteristics, 2-84, 3-122, 4-115, 4-318, 4-319, 4-320, 4-321

NO_x, see oxides of nitrogen (NO_x), 3-18, 4-6, 4-7, 4-8, 4-10, 4-12, 4-13, 4-14, 4-15, 4-16, 4-55, 4-329
 noxious weed, 1-8, 1-9, 1-10
 noxious weeds, ES-5, 1-6, 1-8, 1-9, 1-10, 2-6, 2-11, 2-12, 2-29, 2-56, 2-67, 2-73, 3-100, 4-83, 4-133, 4-134, 4-139, 4-140, 4-142, 4-143, 4-145, 4-146, 4-148, 4-149, 4-151, 4-155, 4-156, 4-157, 4-158, 4-159, 4-160, 4-171, 4-172, 4-242, 4-246, 4-274, 4-329, 4-372

-O-

off-highway vehicle (OHV), 2-7, 2-50, 2-57, 2-59, 2-67, 2-74, 3-49, 3-50, 3-51, 3-52, 3-70, 3-80, 3-81, 3-84, 3-100, 3-105, 4-93, 4-94, 4-95, 4-98, 4-99, 4-101, 4-102, 4-104, 4-105, 4-106, 4-107, 4-108, 4-109, 4-110, 4-122, 4-154, 4-157, 4-158, 4-171, 4-172, 4-215, 4-216, 4-328, 4-360, 4-364, 4-365, 4-367, 4-368, 4-369, 4-370, 4-371, 4-373
 oil shale, 2-53, 3-36, 4-61, 4-62, 4-63, 4-64, 4-65, 4-66, 4-67, 4-327, 4-358, 4-359, 4-360, 4-361, 4-364, 4-367, 4-377
 Oxides of nitrogen (NO_x), 3-18, 3-19, 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, 4-14, 4-15, 4-16, 4-27, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-39, 4-40, 4-41, 4-42, 4-55, 4-329, 4-332, 4-333, 4-334, 4-335, 4-336, 4-337, 4-338, 4-339, 4-340, 4-341

-P-

Paleontological Resources, ES-6, 1-10, 2-6, 2-12, 2-28, 2-29, 2-50, 2-56, 3-44, 3-45, 3-46, 3-47, 3-48, 4-1, 4-87, 4-88, 4-89, 4-90, 4-91, 4-92, 4-364
 Pariette Bench, 2-16, 3-40, 3-106, 4-73
 Pariette cactus, 3-66, 3-70, 3-71, 3-72, 4-132, 4-133, 4-156, 4-157, 4-191, 4-203, 4-215, 4-226
 Pariette Draw, 2-77, 3-51, 3-53, 3-66, 3-71, 3-72, 3-100, 3-106, 3-109, 3-110, 3-111, 3-112, 4-133, 4-140, 4-146, 4-157, 4-168, 4-268, 4-269, 4-270, 4-271, 4-272, 4-273, 4-275, 4-277, 4-279, 4-280, 4-281, 4-282, 4-283, 4-297, 4-376
 Pariette Wetlands, 2-60, 2-64, 3-49, 3-51, 3-53, 3-66, 3-73, 3-89, 3-90, 3-99, 3-121, 4-94, 4-99, 4-100, 4-103, 4-105, 4-107, 4-109, 4-132, 4-133, 4-140, 4-143, 4-146, 4-149, 4-152, 4-328, 4-369, 4-370
 particulate matter (PM₁₀ and PM_{2.5}), 2-51, 3-18, 3-20, 4-6, 4-7, 4-8, 4-9, 4-10, 4-12, 4-13, 4-14, 4-15, 4-16, 4-26, 4-27, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-39, 4-40, 4-41, 4-42, 4-55, 4-253, 4-329, 4-332, 4-333, 4-334, 4-335, 4-336, 4-337, 4-338, 4-339, 4-340, 4-341
 Peregrine falcon, 2-30, 3-87, 3-88, 4-184
 pinyon-juniper, 2-63, 3-65, 3-70, 3-72, 3-79, 3-82, 3-86, 3-95, 3-101, 3-120, 4-120, 4-121, 4-125, 4-127, 4-128, 4-129, 4-181, 4-252, 4-253, 4-300, 4-302, 4-316, 4-368
 pipeline, 1-9, 1-10, 1-12

