Endangered Species Act Section 7 Consultation

Final Programmatic Biological Opinion and Conference Opinion

on the

United States Department of the Interior

Office of Surface Mining Reclamation and Enforcement's

Surface Mining Control and Reclamation Act Title V Regulatory Program

U.S. Fish and Wildlife Service
Ecological Services Program
Division of Environmental Review
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1 INTRODUCTION

The Endangered Species Act of 1973 (ESA), as amended, requires Federal agencies to consult with the U.S. Fish and Wildlife Service (Service) to ensure their actions are not likely to jeopardize the continued existence of an endangered or threatened species or destroy or adversely modify designated critical habitat. The ESA also requires Federal agencies to confer with the Service on any agency action that is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat. Congress enacted the Surface Mining Control and Reclamation Act of 1977 (SMCRA) to establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining and reclamation operations[1]. SMCRA was also designed to: assure that surface coal mining operations are not conducted where reclamation as required is not feasible, assure that surface coal mining operations are designed in a manner to protect the environment, assure that reclamation occurs as contemporaneously with mining as possible, and promote the reclamation of mined areas left without adequate reclamation prior to the enactment of SMCRA.

The Federal action that is the subject of this consultation is the Office of Surface Mining Reclamation and Enforcement's (OSMRE) implementation of Title V of the SMCRA, which includes the promulgation of implementing regulations; the direct implementation and enforcement of the SMCRA regulations at 30 U.S.C. §§ 1201 *et seq.* in Federal program States and on Indian lands; and oversight of State regulatory programs with primacy, which includes oversight of State program compliance with requirements related to the protection and enhancement of proposed or listed species and proposed or designated critical habitats (hereinafter referred to as "OSMRE's implementation of Title V of SMCRA"). This action also includes implementation of two documents developed by OSMRE in consultation with the Service. The first is the *SMCRA/ESA Coordination Process as Outlined in 30 C.F.R. §§ 780.16 and 784.21 and Based on OSMRE's Oversight Process* (Appendix A), hereinafter referred to as the "SMCRA Coordination Process." The second is the *Dispute Resolution Process Relevant to Regulatory Authorities Coordinating SMCRA Permitting with the USFWS* (Appendix B), hereinafter referred to as the "2020 DRP" (Appendix B).

OSMRE administers and enforces SMCRA on behalf of the Secretary of the Interior (Secretary). SMCRA sets forth minimum performance standards for environmental protection and public health and safety which apply to surface coal mining and reclamation operations, surface effects of underground coal mining operations, and surface coal mining in special areas or in special circumstances (such as steep slope mining). Persons who propose to conduct surface coal mining and reclamation operations (which include surface effects of underground mining by definition) must apply for and receive permits. Applications for permits must contain sufficient information to ensure that surface coal mining operations are designed and conducted in accordance with SMCRA and its implementing regulations, and applicants must post performance bonds in an amount that is sufficient to guarantee the completion of the reclamation plan if the work has to be performed by the regulatory authority in the event of forfeiture.

SMCRA establishes a program of cooperative federalism that allows a State or Indian Tribe to assume primary jurisdiction (primacy) over the regulation of surface coal mining and reclamation operations within its borders once its regulatory program has been approved by the

[1] In this document, shorthand terms such as "mining", "coal mining", and other similar uses of these terms all signify "surface coal mining andreclamation operations."

Secretary. Among other things, SMCRA requires that a permanent regulatory program be in accordance with SMCRA and no less stringent than SMCRA and no less effective than the Federal regulations issued by the Secretary, in meeting the requirements of the Act (30 U.S.C. §§ 1255; 1253(a)(1); 30 C.F.R. § 730.5).

OSMRE's role under SMCRA does not end once it has approved a State or Tribal regulatory authority's program. SMCRA gives OSMRE ongoing authority to oversee the effectiveness of the State or Tribal regulatory authority's implementation of the approved program. OSMRE's responsibilities in this area also include conducting inspections as necessary to evaluate the State or Tribal regulatory administration of its approved program. OSMRE retains enforcement authority for States and Tribes with primacy and is responsible for ensuring that the State or Tribal regulatory authority is effectively implementing, administering, maintaining, and enforcing their program.

2 CONSULTATION HISTORY

The following timeline describes key milestones between the OSMRE and the Service that inform this reinitiated consultation.

- On September 24, 1996, the Service issued the 1996 Biological Opinion (1996 Biological Opinion) on implementation of OSMRE's current SMCRA regulations.
- On December 16, 2016, OSMRE and the Service finalized the 2016 Memorandum of Understanding Regarding Improved ESA Coordination on Surface Coal Mining and Reclamation Operations (MOU),), and the Service finalized its Biological Opinion on OSMRE's revised SMCRA regulations (known as the *Stream Protection Rule*).).
- On February 16, 2017, President Trump signed joint resolution, H.R. J. Res. 38, under the Congressional Review Act, 5 U.S.C. §§ 801 et seq., which disapproved the 2016 revised SMCRA regulations, thereby eliminating the Federal action analyzed in the Service's 2016 Biological Opinion.
- On April 13, 2017, OSMRE requested reinitiation of consultation on implementation of their current SMCRA regulations.
- On July 19, 2017, the Service, OSMRE, and Department met with the Interstate Mining Compact Commission (IMCC) to discuss the reinitiated consultation, (e.g., the purpose of reinitiation and opportunities to improve implementation of the SMCRA program).
- During the week of October 16, 2018, OSMRE provided the IMCC with drafts of the documents (e.g., draft biological assessment) that would be used to support the reinitiated consultation. The IMCC provided OSMRE with comments on the draft documents on February 1, 2019.
- On April 6, 2020, OSMRE provided a draft biological assessment to the Service.
- On April 22, 2020, the Service informed OSMRE that the draft biological assessment was sufficient to initiate formal consultation and provided OSMRE overarching comments on the draft biological assessment.

- On April 23, 2020, the Director of the Service, Assistant Director of Ecological Services, Deputy Solicitor and OSMRE and Assistant Secretary for Lands and Mineral Management (ASLM) met to discuss comments on the draft biological assessment and next steps for the consultation.
- On April 24, 2020, after meeting with OSMRE to discuss concerns, the IMCC provided OSMRE with additional input on the draft biological assessment.
- On May 21, 2020, OSMRE provided supplemental information to the Service for the reinitiated consultation.
- Between June 10 and July 13, 2020, Service and OSMRE staff met weekly and corresponded via email to coordinate regarding various topics, such as the species list, extent of the action area, and OSMRE's proposed draft technical assistance and dispute resolution processes.
- On June 23, 2020, the Service and OSMRE met to understand key elements of OSMRE's regulatory program under Title V of SMCRA.
- On July 9, 2020, OSMRE's draft dispute resolution process was provided to the Service. The draft describes a proposed process by which OSMRE may engage, in the exercise of its oversight authority, in resolving disagreements between State regulatory authorities and FWS on, among other things, measures to minimize incidental take reasonably certain to occur from a proposed mining permit.
- On July 15, 2020, OSMRE provided the Service with an effects analyses for additional species.
- On July 16, 2020, the Service provided comments to OSMRE on the SMCRA regulatory process for technical assistance between State regulatory authorities and the Service and its dispute resolution process.
- On July 27, 2020, the Service and OSMRE met regarding the status of the reinitiated consultation.
- On August 26, 2020, OSMRE provided to the Service final descriptions of the technical assistance process between State regulatory authorities and the Service for implementing the coordination provisions contained in OSMRE's regulations implementing Title V of SMCRA, as well as the final dispute resolution process for resolving any differences that may arise between the Service and State regulatory authorities through that technical assistance process. The description of the technical assistance process was revised and resubmitted to the Service via email on October 6, 2020. Both documents were described as addenda to OSMRE's 2020 biological assessment, and are included as appendices in this document (Appendices A, B).

3 BACKGROUND

On September 24, 1996, the Service issued a final biological opinion on OSMRE's regulations implementing Title V of SMCRA, completing the ESA Section 7 consultation between OSMRE and the Service. In December 2016, OSMRE finalized revisions to its SMCRA regulations, which constituted a change in the action and served as grounds for reinitiation of the Section 7consultation previously completed in 1996.

On December 16, 2016, the Service issued a final biological opinion on OSMRE's implementation of Title V of SMCRA under the revised regulations, which superseded the 1996 Biological Opinion. However, President Trump's February 16, 2017 signing of joint resolution, H.R. J. Res. 38, under the Congressional Review Act, 5 U.S.C. §§ 801 *et seq*., disapproved the 2016 revised SMCRA regulations, thereby eliminating the Federal action analyzed in the Service's 2016 Biological Opinion. As a result, OSMRE requested reinitiated consultation with the Service regarding its regulations implementing Title V of SMCRA on April 17, 2017.

In its April 2017 reinitiation request, OSMRE noted that "new information obtained by OSMRE in the intervening years since 1996 makes it appropriate to reinitiate consultation at this time," and that "new species have been listed that may be affected by the SMCRA regulatory program." In its reinitiation request, OSMRE also stated that during the reinitiated consultation, OSMRE would resume its reliance on the 1996 Biological Opinion.

This reinitiated consultation evaluates the effects to endangered and threatened species and their designated critical habitats from OSMRE's implementation of Title V of SMCRA, which include its regulations governing mining and reclamation activities. Our analysis also addresses species proposed for listing and proposed critical habitat. Although conferencing on proposed species and critical habitat is not required under the ESA when the action is not likely to jeopardize the continued existence of proposed species or destroy or adversely modify proposed critical habitat, the regulations implementing Title V of SMCRA include requirements specifically related to the protection and enhancement of proposed species and proposed critical habitat. Further, in the event that these proposed species are subsequently listed and/or critical habitat designated through final rulemakings, conference opinions may later serve as biological opinions, thus satisfying OSMRE's obligations under ESA Section 7(a)(2). Thus, this document includes both the Service's biological opinion on endangered and threatened species and designated critical habitat and our conference opinion on proposed species and proposed critical habitat.

In our Programmatic approach, we examine whether and to what degree OSMRE has structured its regulatory program to ensure its implementation is not likely to jeopardize the continued existence of proposed or listed species or result in the destruction or adverse modification of proposed or designated critical habitat. This programmatic biological opinion (Opinion) addresses surface impacts from coal mining on all ESA-listed and -proposed species and designated and proposed critical habitats. This Opinion assigns the 194 ESA-listed and proposed species and their proposed or designated critical habitats known to occur within regions of mineable coal in the U.S. to species guilds and analyzes response to surface coal mining and reclamation operations. Under this programmatic approach, proposed mining activities will undergo further evaluation through one of two pathways, depending upon whether the authority issuing the mining permit is OSMRE or the State or Tribal regulatory authority: 1) future section 7 consultations with OSMRE on individual permit applications, renewals , and significant revisions where OSMRE is the permitting authority that tier off this programmatic consultation (hereafter, "step-down ESA section 7(a)(2) consultations); or 2) a technical assistance process with the Service where the State or Tribal regulatory authority has delegated authority in rendering mining permit decisions (i.e., the State or Tribal regulatory authority has "primacy"). Under the second pathway, SMCRA permit applications will be reviewed by the Service on a

permit-by-permit basis through a technical assistance process among the Service, State or Tribal regulatory authority, and mine permit applicant as described in Section 4.2 on permitting and outlined in Appendix A. Throughout this document, we refer to the "regulatory authority, " which, in some cases may apply to OSMRE (where OSMRE is the permitting authority), States (or Tribes) where they have primacy, or both, as appropriate.

4 DESCRIPTION OF THE ACTION

The proposed action is OSMRE's continued implementation of Title V of SMCRA, and includes activities where OSMRE retains permitting authority, as well as where States and Tribes have primacy. States and Tribes may assume primary jurisdiction (i.e., primacy) over operations within their borders by developing a regulatory program, which the Secretary through OSMRE, has reviewed and approved as meeting the standards of SMCRA (30 U.S.C. § 1253). The proposed action also includes OSMRE's oversight of State or Tribal programs, such as State or Tribal regulatory authority compliance with requirements related to the protection and enhancement of proposed or listed species and proposed or designated critical habitats. Title V of SMCRA is implemented, in part, through State regulatory programs in which States with programs approved by OSMRE directly regulate surface and underground coal mining and reclamation activities within their own borders. Currently, there are no Tribes that have achieved primacy, and no Tribe has submitted a proposal for primacy. However, in the event a Tribe does apply for primacy, the same processes explained in OSMRE's biological assessment related to State program approval would be applied. Therefore, when the Service refers to "State regulatory program" it is also referring to any possible future "Tribal regulatory program." This is consistent with 30 U.S.C. § 1300(j)(B) that provides in part, "any reference to a "State" in this Act shall be considered to be a reference to "[T]ribe."

SMCRA authorizes OSMRE to establish regulatory standards that States or Tribes must incorporate in their programs in order to obtain primary regulatory authority. OSMRE's regulatory standards that apply to primacy States has five major components: i) performance standards, ii) permitting requirements, iii) bonding requirements, iv) inspection and enforcement provisions, and v) restrictions on where mining may be conducted.

As required by section 504 of SMCRA, OSMRE directly regulates surface coal mining and reclamation operations in a State if the State does not submit and receive approval of its own program pursuant to section 503 of SMCRA. As of the date of this document, OSMRE operates Federal regulatory programs in 12 States (Arizona, California, Georgia, Idaho, Massachusetts, Michigan, North Carolina, Oregon, Rhode Island, South Dakota, Tennessee, and Washington), although only Tennessee has active surface mines (Washington has two approved permits, but both are in reclamation only status).

OSMRE is the regulatory authority on Federal and Indian lands. 30 U.S.C. § 1273(a) requires that the Secretary establish and implement a Federal regulatory program applicable to all surface coal mining and reclamation operations taking place on Federal lands. Federal lands are defined as "any land, including mineral interests, owned by the United States, without regard to how the United States acquired ownership of the lands or which agency manages the lands" (30 C.F.R. § 700.5). Through cooperative agreements, the Secretary has delegated most regulatory responsibilities under this provision to States with approved regulatory programs. The Secretary

has entered into cooperative agreements with 14 States to regulate coal on Federal lands (Alabama, Colorado, Illinois, Indiana, Kentucky, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Utah, Virginia, West Virginia, and Wyoming). According to OSMRE, there is no significant mining on Federal lands in States without cooperative agreements.

Likewise, 30 U.S.C. § 1300 authorizes OSMRE to directly regulate all surface coal mining and reclamation operations on Indian lands. Currently, these operations include mines on the Navajo, Hopi, and Ute Mountain Ute reservations. On the Crow Ceded Area in Montana, OSMRE and the Montana Department of State Lands jointly administer applicable requirements. In 2006, SMCRA was amended to allow Indian Tribes the option of assuming part or all of the responsibility for the regulation of surface coal mining and reclamation operations on reservation lands, but, as of the date of OSMRE's biological assessment, no Tribe had assumed this responsibility.

Thus, for now, all Indian lands are regulated under the Federal regulatory program. Nevertheless, any future approval of a Tribal regulatory program would be governed by the same standards applied to a State regulatory program because, in accordance with 30 U.S.C. §§ 1253(a)(1) & (7) and 1300(j), the administration and enforcement of any future Tribal regulatory program would be no less stringent than and no less effective than that of a Federal regulatory program.

Unless otherwise specified in this Opinion, "regulatory authority" refers to the definition in SMCRA: "[T]he department or agency in each State which has primary responsibility at the State level for administering the Act in the initial program, or the State regulatory authority where the State is administering the Act under a State regulatory program, or the Secretary in the initial or permanent program where the Secretary is administering the Act, or the Secretary when administering a Federal program or Federal lands program or when enforcing a State program pursuant to section 521(b) of the Act."

4.1 The Mining Process

This section contains a general description of the mining process. It provides a basic understanding of the steps involved in coal removal and reclamation under Title V of SMCRA. For a more detailed description of the mining process, see the Description of the Action section in OSMRE's biological assessment.

Both surface and underground mining occur in the area considered by this Opinion. Surface mining may occur in a variety of ways but the most common methods are contour mining, open pit mining, and area mining. The two most common underground mining methods are room-and-pillar and longwall mining. Mining methods can vary between individual mines, but all share common site development activities.

4.1.1 Exploration

Mining applicants may conduct exploration drilling or excavation to determine the location and quality of mineable coal. The Federal regulations also require that before an exploration permit to remove more than 250 tons of coal may be approved, it is subject to public notice and the opportunity to comment (30 C.F.R. § 772.12(c));. Before approving an exploration permit, the regulations promulgated pursuant to SMCRA require that the regulatory authority must find that the exploration and reclamation activities will not jeopardize the continued existence of an endangered or threatened species listed under the ESA or result in the destruction or adverse

modification of critical habitat (30 C.F.R. § 772.12(d)(2)(ii)). Therefore, the SMCRA regulations require a more stringent standard than that required pursuant to the ESA to ensure against the "likelihood" of jeopardy.

Disturbance from exploration operations usually involves building of temporary roads and drill pads. Exploration operations that substantially disturb the natural land surface must comply with the performance standards at 30 C.F.R. § 772.13 and 30 C.F.R. Part 815. These regulations prohibit the disturbance of unique or unusually high value for fish, wildlife, and other related environmental values and critical habitats of threatened or endangered species during coal exploration operations that remove more than 250 tons. In addition, for Federally-owned coal, 43 C.F.R. § 3410.2-2(a)(2) specifies "No exploration license shall be issued if the exploration would… [j]eopardize the continued existence of a threatened or endangered species of fauna or flora or destroy or cause adverse modification to its critical habitat."

Exploration roads are required to be constructed, maintained, and reclaimed to the same standards as roads used for other purposes and must not seriously alter the normal flow of water in streambeds or drainage channels. All disturbed areas are required to be revegetated and drill holes are required to be sealed. These requirements are enforced by the regulatory authority.

4.1.2 Erosion and Sedimentation Controls

Erosion and sedimentation control structures are typically constructed in advance of any excavation for coal extraction purposes. Any number of erosion and sedimentation control structures are employed including, sedimentation ponds constructed to prevent pollution of receiving streams, and diversion ditches constructed to convey runoff from disturbed areas to the sedimentation ponds. Diversion ditches are also built around areas affected by mining to divert runoff from upslope areas to natural drainages. Permanent or temporary stream relocations are employed to reroute streams around the mine. These activities may change the hydrology of a site. Construction techniques for temporary diversion channels focus on stability; but are not required to focus on ecological functions. However, some regulatory authorities may address restoration of ecological function thorough requirements under the Clean Water Act. Permanent diversions are required to restore or approximate the premining characteristics of the original stream channel including the natural vegetative corridor to promote the recovery and the enhancement of the aquatic habitat. Additionally, a variety of approved, alternative sediment control measures that utilize the best technology currently available may be used. Examples include, silt fence, sediment traps, contour ditches, mulch, vegetation filters, and surface pitting.

Maintenance of sedimentation ponds may require removal of nuisance species (e.g. rodents, noxious weeds, trees) to maintain their structural integrity, and dredging of accumulated sediment to maintain storage capacity. Dredged materials are usually buried within the permit area. Ponds are removed or left as permanent structures if approved as part of the postmining land use. Sedimentation ponds are typically removed by breaching the pond's dam in a controlled manner to prevent impacts to downstream waters. Permanently retained ponds are not monitored after final bond release; they are retained as habitat features for fish and wildlife or to provide water for livestock. The landowner must assume the responsibility for maintenance of the pond before the regulatory authority may approve its retention as a permanent structure.

4.1.3 Clearing and Grubbing

The removal of trees, stumps, shrubs, and other vegetation from the area to be mined allows for more efficient removal of any topsoil for later use in reclamation. The regulations do not

specifically require reincorporation of plant debris accumulated from site clearing (for example non-merchantable trees, tree limbs, stumps and branches). As a result, these materials are often burned on-site. Topsoil is segregated by a bulldozer that typically removes the recoverable soil from mining areas to temporary stockpiles, which is seeded with fast-growing grass species that persist until the topsoil is needed for reclamation. Excess spoil disposal areas are cleared and grubbed to prepare the foundation to ensure stability prior to placement of fill.

4.1.4 Excavation of Overburden and Coal

The removal of strata overlying the coal seams allows for removal of the uncovered coal. This mining phase can last for decades for large mines. The overlying strata (layers of overburden) are fractured by drilling and blasting, or by ripping with bulldozers. The void left after excavation is referred to as a mine pit. The overburden that is removed is known as spoil. As a result of the excavation process, this spoil material increases in volume because of the fracturing of rock strata, which results in the creation of many more voids. This bulking is commonly referred to as swell. In steep-slope areas, spoil that exceeds the amount required to restore the approximate original contour must be permanently placed in excess spoil fills constructed in the narrow valleys typical of steep-slope topography. These fills are known as valley fills or head-of-hollow fills. Where potentially acid-forming or toxic-forming overburden is encountered, this material requires special handling to segregate and bury it to isolate it from oxygen and/or water. Stream channels are sometimes mined through or diverted during excavation of the overburden and coal. Streams are sometimes covered by excess spoil fills.

Mountaintop removal mining, a subset of area mining, is defined as a surface mining operation that removes an entire coal seam or seams running through the upper fraction of a mountain, ridge or hill, creating a level plateau or gently rolling contour with no highwalls remaining. As the tops of mountains are removed, the spoil is placed in adjacent valleys below the coal seam being mined, filling them and burying any streams located in those valleys.

Permittees may extract coal from the final highwall using augers, highwall miners, and similar equipment.

Surface mines can employ any combination of these methods to maximize the coal recovery from a given land parcel.

4.1.5 Underground Mining

The two most common underground mining methods are room-and-pillar and longwall mining. Room-and-pillar mining leaves some coal in place to maintain the roof stability of the mine during extraction. These pillars temporarily support the rock immediately overlying the intact coal pillar plus some portion of the overlying rock previously supported by the excavated coal.

Surface disturbance and excavation are required to establish an underground mine's operational facilities and gain access to the coal seam by way of portals, ramps, and/or shafts, and to construct ventilation shafts or degasification wells. During coal extraction, a portion of the strata above and below the coal seam may be removed with the coal. These materials, commonly referred to as coal refuse and/or gob, are separated from the coal during processing and permanently stored, most often at the surface in slurry impoundments or refuse piles.

4.1.5.1 Room-and-Pillar

Room-and-pillar mining involves the removal of blocks of coal (rooms) while leaving adjacent blocks of coal (pillars) arranged uniformly and large enough to permanently support the mine's

roof. Subsidence from modern room-and-pillar mining operations is not common and surface expression of subsidence is isolated when it does occur. Subsidence from room-and-pillar mining may occur when retreat mining is conducted. Retreat mining occurs when pillars left for support are removed as an operation leaves a mined area. Any subsidence from retreat mining is planned and intentional.