plugged, ES-5, ES-6, 2-8, 2-15, 2-20, 2-25, 4-366
 Potential Fossil Yield Classification (PFYC), 2-28, 2-57, 2-56, 3-44, 3-45, 3-47, 4-87, 4-88, 4-89, 4-90, 4-91
 power line, 3-51, 3-87, 4-324, 4-369, 4-371, 4-373, 4-374
 Prevention of Significant Deterioration (PSD), 2-51, 4-6, 4-11, 4-12, 4-13, 4-14, 4-15, 4-16, 4-26, 4-27, 4-29, 4-30, 4-31, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-39, 4-40, 4-41, 4-43, 4-253, 4-330, 4-332, 4-333, 4-334, 4-335, 4-336, 4-337, 4-338, 4-339, 4-340, 4-341, 4-346
 Proposed Action, ES-1, ES-2, ES-4, ES-5, ES-6, ES-8, ES-9, ES-10, ES-11, ES-12, ES-13, 1-1, 1-2, 1-3, 1-4, 1-5, 1-9, 2-1, 2-15, 2-16, 2-17, 2-22, 2-26, 2-27, 2-28, 2-33, 2-34, 2-35, 2-37, 2-38, 2-39, 2-40, 2-41, 2-42, 2-43, 2-44, 2-51, 2-52, 2-53, 2-54, 2-55, 2-56, 2-57, 2-58, 2-59, 2-60, 2-61, 2-62, 2-63, 2-64, 2-67, 2-68, 2-69, 2-70, 2-73, 2-74, 2-76, 2-78, 2-81, 2-82, 2-84, 2-84, 3-69, 3-79, 3-103, 3-104, 3-111, 4-1, 4-7, 4-8, 4-10, 4-12, 4-13, 4-17, 4-18, 4-23, 4-25, 4-26, 4-27, 4-28, 4-32, 4-37, 4-42, 4-43, 4-46, 4-50, 4-56, 4-57, 4-58, 4-59, 4-61, 4-62, 4-63, 4-64, 4-65, 4-66, 4-68, 4-69, 4-70, 4-72, 4-73, 4-74, 4-75, 4-76, 4-77, 4-78, 4-79, 4-82, 4-83, 4-84, 4-85, 4-86, 4-87, 4-88, 4-89, 4-90, 4-91, 4-93, 4-94, 4-95, 4-96, 4-97, 4-98, 4-99, 4-100, 4-101, 4-102, 4-103, 4-105, 4-107, 4-111, 4-112, 4-113, 4-114, 4-115, 4-117, 4-118, 4-119, 4-120, 4-121, 4-123, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-131, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-139, 4-142, 4-145, 4-150, 4-154, 4-155, 4-156, 4-157, 4-158, 4-159, 4-160, 4-161, 4-162, 4-163, 4-164, 4-165, 4-166, 4-167, 4-168, 4-169, 4-170, 4-171, 4-172, 4-173, 4-174, 4-175, 4-176, 4-177, 4-178, 4-179, 4-180, 4-181, 4-182, 4-183, 4-184, 4-185, 4-187, 4-188, 4-190, 4-191, 4-192, 4-193, 4-194, 4-195, 4-196, 4-197, 4-198, 4-199, 4-200, 4-201, 4-202, 4-203, 4-204, 4-205, 4-206, 4-207, 4-208, 4-209, 4-210, 4-211, 4-212, 4-213, 4-214, 4-215, 4-216, 4-217, 4-218, 4-219, 4-220, 4-221, 4-222, 4-223, 4-224, 4-225, 4-226, 4-227, 4-228, 4-229, 4-230, 4-231, 4-232, 4-233, 4-235, 4-236, 4-237, 4-242, 4-243, 4-244, 4-245, 4-246, 4-247, 4-248, 4-249, 4-250, 4-253, 4-254, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260, 4-261, 4-263, 4-264, 4-265, 4-266, 4-267, 4-268, 4-269, 4-270, 4-271, 4-272, 4-274, 4-275, 4-285, 4-286, 4-287, 4-288, 4-289, 4-290, 4-291, 4-292, 4-293, 4-294, 4-295, 4-296, 4-297, 4-298, 4-300, 4-301, 4-302, 4-303, 4-305, 4-309, 4-310, 4-312, 4-315, 4-319, 4-320, 4-322, 4-323, 4-329, 4-332, 4-337, 4-342, 4-347, 4-351, 4-356, 4-357, 4-358, 4-359, 4-360, 4-361, 4-362, 4-363, 4-364, 4-365, 4-366, 4-367, 4-368, 4-369, 4-370, 4-371, 4-372, 4-374, 4-375, 4-376, 4-377, 4-378

pumper, 4-23

-R-

Raptors, ES-6, ES-7, ES-9, 2-29, 2-31, 2-33, 2-35, 2-36, 2-41, 2-65, 3-67, 3-87, 3-88, 4-134, 4-135, 4-141, 4-144, 4-146, 4-147, 4-149, 4-177, 4-178, 4-183, 4-184, 4-185, 4-199, 4-201, 4-213, 4-224, 4-236, 4-238, 4-241, 4-329, 4-365, 4-371, 4-378