4.1.5.2 Longwall

Longwall mining operations utilize specialized methods and equipment to safely remove large blocks of coal commonly referred to as panels. A typical longwall panel is 600 to 1,500 feet (183 to 457 meters) wide and 1 to 3 miles (1.6 to 4.8 kilometers) long. Typically, longwall mining will—and other methods of underground mining may, depending on the competence of the overlying rock and the extent of pillars left as support—result in the subsidence of overlying strata after the coal is removed. Subsidence may reach the surface, depending upon the depth of the mine and the competence of rock strata between the underground workings and the surface. Subsidence that reaches the surface will alter the surface configuration and topography.

Underground mining also can dewater streams or diminish flows by fracturing strata that support perched aquifers or by draining aquifers to facilitate mining. The undulating surface expression between subsided and unsubsided reaches can greatly impact a stream's geomorphology. Subsided stream reaches commonly pond water immediately upstream of an unsubsided reach. These areas often require in-stream restoration work to reduce flooding and loss of land productivity (e.g., crop loss). If left unrestored, the unsubsided reaches typically down-cut over time through natural stream evolution processes resulting in erosive banks and increased downstream sediment deposition. Permittees are generally required to restore stream flows altered by longwall mining. SMCRA regulations only require correction of subsidence damage to the extent technologically and economically feasible. These localized hydrologic changes can, to some extent, be predicted (Newman et al., 2016). Buffer zones can be established between the stream and the longwall panel to prevent subsidence (Karmis et al. 2012). Longwall panels are typically mined out parallel to each other and separated by lengths of narrower underground "chain pillars." Chain pillars are mined utilizing room-and-pillar methods and typically do not subside.

4.1.6 Surface Mining

Surface mining includes various activities such as area and contour mining, as well as mountaintop removal. Area mining may occur within the entire width of a flat or gently sloping area, mountaintop, or ridge line, while contour mining may occur in rolling topography or in mountainous terrain. Area and contour mining, as well as mountaintop removal are described more fully in the biological assessment. For example, mountaintop removal mining operations are surface mining activities in which the mining operation removes an entire coal seam or seams running through the upper fraction of a mountain, ridge or hill by removing substantially all of the overburden off the bench and creating a level plateau or gently rolling contour, with no highwalls remaining. To obtain a permit for mountaintop removal mining operations, the proposed postmining land use must be a commercial, industrial, residential, agricultural, or public facility land use. The regulatory authority must find that the proposed postmining land use meets all requirements for alternative postmining land uses and is an equal or better economic or public use of the land compared to its premining use. The permit application must include

specific plans for the proposed postmining land use, including assurance of investment in public facilities and documentation of private financial capability to ensure completion. The regulations do not require implementation of the approved postmining land use prior to final bond release. The regulations also allow for variances, under certain conditions, from the requirement that land operations be returned to its approximate original contour for steep-slope mining operations.

The regulatory authority may approve a permit for a mountaintop removal mining operation only upon a demonstration that there would be no damage to natural watercourses below the lowest coal seam to be mined. Natural watercourses above the lowest coal seam mined are not protected from damage.

4.1.7 Mining Through Streams

The regulatory authority may approve diversion of perennial or intermittent streams within the permit area only after making the finding that the diversion would not adversely affect the water quantity and quality and related environmental resources of the stream. The applicant must design the diversion to minimize adverse impacts to the hydrologic balance within the permit and adjacent areas, prevent material damage to the hydrologic balance outside the permit area, and to assure the safety of the public. In addition, the applicant must design, locate, construct, maintain, and use the diversion to prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area. Both the design and construction of stream-channel diversions for perennial and intermittent streams must be certified by a qualified registered professional engineer as meeting applicable performance standards and any design criteria established by the regulatory authority. The design for restored stream channels for perennial and intermittent streams (or permanent diversion channels for those streams) must restore or approximate the premining characteristics of the original stream channel, including the natural riparian vegetation. The design capacity for both temporary and permanent stream-channel diversions must at least equal the capacity of the unmodified stream channel immediately upstream and downstream of the diversion. While it is feasible to restore the form and function of stream segments that are mined through or permanently diverted as a result of mining, there is no requirement to restore ecologic function. In addition it may be difficult to restore ecologic function of certain high gradient streams and or high quality streams. As a result, biological resources may be negatively impacted.

4.1.8 Backfilling, Grading, Excess Spoil, and Coal Mine Waste

After coal removal, mine pits are backfilled with spoil to restore the ground surface. Backfilling, also known as “backstacking” in steep-slope areas, may be accomplished by a variety of methods, including casting by draglines or shovels, cast blasting, dozer pushes, and truck haulage and dumping.

During these activities, spoil and waste are returned to the mined-out area (or placed in excess spoil fills in adjacent valleys), and graded as needed to achieve final reclamation contours. After spoil casting or haulage and dumping, spoil areas usually have a very irregular surface that may require grading to achieve a surface configuration that better resembles the natural land surface and that will support the postmining land use. Regrading of spoil is primarily accomplished by dozers, with the final site topography determined by the site reclamation plan and the approved postmining land use.

The regulations require that a permit application include a plan for backfilling, soil stabilization, and compacting and grading. Contour maps or cross-sections must show the anticipated final surface configuration. The performance standards at 30 C.F.R. §§ 816.102, 816.104, 816.105, 816.106, and 816.107[2] require that disturbed areas be backfilled and regraded to closely resemble the premining surface configuration, with exceptions for thin and thick overburden situations, previously mined areas, and certain other circumstances. The regulations allow permanent impoundments, including final-cut impoundments, provided they do not otherwise create conflicts with achieving approximate original contour and they meet the design, construction, maintenance, postmining land use, and other requirements in the regulations.

Except for mountaintop removal mining operations, sites with steep-slope variances, sites with thin or thick overburden, and a few other limited situations, the permittee must restore the approximate original contour.

There are situations, particularly in steep terrain, where the volume of spoil is more than sufficient to return the reclaimed land to approximate original contour or where stability concerns prevent the return of all spoil to the mined-out area when reclaiming the site. Surplus spoil material disposed of in locations other than the mined-out area, except for material used to blend spoil with surrounding terrain in achieving approximate original contour in non-steep slope areas, is referred to as "excess spoil." In steep-slope terrain, the permittee may place the excess spoil either in adjacent valleys or on previously mined sites.

OSMRE and most State regulatory authorities allow the construction of excess spoil fills, refuse piles, slurry impoundments, and sedimentation ponds in all types of streams and their buffer zones. The regulations require that excess spoil fills be constructed by controlled placement of the excess spoil in lifts no greater than four feet thick, except that durable rock fills may be constructed by end-dumping, which is intended to result in the formation of underdrains by gravity segregation.

Although not expressly required by OSMRE regulations, most States with mining operations in steep-slope terrain have adopted policies intended to minimize the generation of excess spoil and thus reduce the need for (and size of) excess spoil fills, which in turn would reduce the length of stream covered by those fills. In addition, the agencies administering the Clean Water Act have implemented policies that have sharply reduced both the number of excess spoil fills and the length of stream covered by those fills. Furthermore, the regulations in 40 C.F.R. Part 230 for implementation of section 404(b)(1) of the Clean Water Act require an analysis of all practicable alternatives to placement of fill material in waters of the United States, which would include most streams. Under those regulations, the applicant must select the alternative with the least adverse effect on the aquatic ecosystem and mitigate any remaining adverse impacts on the aquatic environment.

4.1.9 Steep-Slope Approximate Original Contour Variances

Steep slopes are any slope of more than 20° or a lesser slope designated by the regulatory authority after consideration of soil, climate, and other characteristics of a region or State. To obtain an approximate original contour variance for steep-slope mining operations the proposed postmining land use must be of an industrial, commercial, residential, or public (including

[2] Throughout this document, reference is made to OSMRE's regulations at 30 C.F.R. Part 816 about Permanent Program Performance Standards—Surface Mining Activities. Unless specifically exempted, when referring to these regulations OSMRE's counterpart regulations about underground mining activities found at 30 C.F.R. Part 817 are also to be considered.

recreational facilities) nature. It also must meet the requirements for approval of alternative postmining land uses, which, among other things, means that the postmining use must be an equal or better economic or public use. The applicant must demonstrate that the proposed operation will improve the watershed when compared to either premining conditions or the conditions that would exist if the applicant restored the area to its approximate original contour after mining. The regulatory authority can concur that the operation would improve the watershed only if the operation would reduce the amount of total suspended solids or other pollutants discharged from the permit area to surface water or groundwater or reduce the flood hazards within the watershed by a reduction of the peak-flow discharge from precipitation events or thaws. *See* 30 C.F.R. § 785.16. In both cases, the total volume of flow from the proposed permit area during every season of the year must not vary in a way that adversely affects the ecology of any surface water or any existing or planned use of surface water or groundwater.

4.1.10 Soils and Revegetation

Under the regulations, the permittee must restore all disturbed areas to a condition that is capable of supporting the uses the land was capable of supporting before any mining or higher or better uses. The permittee must salvage and redistribute all topsoil (the A and E soil horizons). If topsoil is of insufficient quantity or of poor quality for sustaining vegetation, selected overburden layers may be substituted for or used as a supplement to topsoil if it can be shown the material is as good as or better than the existing topsoil. The permittee also must demonstrate that the selected overburden materials they propose to use as topsoil substitutes and supplements are the best available material within the permit area. The regulatory authority may require salvage and redistribution of the subsoil (the B and C soil horizons) or other underlying strata if it finds that those layers are necessary to comply with the revegetation performance standards in 30 C.F.R. §§ 816.111 through 816.116. Unless the regulatory authority approves the use of a topsoil substitute, the permittee must remove and salvage topsoil separately from other overburden materials. The salvaged topsoil is either redistributed on another backfilled and graded portion of the permit area or stored for redistribution on the area from which it was removed.

When reclaiming the site the permittee must redistribute topsoil and topsoil substitutes and supplements in a manner that achieves an approximately uniform, stable thickness when consistent with the approved postmining land use, contours, and surface water drainage systems. Soil thickness may vary to the extent necessary to meet the specific revegetation goals identified in the permit and approved application[3]. The permittee also must redistribute soil materials in a manner that prevents excess compaction and protects the materials from wind and water erosion before and after seeding and planting.

Revegetation success standards must be based upon the effectiveness of the vegetation to support the approved postmining land use, the extent of ground cover compared to the cover provided by the natural vegetation of the area, and the general revegetation requirements. These general requirements provide that the vegetative cover must be diverse, effective, and permanent; comprised of species native to the area (with certain exceptions); at least equal in extent of cover to the natural vegetation of the area; capable of stabilizing the soil surface from erosion; compatible with the postmining land use; have the same seasonal characteristics of growth as the

[3] Throughout this Opinion, where a permit is discussed in the context of having been issued, we assume the application was approved.

original vegetation; be capable of self-regeneration and plant succession; be compatible with the plant and animal species of the area; and meet the requirements of State and Federal laws and regulations concerning seeds, poisonous and noxious plants, and introduced species. The regulations provide limited exceptions to some of these requirements for agricultural crops and for plantings used to establish temporary cover.

4.1.11 Coal Haulage

Haul roads within a mine site are constructed to accommodate the widths of vehicles used on that particular operation. They can be 50 feet or more wide. The overall grade of a haul road normally does not exceed ten percent.

Lengths of haul roads vary according to the distances necessary to access development, mining, and fill disposal areas. In steep slope areas, ditches are constructed on the uphill sides of haul roads to collect runoff, and culverts are placed at intervals to convey runoff under the road to the downhill side. In flatter terrain, ditches are constructed on both sides of the road and the road is crowned to allow for drainage to both sides. Temporary haul roads to working areas are usually surfaced with crushed overburden materials; while primary haul roads connecting to public roads are generally surfaced with gravel. Stream crossings are typically constructed by hardening the stream bottom or installing culverts.

Coal may be transported from the mine site to a processing or power plant by rail, truck, or conveyor. Permittees must control road dust and dust occurring on other exposed surfaces by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices. Operators typically use water for dust abatement.

4.1.12 Coal Processing

In many instances coal must be processed before it is suitable for burning in a power plant or in an industrial or residential furnace. This may be done at the mine site or at a coal preparation plant located elsewhere. Processing involves washing, crushing, and sorting run-of-the-mine coal to remove rock and other impurities from the coal Slurry generally is pumped into impoundments constructed in adjacent valleys for dewatering. Coarse refuse may be returned to the mine excavation or placed in constructed refuse piles.

4.1.13 Coal Combustion Residue Placement

The operators of electric power plants generate coal combustion residues (CCRs) as a result of the combustion or gasification of coal.

Current uses of CCRs on mine sites include:

- As a seal to encapsulate acid-forming materials to prevent the formation of acid mine drainage;
- As an alkaline amendment on active and abandoned surface mines to abate acid mine drainage;
- As an agricultural soil supplement;
- As a flowable fill to seal and stabilize abandoned underground mines to prevent subsidence and the production of acid mine drainage;
- As a durable base for dams, roads, or other structures;
- As an additive to chemically stabilize coal refuse piles and reduce acidic leachate formation;

- As a fill material to assist in achieving approximate original contour restoration on active and abandoned mines;
- As a fill material to eliminate highwalls on abandoned mine lands; and
- As an alternative to landfill disposal, with no beneficial purpose.

These CCRs contain various concentrations of trace metals along with major anions and cations, which have been concentrated in the CCRs. CCRs may be enriched in arsenic, boron, mercury, selenium, lead, magnesium, sulfur, and cadmium (Natural Research Council 2006). In addition, eight metals (barium, arsenic, selenium, chromium, cadmium, mercury, lead, and silver) that the EPA regulates under the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et seq.* (RCRA) toxicity characteristic rule are present in CCRs at varying concentrations.

SMCRA does not mention CCRs. However, the placement of CCRs on a mine site regulated under SMCRA must comply with the environmental protections provisions of the applicable SMCRA regulatory program unless the site is re-permitted as a waste disposal site under the RCRA.

4.1.14 Bond Release

Regulations under SMCRA require that, prior to permit issuance, the applicant file a performance bond with the regulatory authority. The bond assures that sufficient funds will be available to complete the approved reclamation plan in the event the permittee fails to do so. The bond amount required for each bonded area must be determined by the regulatory authority, based upon the requirements of the approved permit and reclamation plan. The amount of bond must be sufficient to assure completion of the reclamation plan if the regulatory authority must perform the work.

Reclamation bonds are typically released in three phases, with certain exceptions. Phase I bond releases are granted after satisfactory backfilling, regrading, and drainage control have been completed on the disturbed area. Phase II releases are granted after revegetation has been established. Phase III releases are granted after the revegetation responsibility period (which is either 2, 5, or 10 years after the last year of augmented seeding, fertilization, or irrigation) has expired and all reclamation requirements of the permit and regulatory program are met. SMCRA jurisdiction terminates upon Phase III bond release.

4.2 Permitting

The following sections describe the permitting process.

4.2.1 Permit Requirements

Under SMCRA, anyone intending to conduct surface coal mining and reclamation operations (which also includes surface effects of underground mining) must apply for and receive a permit from the applicable SMCRA regulatory authority.

In order to obtain a permit, an applicant must provide baseline information about hydrology, geology, vegetation, soils, water quality, existing land uses, threatened and endangered

species/critical habitat occurrences, and habitat suitability using a variety of field methods, some of which may involve sampling (*e.g.*, 30 U.S.C. § 1257(b); 30 C.F.R. Parts 773, 779, 780, 783, and 784).

The permit applicant must submit fish and wildlife resource information for both the permit area and the adjacent area[4] (30 C.F.R. §§ 780.16(a) and 784.21(a)). The scope and level of detail for the resource information required with each permit "shall be determined by the regulatory authority in consultation with State and Federal agencies with responsibilities for fish and wildlife and shall be sufficient to design the protection and enhancement plan (PEP) required under" 30 C.F.R. §§ 780.16(a)(1) and 784.21(a)(1). Specifically, Federal regulations require that all surface and underground coal mining permit applications include site-specific resource information about proposed, endangered, or threatened plants and animals and critical habitats listed under the ESA in either the permit area or the adjacent area (*Id.* at §§ 780.16(a)(2)(i) and 784.21(a)(2)(i)). The resource information necessary to address species or habitat is required where the permit area or adjacent area includes habitats of unusually high value for fish and wildlife or "[o]ther species and habitats identified through agency consultation as requiring special protection under State or Federal law" (*Id.* at §§ 780.16(a)(2)(ii)-(iii) and 784.21(a)(2)(ii)-(iii)).

Each permit application must include a PEP, which describes "how, to the extent possible using the best technology currently available, the operator will minimize disturbances and adverse impacts on fish and wildlife and related environmental values, including compliance with the Endangered Species Act" (*Id.* at § 780.16(b) and 784.21(b)). The PEP must include information about how enhancement of these resources will be achieved where practicable.

More specifically, the PEP must include protective measures that will be used during the active mining phase of operation (e.g., the establishment of buffer zones, selective location and design of haul roads and powerlines, and monitoring of surface water quality and quantity) and enhancement measures that will be used during the reclamation and postmining phase of operation to develop aquatic and terrestrial habitat (*Id.* at §§ 780.16(b)(3)(i)-(ii) and 784.21(b)(3)(i)-(ii)). "Such measures may include restoration of streams and other wetlands, retention of ponds and impoundments, establishment of vegetation for wildlife food and cover, replacement of perches, and nest boxes. Where the plan does not include enhancement measures, the operator must provide a statement explaining why enhancement is not practicable" (*Id.* at §§ 780.16(b)(3)(ii) and 784.21(b)(3)(i)-(ii)). The PEP must also be drafted in a manner consistent with the performance standards specified in the Federal regulations (*Id.* at § 780.16(b)(1))[5].

Furthermore, Title V of SMCRA (*See* 30 U.S.C. § 1265) mandates that any permit issued under any approved State or Federal program to conduct surface coal mining operations must require that such surface coal mining operations will meet all applicable environmental protection performance standards of the OSMRE or the State regulatory authority (whichever is applicable), and such other requirements as the OSMRE or the State regulatory authority shall promulgate.

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[4] The Federal regulations define "adjacent area" in a manner similar to the definition of "action area." The phrase "*adjacent area* means the area outside the permit area where a resource or resources, determined according to the context in which *adjacent area* is used, are or reasonably could be expected to be adversely impacted by proposed mining operations, including probable impacts from underground workings" (30 C.F.R.§ 701.5). "*Action area* means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 C.F.R. § 402.02).

[5] Throughout this document reference is made to OSMRE's regulations at 30 C.F.R. Part 780, about Surface Mining permit Applications— Minimum Requirements for Reclamation and Operation Plan. Unless specifically, exempted references to this Part are also referring to the underground mining permit applications counterpart found at 30 C.F.R. Part 784.

Specifically, in reference to avoiding and minimizing potential impacts to listed species, 30 U.S.C. § 1265 (b)(24) mandates "that to the extent possible using the best technology currently available, minimize disturbances and adverse impacts of the operation on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable." After approval of the permit application, the regulatory authority may not issue the permit until the applicant posts a performance bond to cover the cost of reclamation.

Species-specific protection measures (SSPMs) are activities deemed necessary to avoid, minimize, and monitor the effects of the proposed mining action on ESA-listed and -proposed species. SSPMs was a term referenced in the terms and conditions contained in the ITS of the 1996 Opinion. The Service uses the term in this Opinion to describe measures that minimize the impacts of incidental take and must be implemented as a mandatory condition in the permit if the regulatory authority and/or applicants choose to avail themselves of incidental take coverage under this Opinion's incidental take statement.

The regulatory authority, and/or individual permit applicants, coordinate the development of the PEP and SSPMs with the Service during the permit application process as needed to minimize effects to listed or proposed species and designated or proposed critical habitat. As described in the biological assessment, SSPMs for a proposed project should be developed in conjunction with the appropriate local Service Field Office. The Service, regulatory authority, and permit applicant should cooperatively develop measures that are feasible to implement and evaluate. This coordination and development of species-specific protective measures for a proposed project may occur prior to a determination that the permit application is complete (i.e., meets the informational requirements under SMCRA regulations and other applicable authorities) (*See* 30 U.S.C 780.16(b)). For State (or future Tribal) regulatory authorities, this coordination process is outlined in Appendix A. Under the regulations, the Service should be notified of a potential permit application no later than when the application is considered complete (30 C.F.R. 773.6 (a)(3). When developed, SSPMs should include a brief explanation of how the operator will avoid or minimize disturbances and adverse impacts by explaining how the SSPMs are to be implemented and how they will benefit the ESA-listed or proposed species and/or its critical habitat.

As determined warranted by the Service, the Service may develop range-wide guidance documents[6] to assist in the development of PEPs and/or species-specific protective measures that would be incorporated into individual permits. These guidance documents can also help streamline the permitting process.

PEPs, as required under SMCRA implementing regulations, contain measures to minimize disturbances or impacts to resources, as well as measures that enhance the protection of resources. Thus, it may be the case that PEPs avoid any incidental take from occurring altogether such that incidental take coverage and associated species-specific protective measures to minimize incidental take are not required. Alternatively, species-specific protective measures may be incorporated in PEPs.

[6] While this range-wide guidance has sometimes been referred to informally as "range-wide SSPMs," they are more properly defined as guidance documents, while SSPMs are those measures that are defined at a project specific level, as described above.

4.2.2 Permit Application Process and Service Coordination

As part of the action being evaluated in this consultation, the SMCRA implementing regulations provide for a technical assistance process between the Service, the State regulatory authority, and applicant with respect to initial permit issuance, permit renewals, and significant permit revisions involving all surface coal mining and reclamation operations and coal exploration conducted under Title V of SMCRA. During the technical assistance process, if a proposed action is anticipated to result in incidental take of a species, the State regulatory authority and/or the applicant/mining operator may indicate that incidental take coverage has already been provided under a prior biological opinion (e.g., as a result of ESA section 7(a)(2) consultation with another Federal agency) or via an ESA section 10 permit (i.e., via a previously completed Habitat Conservation Plan [HCP] or Candidate Conservation Agreement with Assurances [CCAA]). If that is the case, then additional species-specific measures would not need to be developed by the Service and incorporated in the permit, and the State regulatory authority and mining operator would not need to rely on incidental take coverage afforded by the ITS contained in this programmatic Opinion.

Because this is a programmatic consultation that examines many activities on a nationwide basis, subsequent, site-specific step-down ESA section 7(a)(2) consultations will be conducted between the Service and OSMRE when OSMRE is the authority rendering a specific permit decision that may affect proposed or listed species or proposed or designated critical habitat.

The SMCRA Coordination Process described in Appendix A and the 2020 DRP process, as described in Appendix B and developed by OSMRE in coordination with the Service, provide additional information describing OSMRE's action evaluated in this consultation. Because concerns have been previously raised relating to the inconsistent implementation of the technical assistance process, these documents are also intended to address this concern by providing information to State regulatory authorities, OSMRE and Service staff, the mining industry, as well as other interested parties, on how this process operates between State (or Tribal) regulatory authorities and the Service. As discussed in further detail in this Opinion, the Service finds that the additional clarity provided by these documents will assist in addressing the concerns surrounding inconsistent implementation and other issues in order to help OSMRE ensure that its regulatory program, including approved State SMCRA regulatory programs, is structured to avoid the issuance of a permit that is likely to jeopardize ESA-listed species or result in destruction or adverse modification of critical habitat.

4.2.2.1 SMCRA Coordination Process Between the Service and the Applicable State Regulatory Authority

The document in Appendix A describes how the technical assistance process contained in SMCRA implementing regulations is implemented between the State regulatory authority and the Service[7], where States have primacy. The technical assistance process is essentially the

[7] As any proposed permit where OSMRE is the regulatory authority would undergo step-down section 7 consultation, this process is only relevant to the circumstances in which the States have primacy.

exchange of information between the Service and the applicable State regulatory authority on effects to ESA-listed and proposed species and critical habitat associated with mining permit determinations (i.e., initial permit issuance, for exploration that will remove 250 tons of coal or more or that will occur on lands designated as unsuitable for mining, permit renewals, and significant permit revisions) that are made by the State regulatory authority. The Service may provide comments and recommendations for the State regulatory authority to consider as it determines a PEP to be implemented as part of the permitted action, any SSPMs to the extent that the State regulatory authority and project proponent seek incidental take coverage, and to assist the State regulatory authority with its compliance with the SMCRA regulatory requirement to ensure that no permit will be issued that will jeopardize ESA proposed or listed species and/or destroy or adversely modify critical habitat designations and proposed designations.

We use the phrase "SMCRA Coordination Process" throughout this document to describe the exchange of information among State regulatory authorities, applicants, mining operators, and the Service. Although SMCRA regulations provide for coordination with the Service in review of individual permits, further clarification of the regulations was desired between OSMRE and the Service to ensure smooth coordination between State regulatory authorities, applicants, and the Service. The SMCRA Coordination Process clarifies the information needs of the Service when evaluating the effects of proposed permitted activities on listed and proposed species and designated and proposed critical habitats. During the SMCRA Coordination Process, the Service will provide recommendations and assist the State regulatory authority in their efforts to ensure the proposed mining operation is not likely to jeopardize listed or proposed species or destroy or adversely modify designated or proposed critical habitats. The Service has the opportunity to review the relevant permitting material in a timely manner and, in coordination with the State regulatory authority and applicant (as detailed in 30 C.F.R. §§ 780.16 and 784.21), assist in developing measures to minimize disturbances and adverse impacts to proposed or listed as threatened or endangered species or proposed or designated critical habitat. The Service will consider adverse effects to listed species or critical habitat, and estimate any anticipated incidental take during review of the permit application and PEP. Under the ESA, the Service is ultimately responsible for the accurate quantification and tracking of take exempted through consultation.

To ensure timely permit processing as outlined in the SMCRA Coordination Process described in Appendix A, this coordination will occur within 30 days of receipt of the fish and wildlife information required as part of an administratively complete application. OSMRE's regulations at 30 C.F.R. § 780.16 require a permit application to include a Protection and Enhancement Plan that includes protective measures and enhancement measures as mandatory permit conditions, as determined by the State regulatory authority in consultation with the Service for permits that may affect listed species or their designated critical habitat. Permits are deemed administratively complete by the State regulatory authority. Upon receipt of the resource information specified in Appendix A from the State regulatory authority, the Service will conduct a review of the materials to determine if any of the required information is missing or in need of clarification in order for the Service to evaluate the permit application and decide whether they are sufficient to determine if and how the permitted operation will affect listed species or their habitats. If the information is not sufficient to make such a determination, the Service will provide the State regulatory authority with a detailed explanation of what additional information is required. Once requested information on listed or proposed species or designated or proposed critical habitat and the measures proposed for their protection is received, the Service will respond to the State

regulatory authority within 30 days and propose, if necessary, any species-specific protective measures to minimize incidental take or avoid jeopardy and/or adverse modification.

Specific to State regulatory authorities as outlined in the SMCRA Coordination Process (Appendix A), if the State regulatory authority accepts the new measures, they will incorporate them as mandatory conditions into the permit. If the State regulatory authority does not accept the additional measures, the regulatory authority must respond to the Service, explaining its rationale for not implementing all the suggested protective measures. The Service will respond to the State regulatory authority with its decision whether it agrees with the State regulatory authority's rationale for not accepting the additional measures and to provide its reason(s) for agreeing with the decision in a confirmation letter to the State regulatory authority.

4.2.2.2 2020 Dispute Resolution Process Relevant to Regulatory Authorities Coordinating SMCRA Permitting with the USFWS (2020 DRP).

OSMRE provided the 2020 DRP (Appendix B) to accompany the SMCRA Coordination Process addendum to OSMRE's biological assessment. The 2020 DRP applies to State regulatory authorities where they are the primary regulatory authority. The goal of the dispute resolution process is to efficiently and effectively resolve disagreements that may arise at the permitting level. If the State regulatory authority and the Service cannot agree on the measures recommended by the Service or if the Service does not provide recommendations within the 30-day process as described in the 2020 DRP, the dispute may be elevated. The dispute resolution process is structured to resolve issues at the lowest level of management possible. The dispute resolution process has four levels of elevation: 1) OSMRE and Service Field offices; 2) Regional OSMRE and Regional Service offices; 3) OSMRE and the Service Headquarters; and 4) the Secretary. The following paragraphs provide a general overview of the 2020 DRP. Additional information on this process, including the roles of participants and timing, can be found in the addendum to the biological assessment and attached to this Opinion for reference as Appendix B.

At Level 1 in the elevation process, the Field Office Director or comparable entity (FOD) will review the situation, consult experts as needed including the Service and the applicant, and offer a reasonable resolution on the issue. Once a proposed resolution is issued, the State regulatory authority can either require implementation of the proposed resolution if one is issued and request agreement of the Service, to which the Service will either respond within 14 days, reject the proposed result and request elevation to Level 2, or reject the proposed resolution and approve the permit. If the issue is not resolved at Level 1, the State regulatory authority may request review by the OSMRE Regional Office or the Service Regional Office, thereby activating Level 2 review.

When Level 2 review is initiated, the appropriate OSMRE or Service Regional Director (RD) or/ their designees will contact the reciprocal office and mutually establish an evaluation team. The evaluation will be comprised of experts deemed essential to derive a satisfactory resolution to the issue. The RDs of OSMRE and the Service will mutually serve as the officials to assist in resolving the issue. Resolution should occur within 14 days of receipt of the review request. Once a proposed resolution is issued, the State regulatory authority can either require implementation of the proposed resolution and request agreement of the Service, to which the

Service will respond within 14 days, reject the proposed resolution and request elevation to Level 3, or reject the proposed resolution and approve the permit.

When an issue is elevated to Level 3, the contacted Director or their designees will contact the Director of the reciprocal office and begin a coordinating and review process. The Directors may choose personnel they believe will help promptly resolve the issue to assist them, including experts or members of the State regulatory authority. The Directors will reach a consensus and offer a resolution to the parties within 14 days of review request. Once a proposed resolution is issued, the State regulatory authority can either require implementation of the proposed resolution and request agreement of the Service (in which case the Service will respond within 14 days), reject the proposed resolution and request elevation to Level 4, or reject the proposed resolution and approve the permit.

At Level 4, the State regulatory authority may request review by the Secretary of the Department of the Interior (Secretary), or his or her designee. After careful consideration, the Secretary will offer a proposed resolution within 21 days. Once a proposed resolution is issued, the regulatory authority can either require implementation of the proposed resolution or reject the proposed resolution and approve the permit. Further elevations will not be available.

4.2.2.3 Additional Considerations Related to ESA-Listed Species and Critical Habitat

OSMRE's SMCRA regulations at 30 C.F.R. § 773.15(j) require that before any surface coal mining and reclamation permit application or application for a significant revision of a permit can be approved, the regulatory authority must find, in writing, based on information in the application, that the "operation would not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the [ESA]." As described previously, we anticipate the coordination process (Appendix A), where the State has primacy, or the step-down ESA section 7(a)(2) consultation, where OSMRE has permitting authority, would consider information described in the regulations at 30 CFR § 780.16.

The regulations at 30 C.F.R. § 816.97(b) state "[n]o surface mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species … or which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the [ESA]." In implementing those regulations, in the event the species- and site-specific analyses performed during the SMCRA Coordination Process (i.e., where a State has primacy) determine a permitted operation is likely to result in jeopardy of a listed or proposed species or destruction or adverse modification of designated or proposed critical habitat and the State regulatory authority and Service cannot come to agreement on an alternative that would avoid the likelihood of jeopardy or destruction or adverse modification, OSMRE through the process described in the 2020 DRP (Appendix B) will engage to facilitate a resolution of those differences. Where OSMRE is the regulatory authority, ESA section 7 procedures would apply.

The regulations at 30 C.F.R. § 816.97(b) also state, "[t]he operator shall promptly report to the regulatory authority any State- or federally-listed endangered or threatened species within the permit area of which the operator becomes aware. Upon notification, the regulatory authority

shall consult with appropriate State and Federal fish and wildlife agencies and, after consultation, shall identify whether, and under what conditions, the operator may proceed. (30 C.F.R. § 816.97(b)). We interpret this to include, for example, rare or infrequent circumstances, where, after the permit has been issued, the operator may become aware of endangered or threatened species that enter the action permit area that had not previously considered or addressed during previous coordination or step-down ESA section 7(a)(2) consultation with the Service, as applicable. We generally anticipate this coordination would be largely consistent with the coordination process described in the biological assessment and its appendices (and provided for reference this to document in Appendix A) where the State has primacy, or according to ESA section 7 procedures, where OSMRE is the regulatory authority. Similarly, as new species become listed or proposed under the ESA or as critical habitat is proposed or designated, and operators or regulatory authorities become aware that those newly listed or proposed species or proposed or designated critical habitat would be affected by individual mining projects, those operators and/or the regulatory authority must coordinate with the local Service Field Office to determine if the permit and other related documents (e.g., PEP, where applicable) need to be re-examined, particularly where these resources were not addressed in the previous technical assistance or step-down ESA Section 7(a)(2) consultation (as appropriate)

4.2.3 Permit Enforcement under State Regulatory Programs

As discussed in OSMRE's biological assessment, each of the States that obtained primacy has followed the procedures outlined in 30 C.F.R. Part 732, and the Secretary has determined, among other things, that each state's program "provides for the State to carry out the provisions and meet the purposes of the Act and this Chapter within the State and that the State's laws and regulations are in accordance with the provisions of the Act and consistent with the requirements of this Chapter." 30 C.F.R. § 732.15(a).

SMCRA provides OSMRE with oversight responsibility, which further shields fish, wildlife, and related environmental values and resources in the event that a State regulatory authority issues a permit that is likely to jeopardize the continued existence of species or adversely modify critical habitat. OSMRE is responsible for overseeing the effectiveness of the state's implementation, administration, or enforcement of its approved program, which ensures that State regulatory authorities are enforcing the State counterparts to the Federal regulations.

OSMRE's oversight authority is both permit-specific and programmatic. For alleged permit-specific violations, under 30 U.S.C. § 1271(a)(1), whenever OSMRE, on the basis of any information available, including receipt of information from any person, has reason to believe that any person is in violation of any requirement of the Act or any permit condition required by the Act, OSMRE must notify the State regulatory authority. The State regulatory authority then has ten days to take appropriate action to cause the violation to be corrected or show good cause for not taking action (30 U.S.C. § 1271(a)(1); *see also* 30 C.F.R. §§ 842.11(b)(1), 843.12(a)(2)). If the State regulatory authority fails to take appropriate action or show the requisite good cause for failing to act, OSMRE will order and conduct a Federal inspection of the surface coal mining operation at which the alleged violation is occurring, unless the information available to OSMRE is the result of a prior Federal inspection (30 U.S.C. § 1271(a)(1); 30 C.F.R. § 842.11(b)(1)).

If OSMRE, on the basis of a Federal inspection, determines that any permittee is in violation of any requirement of SMCRA or any permit condition required by SMCRA and that violation does not create imminent harm or danger, then OSMRE will issue a notice of violation (NOV) to the permittee setting forth a reasonable time for abatement of the violation and providing opportunity for a public hearing (30 U.S.C. § 1271(a)(3)). If OSMRE finds that the violation has not been abated within the time provided, OSMRE will order a cessation of surface coal mining and reclamation operations.

OSMRE will waive the ten-day notice process and immediately order a Federal inspection in instances where OSMRE has adequate proof that an imminent danger of significant environmental harm exists, and the State has failed to take appropriate action (*Id*. at § 1271(a)(1)). If OSMRE determines, on the basis of any Federal inspection, that any condition or practices exist or that the permittee is in violation of any requirement of SMCRA or any permit condition required by SMCRA, and that condition, practice, or violation creates an imminent danger to the health or safety of the public, or is causing, or can reasonably be expected to cause significant, imminent environmental harm to land, air, or water resources, OSMRE must immediately order a cessation of that surface coal mining and reclamation operation (*Id*. at § 1271(a)(2)). The Federal regulations define a "significant, imminent environmental harm to land, air, or water resources" to include harm to "plant and animal life," and consider environmental harm to be significant "if that harm is appreciable and not immediately reparable" (30 C.F.R. § 701.5).

In addition to permit-specific Federal enforcement, OSMRE has programmatic oversight responsibilities. OSMRE is required to evaluate the administration of each State regulatory program at least annually (30 C.F.R. § 733.12(a)(1)). An evaluation can also be initiated at the request of any interested person who provides a statement of facts alleging that a State is not effectively implementing, administering, maintaining or enforcing any part of its approved program (*Id*. at § 733.12(a)(2)). If OSMRE finds that a State is not effectively administering any or all of its approved program, the Director will either substitute Federal enforcement for all or part of the State program or recommend that the Secretary withdraw approval of the State program (*Id*. at § 733.12(e)).

Pursuant to these provisions of the Act and Federal regulations, OSMRE has the authority to ensure that each State regulatory authority is satisfying its obligations under its approved State regulatory program, including those provisions related to the protection of proposed or listed species and/or designated critical habitat. OSMRE's regulations at 30 C.F.R. Part 773 related to requirements for permits and permit processing can serve to ensure that permitted actions are not likely to jeopardize the continued existence of ESA-listed species and/or destroy or adversely modify critical habitat. First, if OSMRE received information, from any person, including the Service, concerning the impacts of a permitted mining operation on species or critical habitat and depending on the facts of the situation, OSMRE may issue a ten-day notice to the appropriate State regulatory authority or conduct a Federal inspection when appropriate. Thus, where appropriate, OSMRE will invoke its oversight authority as enumerated in 30 U.S.C. § 1271(a), in the event it receives information from any person (again including the Service) that a permitted mine will result in significant, imminent environmental harm to ESA-listed species and/or critical habitat. Second, as detailed in 30 U.S.C. § 1271(b), if OSMRE discovers or receives information concerning the ability and effectiveness of a State regulatory authority to implement, administer, or enforce the fish and wildlife, and related environmental values portion of its

approved State program, OSMRE could require modification of that portion of the approved State program, which could lead to more effective implementation, administration, or enforcement of the approved State program. For example, such information may include information on a State regulatory authority's coordination or review with the Service to design protection and enhancement plans as necessary and provide site-specific resource information during the permitting process. In extreme cases, OSMRE could substitute Federal enforcement or withdraw that portion of the State program.

30 C.F.R. Part 842 requires issuance of a ten-day notice (with certain exceptions) to State and Tribal regulatory authorities when: (a) the authorized representative has reason to believe a violation of SMCRA, the approved regulatory program, or a permit condition exists; or (b) on the basis of a Federal inspection, the authorized representative determines that a violation of SMCRA, the approved regulatory program, or a permit condition exists and OSMRE has not issued a previous ten-day notice (TDN) for the same violation (30 C.F.R. Part 842 and Part 843).

4.2.4 Monitoring During Mining and Reclamation

The Service may recommend monitoring to ESA-listed species, including but not limited to, monitoring of take within the permit and adjacent areas related to individual ESA-listed or proposed species that have the potential to be impacted by the proposed mining operation, as part of the permit review. Species-specific monitoring should be performed by personnel with relevant taxonomic expertise and capable of identifying the target species and following Service-recommended protocols.

Monitoring recommended by the Service would be to identify adverse trends and determine whether any changes are needed to the mining and reclamation plan (e.g., to monitor effectiveness of SSPMS, and to prevent material damage to the hydrologic balance outside the permit area). Monitoring recommended by the Service to avoid or minimize impacts to proposed or listed species and their proposed or designated critical habitat is required as a term and condition if the State or Tribal regulatory authority is seeking incidental take coverage under this Incidental Take Statement.

4.3 Action Area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 C.F.R. § 402.02). Consistent with the ESA Section 7 implementing regulations, in delineating the action area for the proposed action, we evaluated the physical, chemical, and biotic effects of the action on the environment that would not occur but for the action and are reasonably certain to occur. The action area for this consultation, as delineated by these effects to the environment, consists of the areas within the United States that are major coal producing areas (Figure 1). This area represents the extent of lands that could be mined under OSMRE's regulatory program, with the understanding that the effects of coal mining can extend well beyond the footprint of individual mines addressed

under OSMRE's regulatory program.

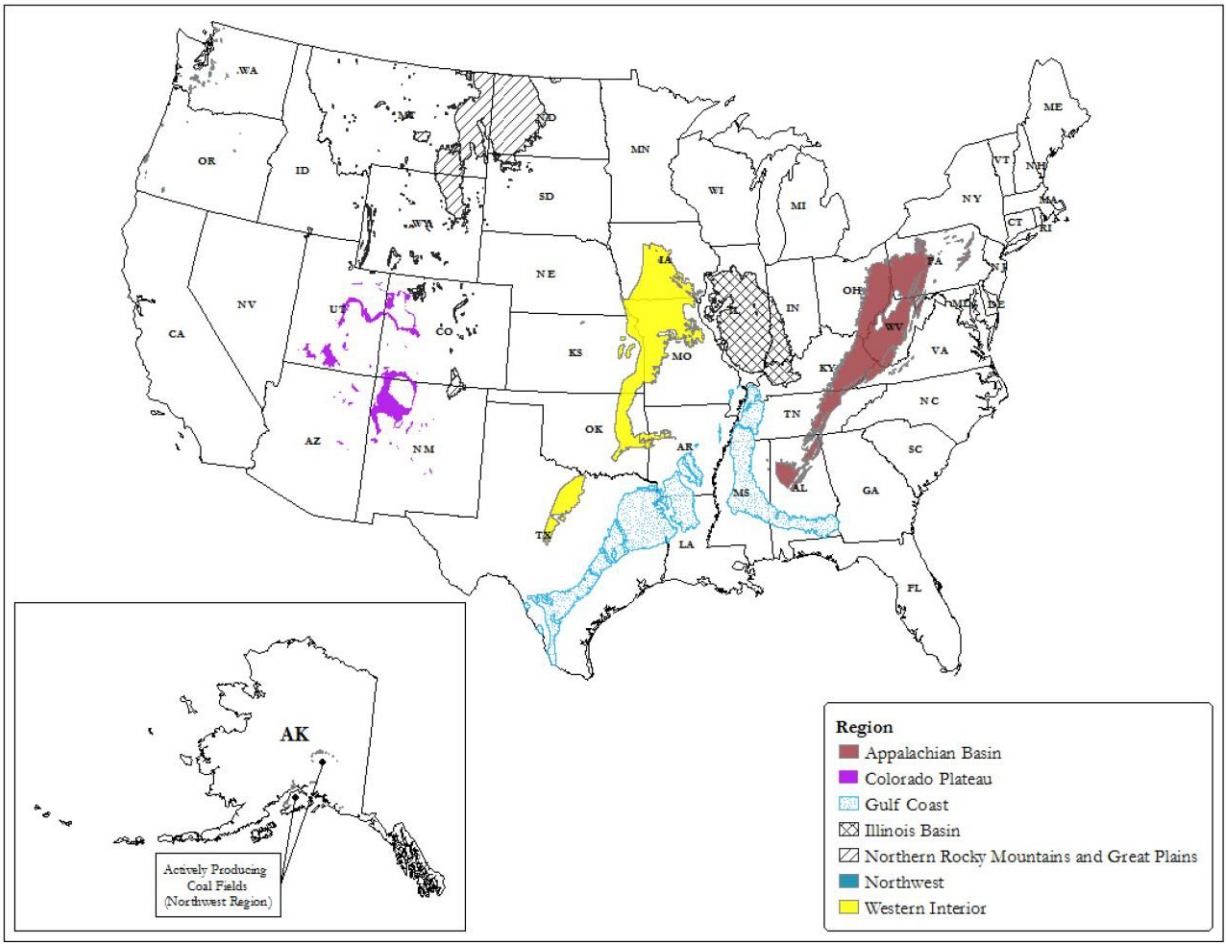

Figure 1. Action area for the OSMRE consultation showing major coal producing areas of the United States. Source: OSMRE's Biological Assessment. Modified from: United States Geological Survey (USGS), 2011, Coal Fields, United States Department of the Interior (https://www.sciencebase.gov/catalog/item/4f4e477ae4b07f02db47f841).

5 APPROACH TO THE ASSESSMENT

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assistance of the Services (U.S. Fish and Wildlife Service and National Marine Fisheries Service), to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any ESA-listed species or result in the destruction or adverse modification of designated critical habitat. "'Jeopardize the continued existence of'" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." (50 C.F.R. § 402.02) "'Destruction or adverse modification'" means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." (50 C.F.R. § 402.02).

Because we are consulting on OSMRE's implementation of Title V of SMCRA, which regulates many activities conducted over several geographic areas and long periods of time, there is substantial uncertainty about the number, location, timing, frequency, and intensity of individual activities. Therefore, we developed a programmatic consultation approach to determine whether and to what degree OSMRE has structured their regulatory program to ensure its implementation is not likely to jeopardize the continued existence of proposed or listed species or result in the destruction or adverse modification of proposed or designated critical habitat by assessing whether the following criteria are fulfilled: (1) understand the scope of its action; (2) reliably estimate the physical, chemical, or biotic stressors that are likely to be produced as a direct or indirect result of their action; (3) minimize adverse effects of such activities on ESA-listed species and designated critical habitat; (4) identify, inform, encourage, and screen applicants for potential eligibility under or participation in the permitted activity; (5) continuously monitor and evaluate likely adverse effects on listed species and critical habitat; (6) monitor and enforce permit compliance; and (7) modify its action if new information (including inadequate protection for species or low levels of compliance) becomes available. This approach is further described in Section 8.1. This approach also recognizes that site- and species-specific considerations would be addressed with the Service in subsequent technical assistance efforts with the State or Tribal regulatory authority through the SMCRA Coordination Process, or, where OSMRE is the regulatory authority, during a subsequent step-down ESA Section 7(a)(2) consultation.

Jeopardy Determination

The jeopardy analysis in this Opinion relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the listed species in the action area, without the consequences to the listed species caused by the proposed action; (3) the *Effects of the Action*, which includes all consequences to listed species that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

For purposes of making the jeopardy determination, the Service: (1) reviews all the relevant information, (2) evaluates the current status of the species and environmental baseline, (3) evaluates the effects of the Action and cumulative effects, (4) add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species, determines if the Action is likely to jeopardize listed species.