Razorback sucker, 2-70, 3-76, 3-78, 3-121, 4-134, 4-139, 4-166, 4-170

Reasonably Foreseeable Development (RFD), 4-323, 4-356, 4-357, 4-360, 4-364, 4-365, 4-368, 4-369, 4-370, 4-372, 4-373, 4-374, 4-377

Reasonably foreseeable, 4-3

reclamation, ES-6, 2-1, 2-3, 2-10, 2-11, 2-19, 2-25, 2-26, 2-29, 2-35, 2-38, 2-39, 2-44, 2-49, 2-50, 2-54, 2-62, 3-61, 3-62, 3-64, 3-65, 3-71, 3-72, 4-3, 4-79, 4-82, 4-86, 4-95, 4-110, 4-115, 4-117, 4-120, 4-122, 4-123, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-130, 4-171, 4-173, 4-242, 4-250, 4-251, 4-253, 4-260, 4-262, 4-287, 4-321, 4-365, 4-373

Record of Decision (ROD), ES-2, ES-12, ES-13, 1-2, 1-4, 3-36, 3-66, 3-67, 3-68, 4-3, 4-133, 4-168, 4-271, 4-322

recreation, ES-4, ES-7, ES-9, ES-11, 1-6, 1-7, 2-33, 2-42, 2-57, 2-58, 2-58, 2-60, 2-61, 3-2, 3-39, 3-40, 3-49, 3-50, 3-51, 3-52, 3-53, 3-55, 3-67, 3-73, 3-102, 3-110, 3-122, 4-29, 4-46, 4-47, 4-48, 4-68, 4-74, 4-93, 4-94, 4-95, 4-96, 4-97, 4-98, 4-99, 4-100, 4-101, 4-102, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-109, 4-110, 4-113, 4-115, 4-138, 4-144, 4-147, 4-150, 4-253, 4-318, 4-320, 4-321, 4-322, 4-328, 4-342, 4-343, 4-344, 4-356, 4-357, 4-359, 4-360, 4-361, 4-364, 4-365, 4-366, 4-367, 4-369, 4-371, 5-2, 5-4

rehabilitation, 2-11, 3-61, 3-62, 3-122, 4-117, 4-118, 4-119, 4-120, 4-125, 4-126, 4-127, 4-128, 4-131, 4-242, 4-251, 4-329

reserve pit, 2-3, 2-5, 2-7, 2-17, 2-19, 2-20, 2-24, 2-25, 2-35, 2-38, 2-43, 3-82, 4-241, 4-263

Resource Management Plan (RMP), ES-1, ES-2, ES-6, ES-7, ES-9, 1-3, 1-4, 2-33, 2-35, 2-36, 2-41, 2-42, 2-75, 3-27, 3-28, 3-33, 3-34, 3-52, 3-66, 3-67, 3-68, 3-102, 3-113, 4-56, 4-60, 4-67, 4-80, 4-81, 4-85, 4-130, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-138, 4-142, 4-145, 4-148, 4-150, 4-177, 4-178, 4-238, 4-239, 4-240, 4-241, 4-251, 4-255, 4-261, 4-285, 4-316, 4-322, 4-327, 4-328, 4-329, 4-373

right-of-way (ROW), ES-13, 1-2, 1-8, 1-9, 1-12, 2-6, 2-17, 3-39, 4-57, 4-132, 4-134, 4-135, 4-356, 4-360

riparian, ES-11, 2-3, 2-64, 2-68, 2-69, 2-78, 2-81, 3-2, 3-41, 3-53, 3-66, 3-67, 3-73, 3-74, 3-75, 3-76, 3-81, 3-82, 3-83, 3-85, 3-86, 3-88, 3-89, 3-90, 3-93, 3-98, 3-99, 3-100, 3-103, 3-104, 3-109, 3-112,

3-116, 3-121, 4-5, 4-99, 4-105, 4-132, 4-133, 4-134, 4-139, 4-140, 4-142, 4-143, 4-145, 4-146, 4-148, 4-149, 4-150, 4-151, 4-152, 4-160, 4-165, 4-179, 4-181, 4-192, 4-194, 4-198, 4-204, 4-206, 4-210, 4-216, 4-218, 4-222, 4-228, 4-229, 4-234, 4-238, 4-240, 4-244, 4-245, 4-247, 4-248, 4-249, 4-250, 4-251, 4-263, 4-274, 4-278, 4-280, 4-282, 4-284, 4-285, 4-286, 4-297, 4-305, 4-309, 4-312, 4-328, 4-365, 4-369, 4-371, 4-374, 4-375, 4-376, 4-377, 4-378, 5-4

roadless, 3-50, 3-101, 4-100, 4-241, 4-317, 4-320

Roundtail chub, 2-72, 3-86, 3-121, 4-182, 4-200, 4-212, 4-224, 4-236

royalties, ES-2, 1-1, 1-3, 3-58, 3-59, 4-111, 4-115, 4-323

runoff, ES-4, 1-6, 2-5, 2-10, 2-23, 3-63, 3-64, 3-78, 3-111, 4-122, 4-123, 4-126, 4-127, 4-129, 4-130, 4-269, 4-274, 4-278, 4-284, 4-374, 4-376