We evaluated the effects of the action on guilds of ESA-proposed and -listed species and designated and proposed critical habitat. Assigning species to guilds based on life-history similarities allows for a thorough review of expected responses of similar species to stressors without redundantly discussing key impacts for each individual species. Analysis of effects using a guild approach is more appropriate at the programmatic level. Species-specific and site-specific analyses will occur during subsequent step-down ESA section 7(a)(2) consultations (when OSMRE is issuing the permit) and the technical assistance process conducted between the Service and the State regulatory authority for permit decisions issued by the State regulatory authority.

Adverse Modification Determination
The destruction or adverse modification analysis in this Opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the range-wide condition of the critical habitat in terms of the key components (i.e., essential habitat features, physical and biological features, or primary constituent elements) that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat overall for the conservation/recovery of the listed species; (2) the *Environmental Baseline*, which analyzes the condition of the designated critical habitat in the action area, without the consequences to the designated critical habitat caused by the proposed action; (3) the *Effects of the Action*, which includes all consequences to the critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action; and (4) *Cumulative Effects*, which evaluate the effects of future non-Federal activities that are reasonably certain to occur in the action area on the key components of critical habitat that provide for the conservation of the listed species and how those impacts are likely to influence the conservation value of the affected critical habitat.

For purposes of making the destruction or adverse modification determination, the Service: (1) reviews all relevant information, (2) evaluates the current status of the critical habitat and environmental baseline, (3) evaluates the effects of the proposed action and cumulative effects, (4) add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the critical habitat, determines if the proposed action is likely to result in the destruction or adverse modification of critical habitat.

Past designations of critical habitat have used the terms “primary constituent elements” (PCEs), “physical or biological features” (PBFs) or "essential features" to characterize the key components of critical habitat that provide for the conservation of the listed species. Recent critical habitat regulations (50 C.F.R. § 402.02) discontinue use of the terms PCEs or essential features, and rely exclusively on use of the term PBFs for that purpose because that term is contained in the statute. However, the shift in terminology does not change the approach used in conducting a ‘‘destruction or adverse modification’’ analysis, which is the same regardless of whether the original designation identified PCEs, PBFs or essential features. For those reasons, in this Opinion, we use the term PBFs to characterize the key components of critical habitat that provide for the conservation of the listed species.

6 STATUS OF THE SPECIES AND CRITICAL HABITAT

In the biological assessment, OSMRE identified 194 ESA-listed and proposed species (66 of which have proposed or designated critical habitat) that overlap with the Action Area and that that may affected by the proposed action. Species addressed in this Opinion are listed in Table 1 below. In their biological assessment, OSMRE assigned each of the species to guilds. The remainder of this Opinion addresses species and critical habitats within these functional guilds, based primarily on taxa groups (i.e., animals) or habitat associations (i.e., plants). Taxa and habitat group categories for guilds vary according to the similarities in expected exposure or response to the effects of the activities covered by the action. Taxa groupings may include broader groups of species (e.g., passerines, raptors, shorebirds, salamanders, crayfish, bats, mussels, etc.), or may have a more narrow focus, as appropriate (e.g., cuckoos, sage grouse, carrion beetles, or jumping mice). For plants, three categories were used, based on habitat type:

hydric (wet), xeric (dry), and mesic (intermediate or transitional between wet and dry habitats). The status of the species and critical habitat are addressed in Appendix C of this Opinion[8] and are discussed according to these groups; additional information on the status of the species and critical habitat can also be found in OSMRE's biological assessment.

The species and critical habitats potentially affected by this action will be identified and evaluated on a project-specific basis by the Service Field Offices during ESA technical assistance with State or Tribal regulatory authorities, or through subsequent section 7 consultations where OSMRE is the regulatory authority. We have worked with OSMRE to determine the list of species addressed in this Opinion, and consider these species in the context of guilds to aid in our analysis. The use of guilds for analyses also allows for a broader consideration of anticipated effects among species, including, where applicable, any subsequent listings of species that would experience similar exposures or responses to those considered in this Opinion.

[8] Supplemental information is also available for each species in species-specific documents, such as proposed and final listing determinations, critical habitat designations, recovery plans, species status assessments, and five-year reviews (https://www.fws.gov/endangered/species/us- species.html).

Table 1. Endangered, Threatened, and Proposed Species That May Be Affected by the Action. Key: Coal Basin: AP – Appalachian; AK – Alaska; CP- Colorado Plateau; G – Gulf; I – Illinois; NRM – Northern Rocky Mountains; WI – Western Interior. Federal Status: LE – Listed Endangered; LT – Listed Threatened; XN – Experimental Non-essential; CH – Critical Habitat designated; P – Proposed. Critical Habitat: NA – not applicable; UTD- unable to determine based on pending critical habitat designation.

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Amphibians	Chiricahua leopard frog	*Rana chiricahuensis*	LT, CH	CP	Frogs and Toads	0.7	0.0
Amphibians	Houston toad	*Bufo houstonensis*	LE, CH	G	Frogs and Toads	52.0	86.0
Amphibians	Jemez Mountains salamander	*Plethodon neomexicanus*	LE, CH	CP	Salamanders	11.1	0.0
Amphibians	Cheat Mountain salamander	*Plethodon nettingi*	LT	AP	Salamanders	20.8	NA
Amphibians	Black warrior waterdog	*Necturus alabamensis*	LE, CH	AP	Salamanders	55.0	39.0
Birds	Yellow-billed cuckoo	*Coccyzus americanus*	LT, PCH	CP, NRM	Cuckoos	3.5	1.4
Birds	Gunnison sage-grouse	*Centrocercus minimus*	LT, CH	CP	Sage-grouse	6.6	1.9
Birds	Southwestern willow flycatcher	*Empidonax traillii extimus*	LE, CH	CP, NRM,	Passerines	4.1	0.3

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Birds	California condor	*Gymnogyps californianus*	XN	CP	Raptors	2.2	NA
Birds	Mexican spotted owl	*Strix occidentalis lucida*	LT, CH	CP, NRM	Raptors	5.2	4.2
Birds	Piping plover	*Charadrius melodus*	LE, CH	AP, CP, I, NRM,	Shorebirds	12.0	32.3
Birds	Interior least tern	*Sternula antillarum*	LE	CP, G. I, NRM, WI	Shorebirds	16.2	NA
Birds	Rufa Red knot	*Calidris canutus rufa*	LT	NRM, G	Shorebirds	13.0	NA
Birds	Whooping Crane	*Grus americana*	LE, CH	NRM,G	Wading birds	13.0	NA
Birds	Red-cockaded woodpecker	*Picoides borealis*	LE	AP, G	Woodpeckers	12.1	NA
Crustaceans	Big Sandy crayfish	*Cambarus callainus*	LT, PCH	AP	Crayfish	98.0	90.0
Crustaceans	Guyandotte River crayfish	*Cambarus veteranus*	LE, PCH	AP	Crayfish	100.0	100.0

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Crustaceans	Slenderclaw crayfish	*Cambarus cracens*	PLT, PCH	AP	Crayfish	87.0	UTD
Fishes	Diamond darter	*Crystallaria cincotta*	LE, CH	AP, I	Darters	92.6	22.9
Fishes	Bluemask darter	*Etheostoma akatulo*	LE	AP	Darters	44.2	NA
Fishes	Vermilion darter	*Etheostoma chermocki*	LE	AP, WI	Darters	45.6	NA
Fishes	Relict darter	*Etheostoma chienense*	LE	G	Darters	72.6	NA
Fishes	Watercress darter	*Etheostoma nuchale*	LE	AP	Darters	56.1	NA
Fishes	Duskytail darter	*Etheostoma percnurum*	LE	AP	Darters	34.4	NA
Fishes	Candy darter	*Etheostoma osburni*	LE, PCH	AP	Darters	37	8.0
Fishes	Rush darter	*Etheostoma phytophilum*	LE, CH	AP	Darters	35.3	9.5

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Fishes	Bayou darter	*Etheostoma rubrum*	LT	G	Darters	7.1	NA
Fishes	Kentucky arrow darter	*Etheostoma spilotum*	LT, CH	AP	Darters	84.2	10.4
Fishes	Cumberland darter	*Etheostoma susanae*	LE, CH	AP	Darters	84.4	NC
Fishes	Trispot darter	*Etheostoma trisella*	LT, PCH	AP	Darters	11.0	NC
Fishes	Goldline darter	*Percina aurolineata*	LT	AP	Darters	28.1	NA
Fishes	Pearl darter	*Percina aurora*	LT	G	Darters	13.0	NA
Fishes	Snail darter	*Percina tanasi*	LT	AP	Darters	11.9	NA
Fishes	Yellowfin madtom	*Noturus flavipinnis*	LT, CH	AP	Madtoms	8.1	0.0
Fishes	Neosho madtom	*Noturus placidus*	LT	WI	Madtoms	21.9	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Fishes	Laurel dace	*Chrosomus saylori*	LE, CH	AP	Minnows	60.6	100.0
Fishes	Spotfin chub	*Erimonax monachus*	LT, XN, CH	AP	Minnows	21.5	54.5
Fishes	Slender chub	*Erimystax cahni*	LT, CH	AP	Minnows	23.0	2.4
Fishes	Humpback chub	*Gila cypha*	LE, CH	CP, NRM	Minnows	6.5	9.0
Fishes	Bonytail	*Gila elegans*	LE, CH	CP, NRM	Minnows	5.3	2.1
Fishes	Rio Grande silvery minnow	*Hybognathus amarus*	LE, CH, XN	CP	Minnows	2.1	0.0
Fishes	Little Colorado spinedace	*Lepidomeda vittata*	LE, CH	CP	Minnows	1.2	0.0
Fishes	Palezone shiner	*Notropis albizonatus*	LE	AP	Minnows	44.7	NA
Fishes	Cahaba shiner	*Notropis cahabae*	LE	AP	Minnows	43.0	NA
Fishes	Blackside dace	*Chrosomus cumberlandensis*	LT	AP	Minnows	62.5	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Fishes	Colorado pikeminnow	*Ptychocheilus lucius*	LE, CH, XN	CP, NRM	Minnows	9.6	6.1
Fishes	Loach minnow	*Tiaroga cobitis*	LE	CP	Minnows	1.3	NA
Fishes	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	LT, CH	G	Sturgeon	4.0	0.0
Fishes	Pallid sturgeon	*Scaphirhynchus albus*	LE	G, I, NRM, WI	Sturgeon	27.1	NA
Fishes	Alabama sturgeon	*Scaphirhynchus suttkusi*	LE, CH	AP	Sturgeon	24.9	14.4
Fishes	Zuni bluehead sucker	*Catostomus discobolus yarrowi*	LE, CH	CP	Suckers	24.3	0.0
Fishes	Razorback sucker	*Xyrauchen texanus*	LE, CH	CP, NRM	Suckers	5.0	0.6
Fishes	Apache trout	*Oncorhynchus apache*	LT	CP	Trout	0.3	NA
Fishes	Greenback cutthroat trout	*Oncorhynchus clarki stomias*	LT	CP, NRM	Trout	6.2	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Fishes	Gila trout	*Oncorhynchus gilae*	LT	CP	Trout	0.5	NA
Insects	Rusty patched bumble bee	*Bombus affinus*	LE	I, AP	Bumble bees	11.0	NA
Insects	Dakota skipper	*Hesperius dacotae*	LT, CH	NRM	Butterflies	26.0	4.0
Insects	Mitchell's satyr butterfly	*Neonympha mitchellii*	LE	AP	Butterflies	9.6	NA
Insects	American burying beetle	*Nicrophorus americanus*	LT	AP, WI	Carrion Beetles	18.4	NA
Mammals	Virginia big-eared bat	*Corynorhinus (Plecotus) townsendii virginianus*	LE, CH	AP	Bats	27.6	0.0
Mammals	Gray bat	*Myotis grisescens*	LE	AP, G, I, WI	Bats	21.3	NA
Mammals	Northern long-eared bat	*Myotis septentrionalis*	LT	AP, G, I, WI	Bats	18.8	NA
Mammals	Indiana bat	*Myotis sodalis*	LE, CH	AP, G, I	Bats	31.6	0.0

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mammals	Ocelot	*Leopardus pardalus*	LE	G	Cats	21.0	NA
Mammals	Gulf Coast jaguarundi	*Herpailurus yagouaroundi*	LE	G	Cats	25.0	NA
Mammals	Canada lynx	*Lynx canadensis*	LT	NRM	Cats	2.0	1.0
Mammals	New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	LE, CH	CP, NRM	Jumping Mice	7.2	9.3
Mammals	Preble's meadow jumping mouse	*Zapus hudsonius preblei*	LT, CH	NRM	Jumping Mice	3.9	4.4
Mammals	Utah prairie dog	*Cynomys parvidens*	LT	CP	Other Mammals	13.0	NA
Mammals	Black-footed ferret	*Mustela nigripes*	LE, XN	CP, NRM	Other Mammals	10.7	NA
Mammals	North American wolverine	*Gulo gulo luscus*	PLT	NRM	Other Mammals	2.0	NA
Mammals	Grizzly bear	*Ursos arctos horriblis*	LT	NRM	Other Mammals	1.0	NA
Mollusks	Anthony's riversnail	*Athearnia anthonyi*	LE, XN	AP	Aquatic Snails	22.8	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mollusks	Round rocksnail	*Leptoxis ampla*	LT	AP	Aquatic Snails	37.6	NA
Mollusks	Plicate rocksnail	*Leptoxis plicata*	LE	AP	Aquatic Snails	45.6	NA
Mollusks	Flat pebblesnail	*Lepyrium showalteri*	LE	AP	Aquatic Snails	23.2	NA
Mollusks	Cylindrical lioplax	*Lioplax cyclostomaformis*	LE	AP	Aquatic Snails	37.6	NA
Mollusks	Cumberland elktoe	*Alasmidonta atropurpurea*	LE, CH	AP	Mussels	64.5	82.4
Mollusks	Oauchita rock pocketbook	*Arkansia wheeleri*	LE	G	Mussels	20.5	NA
Mollusks	Spectaclecase	*Cumberlandia monodonta*	LE	AP, G, I, WI	Mussels	12.3	NA
Mollusks	Fanshell	*Cyprogenia stegaria*	LE	AP, G, I	Mussels	40.7	NA
Mollusks	Dromedary pearlymussel	*Dromus dromas*	LE	AP	Mussels	9.9	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mollusks	Cumberlandian combshell	*Epioblasma brevidens*	LE, CH	AP	Mussels	20.8	26.9
Mollusks	Oyster mussel	*Epioblasma capsaeformis*	LE, CH	AP	Mussels	12.8	26.9
Mollusks	Tan riffleshell	*Epioblasma Florentina walkeri (E. walkeri)*	LE	AP	Mussels	28.4	NA
Mollusks	Purple cat's paw pearly mussel	*Epioblasma obliquata obliquata*	LE	AP, I	Mussels	40.6	NA
Mollusks	Northern riffleshell	*Epioblasma torulosa rangiana*	LE	AP, I	Mussels	11.9	NA
Mollusks	Snuffbox	*Epioblasma triquetra*	LE	AP, I	Mussels	17.5	NA
Mollusks	Shiny pigtoe	*Fusconaia cor*	LE	AP	Mussels	15.1	NA
Mollusks	Finerayed pigtoe	*Fusconaia cuneolus*	LE	AP	Mussels	12.0	NA
Mollusks	Longsolid	*Fusconaia subrotunda*	PT	AP	Mussels	32.0	UTD

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mollusks	Finelined pocketbook	*Lampsilis altilis*	LT, CH	AP	Mussels	14.5	10.7
Mollusks	Orangenacre mucket	*Lampsilis perovalis*	LT, CH	AP, G	Mussels	21.9	19.6
Mollusks	Cracking pearlymussel	*Hemistena lata*	LE	AP	Mussels	17.0	NA
Mollusks	Pink mucket	*Lampsilis abrupta*	LE	AP, G, I	Mussels	18.6	NA
Mollusks	Arkansas fatmucket	*Lampsilis powellii*	LT	G	Mussels	21.0	NA
Mollusks	Neosho mucket	*Lampsilis rafinesqueana*	LE, CH	WI	Mussels	23.5	27.0
Mollusks	Alabama lampmussel	*Lampsilis virescens*	LE	AP	Mussels	17.9	NA
Mollusks	Birdwing pearlymussel	*Lemiox rimosus*	LE	AP	Mussels	16.9	NA
Mollusks	Louisiana pearlshell	*Margaritifera hembeli*	LT	G	Mussels	4.0	NA
Mollusks	Alabama moccasinshell	*Medionidus acutissimus*	LT, CH	AP, G	Mussels	20.6	16.6

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mollusks	Ring pink	*Obovaria retusa*	LE, XN	G, I	Mussels	14.1	NA
Mollusks	Round hickorynut	*Obovaria subrotunda*	PT	AP,G,I	Mussels	40.0	UTD
Mollusks	Littlewing pearlymussel	*Pegias fabula*	LE	AP	Mussels	26.9	NA
Mollusks	Orangefoot pimpleback	*Plethobasus cooperianus*	LE	G, I	Mussels	6.5	NA
Mollusks	Sheepnose	*Plethobasus cyphyus*	LE	AP, G, I	Mussels	22.1	NA
Mollusks	Clubshell	*Pleurobema clava*	LE	AP, G, I	Mussels	17.6	NA
Mollusks	Southern clubshell	*Pleurobema decisum*	LE, CH	AP, G	Mussels	20.3	10.1
Mollusks	Dark pigtoe	*Pleurobema furvum*	LE, CH	AP	Mussels	42.2	25.8
Mollusks	Southern pigtoe	*Pleurobema georgianum*	LE, CH	AP	Mussels	12.5	1.0
Mollusks	Cumberland pigtoe	*Pleurobema gibberum*	LE	AP	Mussels	20.1	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mollusks	Ovate clubshell	*Pleurobema perovatum*	LE, CH	AP	Mussels	18.3	14.0
Mollusks	Rough pigtoe	*Pleurobema plenum*	LE	AP, G, I,	Mussels	17.4	NA
Mollusks	Slabside pearlymussel	*Pleuronaia dolabelloides*	LE, CH	AP	Mussels	12.1	3.9
Mollusks	Texas hornshell	*Popenais popeii*	LE	G	Mussels	8.0	NA
Mollusks	Fat pocketbook	*Potamilus capax*	LE	G, I	Mussels	21.4	NA
Mollusks	Inflated heelsplitter	*Potamilus inflatus*	LT	AP, G	Mussels	21.8	NA
Mollusks	Triangular kidneyshell	*Ptychobranchus greenii*	LE, CH	AP	Mussels	24.0	17.8
Mollusks	Fluted kidneyshell	*Ptychobranchus subtentum*	LE, CH	AP	Mussels	30.3	11.5
Mollusks	Rabbitsfoot	*Quadrula cylindrica cylindrica*	LT, CH	AP, G, I, WI	Mussels	22.9	5.8
Mollusks	Rough rabbitsfoot	*Quadrula cylindrica strigillata*	LE, CH	AP	Mussels	26.0	8.6