-S-

Sage grouse, ES-6, ES-7, ES-9, 2-28, 2-31, 2-33, 2-35, 2-36, 2-41, 2-69, 3-74, 3-75, 3-120, 4-98, 4-162, 4-163, 4-164, 4-193, 4-194, 4-205, 4-217, 4-228, 4-229, 4-240, 4-297, 4-329, 4-371, 4-378

sagebrush, 2-31, 2-63, 3-65, 3-70, 3-75, 3-79, 3-82, 3-83, 3-84, 3-85, 3-93, 3-94, 3-95, 3-96, 3-97, 3-98, 3-101, 3-104, 3-118, 3-120, 4-120, 4-121, 4-125, 4-127, 4-128, 4-129, 4-163, 4-164, 4-240, 4-242, 4-243, 4-244, 4-245, 4-247, 4-248, 4-249, 4-250, 4-253, 4-300, 4-302, 4-329, 4-368

salinity, 3-65

Sand Wash, 2-16, 2-55, 3-40, 3-41, 3-42, 3-51, 3-53, 3-70, 3-71, 3-72, 3-80, 3-101, 3-110, 3-112, 4-72, 4-73, 4-76, 4-77, 4-78, 4-84, 4-94, 4-96, 4-273, 4-275, 4-360, 4-362

School and Institutional Trust Lands Administration (SITLA), 1-9

sediment, 2-5, 2-63, 2-68, 2-77, 3-63, 3-111, 4-120, 4-122, 4-123, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-130, 4-131, 4-158, 4-169, 4-170, 4-183, 4-195, 4-207, 4-219, 4-230, 4-266, 4-267, 4-268, 4-269, 4-274, 4-275, 4-277, 4-278, 4-279, 4-281, 4-283, 4-284, 4-375, 4-376

seismic, ES-5, 1-1, 2-15, 4-57

Sensitive plant species, 3-79, 4-237

Sensitive species, ES-3, ES-6, ES-7, ES-9, ES-11, ES-12, 1-4, 2-3, 2-8, 2-20, 2-22, 2-27, 2-28, 2-30, 2-32, 2-36, 2-41, 2-50, 2-72, 3-20, 3-47, 3-69, 3-74, 3-78, 3-79, 3-80, 3-81, 3-82, 3-84, 3-86, 3-87, 3-88, 3-103, 3-113, 3-119, 4-1, 4-29, 4-30, 4-49, 4-57, 4-60, 4-87, 4-88, 4-101, 4-107, 4-117, 4-119, 4-125, 4-128, 4-153, 4-154, 4-159, 4-170, 4-177, 4-182, 4-183, 4-188, 4-190, 4-195, 4-200, 4-201, 4-202, 4-207, 4-212, 4-213, 4-214, 4-219, 4-224, 4-225, 4-230, 4-236, 4-237, 4-239, 4-240, 4-