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Mollusks	Winged mapleleaf	*Quadrula fragosa*	LE	G	Mussels	19.8	NA
Mollusks	Cumberland monkeyface	*Quadrula intermedia*	LE	AP	Mussels	6.3	NA
Mollusks	Appalachian monkeyface	*Quadrula sparsa*	LE	AP	Mussels	27.6	NA
Mollusks	Pale lilliput	*Toxolasma cylindrellus*	LE	AP	Mussels	26.3	NA
Mollusks	Rayed bean	*Villosa fabalis*	LE	AP	Mussels	4.2	NA
Mollusks	Purple bean	*Villosa perpurpurea*	LE, CH	AP	Mussels	38.5	13.2
Mollusks	Cumberland bean	*Villosa trabalis*	LE	AP	Mussels	40.3	NA
Mollusks	Flat-spired three-toothed snail	*Triodopsis platysayoides*	LT	AP	Terrestrial Snails	70.3	NA
Plants	Northern monkshood	*Aconitum noveboracense*	LT	AP	Hydric Plants	8.5	NA
Plants	Decurrent false aster	*Boltonia decurrens*	LT	I	Hydric Plants	44.3	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Plants	Navajo sedge	*Carex specuicola*	LT, CH	CP	Hydric Plants	1.1	0.0
Plants	Morefield's leather-flower	*Clematis morefieldii*	LE	AP	Hydric Plants	32.8	NA
Plants	Cumberland rosemary	*Conradina verticillata*	LT	AP	Hydric Plants	84.1	NA
Plants	Pecos sunflower	*Helianthus paradoxus*	LT, CH	CP	Hydric Plants	1.5	0.0
Plants	Neches River rose-mallow	*Hibiscus dasycalyx*	LT, CH	G	Hydric Plants	94.0	100.0
Plants	Texas golden gladecress	*Leavenworthis texana*	LE, CH	G	Hydric Plants	91.0	100.0
Plants	Louisiana quillwort	*Isoetes louisianensis*	LE	G	Hydric Plants	11.4	NA
Plants	Pondberry	*Lindera melissifolia*	LE	G	Hydric Plants	3.6	NA
Plants	White fringeless orchid	*Platanthera integrilabia*	LT	AP, G	Hydric plants	21.4	NA
Plants	Eastern prairie fringed orchid	*Platanthera leucophaea*	LT	AP, I	Hydric Plants	37.9	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Plants	Harperella	*Ptilimnium nodosum*	LE	AP	Hydric Plants	6.8	NA
Plants	Kral's water plantain	*Sagittaria secundifolia*	LT	AP	Hydric Plants	15.9	NA
Plants	Green pitcher plant	*Sarracenia oreophila*	LE	AP	Hydric Plants	25.6	NA
Plants	Northeastern bulrush	*Scirpus ancistrochaetus*	LE	AP	Hydric Plants	5.2	NA
Plants	Virginia spiraea	*Spiraea virginiana*	LT	AP	Hydric Plants	43.5	NA
Plants	Ute ladies' tresses	*Spiranthes diluvialis*	LT	NRM	Hydric Plants	6.3	NA
Plants	Alabama streak-sorus fern	*Thelypteris pilosa var. alabamensis*	LT	AP	Hydric Plants	4.8	NA
Plants	Tennessee yellow-eyed grass	*Xyris tennesseensis*	LE	AP	Hydric Plants	11.8	NA
Plants	Large-fruited sand-verbana	*Abronia macrocarpa*	LE	G	Mesic plants	86.0	NA
Plants	Price's potato-bean	*Apios priceana*	LT	AP, G, I	Mesic plants	9.9	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Plants	Georgia rockcress	*Arabis georgiana*	LT	AP, G	Mesic plants	12.7	NA
Plants	Mead's milkweed	*Asclepias meadii*	LT	I, WI	Mesic plants	48.9	NA
Plants	American hart's-tongue fern	*Asplenium scolopendrium*	LT	AP	Mesic plants	10.2	NA
Plants	Alabama leather flower	*Clematis socialis*	LE	AP	Mesic plants	13.3	NA
Plants	Leafy prairie clover	*Dalea foliosa*	LE	I	Mesic plants	6.4	NA
Plants	Earthfruit	*Geocarpon minimum*	LT	G, WI	Mesic plants	53.7	NA
Plants	Pagosa skyrocket	*Ipomopsis polyantha*	LE	CP	Mesic plants	17.2	NA
Plants	Small whorled pogonia	*Isotria medeoloides*	LT	AP, I	Mesic plants	3.7	NA
Plants	Prairie bush clover	*Lespedeza leptostachya*	LT	I	Mesic plants	23.1	NA
Plants	Mohr's Barbara button	*Marshallia mohrii*	LT	AP	Mesic plants	26.4	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Plants	Cumberland sandwort	*Arenaria cumberlandensis*	LE	AP	Mesic plants	85.1	NA
Plants	Short's bladderpod	*Physaria globosa*	LE, CH	AP	Mesic plants	7.5	0.5
Plants	Western prairie fringed orchid	*Platanthera praeclara*	LT	CP	Mesic plants	16.1	NA
Plants	Gentian pinkroot	*Spigelia gentianoides*	LE	AP	Mesic plants	26.0	NA
Plants	Navasota ladies'-tresses	*Spiranthes parksii*	LE	G	Mesic plants	56.0	NA
Plants	Running buffalo clover	*Trifolium stoloniferum*	LE, proposed for delisting 8/2019	AP	Mesic plants	18.2	NA
Plants	Welsh's milkweed	*Asclepias welshii*	LT, CH	CP	Xeric Plants	4.2	0.0
Plants	Mancos milk-vetch	*Astragalus humillimus*	LE	CP	Xeric Plants	38.3	NA
Plants	Black lace cactus	*Echinocereus rechenbachii* var. *albertii*	LE	G	Xeric Plants	33.0	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Plants	Zuni fleabane	*Erigeron rhizomatus*	LT	CP	Xeric Plants	14.7	NA
Plants	Dudley Bluffs bladderpod	*Lesquerella congesta*	LT	CP	Xeric Plants	33.6	NA
Plants	Kodachrome bladderpod	*Lesquerella tumulosa*	LE	CP	Xeric Plants	13.0	NA
Plants	San Rafael cactus	*Pediocactus despainii*	LE	CP	Xeric Plants	10.5	NA
Plants	Knowlton's cactus	*Pediocactus knowltonii*	LE	CP	Xeric Plants	44.8	NA
Plants	Peebles Navajo cactus	*Pediocactus peeblesianus var. peeblesianus*	LE	CP	Xeric Plants	3.5	NA
Plants	Winkler pincushion cactus	*Pediocactus winkleri*	LE	CP	Xeric Plants	12.0	NA
Plants	Parachute beardtongue	*Penstemon debilis*	LT, CH	CP	Xeric Plants	0.56	0.0
Plants	Clay phacelia	*Phacelia argillacea*	LE	CP	Xeric plants	1.5	NA
Plants	North Park phacelia	*Phacelia formosula*	LE	NRM	Xeric Plants	3.5	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Plants	DeBeque phacelia	*Phacelia submutica*	LT, CH	CP	Xeric Plants	15.8	1.1
Plants	Dudley Bluffs twinpod	*Physaria obcordata*	LT	CP	Xeric Plants	33.6	NA
Plants	Colorado hookless cactus	*Sclerocactus glaucus*	LT	CP	Xeric Plants	15.1	NA
Plants	Mesa Verde cactus	*Sclerocactus mesae-verdae*	LT	CP	Xeric Plants	38.3	NA
Plants	Wright fishhook cactus	*Sclerocactus wrightiae*	LE	CP	Xeric Plants	12.0	NA
Reptiles	Black pinesnake	*Pituophis melanoleucus lodingi*	LT, CH	G	Snakes	9.1	10.4
Reptiles	Louisiana pinesnake	*Pituophis ruthveni*	LT	G	Snakes	57.0	NA
Reptiles	Northern Mexican gartersnake	*Thamnophis eques megalops*	LT	CP	Snakes	0.6	NA
Reptiles	Narrow-headed gartersnake	*Thamnophis rufipunctatus*	LT, PCH	CP	Snakes	0.8	UTD
Reptiles	Eastern massasauga	*Sistrurus catenatus*	LT	AP, I, WI	Snakes	24.3	NA

Category	Common name	Scientific name	Federal Status	Coal Basin	Guild	Total Range Area Overlapping Mineable Coal (%)	Total Critical Habitat Overlapping Mineable Coal (%)
Reptiles	Bog turtle	*Clemmys muhlenbergii*	LT	AP	Turtles	0.7	NA
Reptiles	Yellow blotched map turtle	*Graptemys flavimaculata*	LT	G	Turtles	11.7	NA
Reptiles	Ringed map turtle	*Graptemys oculifera*	LT	G	Turtles	30.3	NA
Reptiles	Flattened musk turtle	*Sternotherus depressus*	LT	AP	Turtles	43.0	NA

7 ENVIRONMENTAL BASELINE

The *Environmental Baseline* refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 C.F.R. § 402.02).

Due to the large size and widespread distribution of the Action Area, a detailed review of all past and present impacts to all of the species and critical habitats represented within the guilds is not feasible, nor is it required. Therefore, this programmatic Opinion relies on a general discussion of stressors to ESA-proposed and -listed species and proposed and designated critical habitat that, while generalized, are reasonably certain to occur within the Action Area.

OSMRE's biological assessment includes an environmental baseline discussion that adequately addresses the needs for this Opinion for the scale of this analysis related to the effects of surface coal mining and the surface effects of underground coal mining. As noted in OSMRE's biological assessment, *"[g]iven the programmatic nature of this consultation on a nationwide regulatory program, this consultation relies on a generalized discussion of past and present activities that have influenced the status of species within the action area which are grouped as guilds for the purpose of this [biological assessment]. As previously mentioned, more detailed, site-specific information contributing to the environmental baseline will be assessed for subsequent, individual permit decisions made by states via the technical assistance process (i.e., the exchange of information with the Service as required under SMCRA implementing regulations and described in the description of the action* [SMCRA Coordination Process]*), or for subsequent, individual permit decisions made by OSMRE that are subject to ESA § 7(a)(2) requirements. 16 U.S.C. §§ 1536 and 30 U.S.C. 1257.*"

The larger discussion excerpted from the biological assessment is provided in Appendix D, and describes the major environmental baseline activities associated with effects of surface coal mining and the surface effects of underground coal mining on species and critical habitat. We briefly describe other aspects of the Environmental Baseline in the following paragraphs, including climate change, habitat destruction and modification, invasive species, pollution, harvest, and mining.

7.1 Climate Change

All of the species and critical habitats represented within the guilds discussed in this programmatic Opinion are, or may be, impacted by global climatic change. The Intergovernmental Panel on Climate Change (IPCC) estimated that average global land and sea surface temperature has increased by 0.85 °C (± 0.2) since the late-1800s, with most of the

change occurring since the mid-1900s (IPCC 2013). This temperature increase is greater than what would be expected given the range of natural climatic variability recorded over the past 1,000 years (Crowley and Berner 2001). The IPCC estimates that the last 30 years were likely the warmest 30-year period of the last 1,400 years, and that global mean surface temperature change will likely increase in the range of 0.3 to 0.7 °C over the next 20 years.

Warming water temperatures attributed to climate change can have significant effects on survival, reproduction, and growth rates of aquatic organisms (Staudinger et al 2012). For example, warmer water temperatures have been identified as a factor in the decline and disappearance of mussel and barnacle beds in the Northwest (Harley 2011). Shifts in migration timing of pink salmon (*Oncorhynchus gorbuscha*), which may lead to high pre-spawning mortality, have also been tied to warmer water temperatures (Taylor 2008). Increasing atmospheric temperatures have already contributed to changes in the quality of freshwater, coastal, and marine ecosystems and have contributed to the decline of populations of endangered and threatened species (Karl et al. 2009; Littell et al. 2009).

Climate change is also expected to impact the timing and intensity of stream seasonal flows (Staudinger et al 2012). Warmer temperatures are expected to reduce snow accumulation and increase stream flows during the winter, cause spring snowmelt to occur earlier in the year, and reduced summer stream flows in rivers that depend on snow melt. As a result, seasonal stream flow timing will likely shift significantly in sensitive watersheds (Littell et al. 2009). Warmer temperatures may also have the effect of increasing water use in agriculture, both for existing fields and the establishment of new ones in once unprofitable areas (ISAB 2007). This means that streams, rivers, and lakes will experience additional withdrawal of water for irrigation and increasing contaminant loads from returning effluent. Changes in stream flow due to use changes and seasonal run-off patterns may alter predator-prey interactions and change species assemblages in aquatic habitats. For example, studies conducted in the southwest and Great Plains have documented the complete loss of some macroinvertebrate species as the duration of low stream flows increased (Sponseller et al 2010, Burk and Kennedy 2013). The frequency and intensity and of droughts is likely to increase across the southwest (Karl et al. 2009), leading to changes in aquatic species composition and community function. Shifts in aquatic community structure and function in groundwater-dependent ecosystems may be profound. Changes in drought frequency and intensity, combined with increasing human demands on groundwater can cause a shift from perennial to intermittent flow regimes (Burk and Kennedy 2012). Predicted global climate change of increased frequency and intensity of droughts combined with increasing human demands placed on groundwater systems, are predicted to have a detrimental impact on the remaining groundwater-dependent ecosystems in the Great Plains and Southwest (Fritz and Dodds 2004; IPCC 2007a; Bogan and Lytle 2011; Burk and Kallberg 2012).

Warmer water also stimulates biological processes which can lead to environmental hypoxia. Oxygen depletion in aquatic ecosystems can result in anaerobic metabolism increasing, thus leading to an increase in metals and other pollutants being released into the water column (Staudinger et al 2012). In addition to these changes, climate change may affect agriculture and other land development as rainfall and temperature patterns shift. Aquatic nuisance species invasions are also likely to change over time, as ecosystems become less resilient to disturbances (USEPA 2008). Invasive species that are better adapted to warmer water temperatures would outcompete native species that are physiologically geared towards lower water temperatures;

such a situation currently occurs along central and northern California (Lockwood and Somero 2011).

In summary, the effects of climate change include increases in atmospheric temperatures, decreases in sea ice, and changes in sea surface temperatures, patterns of precipitation, severity and intensity of droughts, and sea level. Effects of climate change also include altered reproductive seasons/locations, shifts in migration patterns, reduced distribution and abundance of prey, and changes in the abundance of competitors and/or predators. Climate change is most likely to have its most pronounced effects on species whose populations are already in tenuous positions (Williams et al. 2008b).

7.2 Habitat Destruction and Modification

Habitat destruction and modification, including but not limited to that associated with mining, is perhaps the number one factor negatively affecting imperiled species. According to the U.S. Energy Information Administration (EIA), 669 coal mines were in production in the United States in 2019 and produced 706.3 million short tons of coal. In 2018, 679 mines were in production and produced 756 million short tons of coal (U.S. EIA 2020). While coal mining is ongoing, it is decreasing. Annually, mine operations contribute to the amount of habitat destroyed or modified within the Action Area; however, required reclamation provides alternative habitat to habitat impacted or modified by surface mining activities.

Streams, rivers, and other freshwater sources are found throughout the Action Area. Freshwater habitats are among the most threatened ecosystems in the world (Leidy and Moyle 1998). Reviews of aquatic species' conservation status over the past three decades have documented the cumulative effect of anthropogenic and natural stressors on freshwater aquatic ecosystems, resulting in a significant decline in the biodiversity and condition of indigenous fish, mussel and crayfish communities (Taylor et al. 2007; Jelks et al. 2008). Anthropogenic stressors are present to some degree in all water bodies of the United States, and are the result of many different impacts. These stressors often lead to long-term environmental degradation associated with lowered biodiversity, reduced primary and secondary production, and a lowered capacity or resiliency of the ecosystem to recover to its original State in response to natural perturbations (Rapport and Whitford 1999).

Many of our nation's rivers and streams have been altered by non-mining related activities including dams, stream channelization, and dredging to stabilize water levels in rivers or lakes. When examining the impacts of large dams alone, it is estimated that 75,000 large dams have modified at least 600,000 miles of rivers across the country (IWSRCC 2011). For example, more than 400 dams exist in the Columbia River Basin alone (Columbia Basin Trust 2018). Habitat loss coupled with other stressors has led to impacts on fish communities as well. By the early 1980s, approximately 81 percent of the native fish communities in the United States had been adversely affected by human activities (Judy et al. 1984).

Wetland habitats have been drained to make land available for agriculture; they have been filled to make land available for residential housing, commerce, and industry; they have been diked to control mosquitoes; and they have been flooded for water supply. Efforts to create and restore wetlands and other aquatic habitats by agencies of Federal, State, and local governments, non-governmental organizations, and private individuals have dramatically reduced the rate at which these ecosystems have been destroyed or degraded, but many aquatic habitats continue to be lost each year. Between 2006 and 2009, approximately 13,800 acres of wetlands were lost per year

(Dahl 2011). While this is significantly less than losses experienced in the previous decades, an estimated 72 percent of U.S wetlands have already been lost when compared to historical estimates (Dahl 2011).

As with aquatic habitats, terrestrial ecosystems are also experiencing declines and degradation from a myriad of human-related activities. Data from the USDA suggests more than 398,000 acres of grasslands, forests, and other lands were converted to cropland between 2011 and 2012 (USDA 2013) (Figure 2). Conversion of natural lands also occurs from urbanization. Beginning the 1600s and continuing into the early 20th century, forests of the United States were harvested at an alarming rate (Masek et al. 2011). Over the last 100 years, the area of forest cover in the United States has been relatively stable (Masek et al. 2011), though reforested areas may not provide the same quality of habitat as unharvested, old-growth forests for ESA-proposed and -listed species. Through an analysis of threat data compiled from Federal Register documents, Czech et al. (2000) identified urbanization and agriculture as the second and third most common causes of species endangerment in the United States, behind non-native species interactions. Habitat conversion is occasionally associated with postmining land use changes away from premining conditions.

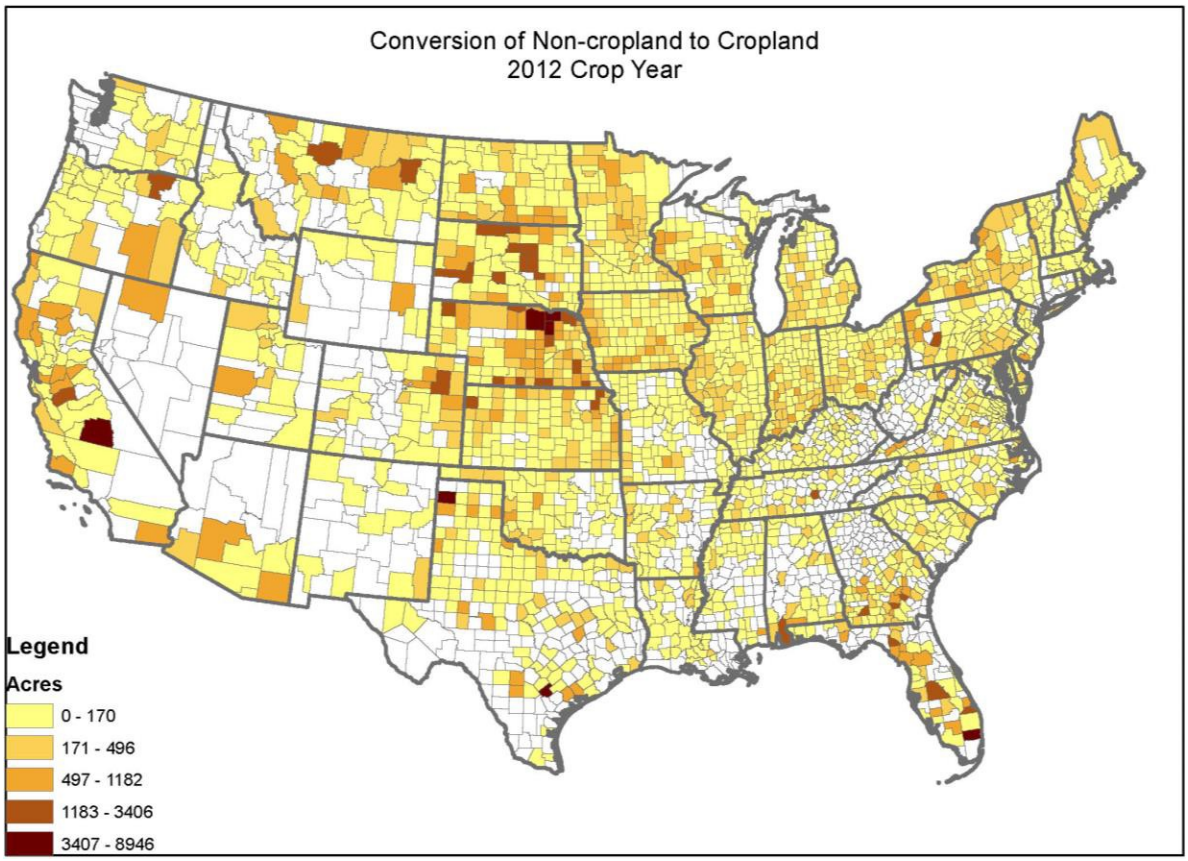

Figure 2. The conversion of land to cropland in 2012 (USDA 2013).

ESA-proposed and -listed species requiring ephemeral habitats, such as those maintained by fire or flooding, have experienced range reduction because the stochastic events that maintain their habitat are often incompatible with human cohabitation. Suppression of wildfires and natural flood events

that would occasionally disturb climax ecological communities and create early successional stage and transitory habitat have reduced habitat available for many species.

7.3 Invasive Species

Invasive species are non-native species capable of causing economic or ecological impacts in areas where they become established. Ecological impacts from biological invasion include, but are not limited to: predation; disease transmission; competition for food, light, space; and hybridization. The rate of species invasion has increased over the past 40 or more years due to human population growth, alterations of the environment, and technological advances that allow for the rapid movement of people and products (Pimentel et al. 2005). Invasive species are considered a contributing factor in the decline of 49 percent of the imperiled species in the United States (Wilcove et al. 1998).

There are an estimated 50,000 or more non-native terrestrial and aquatic plant species established in the United States, many of which are outcompeting native plants for habitat (Pimentel et al. 2005). In some cases non-native plants are capable of completely dominating new habitats and form dense monocultures, completely excluding other native plants. Approximately 97 non-native birds exist in the United States, many of which compete with or displace native birds and provide a vector for avian diseases (Pimentel et al. 2005). Approximately 53 species of reptiles and amphibians have been introduced to the United States, which often prey upon native species (Pimentel et al. 2005). More than 4,600 non-native invertebrate species inhabit the United States, some of which are well known for vast ecological impacts, including the decline or extirpation of native species (Pimentel et al. 2005).

7.4 Pollution

In addition to direct loss and alteration of aquatic habitat, many aquatic ecosystems have been impacted by various contaminants and pollutants. In 2008, the Heinz Center for Science, Economics and the Environment (Heinz Center) published a comprehensive report on the condition of our nation's ecosystems. In their report, the Heinz Center noted the following:

- From 1992 to 2001, benchmarks for the protection of aquatic life were exceeded in 50 percent of streams tested nationwide—83 percent of streams in urbanized areas—and 94 percent of streambed sediments.
- Contaminants were detected in approximately 80 percent of sampled freshwater fish and most of these detected contaminants exceeded wildlife benchmarks (1992 to 2001 data) (Gilliom et al 2006).
- Nearly all saltwater fish tested had at least five contaminants at detectable levels, and concentrations exceeded benchmarks for the protection of human health in one-third of fish tissue samples—most commonly DDT, PCBs, PAHs, and mercury (USEPA 2007).

Toxic contaminants, as noted above, have been documented in the Lower Columbia River and its tributaries (LCREP 2007). More than 41,000 waters are listed as impaired by pollutants that include mercury, pathogens, sediment, other metals, nutrient, and oxygen depletion, and other causes (USEPA 2013a). Pennsylvania reported the greatest number of impaired waters (6,957), followed by Washington (2,420), Michigan (2,352), and Florida (2,292). These figures likely

underestimate the true number of impaired waterbodies in the U.S. The EPA estimates that 50 percent of the nation's streams (approximately 300,000 miles) and 45 percent of the nation's lakes (approximately seven million acres) are in fair to poor condition for nitrogen or phosphorus levels relative to reference condition waters (USEPA 2013b). However, data submitted by the States indicates that only about half of the national Aquatic Resource Surveys' estimate (155,000 miles of rivers and streams and about four million acres of lakes) have been identified on EPA's 303(d) impaired waters list for nutrient related causes (USEPA 2013b).

Water quality problems, particularly the problem of non-point sources of pollution, have resulted from changes humans have imposed on the landscapes of the United States over the past 100 to 200 years. The mosaic of land uses associated with urban and suburban centers has been cited as the primary cause of declining environmental conditions in the United States (Flather et al. 1998) and other areas of the world (Houghton 1994). Most land areas covered by natural vegetation are highly porous and have very little sheet flow; precipitation falling on these landscapes infiltrates the soil, is transpired by the vegetative cover or evaporates. The increased transformation of the landscapes of the United States into a mosaic of urban and suburban land uses has increased the area of impervious surfaces such as roads, rooftops, parking lots, driveways, sidewalks, etc., in those landscapes. Precipitation that would normally infiltrate soils in forests, grasslands and wetlands falls on and flows over impervious surfaces. That runoff is then channeled into storm sewers and released directly into surface waters (rivers and streams), which changes the magnitude and variability of water velocity and volume in those receiving waters.

Increases in polluted runoff have been linked to a loss of aquatic species diversity and abundance, including many important commercial and recreational fish species. In addition, many shellfish bed and swimming beach closures can be attributed to polluted runoff.

Water-quality concerns related to urban development include providing adequate sewage treatment and disposal, transport of contaminants to streams by storm runoff, and preservation of stream corridors. Water availability has been and will continue to be a major, long-term issue in many areas. It is now widely recognized that groundwater withdrawals can deplete stream flows (Morgan and Jones 1999), and one of the increasing demands for surface water is the need to maintain instream flows for fish and other aquatic biota.

7.5 Harvest

Some ESA-listed species, such as salmonids and freshwater mussels, are economically important species harvested as food sources or ornamentally. Harvesting and exploitation, often associated with the pearl industry, is identified as a contributing factor in 18 percent of the imperiled freshwater mussels of the United States (Strayer et al. 2004). Generally speaking, after species are listed as threatened or endangered under the ESA, they receive protection from overharvesting since this action would require a permit issued by the Service. Therefore, although harvest is a historical threat to many species and illegal harvests still likely occur to some degree, harvesting now affects species primarily through closely regulated actions.