- 241, 4-256, 4-276, 4-282, 4-302, 4-330, 4-346, 4-368
- Short-eared owl, 3-85, 4-181, 4-185, 4-199, 4-200, 4-211, 4-212, 4-223, 4-235
- Shrubby reed-mustard, 2-29, 2-65, 2-67, 3-69, 3-70, 3-119, 4-136, 4-137, 4-142, 4-145, 4-148, 4-150, 4-155, 4-156, 4-191, 4-203, 4-215, 4-226, 4-238
- SITLA, 1-9
- slope, 2-5, 2-9, 2-17, 3-27, 3-46, 3-62, 3-63, 3-74, 3-99, 3-103, 3-106, 4-117, 4-122, 4-130, 4-239, 4-285
- Socioeconomics, ES-4, 1-6, 1-7, 3-55, 4-4, 4-111, 4-366, 5-4
- soils, ES-4, ES-11, 1-6, 2-2, 2-4, 2-5, 2-6, 2-7, 2-10, 2-17, 2-19, 2-25, 2-28, 2-32, 2-49, 2-50, 2-62, 2-63, 2-64, 2-70, 2-77, 2-81, 3-2, 3-18, 3-41, 3-45, 3-46, 3-47, 3-61, 3-62, 3-63, 3-64, 3-65, 3-66, 3-69, 3-70, 3-71, 3-72, 3-79, 3-92, 3-95, 3-96, 3-97, 3-98, 3-100, 3-104, 3-106, 3-111, 4-2, 4-3, 4-5, 4-55, 4-57, 4-59, 4-80, 4-117, -119, 4-120, 4-122, 4-123, 4-124, 4-125, 4-126, 4-127, 4-128, 4-129, 4-130, 4-131, 4-132, 4-133, 4-134, 4-139, 4-140, 4-142, 4-143, 4-145, 4-146, 4-148, 4-149, 4-150, 4-154, 4-155, 4-158, 4-159, 4-166, 4-169, 4-171, 4-194, 4-195, 4-206, 4-207, 4-218, 4-219, 4-230, 4-241, 4-242, 4-245, 4-251, 4-252, 4-267, 4-269, 4-274, 4-275, 4-277, 4-278, 4-279, 4-280, 4-281, 4-282, 4-283, 4-284, 4-323, 4-328, 4-356, 4-365, 4-367, 4-368, 4-372, 4-373, 4-374, 4-375, 4-376
- spacing patterns, ES-6, ES-7, ES-9, 2-8, 2-28, 2-33, 2-36, 2-41, 2-42, 2-49, 2-50, 2-62, 4-115, 4-373
- Special Designations, ES-4, 1-6, 1-7, 3-66, 4-5, 4-132, 4-328, 4-365, 4-368, 5-4, 5-5
- Special Status Species, ES-6, ES-11, 1-7, 2-29, 2-50, 2-72, 2-81, 3-2, 3-41, 3-66, 3-67, 3-69, 3-79, 3-87, 3-113, 3-120, 3-121, 4-4, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-139, 4-140, 4-141, 4-142, 4-143, 4-144, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-152, 4-153, 4-154, 4-155, 4-156, 4-158, 4-159, 4-160, 4-169, 4-171, 4-172, 4-183, 4-201, 4-213, 4-224, 4-236, 4-237, 4-241, 4-265, 4-269, 4-297, 4-298, 4-328, 4-329, 4-369, 4-370, 4-371, 5-4, 5-5
- Spotted bat, 3-82, 3-83, 4-175, 4-197, 4-209, 4-220, 4-232
- State of Utah, ES-1, ES-8, ES-12, 1-1, 1-3, 1-4, 1-9, 2-1, 2-7, 2-20, 2-39, 2-51, 3-1, 3-52, 3-55, 3-56, 3-57, 3-58, 3-59, 3-60, 3-69, 3-79, 3-81, 3-92, 3-106, 3-110, 3-111, 4-1, 4-11, 4-16, 4-17, 4-31, 4-68, 4-80, 4-112, 4-153, 4-170, 4-182, 4-195, 4-207, 4-219, 4-230, 5-1
- stormwater, 1-11, 4-268, 4-284
- strutting grounds, 2-31, 2-35, 4-163
- surface disturbance, ES-4, ES-6, ES-8, ES-10, ES-13, 1-2, 1-5, 2-6, 2-15, 2-16, 2-26, 2-27, 2-28, 2-32, 2-33, 2-35, 2-36, 2-37, 2-39, 2-42, 2-44, 2-49, 2-50, 2-52, 2-53, 2-56, 2-60, 2-63, 2-74, 2-78, 2-84, 3-45, 3-61, 3-73, 3-101, 4-1, 4-56, 4-57, 4-58, 4-59, 4-62, 4-67, 4-68, 4-69, 4-75, 4-76, 4-78, 4-79, 4-87, 4-89, 4-90, 4-91, 4-93, 4-94, 4-95, 4-96, 4-97, 4-99, 4-101, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-109, 4-114, 4-117, 4-121, 4-123, 4-125, 4-127, 4-128, 4-129, 4-131, 4-132, 4-133, 4-134, 4-136, 4-146, 4-147, 4-154, 4-157, 4-158, 4-159, 4-163, 4-164, 4-165, 4-171, 4-172, 4-176, 4-177, 4-178, 4-179, 4-180, 4-181, 4-182, 4-183, 4-186, 4-192, 4-193, 4-198, 4-199, 4-200, 4-201, 4-204, 4-205, 4-210, 4-211, 4-212, 4-213, 4-216, 4-217, 4-221, 4-222, 4-223, 4-224, 4-225, 4-227, 4-228, 4-229, 4-233, 4-234, 4-235, 4-236, 4-238, 4-239, 4-240, 4-246, 4-248, 4-249, 4-250, 4-251, 4-253, 4-254, 4-255, 4-256, 4-257, 4-258, 4-259, 4-260, 4-261, 4-267, 4-269, 4-274, 4-278, 4-282, 4-284, 4-286, 4-287, 4-288, 4-293, 4-294, 4-295, 4-296, 4-303, 4-304, 4-305, 4-306, 4-307, 4-308, 4-313, 4-314, 4-317, 4-319, 4-320, 4-321, 4-323, 4-324, 4-328, 4-356, 4-357, 4-360, 4-364, 4-365, 4-366, 4-367, 4-368, 4-369, 4-370, 4-371, 4-372, 4-373, 4-374, 4-375, 4-376, 4-377, 4-378
- surface water, 1-11, 2-5, 2-9, 2-24, 2-76, 3-19, 3-61, 3-108, 3-110, 4-119, 4-240, 4-263, 4-265, 4-266, 4-269, 4-270, 4-273, 4-276, 4-277, 4-279, 4-281, 4-283, 4-284, 4-285, 4-286, 4-298, 4-374, 4-375, 4-376