7.6 Mining

Mining has resulted in physical and chemical effects on surface waters and other habitats. For example, during the duration of some mining activities, vegetation is removed and surfaces remain exposed, topography is altered and surfaces are compacted, infiltration of rainwater and uptake of water into vegetation is reduced and consequently overland runoff of water is increased. The local geology has a profound influence on the quantity and quality of surface

water and groundwater. Mining activities break rock into smaller fragments, exposing previously unexposed minerals and increasing the amount of surface area available for weathering. As weathering commences, chemical constituents contained within the rock are released to the environment. In the mining environment, these constituents would be released into waters on the site, which would then make their way to water treatment structures, such as sedimentation ponds, before being discharged from the permit area. Despite treatment, discharge from sedimentation ponds can demonstrate elevated levels of total dissolved solids. Constituents also make their way into groundwater and then are discharged as groundwater baseflow into receiving streams.

Mining activities can affect downstream water chemistry, which may in turn affect species, their habitat, and other resources on which they depend. Studies have shown that mining-impacted waterways often contain elevated levels of arsenic, selenium, iron, aluminum, manganese, and sulfate. These waters typically have lower alkalinity concentrations and lower pH, while specific conductivity and total suspended solids are typically higher, as compared to streams unimpacted by mining (Wangsness et al. 1981; Zuehls et al. 1984; Herlihy et al. 1990; Howard et al. 2001; Stauffer and Ferreri 2002; Bryant et al. 2002; Hartman et al. 2005; Pond et al. 2008; Petty et al. 2010; U.S. EPA 2011; Presser 2013; Skogerboe et al. 1979).

Acid mine drainage has historically been a primary concern associated with coal mining due to the effects of low pH on the viability of the system for aquatic life and human health (Dills and Rogers 1974; Powell 1988; Sams and Beer 2000). The concern is relevant to mining nationwide, although contamination from acid mine drainage is more difficult to observe in western coal fields (e.g., Colorado Plateau, Northern Rocky Mountains and Great Plains), where the geology, soils and hydrology provide high buffering capacity (alkalinity), which neutralizes mine spoil and waste (Powell 1988; Lowry et al. 1983).

Excess spoil fills constructed during large-scale mining operations in steep-slope areas may impact aquatic ecosystems by, among other things, increasing ion concentrations in receiving waters. These impacts may occur both during the mining activity and after reclamation. Palmer and Bernhardt (2009) found that streams impacted by valley fills often have 30- to 40-fold increases in sulfate concentrations and that sulfate concentrations in receiving waters continued to increase after mining activities ended. In addition, streams and rivers below valley fills receive elevated concentrations of calcium, magnesium, bicarbonate ions, and often trace metals, leading to elevated conductivity levels in these waterways. Conductivity levels in receiving streams below valley fills contribute to biological impairment of aquatic ecosystems (Palmer and Bernhardt 2009). Biological impairment has been shown to occur in the form of, for example, shifts in the species diversity and reduced abundance and richness of Ephemeroptera taxa (Pond et al. 2008).

Direct impacts to streams from mining and reclamation activities also occur in association with the practice of mining through ephemeral, intermittent, and perennial streams. The impacts of large-scale mining operations upon the water quality of ephemeral, intermittent, and perennial streams in Central Appalachia are highlighted in Bernhardt and Palmer (2011). Research compiled in Bernhardt and Palmer (2011) demonstrated that multiple surface mines and valley fill activity within large watersheds resulted in increases in concentrations of sulfate, bicarbonate, calcium, and magnesium ions further downstream.

Physical effects on surface waters include all those effects that would change the size (width and or depth) and location of the surface water. These effects occur from mining activities that include mining through surface waters, placement of fill in surface waters to cross them with mining roads, and placement of spoil or refuse in surface waters.

Excess spoil placement into streams is allowable under longstanding interpretations of the regulations and substantial effects of excess spoil generation on streams continue to occur, particularly in Appalachia. For example, a 2007, *Times West Virginian* article reported that surface mining permits issued between October 2001 and June 2005 affected approximately 535 miles of streams, including 367 miles of streams in the Appalachian coal fields. More specifically, the West Virginia Department of Environmental Protection completed a report titled "Trends in Mining Fills and Associated Stream Loss in West Virginia 1984–2012" (Shank and Gebrelibanos 2013) in which the authors calculated stream loss due to spoil and refuse fill construction. The analysis indicated the following: completed or under construction fills included 1,932 spoil fills and 392 refuse fills; fill acreage totaled 62,471 acres or approximately 97 square miles; direct stream loss (under the fills) totaled 764.3 miles (297.5 miles of intermittent and 466.8 miles of perennial streams); and indirect stream impacts above fills, including change in ecologic function, totaled 279.5 miles. The 2005 Mountaintop Mining EIS (U.S. EPA 2005) included two studies that estimate the effect of mountaintop mining and valley fills in West Virginia, Kentucky, Tennessee, and Virginia. The first study estimated that between 1985 and 2001, 724 stream miles (1.2 percent of streams) were covered by valley fills (equating to 45 miles per year). The second study estimated impacts of mountaintop mining and valley fills between 1992 and 2002 to be 1,200 stream miles (equating to approximately 110 per year), out of 58,998 streams in the study area.

Activities that involve land disturbance, such as mining and reclamation, increase the risk of erosion and, therefore have the potential to affect the quantity of sediment that reaches waterways. Sediments are a pollutant of waters because sediment particles can carry attached pollutants with them. They can also affect biological processes directly by burying or smothering aquatic organisms or their habitats, and reducing the amount of light available for photosynthesis or activities requiring visibility. Excessive sediment reduces stream depth, leads to increases in water temperatures and reductions in dissolved oxygen content (Slagle et al. 1986).

An unintended consequence of the storage function provided by sediment ponds is that the impoundment of the waters affects the timing and volume of water received downstream from the pond; peaks and lows in the hydrograph are smoothed out due to the impoundment and controlled release of the water. This, in turn, affects the physical and biological characteristics downstream. Captured runoff released from impounding structures such as sediment ponds can be a source of downstream channel instability. The energy potential of the water that was once used to transport sediment is now available to erode the receiving channel (Leopold and Maddock 1953). Limiting the frequency of flow and sediment delivered to streams below mined areas may initiate changes in channel form due to deposition of eroded sediment and mass wasting processes, altering the channel's capacity to convey flow and causing subsequent channel incision or widening.

When streams are filled for any reason, the water that once made its way to that stream will find a new pathway. Flooding or, conversely, water deprivation, scouring, and gullies are all possible consequences of alterations of natural flow regimes. Additionally, changes in drainage divides,

contributing area, and drainage density may affect how much runoff is contributed to the receiving stream system.

Quantity and rate of water flow are important hydrologic characteristics that help determine the water that will be available to support aquatic life and other stream benefits. Mining activities have had been documented to impact hydrologic characteristics. For example, higher infiltration rates on mined areas increased stream baseflow. Further, increased storage capacity in replaced mine spoils reduced peak flow in streams receiving drainage from mine sites (Corbett and Agnew 1968). Conversely, negative effects on streamflows have also been documented, particularly in the Appalachian Basin region. For example, there are documented cases of subsidence-induced stream dewatering caused by longwall mining operations in Pennsylvania and West Virginia (Wade 2008; Rauch et al. 1984; Hobba 1993; Stout 2004). In some cases, the streamflow rebounded within months while other cases have shown the dewatering to persist for years.

Mining can also affect groundwater. A United States Geological Survey (USGS) study (Eberle and Razem 1985) investigating the effects of surface mining in small watersheds of the Allegheny Plateau in Ohio identified a change in upper aquifers associated with surface coal mining from calcium bicarbonate to calcium sulfate predominated water. Following reclamation, dissolved sulfate, iron, and manganese in the upper aquifers generally exceeded U.S. and Ohio EPA drinking water standards. These water sources generally did not demonstrate these exceedances prior to reclamation. Another USGS study (Paybins et al., 2000), investigating groundwater water quality downgradient of reclaimed surface coal mines, showed lowered pH and increased sulfate concentrations at sampling locations affected by mining. Paybins et al. (2000) showed higher sulfate concentrations in groundwater in shallow wells within 1,000 feet of reclaimed surface mines. This study also documented higher iron, manganese, and aluminum concentrations within about 2,000 feet of reclaimed surface mines (Paybins et al. 2000). An additional USGS study focusing on groundwater resources in the Allegheny and Monongahela River Basins found groundwater in shallow private domestic wells near reclaimed surface coal mines had higher concentrations of sulfate, iron, and manganese compared to unmined areas, even after all mining and reclamation had been completed (Anderson et al. 2000).

Mining activities can affect both the quantity and direction of groundwater flow. Water infiltration contributes to groundwater, and coal mining and reclamation activities can change overland flow and the amount of water that infiltrates the surface to ultimately recharge the groundwater system.

Overburden removal and coal excavation during surface coal mining results in a new groundwater static water level within the disturbance boundary. This consequently affects the hydraulic gradients surrounding the mined area, which can cause changes to direction of the groundwater flow. Although intact portions of the aquifer(s) may still exist beyond the extent of the coal removal area, water availability from within these aquifers will generally be reduced as the water flows towards the active pit in response to a lowering of hydraulic head values. As a result, water levels in existing wells installed in these aquifers may be lowered, potentially reducing the amount of water available for use (e.g., as drinking water) and the amount of water discharged downstream as baseflow.

Mines and preparation facilities may also use groundwater resources for their operations. Some mines must continuously pump water either from open pits or from groundwater to facilitate

mining operations. The interception of groundwater and continuous mine pumping lowers the surrounding groundwater table. The lowered groundwater table may affect springs, streams, or users of groundwater resources. In doing so, water levels in affected aquifers may be significantly lowered over long periods of time (OSMRE 2007). These levels may recover over time once surface mining and reclamation activities are complete and the mine pits fill, saturating the backfilled spoil material. Once pumping and treatment of groundwater from underground mine ceases, groundwater properties such as pH may become more acidic and in turn metals and other contaminant bioavailability may increase posing a contaminant risk to aquatic organisms as a legacy effect (Belmer et al. 2019).

As noted above, additional information on mining-related activities can be found in Appendix D.

8 EFFECTS OF THE ACTION

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See 50 C.F.R. § 402.17).

8.1 Programmatic Approach

As noted above, the scope of the OSMRE's implementation of Title V of SMCRA is essentially nationwide, covering an array of operations that may affect a wide variety of ESA-proposed and -listed species and proposed and designated critical habitat. Under SMCRA, OSMRE does not permit or authorize the majority of surface mining activities. SMCRA places enforcement and oversight authority with OSMRE; however, if OSMRE approves a State's regulatory program, much of the responsibility for authorizing and regulating those activities lies with the State regulatory authority, whose program has met the minimum standards established in SMCRA and OSMRE's regulations implementing SMCRA. Moreover, the specific State mining programs differ in regulatory approaches and detailed information on the specific size, scope, and operation of future mining activities is not available at the time of this programmatic consultation. In fact, because this is a consultation on regulations that are not self-implementing (i.e., the regulations are implemented only through future permits), it is not feasible, nor is it required, to conduct a meaningful site-specific and species-specific effects analysis in this Opinion. Therefore, the Service determined that a programmatic consultation is appropriate in determining whether OSMRE's regulatory program implementing SMCRA is structured to ensure that no permit will be issued that is likely to jeopardize threatened and endangered species and destroy or adversely modify critical habitat. For future permits issued under the SMCRA regulatory program, site-specific and species-specific information will be available and assessed through the technical assistance process with the State regulatory authority or through step-down, ESA Section 7 consultations with OSMRE as the regulatory authority.

8.2 Key Assumptions for the Effects Analysis

In developing this analysis, we made a number of key assumptions due to the lack of information and uncertainties surrounding the location, timing, frequency, and intensity of individual mining

activities. They include:

- State regulatory authorities and OSMRE will adhere to SMCRA Title V regulations that specify many general environmental performance requirements, including requirements to minimize potential effects on ESA-listed species, e.g. 30 U.S.C. § 1265(b)(24).
- Where OSMRE is the regulatory authority, OSMRE will consult with the Service on the issuance of those permits pursuant to ESA section 7(a)(2) and in accordance with the interagency consultation regulations at 50 C.F.R. Part 402;
- State regulatory authorities will coordinate with the Service in accordance with the SMCRA Coordination Process described in an addendum to OSMRE's 2020 Biological Assessment (and included as Appendix A of this Opinion). Accordingly,
    - The Service will receive notification for all administratively complete applications for a permit, significant permit revision, or permit renewal submitted to the regulatory authority, 30 C.F.R. § 773.6;
    - The Service will receive fish and wildlife resource information and PEPs for applications determined by the regulatory authority to be administratively complete and that may affect ESA resources as outlined in the SMCRA Coordination Process (30 C.F.R. §§ 780.16 and 784.21);
    - The protective measures, monitoring, and reporting developed through the SMCRA Coordination Process will minimize the adverse effects of surface coal mining and reclamation operations or coal exploration to levels that will avoid the likelihood of jeopardy to listed and proposed species and/or destruction and adverse modification of designated or proposed critical habitat;
    - In situations where a State regulatory authority's proposed permitted action is not likely to jeopardize listed species or destroy or adversely modify critical habitat, the Service will limit its request for species-specific protective measures to those that involve only minor changes and do not alter the basic design, location, scope, duration, or timing of the action.
- In the event that coordination between a State regulatory authority and the Service pursuant to the SMCRA Coordination Process results in a dispute over recommended measures to avoid the likelihood of jeopardy to listed species or destruction/adverse modification of critical habitat, the parties will use the dispute resolution process described in an addendum to OSMRE's 2020 Biological Assessment (Appendix B).
    - In situations where a State regulatory authority's proposed permitted action is not likely to jeopardize listed species or destroy or adversely modify critical habitat, the Service will engage in dispute resolution over minimization measures only when the anticipated take is of significant conservation consequence to the species.
- Regulatory authorities will conduct regular inspections of operations as required by SMCRA, averaging not less than one partial inspection per month, and one complete inspection per calendar quarter. A complete inspection is an on-site review of a person's compliance with all permit conditions and requirements imposed under the State program, including those related to fish and wildlife. 30 C.F.R. § 840.11(b).
- If, as the result of an inspection, the regulatory authority determines that the operation is in violation of the federal or state program or any condition of an exploration approval or permit, the regulatory authority will either issue a notice of violation (NOV) to the

operator or, if the violation creates an imminent danger to the public health or safety or is or can reasonably be expected to cause significant, imminent environmental harm, an order mandating the cessation of operations. 30 U.S.C. §§ 1268, 1271; 30 C.F.R. §§ 840.13, 843.11, and 843.12.

- OSMRE and State regulatory authorities will utilize applicable authority, where it exists, to monitor the SMCRA regulatory programs these authorities may oversee, including Clean Water Act Section 402 and 404 and maintenance of the hydrological balance (these broader responsibilities under SMCRA help minimize effects to proposed and listed species and designated and proposed critical habitats).
- OSMRE and regulatory authorities will utilize their review of land use plans, environmental impact statements required by NEPA, and other roles in evaluating coal mining covered under cooperative agreements, or Federal coal leases on Federal lands, to ensure accurate application of SMCRA mandates to avoid and minimize impacts to listed species and/or critical habitat to levels that will avoid the likelihood of jeopardy to listed and proposed species and/or destruction and adverse modification of designated or proposed critical habitat for operations on Federal lands.

8.3 Evaluation of the Programmatic Consultation Criteria

As noted in our Approach to the Assessment section above, we use a programmatic approach to determine whether and to what degree OSMRE has structured their regulatory program to ensure its implementation is not likely to jeopardize the continued existence of proposed or listed species or result in the destruction or adverse modification of proposed or designated critical habitat. In this evaluation, we assess whether OSMRE fulfills the following criteria: (1) understand the scope of its action; (2) reliably estimate the physical, chemical, or biotic stressors that are likely to be produced as a direct or indirect result of their action; (3) minimize adverse effects of such activities on ESA-listed species and designated critical habitat; (4) identify, inform, encourage, and screen applicants for potential eligibility under or participation in the permitting activity; (5) continuously monitor and evaluate likely adverse effects on listed species and critical habitat; (6) monitor and enforce permit compliance; and (7) modify its action if new information (including inadequate protection for species or low levels of compliance) becomes available.

While we recognize that site-specific activities would be addressed on a permit-specific basis during the SMCRA Coordination Process with States, or through step-down consultations with OSMRE, in order to complete our analysis of the proposed action at the program-level, this 7-question approach allows us to consider how the overall implementation of OSMRE's proposed action (which would include these site-specific processes) avoids jeopardy and adverse modification. We discuss each criterion and its applicability to the proposed action in the following paragraphs.

8.3.1 Understanding the Scope

OSMRE must understand the scope of its proposed action where either OSMRE or States (or Tribes, as applicable) is the regulatory authority, to ensure impacts to ESA-proposed and -listed species and designated and proposed critical habitat are appropriately evaluated. For this proposed action, we consider "scope" both in terms of geographic extent, as well as permitting and oversight.

Congress enacted SMCRA to establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations. SMCRA was also designed to assure that coal mining operations are not conducted where reclamation as required by SMCRA is not feasible or unsuitable, assure that surface coal mining operations are designed in a manner to protect the environment, assure that reclamation occurs as contemporaneously as possible, and to promote the reclamation of mined areas left without adequate reclamation prior to the enactment of SMCRA. Thus, by knowing the extent of the action area for each project (including "adjacent areas" as discussed previously), and by having a process in place by which such areas are identified as part of the permitting process, OSMRE, as well as the State regulatory authorities, would be able to determine the scope of the proposed action.

In evaluating whether OSMRE's regulatory program under SMCRA is structured to allow OSMRE to understand the full scope of authorized mining effects, the Service considered how congruent the SMCRA regulatory definition of "adjacent area" was with the ESA regulatory definition of "action area". Both terms limits are bounded by the effects of the action, not the immediate footprint of the mine. Therefore, we confirm that SMCRA regulations would appear to require applicants and regulatory authorities to understand the full scope of effects from mining on ESA trust resources, which in turn would enable OSMRE to better understand the geographic scope of its proposed action.

Additionally, the scope of the action includes all aspects of OSMRE's implementation of Title V of SMCRA. OSMRE's oversight authority is both permit-specific and programmatic. OSMRE is the regulatory authority for permitting activities where a State does not have primacy. However, the majority of permits issued under SMCRA will be issued by States, and OSMRE has an ongoing oversight role in the administration and enforcement of mining programs in the States that have assumed primary regulatory authority. Under SMCRA, as discussed above in section 4.2.3, OSMRE has the authority to ensure compliance with State and Tribal mining permits. OSMRE's authority also includes subject matter expertise in SMCRA for actions on Federal lands and Indian lands.

Based on the biological assessment as well as this Opinion's Description of the Action section and the Key Assumptions above, the Service anticipates that OSMRE, State regulatory authorities, and mining operators will adequately understand the scope of their respective actions under SMCRA. Thus, we anticipate that OSMRE would understand the scope of their action in terms of permitting and oversight.

8.3.2 Stressors

To determine if OSMRE's implementation of Title V of SMCRA has been structured to reliably estimate the physical, chemical, or biological stressors that are likely to be produced as a direct or indirect result of their action, we reviewed the portions of the regulations that require OSMRE or the approved State regulatory authority to identify stressors likely to be produced by permitted mining activities. The identification of stressors associated with individual mining sites and the analysis of the effects on ESA-proposed and -listed species and designated and proposed critical habitats will be part of the SMCRA Coordination Process with the appropriate Service Field Office, as well as part of any step-down, ESA Section 7 consultation with OSMRE.

We also evaluated the stressors (Table 1) associated with typical mining activities as identified in OSMRE's biological assessment. These stressors lead to the response profiles of each species guild, as discussed in Section 8.1, above.

Table 1. Stressor and activity deconstruction matrix.

Stressor \ Activity	Exploration	Erosion control	Clearing/grubbing	Coal excavation	Backfilling	Revegetation	Spoil disposal	Coal Hauling	Coal processing	CCR placement	Monitoring	Permitting
Ground disturbance	X	X	X	X	X	X	X	X	X	X		
Vegetation removal	X	X	X						X			
Noise	X	X	X	X	X	X	X	X	X	X		
Dust	X	X	X	X	X		X	X	X	X		
Direct strikes	X	X	X	X	X	X	X	X	X	X		
Surface flow alteration	X	X	X	X	X		X	X	X			
Groundwater alteration			X	X	X	X	X		X	X		
Pollution/siltation	X		X	X	X		X	X	X	X		
Invasive species	X	X	X		X	X	X	X				
Land use change												X
Topography alteration				X	X		X			X		
Human presence	X	X	X	X	X	X	X	X	X	X	X	X
Surveys/monitoring											X	X

OSMRE, State regulatory authorities, and mining operators must understand the stressors and effects associated with their actions to ensure impacts to ESA-listed and -proposed species (and designated and proposed critical habitat) are adequately evaluated. For OSMRE-issued permits that may affect ESA-listed species or designated critical habitat, section 7(a)(2) consultation is required and will be performed separately (i.e., via step-down ESA section 7(a)(2) consultations). For OSMRE-issued permits that may jeopardize ESA-proposed species or adversely modify proposed critical habitat, ESA section 7(a)(4) conference is required and will be performed separately.

SMCRA regulations define the information requirements and the public notice process necessary for an application to be determined administratively complete by a regulatory authority. The information requirements include baseline information on the affected areas geology, hydrology, fish and wildlife resources and habitats. In order to obtain a permit, an applicant must provide baseline information about hydrology, geology, vegetation, soils, water quality, existing land uses, threatened and endangered species/critical habitat occurrences, and habitat suitability using a variety of field methods, some of which may involve sampling (30 U.S.C. § 1257(b); 30 C.F.R. Parts 773, 779, 780, 783, and 784).

The permit applicant must submit fish and wildlife resource information for both the permit area

and the adjacent area (30 C.F.R. §§ 780.16(a) and 784.21(a)). The scope and level of detail for the resource information required with each permit "shall be determined by the regulatory authority in consultation with State and Federal agencies with responsibilities for fish and wildlife and shall be sufficient to design the protection and enhancement plan [(PEP)]" (30 C.F.R. §§ 780.16(a)(1) and 784.21(a)(1)).Specifically, Federal regulations require that all surface and underground coal mining permit applications include site-specific resource information about proposed, endangered, or threatened plants and animals and critical habitats listed under the ESA in either the permit area or the adjacent area (30 C.F.R. §§ 780.16(a)(2)(i) and 784.21(a)(2)(i)). The resource information necessary to address species or habitat is required where the permit area or adjacent area includes habitats of unusually high value for fish and wildlife or "[o]ther species and habitats identified through agency consultation as requiring special protection under State or Federal law." *Id*. at §§ 780.16(a)(2)(ii)-(iii) and 784.21(a)(2)(ii)-(iii).

Each permit application must include a PEP, which describes "how, to the extent possible using the best technology currently available, the operator will minimize disturbances and adverse impacts on fish and wildlife and related environmental values, including compliance with the Endangered Species Act," and the PEP must include information about how enhancement of these resources will be achieved where practicable (30 C.F.R. §§ 780.16(b) and 784.21(b)).