-T-

- tar sand, 2-53, 3-34, 3-35, 3-36, 4-61, 4-62, 4-64, 4-65, 4-66, 4-67, 4-327, 4-358, 4-359, 4-360, 4-361, 4-364, 4-367, 4-377
- taxes, ES-2, 1-3, 3-58, 3-59, 3-60, 4-111, 4-112, 4-323
- Threatened species, ES-5, 1-6, 1-8, 2-4, 2-12, 2-29, 3-41, 3-66, 3-68, 3-69, 3-70, 3-72, 3-73, 3-76, 3-79, 3-84, 3-88, 4-4, 4-132, 4-153, 4-154, 4-157, 4-166, 4-190, 4-194, 4-202, 4-206, 4-214, 4-218, 4-226, 4-230, 4-237, 4-238, 5-4
- Threatened, endangered, and sensitive species, ES-5, 1-6, 1-7, 1-8, 2-3, 2-4, 2-12, 2-29, 2-69, 2-72, 3-41, 3-66, 3-68, 3-69, 3-70, 3-72, 3-73, 3-76, 3-77, 3-78, 3-79, 3-80, 3-81, 3-82, 3-84, 3-86, 3-88, 4-3, 4-4, 4-5, 4-132, 4-134, 4-139, 4-153, 4-154, 4-157, 4-166, 4-167, 4-168, 4-169, 4-170, 4-182, 4-188, 4-190, 4-194, 4-195, 4-202, 4-206, 4-207, 4-214, 4-218, 4-219, 4-225, 4-226, 4-230, 4-237, 4-238, 4-240, 4-241, 4-271, 5-1, 5-4
- timing, 2-29, 3-41, 3-118, 4-82, 4-153, 4-162, 4-174, 4-183, 4-287, 4-293, 4-294, 4-295, 4-370
- Transportation, ES-5, 1-6, 1-7, 1-10, 1-11, 2-7, 2-16, 2-19, 2-22, 3-5, 3-32, 3-39, 3-40, 3-54, 3-55, 3-58, 4-58, 4-59, 4-68, 4-69, 4-72, 4-74, 4-75, 4-76, 4-77, 4-78, 4-79, 4-80, 4-88, 4-94, 4-96, 4-110, 4-

112, 4-188, 4-239, 4-287, 4-325, 4-326, 4-327, 4-360, 4-361, 5-4

-U-

U.S. Fish and Wildlife Service (USFWS), 1-8, 2-12, 2-31, 3-69, 3-70, 3-71, 3-72, 3-73, 3-74, 3-76, 3-77, 3-78, 3-79, 3-80, 3-84, 3-85, 3-90, 3-113, 3-120, 4-29, 4-153, 4-157, 4-159, 4-160, 4-161, 4-162, 4-169, 4-170, 4-237, 4-239, 4-298, 4-330, 5-3

Uinta Basin hookless cactus, 2-29, 2-64, 2-65, 2-65, 3-66, 3-67, 3-68, 3-70, 3-71, 3-72, 4-132, 4-133, 4-134, 4-135, 4-136, 4-140, 4-141, 4-143, 4-144, 4-146, 4-147, 4-148, 4-149, 4-150, 4-153, 4-157, 4-158, 4-159, 4-192, 4-203, 4-204, 4-216, 4-227

Uinta Basin, ES-3, ES-10, ES-11, 1-5, 1-8, 1-9, 2-29, 2-47, 2-61, 2-61, 2-64, 2-65, 2-65, 2-68, 2-76, 3-1, 3-3, 3-4, 3-18, 3-28, 3-29, 3-30, 3-31, 3-32, 3-34, 3-36, 3-39, 3-44, 3-49, 3-53, 3-55, 3-56, 3-61, 3-66, 3-67, 3-68, 3-70, 3-71, 3-72, 3-73, 3-79, 3-86, 3-90, 3-94, 3-95, 3-101, 3-106, 3-107, 3-108, 3-110, 3-111, 3-118, 4-10, 4-23, 4-61, 4-63, 4-90, 4-112, 4-113, 4-114, 4-116, 4-125, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-140, 4-141, 4-143, 4-144, 4-146, 4-147, 4-148, 4-149, 4-150, 4-153, 4-157, 4-158, 4-159, 4-160, 4-163, 4-192, 4-203, 4-204, 4-216, 4-227, 4-238, 4-251, 4-263, 4-264, 4-276, 4-278, 4-281, 4-323, 4-356, 4-359, 4-364, 4-376, 5-2

Uinta Formation, 3-34, 3-35, 3-37, 3-38, 3-47, 3-48, 3-71, 3-108, 4-87, 4-88

Uinta-Animas aquifer, 3-107, 3-108

Uintah County, ES-1, ES-11, 1-1, 1-4, 1-9, 1-11, 1-12, 2-14, 3-1, 3-35, 3-36, 3-38, 3-39, 3-44, 3-48, 3-49, 3-52, 3-55, 3-56, 3-57, 3-58, 3-59, 3-60, 3-69, 3-70, 3-73, 3-79, 3-100, 4-74, 4-80, 4-111, 4-112, 4-113, 4-114, 4-115, 4-322, 4-323, 5-1, 5-3

United States Geological Survey (USGS), 3-34, 3-48, 3-81, 3-83, 3-84, 3-86, 3-92, 3-100, 3-107, 3-108, 3-110, 4-120

Untermann daisy, 2-66, 2-70, 3-79, 4-136, 4-137, 4-142, 4-145, 4-148, 4-150, 4-170, 4-171, 4-172, 4-195, 4-196, 4-207, 4-219, 4-230, 4-231

upland, 3-29, 3-41, 3-97, 3-107, 3-113, 3-120, 4-134, 4-139, 4-140, 4-142, 4-143, 4-145, 4-146, 4-148, 4-149, 4-151, 4-274, 4-282, 4-297, 4-305, 4-308, 4-309, 4-311, 4-315, 4-357, 4-375

Utah Division of Water Resources (UDWaR), 3-106, 3-107, 3-108, 4-263, 4-376

Utah Division of Wildlife Resources (UDWR), 2-29, 2-31, 2-79, 2-79, 2-80, 2-80, 2-82, 2-83, 2-84, 2-83, 2-84, 2-83, 2-84, 2-83, 2-84, 2-83, 2-84, 3-70, 3-72, 3-73, 3-74, 3-75, 3-77, 3-78, 3-79, 3-80, 3-81, 3-82, 3-83, 3-84, 3-85, 3-86, 3-87, 3-88, 3-89, 3-106, 3-113, 3-115, 3-116, 3-117, 3-118, 3-119, 3-120, 4-162, 4-163, 4-164, 4-177, 4-178, 4-181, 4-188, 4-190, 4-193, 4-205, 4-217, 4-229, 4-287,

4-288, 4-290, 4-292, 4-293, 4-294, 4-295, 4-296, 4-299, 4-300, 4-301, 4-302, 4-303, 4-304, 4-305, 4-306, 4-307, 4-308, 4-309, 4-310, 4-311, 4-312, 4-313, 4-314, 4-315, 4-316, 5-1

Ute ladies'-tresses, 3-73, 4-160, 4-192, 4-204, 4-216, 4-228

Ute Tribe, ES-3, 1-5, 3-56, 3-71, 3-118, 5-3

-V-

Vernal Field Office (VFO), ES-1, ES-2, 1-1, 1-2, 1-4, 3-27, 3-36, 3-41, 3-52, 3-53, 3-74, 3-113, 3-114, 3-121, 4-2, 4-135, 4-136, 4-141, 4-144, 4-147, 4-149, 4-184, 4-254, 4-322, 4-323, 4-324, 4-356, 4-358, 4-360, 4-361, 4-364, 4-366, 4-367, 4-369, 4-370, 4-371, 4-373, 4-374, 4-377, 5-3

Vernal, ES-1, ES-3, ES-6, ES-7, ES-9, ES-11, 1-1, 1-3, 1-4, 1-5, 2-33, 2-35, 2-36, 2-41, 2-42, 3-1, 3-27, 3-28, 3-33, 3-34, 3-35, 3-36, 3-37, 3-40, 3-41, 3-50, 3-51, 3-52, 3-53, 3-55, 3-58, 3-60, 3-66, 3-67, 3-68, 3-74, 3-102, 3-113, 3-114, 3-121, 4-2, 4-56, 4-60, 4-61, 4-67, 4-72, 4-80, 4-81, 4-85, 4-96, 4-101, 4-104, 4-106, 4-108, 4-130, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-138, 4-141, 4-144, 4-147, 4-149, 4-150, 4-177, 4-178, 4-184, 4-238, 4-239, 4-240, 4-241, 4-251, 4-254, 4-285, 4-316, 4-322, 4-323, 4-324, 4-327, 4-328, 4-329, 4-356, 4-358, 4-360, 4-361, 4-364, 4-366, 4-367, 4-369, 4-370, 4-371, 4-373, 4-374, 4-377, 5-1, 5-2, 5-3