The PEP must include protective measures that will be used during the active mining phase of operation (e.g., the establishment of buffer zones, selective location and design of haul roads and powerlines, and monitoring of surface water quality and quantity) and enhancement measures that will be used during the reclamation and postmining phase of operation to develop aquatic and terrestrial habitat (30 C.F.R.§§ 780.16(b)(3)(i)-(ii) and 784.21(b)(3)(i)-(ii)). The PEP must also be drafted in a manner consistent with the performance standards specified in the Federal regulations. 30 C.F.R. § 780.16(b)(1).

Once an applicant for a permit, a significant permit revision, or a permit renewal has submitted an administratively complete application, as assessed by the OSMRE or the State regulatory authority (depending on which entity is the regulatory authority for a given permit), the regulations require the applicant to provide public notice in newspapers of general circulation and specific notice to "[a]ll Federal or State governmental agencies with authority to lease permits and licenses applicable to the proposed surface coal mining and reclamation operation and which are part of the permit coordinating process developed in accordance with [30 U.S.C. §§ 1253(a)(6) and 1254(h)] or 30 C.F.R. § 773.5;] or those agencies with an interest in the proposed operation, including…State and Federal fish and wildlife agencies… " (30 C.F.R. § 773.6(a)(3)(ii)). Thus, pursuant to the regulations, the Service must be notified once an administratively complete application for a permit, significant permit revision, or permit renewal has been submitted to the regulatory authority.

After notice has been provided, the Federal regulations require that the regulatory authority provide a reasonable period of time for the public and other agencies, such as the Service, to submit comments or objections to an application for a permit, significant permit revision, or permit renewal. *Id*. at § 773.6(b). In addition, persons having an interest that may be adversely affected by the decision on the application, as well as any officer or head of a governmental agency, such as the Service, can request an informal conference with the regulatory authority on

the application (30 C.F.R. § 773.6(c)).

Finally, before any surface coal mining and reclamation permit application or application for a revision of a permit can be approved, the regulatory authority must find, in writing, based on information in the application, that the "operation would not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the [ESA]" (30 C.F.R. §§ 773.15(j); 774.13(c)).

Also, as specified in the SMCRA Coordination Process (Appendix A), the Service anticipates that State regulatory authorities or the applicant will provide an official species list obtained through the Service's Information for Planning and Consultation system (IPAC). The Service considers this an important first step in helping to determine which listed or proposed species, or proposed or designated critical habitats, may potentially be affected by the proposed permit activity.

SMCRA and its implementing regulations require regulatory authorities (as further clarified for State regulatory authorities in the SMCRA Coordination Process and 2020 DRP documents) to provide permit applications to the Service upon request, during which time the Service may provide technical assistance and develop species-specific protective measures and monitoring/reporting deemed necessary to minimize impacts on ESA-listed and proposed resources. The Service expects, through the regulatory authority's, public's, and the Service's review of the information mandated in an administratively complete application, and through OSMRE's oversight, individual mining facilities are ensured a thorough and adequate review of stressors associated with the project. For State-issued permits, mining operators and State regulatory authorities, with assistance from the Service, will be able to identify, minimize, and monitor potential stressors. A general overview of stressors commonly associated with coal mining are analyzed in this Opinion in the context of effects to species guilds (Appendices C and E). Consequently, we anticipate that OSMRE, State regulatory authorities, and mining operators will understand both the general types of stressors and site-specific stressors that are likely to occur from implementation of OSMRE's program.

Thus, based on the information in the biological assessment, and the Description of the Action section of this Opinion and the Key Assumptions described above, the Service anticipates OSMRE, as the action agency implementing the proposed action, would be able to understand the stressors associated with their action.

8.3.3 Minimizing Adverse Effects

Several aspects of the proposed action are anticipated to minimize adverse effects to species and critical habitat. For example, PEPs, as required under SMCRA implementing regulations, are expected to contain measures to minimize disturbances or impacts to species and their critical habitats, as well as measures that enhance the protection of resources. Thus, PEPs would be expected to assist the regulatory authority in avoiding incidental take from occurring altogether such that incidental take coverage and associated species-specific protective measures to minimize incidental take would not be required. Similarly, SSPMs, where coordinated or developed in conjunction with the Service, are expected to avoid, minimize, and monitor the effects of the proposed mining action on ESA-listed and -proposed species and their critical

habitats.[9] Where OSMRE is the permitting authority, we anticipate that step-down ESA section 7(a)(2) consultation would result in incorporation of suitable measures that would avoid or minimize effects.

Implementation of the performance standards required by SMCRA, on their own, will not necessarily eliminate adverse effects on ESA-proposed and listed species and designated and proposed critical habitat. However, through step-down ESA section 7(a)(2) consultation on OSMRE-issued permits and the SMCRA Coordination Process with State or Tribal regulatory authorities facilitated by the exchange of information as established in SMCRA, its implementing regulations, and further clarified in the SMCRA Coordination Process and 2020 DRP documents, the Service will be able to provide to OSMRE or the regulatory authority additional site-specific and species-specific protective measures, monitoring, and reporting recommendations to further enhance the protection of listed or proposed species or designated or proposed critical habitat. By including the Service's recommendations for protective measures, monitoring and reporting as a mandatory condition in the final permit, the regulatory authorities will further reduce the impacts of surface mining operations on ESA-proposed and -listed species and designated and proposed critical habitat.

The regulatory authorities are obligated to consider and address, within their administrative record, any information brought to their attention by the Service before making their permitting decision if listed or proposed species or designated or proposed critical habitat will likely be affected. OSMRE's commitment to exercise its oversight authority to resolve any issues that arise between regulatory authorities and the Service further suggests adverse effects to ESA-proposed and -listed species (and designated or proposed critical habitat) will be adequately minimized as a result of the permit application review process set forth in OSMRE's biological assessment. OSMRE's oversight authority includes, but is not limited to, assessing penalties, ordered revisions to permits, and substitution or withdrawal of the approved State program in whole or in part in accordance with OSMRE's regulations at 30 C.F.R .Part 733.

For the reasons discussed above, the Service anticipates, for purposes of this Opinion, that issues related to ESA-proposed and -listed species, and designated and proposed critical habitats, will be adequately addressed during the opportunities for the Service to engage with the State regulatory authority, or OSMRE where it is the permitting authority, in the permitting process as established in SMCRA and described in OSMRE's biological assessment and the SMCRA Coordination Process and 2020 DRP (in reviewing the permit application and the proposed permit). We anticipate that OSMRE, State regulatory authorities, and mining operators will be able to identify ways to avoid or minimize adverse effects from the activities covered under OSMRE's Program.

Thus, based on the information in the biological assessment, and the Description of the Action section of this Opinion and the Key Assumptions described above, the Service anticipates OSMRE, as the action agency implementing the proposed action, has included ways in which adverse effects to listed and proposed resources can be sufficiently avoided or minimized.

[9] While State regulatory authorities are not required to adopt the Service's recommendations, the recommendations must be incorporated as mandatory conditions in the permit if incidental take coverage is desired.

8.3.4 Identifying and Screening Applicants

OSMRE and State regulatory authorities have been permitting mining projects for decades under the existing SMCRA regulations and have developed and implemented tools to increase information sharing and public participation. OSMRE maintains two databases that support the effective screening of applicants and public participation process: 1) the Applicant Violator System (AVS); and 2) OSMRE's website that contains an electronic database of oversight documents with a search capability.

AVS is an automated information system owned and operated by OSMRE. Information on applicants, permittees, operators, application and permit records, as well as unabated or uncorrected environmental violations of SMCRA are maintained in this nationwide database for OSMRE's Federal and State programs. The primary purpose of AVS is to assist OSMRE and States in making a permit eligibility determination required under section 510(c) of SMCRA for applicants of surface coal mining permits. Section 510(c) of SMCRA prohibits issuance of a new permit to any applicant who owns or controls mining operations having unabated or uncorrected violations anywhere in the United States until those violations are abated or corrected or are in the process of being abated or corrected to the satisfaction of the agency with jurisdiction over the violation.

When OSMRE's oversight activities identify an issue that could result in a failure by the State or Tribe to effectively implement, administer, enforce, or maintain any portion of its approved regulatory program, the OSMRE field or regional office will work with the State or Tribe to develop an action plan to resolve the problem before it escalates into a situation that could result in substitution of Federal enforcement or withdrawal of program approval under 30 CFR 733.12 (https://www.osmre.gov/programs/oversight.shtm). OSMRE encourages public participation in the oversight process through publishing online selected oversight documentation on ODocs, providing access to OSMRE directives related to policies and procedures.

Furthermore, OSMRE Directive REG-8 establishes policies and procedures for oversight evaluations of State and Tribal regulatory programs. According to OSMRE's website describing their oversight program (https://www.osmre.gov/programs/oversight.shtm), each year, OSMRE develops a performance agreement and evaluation plan to guide oversight activities within the State or Tribe for that year. That process includes solicitation and consideration of public input. OSMRE collaborates with the State or Tribe to the extent possible in developing the evaluation plan. OSMRE field and regional offices maintain an evaluation file and prepare an annual evaluation report for each State and Tribe. The Service anticipates mining operators will be successfully identified and screened as part of the permitting process through OSMRE's oversight, implementation of State's approved regulatory programs, and public participation.

Thus, based on the information in the biological assessment, and the Description of the Action section of this Opinion and the Key Assumptions described above, the Service anticipates OSMRE, as the action agency implementing the proposed action, has included a mechanism to adequately identify, inform, encourage, and screen applicants for potential eligibility under or participation in the permitting activities covered by OSMRE's Program.

8.3.5 Monitoring Effects

To ensure OSMRE's regulatory program and the technical assistance coordination process described in this Opinion and the SMCRA Coordination Process and 2020 DRP adequately address ESA-related issues, monitoring of the biotic and abiotic effects from the mining facility are important.

The permit application must include a monitoring plan adequate to evaluate the impacts of the surface mining operation on groundwater and surface water in the proposed permit and adjacent areas and to ensure that the operation does not result in material damage to the hydrologic balance outside the permit area (e.g., consistent with the approved State program, where the State is the regulatory authority). Upon completing the technical review of the application, the regulatory authority may require revision of the plan to increase the frequency of monitoring, to require monitoring of additional parameters, or to require monitoring at additional locations, if the additional requirements would contribute to protection of the hydrologic balance.

As described in OSMRE's biological assessment, SMCRA's implementing regulations include examples of monitoring effects of surface mining in order to detect, minimize, and mitigate adverse impacts on surface water and groundwater from the operation during mining and reclamation. For example, all surface coal mining operations are required to monitor the surface water and groundwater within and adjacent to the permitted operation (30 C.F.R. § 780.21). In most States, mine permittees are required to submit analyses quarterly (30 C.F.R. § 780.21(j)(3)). Regulatory authorities will evaluate the water quality data periodically throughout the permit life cycle. Because water monitoring is permit-specific, these minimization techniques should be designed in a density and location sufficient to detect adverse effects during the operational life of the mine. Operators are required to minimize disturbances to the hydrologic balance within the permit area, prevent or control the discharge of pollutants into groundwater, and ensure compliance with applicable State and Federal water quality laws (30 C.F.R. §§ 816.41 and 816.42). The permittee is required to review all water quality monitoring data and report to the regulatory authority if non-compliance occurs (30 C.F.R. § 816.41(c) and (e)).

The required groundwater monitoring (including identification of parameters) plan must address those water-quantity and water-quality characteristics that relate to the suitability of the groundwater for current and approved postmining uses. The regulatory authority may require drilling and development of additional wells if needed to adequately monitor the groundwater system. The permittee must take whatever steps are necessary to ensure that public health and the environment are protected through compliance with applicable performance standards, permit terms and conditions. The regulatory authority may require corrective actions through a notice of violation, a cessation order, or a required permit revision (*e.g.* 30 C.F.R. Part 840).

Groundwater monitoring is required, and the plan for monitoring must relate to the suitability of the groundwater for current and approved postmining land uses. At a minimum, groundwater monitoring must measure total dissolved solids or specific conductance corrected to 25 °C, pH, total iron, total manganese, and water levels, and in most cases the permittee must submit data quarterly for each monitoring location to the regulatory authority. The regulatory authority may request testing for other analytes if deemed appropriate (30 C.F.R. § 780.21(b)(3)).

Surface water monitoring must be conducted in sufficient quality and quantity to sufficiently demonstrate seasonal variation and water usage. At a minimum, water quality parameters must include total suspended solids, total dissolved solids, pH, total iron and total manganese under the implementing regulations for SMCRA (30 C.F.R. § 780.21(b)(2)). Baseline acidity and alkalinity measurements are required for permit applications where the potential for acid mine drainage exists. Water quality information must also include, at a minimum, baseline information on seasonal flow rates.

As described earlier, each application must include fish and wildlife resource information for the permit area and adjacent area. For projects that may impact listed or proposed species or their proposed or designated critical habitat, the scope and level of detail for such information shall be determined by the regulatory authority in consultation[10] with the Service (30 C.F.R. 780.16). The Service may recommend specific protective measures to minimize disturbances and adverse impacts to trust resources, including biological monitoring, and other protective measures for example, as part of the PEP. Any recommended monitoring or protective measures recommended by the Service in consultation with the regulatory authority must be conducted in the manner specified in the plan approved in the permit. Surface water and/or biological assessment data collection, analysis, and reporting requirements must comply with permit requirements. Biological monitoring data must be submitted to the regulatory authority on an annual basis, or more frequently if prescribed by the regulatory authority.

Implementation of the monitoring practices associated with SMCRA, on their own, will not necessarily adequately monitor effects on ESA-proposed and -listed species or designated and proposed critical habitat in all cases. For example, listed species may have biological thresholds for water quality parameters such as conductivity that are lower than the state water quality standard for that constituent. Through step-down ESA section 7(a)(2) consultations on OSMRE-issued permits and the SMCRA Coordination Process with State or Tribal regulatory authorities, the Service will be able to provide to OSMRE or the regulatory authority additional site-specific and species-specific monitoring and reporting recommendations. If the State regulatory authority seeks incidental take coverage under this programmatic Opinion's ITS, then the State regulatory authority would be required to incorporate monitoring provisions in the permit pursuant to ESA Section 7 (b)(4). By including the Service recommendations for monitoring and reporting as mandatory conditions in the final permit, the regulatory authorities will further ensure the effects of surface coal mining operations on ESA-proposed and -listed species and designated or proposed critical habitat are monitored. The regulatory authorities are obligated to consider and address any information brought to their attention by the Service before making their permitting decision if ESA-listed or -proposed species or designated or proposed critical habitat are potentially affected (30 C.F.R. § 773.6(b)(1) and 780.16 (a) and (b)). In view of the processes outlined and clarified in the SMCRA Coordination Process and 2020 DRP documents, OSMRE's commitment to exercise its oversight authority to resolve any issues that arise between regulatory authorities and the Service, the monitoring of effects to ESA-listed and

[10] The term "consultation" as used here is from SMCRA, and does not imply ESA section 7 consultation. In this context, the use of that term is intended to generally mean "coordination", which may be through the SMCRA Coordination Process, where the State is the regulatory authority, or in step-down section 7 consultations, where OSMRE is the permitting authority.

proposed species and their designated or proposed critical habitats will be adequately conducted as a result of the permit application review process set forth in this Opinion.

Thus, based on the information in the biological assessment, and the Description of the Action section of this Opinion and the Key Assumptions described above, the Service anticipates OSMRE, as the action agency implementing the proposed action, has included a mechanism to adequately monitor and evaluate adverse effects on listed species and critical habitat from the proposed activities covered by OSMRE's Program.

8.3.6 Monitoring and Enforcing Compliance

The monitoring and enforcement of the mining permit program and individual permits is an important aspect in evaluating the effectiveness of SMCRA and mining permit requirements. While OSMRE would monitor and provide oversight and enforcement for permitting where it is the regulatory authority, we also consider their monitoring and oversight where States (or Tribes) are the regulatory authority.

In general, SMCRA establishes a program of cooperative federalism that allows a State to assume primary jurisdiction (primacy) over the regulation of surface coal mining and reclamation operations within its borders once its regulatory program has been approved by the Secretary of the Interior. SMCRA requires that a State program demonstrate that the State's rules and regulations are consistent with regulations issued by the Secretary. Under 30 C.F.R. 730.5(a), this provision means that State laws and regulations must be no less stringent than, must meet the minimum requirements of, and must include all applicable provisions of SMCRA. Paragraph (b) of 30 C.F.R. 730.5 further specifies that this provision means that State laws and regulations must be no less effective than the Federal regulations in meeting the requirements of SMCRA.

If a State does not ensure that its program meets minimum standards, such as ensuring compliance with the ESA, 30 U.S.C. 1271 provides ways for OSMRE to correct the problem. OSMRE's regulations at 30 C.F.R. Parts 732 and 733 define, procedures, and responsibilities for conducting oversight of State and Tribal regulatory programs.

The fundamental purpose of OSMRE's oversight is to ensure that States and Tribes are effectively administering, implementing, maintaining, and enforcing their approved regulatory programs. To achieve that purpose, OSMRE evaluates the administration of each State and Tribal program at least annually. OSMRE also conducts inspections of surface coal mining and reclamation operations as necessary to monitor and evaluate the administration of approved State or Tribal programs. OSMRE prepares an Annual Evaluation Report for each State. In exercising its oversight responsibilities, OSMRE works with the States and Tribes to fulfill its oversight activities, while considering public input and maintaining its independence and objectivity to carry out its duties under SMCRA and 30 C.F.R. Part 842.

OSMRE's oversight authority is both permit-specific and programmatic. For alleged permit-specific violations, under 30 U.S.C. § 1271(a)(1), whenever OSMRE, on the basis of any information available, including receipt of information from any person, has reason to believe that any person is in violation of any requirement of SMCRA or any permit condition required by SMCRA, OSMRE must notify the State regulatory authority. The State regulatory authority

then has ten days to take appropriate action to cause the violation to be corrected or show good cause for not taking action. 30 U.S.C. § 1271(a)(1); see also 30 C.F.R. §§ 842.11(b)(1), 843.12(a)(2).

"Appropriate action" includes enforcement or other action to correct the violation. Circumstances constituting "good cause" include a showing by the State regulatory authority that the possible violation does not exist under the approved State program. OSMRE will accept a State regulatory authority's response to a TDN as constituting "appropriate action" or "good cause" unless the State regulatory authority's response is arbitrary, capricious, or an abuse of discretion. OSMRE has promulgated regulations to enhance 30 C.F.R. Part 733 to add procedures for the development of corrective action plans. OSMRE currently provides for the use of corrective action plans in its internal Directive REG-23, but is now codifying this process. The purpose of corrective action is to ensure early identification of potential State regulatory program issues before the issues escalate. The codification of corrective action plans will give OSMRE another mechanism that will allow it to coordinate with a State regulatory authority to correct any systemic issue that OSMRE identifies in relationship to an approved State regulatory program in order to minimize the number of on-the-ground violations without resorting to the rare remedy of substitution or withdrawal of Federal enforcement.

OSMRE has recently published a clarification to its regulations at 30 C.F.R. Part 842. The regulatory revisions clarify how OSMRE responds to citizen complaints alleging that an operation is in violation of Federal or State standards or requirements, including those related to fish, wildlife, and related environmental values and resources. The proposed changes are designed to expedite and better coordinate enforcement resources among OSMRE and State regulatory authorities and eliminate unnecessary or duplicative enforcement efforts.

Under section 521(a)(2) of SMCRA, OSMRE must issue a cessation order when, on the basis of a Federal inspection, OSMRE determines that a condition, practice, or violation creates an imminent harm or danger. Under 521(a)(3) of SMCRA, OSMRE will take an enforcement action, including issuance of a notice of violation, if OSMRE determines that a violation exists after an inspection.

If OSMRE has reason to believe that a State is not effectively implementing, administering, maintaining, or enforcing any part of its approved program, the Director may begin a process of determining whether to substitute Federal enforcement for the State program or withdrawing approval of State programs. OSMRE's enhancements to 30 C.F.R. Part 733 provides the procedures for when OSMRE identifies a problem with a State's approved regulatory program. This enhancement to OSMRE's existing regulations within this Part reinforces the concept that the focus of corrective actions should be on resolution of the problems. In brief, the recently issued enhancements to 30 C.F.R. Part 733 provide that when the OSMRE FOD identifies a State regulatory program issue , the FOD must attempt to work with the State to create a written Action Plan. If the State does not comply with the Action Plan, the FOD notifies the applicable OSMRE Regional Director. The Regional Director will coordinate with the FOD and the State to modify the Action Plan, if necessary, or he can recommend that the OSMRE Director initiate a process under 30 C.F.R. § 733.13 to substitute direct Federal enforcement for all or part of the State regulatory program or the withdrawal of approval of all or part of the State program. The procedures for substituting Federal enforcement for a State program or for withdrawing all or part of a State program include the creation of a record of the issue, a public hearing, and public comment period, to assist the Director in determining whether a State is not effectively

implementing, administering, maintaining or enforcing any part of its approved State program before Federal enforcement is substituted or approval of the State program is withdrawn.

For the reasons discussed above, the Service anticipates OSMRE and State regulatory authorities will utilize the full extent of their respective authorities to monitor and enforce the mining regulatory programs these agencies oversee.

Thus, the Service finds that OSMRE, as the action agency implementing the proposed action, has included a mechanism to adequately monitor and enforce permit compliance for activities covered by OSMRE's Program.

8.3.7 Modify the Action

As discussed above, where OSMRE is the regulatory authority, it has the ability and authority to modify mining permit programs and individual mining permits if they are inadequately protecting listed or proposed species and designated or proposed critical habitat or if new relevant information becomes available. OSMRE has the ability and authority to address individual mining permits if new information becomes available, or if the permit is not adequately protecting ESA resources.

OSMRE also has oversight authority of State coal mining programs. If, as a result of changes in SMCRA or Federal regulations, State programs are no longer in accordance with SMCRA or with the Federal regulations, SMCRA and OSMRE's regulations require that the State program be amended. (*See, e.g.,* 30 C.F.R § 732.17(e). If the Director determines that a State program amendment is necessary, the State regulatory authority must submit a proposed written amendment within 60 days of the notification (30 C.F.R. § 732.17(f)(1)). Within 30 days after submission of a State program amendment, OSMRE will publish a notice in the **Federal Register** that should include the text of the proposed amendment, dates of the public comment period, and the dates and location of public hearings (30 C.F.R. § 732.17(h)). OSMRE must approve or disapprove the amendment request within 30 days after the close of the public comment period.

Under the technical assistance coordination process outlined in SMCRA, OSMRE's implementing regulations, and the SMCRA Coordination Process and 2020 DRP documents, coordination with the Service is required for permit applications with potential for ESA-listed or -proposed species (or designated or proposed critical habitat) impacts. Similarly, where OSMRE is the permitting authority, step-down ESA section 7(a)(2) consultation with the Service would occur.