viewpoint, 3-104, 3-105, 4-255, 4-257, 4-258, 4-259, 4-260

Visual Resource Management, ES-7, 2-33, 4-328

-W-

Wasatch Formation, ES-1, ES-5, ES-10, 1-1, 2-15, 2-22, 2-48, 3-1, 3-3, 3-18, 3-35, 3-44, 3-49, 3-61, 3-85, 3-94, 3-95, 3-96, 3-101, 3-106, 3-107, 3-118

water quality, ES-5, ES-11, 1-6, 2-48, 2-50, 3-2, 3-41, 3-62, 3-107, 3-110, 3-111, 4-3, 4-120, 4-153, 4-165, 4-270, 4-273, 4-365, 4-370, 4-374, 4-375

water rights, 1-11

well pad, ES-5, ES-6, ES-7, ES-8, ES-9, ES-10, ES-12, ES-13, 1-2, 2-1, 2-5, 2-10, 2-11, 2-15, 2-16, 2-17, 2-18, 2-19, 2-25, 2-30, 2-33, 2-34, 2-35, 2-36, 2-37, 2-39, 2-40, 2-41, 2-42, 2-43, 2-44, 2-50, 2-53, 2-54, 2-57, 2-58, 2-76, 2-75, 2-78, 2-80, 2-81, 3-51, 3-64, 3-70, 3-71, 3-80, 3-104, 3-105, 4-6, 4-23, 4-57, 4-58, 4-59, 4-68, 4-69, 4-79, 4-87, 4-94, 4-95, 4-96, 4-98, 4-100, 4-101, 4-102, 4-103, 4-105, 4-107, 4-122, 4-123, 4-124, 4-128, 4-129, 4-130, 4-133, 4-134, 4-135, 4-136, 4-139, 4-140, 4-141, 4-142, 4-143, 4-144, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-151, 4-154, 4-157, 4-159, 4-161, 4-165, 4-171, 4-173, 4-176, 4-183, 4-184, 4-185, 4-188, 4-193, 4-196, 4-197, 4-198, 4-199, 4-201, 4-205, 4-208, 4-209, 4-210, 4-212, 4-213, 4-

- 217, 4-220, 4-221, 4-222, 4-223, 4-228, 4-231, 4-232, 4-233, 4-234, 4-235, 4-239, 4-240, 4-241, 4-242, 4-247, 4-248, 4-249, 4-250, 4-251, 4-253, 4-254, 4-256, 4-257, 4-258, 4-259, 4-260, 4-261, 4-267, 4-268, 4-269, 4-275, 4-276, 4-277, 4-278, 4-279, 4-280, 4-281, 4-282, 4-283, 4-284, 4-285, 4-288, 4-293, 4-294, 4-295, 4-296, 4-299, 4-303, 4-304, 4-307, 4-308, 4-310, 4-311, 4-313, 4-314, 4-316, 4-317, 4-358, 4-365, 4-369, 4-371, 4-373, 4-374, 4-377
- Western Tavaputs Plateau, ES-10, 3-1, 3-3, 3-5, 3-28, 3-31, 3-44, 3-61, 3-94, 3-106, 4-326
- Western yellow-billed cuckoo, 3-75, 3-76, 4-154, 4-165, 4-166, 4-194, 4-206, 4-218, 4-229, 4-238
- White River, 3-20, 3-25, 3-30, 3-49, 3-69, 3-77, 3-78, 3-106, 4-169, 4-323
- White-tailed prairie dog, 2-28, 2-70, 2-71, 3-80, 3-81, 3-83, 3-84, 3-120, 4-173, 4-174, 4-176, 4-177, 4-196, 4-197, 4-198, 4-208, 4-209, 4-210, 4-220, 4-221, 4-231, 4-233
- Wild and Scenic River, ES-4, ES-7, ES-9, 1-6, 2-33, 2-35, 2-36, 2-42, 2-66, 3-2, 3-66, 3-68, 4-5, 4-132, 4-138, 4-139, 4-142, 4-145, 4-148, 4-150, 4-151, 4-152, 4-328, 4-369, 4-370
- wilderness characteristics, ES-7, ES-9, ES-11, 1-8, 2-33, 2-42, 3-2, 3-122, 4-97, 4-318, 4-319, 4-320, 4-321
- Willow Creek, 1-1, 3-70
- winter range, 3-115, 3-117, 4-316, 4-317, 4-329, 4-365, 4-378

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