For the reasons discussed above, the Service anticipates the technical assistance coordination process as outlined in SMCRA, its implementing regulations, and further clarified in the 2020 SMCRA Coordination Process and 2020 DRP documents, will ensure that no mining actions likely to jeopardize listed species or destroy or adversely modify proposed or designated critical habitat will occur. We also anticipate SMCRA permit applications will be modified and updated through the SMCRA Coordination Processes, or where listed species are subsequently observed after the permit has been granted, through additional coordination with the Service (as described above in Section 4.2.2.3, *Additional Considerations Related to ESA-Listed Species*). For

permitting actions where OSMRE is the regulatory authority, the Service anticipates early interagency coordination, and step-down ESA section 7(a)(2) consultation, will ensure that no mining actions likely to jeopardize listed species or destroy or adversely modify critical habitat would occur.

Thus, the Service anticipates OSMRE, as the action agency implementing the proposed action, has included mechanisms to modify its action (i.e. implementation of the Program) if new information (including inadequate protection for species or low levels of compliance) becomes available.

8.4 Other Considerations

In addition to the seven questions described above that are related to OSMRE's implementation of their Program, we also discuss related aspects of the proposed action in the sections below, including monitoring requirements, vegetative buffers, fill placement in streams, groundwater quality, and revegetation, as these are also relevant to our analyses.

8.4.1 Monitoring Requirements

Under the regulations, mining continues to affect downstream water chemistry in certain geographic areas based on geologic and topographic characteristics. Studies have shown that mining-impacted waterways may contain elevated levels of arsenic, selenium, iron, aluminum, manganese, and sulfate. These waters typically have lower alkalinity concentrations and lower pH, while specific conductivity and total suspended solids are typically higher, as compared to streams unimpacted by mining.

Although the regulations require baseline characterization of water quality, they do not establish standard protocols for determining the placement and number of water sampling points. OSMRE's regulations include a requirement that a permit application shall include a groundwater and surface water monitoring plan based upon the probable hydrologic consequences determination required under OSMRE's regulations and the analysis of all baseline hydrologic, geologic, and other information in the permit. For surface water, this includes monitoring of parameters that relate to the suitability of the surface water for current and approved postmined land uses and to the objectives for the protection of the hydrologic balance and the effluent limitations for pH, total iron, total manganese, and total dissolved solids, total suspended solids or specific conductance corrected to 25 degrees Celsius, but they do not require monitoring of other constituents, such as selenium, that have also been scientifically linked to some coal mining activities. *See* 30 C.F.R. §§ 780.21(i) and (j) and 816.42. The regulations also do not expressly require baseline assessment of biological conditions in streams. Also, consistent with the OSMRE regulations, required groundwater and surface water monitoring plans should include flow (for surface water or water levels for groundwater) and baseline information on seasonal flow rates. It should be noted that for all point-source discharges, including monitoring for pH, total iron, manganese, and total suspended solids, must be accordance with the regulations of the CWA permitting authority.

If there are water quality parameters or monitoring needs related to ESA-listed or -proposed species or designated or proposed critical habitat, the Service would provide species-specific protective measures to address. These species-specific protective measures will also be site-specific and would be developed by the Service during the SMCRA Coordination Process. If specific parameters are known by the Service to be protective of the ESA resources, the Service can provide those parameters to the regulatory authority and mining applicant to facilitate monitoring. If the Service requires pre-mining data and the regulatory authority and mining permittee have not coordinated with the Service early in the permitting process, permitting delays could occur. Therefore, the Service routinely recommends that regulatory authorities and permit applicant contact the Service early in the permitting process. The Service anticipates the technical assistance coordination process as outlined in SMCRA, OSMRE's implementing regulations, and as further clarified in the SMCRA Coordination Process and 2020 DRP documents will be implemented consistently and that, if necessary for specific ESA-listed resources, water quality and biological monitoring of water bodies will be addressed through species-specific protective measures. Likewise, the Service also assumes that such impacts would be addressed in a step-down ESA Section 7 consultation with OSMRE for projects in which OSMRE is the regulatory authority.

8.4.2 Vegetative Buffers

Vegetated buffer zones can slow overland water flow and allow sediment particles to settle out before reaching surface waters. SMCRA's implementing regulations require a 100-foot buffer along perennial and intermittent streams, although the regulations allow the regulatory authority to grant an exception to this requirement, which routinely occurs. The exception review and decision process varies between regulatory authorities. If riparian corridors are in need of vegetation protection to avoid or minimize effects to ESA-listed or –proposed species or designated or proposed critical habitat, the Service will review proposed protective measures or will provide species-specific protective measures to avoid and minimize those impacts. These species-specific protective measures will be site-specific and would be developed by or in coordination with the Service during the SMCRA Coordination Process, or the step-down ESA section 7(a)(2) consultation (depending on the regulatory authority). The Service anticipates the technical assistance coordination process as outlined in SMCRA, OSMRE's implementing regulations, and further clarified in the SMCRA Coordination Process and 2020 DRP documents, will be implemented consistently and that, if necessary for specific ESA-listed resources, vegetative buffer zones will be addressed through species-specific protective measures. Likewise, the Service also assumes that such impacts would be addressed in a step-down ESA Section 7 consultation with OSMRE for projects in which OSMRE is the regulatory authority.

8.4.3 Fill Placement in Streams

Controlled excess spoil placement into streams is allowable under OSMRE's regulations. (30 C.F.R. § 816.72). Effects of excess spoil generation on streams continue to occur, particularly in Appalachia. SMCRA regulations require that a permanent stream-channel diversion or a restored stream channel be designed and constructed so as to approximate the premining characteristics of the original stream channel, including riparian vegetation, but it does not require restoration of the stream's biological condition or ecological function. Historically, some State regulatory authorities have allowed construction of excess spoil fills and coal mine waste disposal facilities in streams within the permit area, as long as the findings and probable hydrologic consequences

determination can be made with respect to the remaining portion of the stream below the toe of the fill or facility (30 C.F.R. §§ 773.15, 780.21 and 784.14). If the determination of the probable hydrologic consequences indicates that adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or that acid-forming or toxic-forming material is present that may result in the contamination of ground-water or surface-water supplies, then supplemental information will be required to plan remedial and reclamation activities (See 30 C.F.R. § 780.21 and 784.14).

If there are streams where filling would adversely affect ESA-listed or -proposed species or designated or proposed critical habitats, the Service would provide species-specific protective measures to avoid and minimize those impacts. These species-specific protective measures will be site-specific and will be developed by the Service during technical assistance coordination. The Service anticipates that the environmental protection standards required by SMCRA in30 U.S.C. § 1265 and 1266), the technical assistance coordination process as outlined in SMCRA, OSMRE's implementing regulations, and further clarified in the SMCRA Coordination Process and 2020 DRP documents, will be implemented consistently and that, if necessary for specific ESA-listed resources, streams whose impacts would negatively impact ESA resources will be addressed through species-specific protective measures. Likewise, the Service also assumes that such impacts would be addressed in a step-down ESA Section 7 consultation with OSMRE for projects in which OSMRE is the regulatory authority.

8.4.4 Groundwater Quality

In some locations, groundwater quality downgradient of reclaimed surface coal mines shows lower pH and increased sulfate, iron, manganese, and aluminum concentrations at sampling locations affected by mining. Overburden removal and coal excavation during surface coal mining results in a new groundwater static water level within the disturbance boundary. This consequently affects the hydraulic gradients surrounding the mined area, and may result in changes to direction of the groundwater flow. If there is groundwater in need of protection to avoid or minimize effects to ESA-listed or -proposed species or designated or proposed critical habitat, the Service would provide species-specific protective measures to avoid and minimize those impacts. These species-specific protective measures would be site-specific and developed by, or in coordination with, the Service during the SMCRA Coordination Process or step-down ESA section 7(a)(2) consultation (depending on the relevant regulatory authority). The Service anticipates the technical assistance coordination process as outlined in SMCRA, its implementing regulations, and further clarified in the SMCRA Coordination Process and 2020 DRP documents, will be implemented consistently and that, if necessary for specific ESA-listed species , groundwater protection will be addressed through species-specific protective measures. Likewise, the Service also assumes that such impacts would be addressed in a step-down ESA Section 7 consultation with OSMRE for projects in which OSMRE is the regulatory authority.

8.4.5 Revegetation

SMCRA regulations emphasize revegetation with native species, and the regulations that pertain to creating growth conditions for the return of forest land to its premining condition are located at 30 C.F.R. 816.111, 816.22 and 30 C.F.R. 701.5. Provisions within the SMCRA regulations require a revegetation plan, including being compatible with the postmining land use, being

compatible with the plant and animal species of the area, and meeting the requirements of applicable state and federal seed, poisonous and noxious plant, and introduced species laws or regulations. Within section 515 of SMCRA, Congress prescribed several protective provisions designed to minimize impacts from mining conducted under Title V of the Act. *See generally*, 30 U.S.C. § 1265. Moreover, in cases where the operator does not salvage and redistribute all soil horizons, the seed bank contained within the topsoil is not returned to the site to facilitate reestablishment of vegetation and the loss of soil organic matter compaction of the soil during filling and grading reduces the quality of the soil for vegetative regrowth. The return to full site productivity may be delayed as a result. Mining can also facilitate conversion of land by making it economically feasible to clear and recontour a site, since these activities would transpire as a matter of course during the mining activity. However, if there are revegetation plans that would negatively affect ESA-listed or -proposed species or designated or proposed critical habitats, the Service would provide species-specific protective measures to avoid and minimize those impacts. These species-specific protective measures would be site-specific and would be developed by the Service during technical assistance coordination or during a step-down ESA Section 7 consultation with OSMRE, depending upon the relevant regulatory authority responsible for overseeing the specific project. The Service anticipates the technical assistance coordination process as outlined in SMCRA, OSMRE's implementing regulations, and further clarified in the SMCRA Coordination Process and 2020 DRP documents, will be implemented consistently and that, if necessary for specific ESA-listed resources, vegetation whose destruction would negatively impact ESA resources will be addressed through species-specific protective measures. Likewise, the Service also assumes that such impacts would be addressed in a step-down ESA Section 7 consultation with OSMRE for projects in which OSMRE is the regulatory authority.

8.4.6 Summary

In summary, we anticipate the technical assistance coordination process as outlined in SMCRA, its implementing regulations, and further clarified in the SMCRA Coordination Process and 2020 DRP documents, will provide a consistent approach to technical assistance coordination among regulatory authorities, permittees, and the Service. The Service anticipates issues related to ESA-proposed and -listed species, and designated or proposed critical habitats, will be adequately addressed during the opportunities for the Service to engage in the permitting process as specifically defined by OSMRE's regulations and the SMCRA Coordination Process attached to this Opinion (where States are the regulatory authority), or in step-down ESA section 7(a)(2) consultation.

8.5 Exposure and Response Analyses

The scope of OSMRE's implementation of Title V of SMCRA is widespread, covering an array of mining sites that may affect a wide variety of ESA- listed and proposed species and their critical habitats. Species listed or proposed for listing under the ESA have known ranges and critical habitats that overlap the Action Area to varying degrees, from no overlap to species or critical habitats that exist entirely within areas containing mineable coal (Table 1). While specific State mining programs may differ in regulatory approaches, SMCRA requires all approved programs must be in accordance with and satisfy minimum Federal standards. To a limited extent, it is also uncertain where and when applicants may ultimately apply for permits. Under

these circumstances, it is not feasible to conduct a meaningful site-specific and species-specific exposure analysis at the level of this Opinion. The regulations are not self-implementing (i.e. it is implemented only through future permits). Rather, site- and species-specific exposure and response analyses will be conducted as part of the technical assistance coordination process among the State regulatory authority, mining permit applicant, and local Service office where the States have primacy over mining permits. For the purposes of this document, surface coal mining operations were assumed to be equally likely to occur anywhere in the Action Area.

While such analyses would be addressed at a site- or species-specific level in subsequent SMCRA Coordination Processes or step-down ESA section 7(a)(2) consultations, as noted above, we provide a high-level overview of considerations relevant to these analysis for each guild in Appendix E.

8.6 Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Declines in the abundance or range of many federally threatened, endangered, and species proposed for listing under the ESA are attributable to various human activities on Federal, State, and private lands, such as human population expansion and associated infrastructure development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expansion of agricultural or grazing activities, including alteration or clearing of native habitats for domestic animals or crops; degradation of water quality; and introductions of non-native plant, wildlife, or fish or other aquatic species, which can alter native habitats or out-compete or prey upon native species. Within the large expanse covered by the Action Area, these activities are expected to continue within the range of various Federally protected wildlife, fish, and plant species, and will contribute to cumulative effects to the species. Species with small population sizes, endemic locations, or slow reproductive rates will generally be more susceptible to cumulative effects. Cumulative effects will be further analyzed at the local landscape scale, as appropriate, during the technical assistance coordination process with a State or Tribal regulatory authority or stepdown ESA Section 7(a)(2) consultation with OSMRE, when site- and species-specific information is reviewed by local Service biologists familiar with the project area and the biology of local species.

9 CONCLUSION

In this Opinion, we have evaluated whether OSMRE has structured its SMCRA regulatory program to ensure that its implementation is not likely to jeopardize the continued existence of proposed or listed species or result in the destruction or adverse modification of proposed or designated critical habitat.

As an overarching protective standard, the OSMRE's regulations implementing SMCRA establish that no permit application, or application for a significant revisions of a permit, shall be approved unless, for example, the State regulatory authority finds that "(t)he operation would not affect the continued existence of endangered or threatened species or result in destruction or

adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973" (30 C.F.R. § 773.15(j).

Based on our analysis of OSMRE's regulations implementing SMCRA described above, and in light of the OSMRE's 2020 biological assessment and its addenda evaluated in this Opinion, the Service finds that:

1) OSMRE, State regulatory authorities, and mining operators are required to adequately identify and understand the scope of their actions so as to identify when proposed or listed species or proposed or designated critical habitats may be affected;

2) the coordination procedures required in the SMCRA regulations and clarified in the SMCRA Coordination Process provided as an addendum to OSMRE's 2020 biological assessment will ensure that stressors associated with projects subject to SMCRA regulation will be identified;

3) the step-down ESA section 7(a)(2) consultation process that will be used for projects for which OSMRE will be the regulatory authority, and the SMCRA Coordination Process and the associated dispute resolution process also provided as an addendum to OSMRE's 2020 biological assessment that will be used when a State is the regulatory authority, are sufficient to ensure that adverse impacts of individual projects to proposed or listed species will be minimized and that project impacts that are likely to jeopardize the continued existence of proposed or listed species or destroy or adversely modify designated critical habitat will be avoided;

4) the SMCRA regulations are sufficient to ensure that mining operators will be successfully identified and screened as part of the permitting process;

5) the monitoring requirements of the SMCRA regulations, as may be supplemented on a project-specific basis through step-down ESA Section 7(a)(2) consultation when OSMRE is the regulatory authority or through implementation of the SMCRA Coordination Process when a State is the regulatory authority, are adequate to monitor the effects of permitted projects on proposed or listed species or proposed or designated critical habitat;

6) the regulations and OSMRE's biological assessment establish that OSMRE and State regulatory authorities have adequate authority as established in SMCRA to monitor and enforce the mining regulatory programs they oversee; and

7) the regulations and OSMRE's biological assessment establish that OSMRE has the ability and authority to make changes, at the individual permit and programmatic level, to the proposed action (i.e., implementation of OSMRE's Program) if new information becomes available demonstrating ESA resources are not adequately protected.

Accordingly, it is the Service's biological opinion that OSMRE's implementation of Title V of SMCRA through its existing regulations is not likely to jeopardize the continued existence of proposed or listed species and or destroy or adversely modify designated or proposed critical habitat. Although activities regulated under SMCRA have the potential to adversely affect listed species or designated critical habitat, the protective measures and project-specific coordination procedures outlined in SMCRA and its implementing regulations, and further clarified in the 2020 biological assessment and associated addenda, are adequate to ensure that no permit issued under the SMCRA Title V regulatory program is likely to jeopardize proposed or listed species or result in the destruction or adverse modification of proposed or designated critical habitat.

10 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and regulations issued pursuant to section 4(d) of the ESA prohibit the "take" of endangered and threatened species, respectively. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by the Service as an act which actually kills or injures wildlife, which may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of sections 7(b)(4) and 7(o)(2), taking that is incidental and not intended as part of the agency action is not considered to be prohibited taking under the ESA, provided that such taking is in compliance with the Terms and Conditions to carry out the Reasonable and Prudent Measures of this Incidental Take Statement.

For species proposed for listing under the ESA, the prohibitions against taking endangered species under section 9 of the ESA or under a Section 4(d) rule for threatened species do not apply until the species is listed. If the conference opinion is adopted as a biological opinion following a listing or critical habitat designation under section 4 of the ESA, the Reasonable and Prudent Measures, with their implementing Terms and Conditions, will be nondiscretionary. Terms and Conditions must be undertaken by OSMRE and/or the State regulatory authority, as appropriate, for the exemption in section 7(o)(2) to apply.

For proposed mining activities in which the State regulatory authority has primacy and for which incidental take of ESA-listed species is reasonably certain to occur, the amount and extent of incidental take anticipated from these proposed actions will be quantified by the Service and evaluated on a project-specific basis through the SMCRA Coordination Process conducted between the Service and the State regulatory authorities and mandated in OSMRE's regulations implementing Title V of SMCRA.

For Federal program mining activities in which OSMRE is the authority issuing permits, any incidental take anticipated to occur from these activities will be analyzed and quantified through project-specific, step-down ESA section 7(a)(2) consultations between the Service and OSMRE.

Section 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the ESA prohibits the removal and reduction to possession of Federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

10.1 Amount or Extent of Take Anticipated

While OSMRE's biological assessment provided a list of species and critical habitats that may be affected by surface mining activities and an analysis of responses of ESA-listed and proposed species to stressors, the paucity of information regarding future mining projects that is available at the time of this programmatic consultation does not allow the Service to identify the specific locations in which future mining projects will occur, the specific activities associated with a particular mining permit, and the number of individuals that might be affected by such activities in order for the Service to conduct species and site-specific analyses. However, this information will be provided to the Service on a permit-specific basis as a result of future step-down ESA

section 7(a)(2) consultations with OSMRE when OSMRE is the regulatory authority or through the SMCRA Coordination Process when a State is the regulatory authority, as discussed in this Opinion and OSMRE's 2020 biological assessment. Both of these processes (i.e., subsequent Section 7 consultations and the technical assistance process) affords the Service the opportunity to evaluate project effects on a site- and species-specific basis.

For States or Indian lands for which OSMRE is the regulatory authority, any incidental take anticipated to be the consequence of regulated activities will be analyzed and quantified by the Service through project-specific, step-down ESA section 7(a)(2) consultations between OSMRE and the Service.

For States that are the approved regulatory authority, if it is determined through the SMCRA Coordination Process that take of listed species is reasonably certain to occur, the amount or extent of incidental take will be quantified by the appropriate Service Field Office in coordination with the State regulatory authority. The State regulatory authority and the Service will review reports and track the levels of take estimated through the SMCRA Coordination Process and exempted by this Incidental Take Statement.

OSMRE, State regulatory authorities, and mine operators will be afforded an exemption from the prohibition against take resulting from surface mining activities subject to regulation under SMCRA when those surface mining activities are carried out in accordance with the implementing regulations as described in OSMRE's 2020 biological assessment, provided that they comply with the Reasonable and Prudent Measures and associated Terms and Conditions of this Incidental Take Statement.

If a State regulatory authority chooses not to follow, or is unable to comply with the Reasonable and Prudent Measures and associated Terms and Conditions of this Incidental Take Statement, they may seek protections from the take prohibitions of the ESA by obtaining take authorization pursuant to section 10(a)(1)(A) and 10(a)(1)(B) of the ESA or exemption through a separate ESA Section 7(a)(2) consultation if another Federal nexus exists.

This Incidental Take Statement does not apply if no prohibited take pursuant to Sections 9 or 4(d) of the ESA is reasonably certain to occur as a result of a given project under the proposed action.

10.2 Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take to ESA-listed species.

> 1) Where OSMRE is the regulatory authority, OSMRE will initiate section 7(a)(2) consultation with the Service when individual projects may affect listed species (described previously as "step-down ESA section 7(a)(2) consultations).
>
> 2) OSMRE will use its authorities to minimize impacts to listed species through oversight of State and Tribal programs. Oversight is the process of evaluating and assisting States and Tribes in the administration of the SMCRA regulations and the implementation, enforcement, and maintenance of approved State or Tribal regulatory programs.

10.3 Terms and Conditions

In order to be exempt from the take prohibitions for endangered species under section 9 of the ESA or the take prohibitions that apply to threatened species under section 4(d) of the ESA,

OSMRE and/or State regulatory authorities must comply with, or ensure compliance with, the following Terms and Conditions, which implement the Reasonable and Prudent Measures described above. These terms and conditions are non-discretionary.

1) State regulatory authorities must engage the Service in review and comment on proposed SMCRA permit actions in accordance with the SMCRA Coordination Process described in the addendum to OSMRE's 2020 biological assessment and included as Appendix A to this Opinion.
   a) Within 60 days of issuance of this Opinion, OSMRE will provide each State Regulatory Authority with the SMCRA Coordination Process (Appendix A), and will provide a copy of the transmittal to the Service.
   b) In situations where an regulatory authority's proposed permitted action is not likely to jeopardize listed species or destroy or adversely modify critical habitat, the Service will limit its request for species-specific protective measures to those that: (1) are within the authority of the regulatory authority and (2) involve only minor changes and do not alter the basic design, location, scope, duration, or timing of the action.
2) If disagreements arise between a State regulatory authority and the Service over recommended species-specific protective measures, and the parties are unable to resolve their differences, OSMRE and the State regulatory authority will engage the Service in the dispute resolution process described in the addendum to OSMRE's 2020 biological assessment and included as Appendix B to this Opinion.
   a) Within 60 days of issuance of this Opinion, OSMRE will transmit to each State regulatory authority a copy of the 2020 DRP (Appendix B) and will provide a copy of the transmittal to the Service. In situations where a regulatory authority's proposed permitted action is not likely to jeopardize listed species or destroy or adversely modify critical habitat, the Service will engage in dispute resolution over minimization measures only when the take is of significant conservation consequence to the species.
   b) If the dispute resolution concludes with the State regulatory authority rejecting the proposed resolution and issuing the permit without Service concurrence, the Service recognizes that the State regulatory authority may decide to issue the permit, but any prohibited take of listed species incidental to that permit action will not be exempted through this incidental take statement.
3) OSMRE will provide an annual evaluation report to the Service (or notify the Service when it is available and provide the report's location, if online) that includes, at a minimum, a discussion of any known issues implementing the technical assistance or dispute resolution process. Additionally, OSMRE will meet with the Service no less than annually to discuss progress implementing this Opinion and any potential issues.

11 REINITIATION NOTICE

This concludes formal consultation on the action. As described in 50 C.F.R. § 402.16(a), reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if:

1. The amount or extent of incidental take for this Opinion is exceeded;
2. New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion;
3. The identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or
4. A new species is listed or critical habitat designated that may be affected by the action identified in this Opinion.

The reinitiation triggers described above apply to the action described in this Opinion. Potential reinitiation scenarios exist if the assumptions outlined in Section 8.2 of this Opinion are proven incorrect.

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