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OPINIONS OF THE ATTORNEY GENERAL
OF THE OSAGE NATION
ONAG-2026-01

QUESTIONS SUBMITTED BY: The Honorable Geoffrey M. Standing Bear, Principal Chief of the Osage Nation.

This Office has received your request for an Official Attorney General Opinion regarding the ownership of pore space beneath the Osage Nation reservation. To wit, you ask:

I. QUESTIONS and SHORT ANSWERS

1. **Did the Act of June 28, 1906, Ch. 3572, 34 Stat. 539 ("1906 Act"), transfer title to pore space to individual Osage allottees as part of the surface estate, or is pore space retained as part of the Osage Mineral Estate and held in trust by the United States for the benefit of the Osage Nation?**

   The 1906 Act did not transfer or convey title to pore space to individual Osage allottees as part of the surface estate. The pore space within the Osage Reservation remains part of the Osage Mineral Estate and is held in trust by the United States for the benefit of the Osage Nation.

2. **Is ownership of pore space within the Osage Reservation determined by the laws of the State of Oklahoma?**

   No, the State of Oklahoma's laws regarding the ownership of pore space, which were first enacted in 2011, do not govern whether the 1906 Act transferred pore space within the Osage Reservation to Osage allottees as part of the surface estate. The interpretation of the 1906 Act, and the relevant treaties and subsequent federal legislation, is determined by federal law.

II. Introduction

On October 31, 2025, the Office of the Attorney General of the State of Oklahoma issued Attorney General Opinion 2025-14 ("Oklahoma Opinion"), addressing whether the 1906 Act "transfer[red] title to pore space to individual members of Osage Nation" and whether this pore space is "governed by Oklahoma law or by a recent act of the Osage Nation Congress that purports to make pore space part of the mineral estate."[1] As used in this Opinion, "pore space" refers to subsurface voids within and among the strata that comprise the mineral formations reserved to the

[1] Okla. Att'y Gen. Op. No. 2025-14 [hereinafter "Oklahoma Op."], at 1 (Oct. 31, 2025).

Osage Nation, including containing chambers, voids, porosity, and spaces naturally occurring or created by extraction or other subsurface operations.

This Opinion briefly describes the history of the Osage Reservation, then reviews the Oklahoma Opinion, applicable statutes, case law, and instructive contemporary legal authorities. After analyzing such materials, this Opinion concludes that Congress did not sever and convey to individual members of the Osage Nation the pore space beneath the Osage Reservation. Those spaces remain in trust for the benefit of the Osage Nation as an incident of its reserved mineral estate ("Osage Mineral Estate").

In reaching this conclusion, one must begin with the text of the 1906 Act and ask whether Congress clearly allocated to the surface estate the right to control subsurface voids within the mineral formations expressly reserved to the Osage Nation. All stakeholders agree that the 1906 Act is silent as to ownership of subsurface voids. But silence, of course, is not sufficient to infer divestiture of valuable incidents of Osage Nation lands. Historical context helps provide clarity of ownership, which is controlling regardless of any later-enacted Oklahoma law.

By 1906, a substantial body of authority had developed holding that the mineral estate—and not the surface estate—owned caverns and voids within severed mineral formations. Therefore, the 1906 Act's silence on pore space cannot provide a basis for inferring its transfer to surface-estate allottees. This is true even if the Indian canons of statutory construction ("Indian canons") are not applied. However, should the Indian canons be employed—a requirement where ambiguity exists—federal ownership of pore space in trust for the Osage Nation is an inescapable conclusion.

The Oklahoma Opinion begins from a different premise and, for that reason, reaches an incorrect result. Rather than ask whether the 1906 Act unambiguously addresses which estate owns the pore space, it starts by reading various sections of the 1906 Act together to assert that pore space was included in the property rights granted to individual surface estate owners. The Oklahoma Opinion acknowledges that the Indian canons require resolution of ambiguity in favor of Indian tribes, but it treats the Indian canons as inoperative by characterizing the 1906 Act as unambiguous. In so doing, the Oklahoma Opinion relies on after-the-fact Oklahoma common law and statutory developments to supply default rules for a federal statute from 1906—an interpretive decision that cannot establish what Congress intended for the Osage Nation before Oklahoma statehood. Accordingly, federal law governs the question of pore space ownership within the Osage Reservation, not Oklahoma state law.

The Oklahoma Opinion further concludes that the "term 'other minerals' unambiguously does not include pore space…."[2] That analysis assumes the conclusion by treating the absence of explicit reservation as dispositive. In any event, it misstates the dispositive issue. The question is not whether pore space is a mineral. Instead, it is whether Congress, in reserving for the Osage Nation's benefit a mineral estate, clearly severed and conveyed to the surface estate the right to control the pore space within those reserved mineral formations.

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[2] *Id.* at 6.

This Opinion clarifies the proper method to resolve the question of pore space ownership and explains why it continues to be held in trust by the United States for the Osage Nation.

III. History of the Osage Reservation.[3]

Ancestors of the Osage originally occupied lands in the Ohio River valley. Beginning nearly two thousand years ago, a great migration occurred, which ultimately led to settlement around Cahokia Mounds near modern-day Saint Louis, Missouri. Following the introduction of the horse in the late seventeenth century, the Osage expanded their geographic footprint, such that by 1750, they established control over much of modern-day Arkansas, Kansas, Missouri, and Oklahoma.

The first Osage treaty with the United States was entered into in 1808,[4] shortly after the Louisiana Purchase of 1803. This treaty of "peace, friendship and intercourse" saw the cession of approximately 50 million acres of Osage land in modern-day Arkansas and Missouri in exchange for $1,200, annual "merchandise" deliveries valued at $1,500, and certain other benefits such as construction of blockhouses and provision of a blacksmith.[5] Additional cessions of approximately 1.8 million acres of land in modern-day Arkansas and Oklahoma were made in 1818 to accommodate Cherokee settlers who relocated from their ancestral homelands.[6]

In 1825, all remaining Osage lands in Missouri and modern-day Arkansas and Oklahoma—approximately 45 million acres—were ceded to the United States in exchange for $140,000 payable over 20 years, "merchandise" valued at $6,000, "horses and equipage" valued at $2,600, and certain other benefits such as 600 head of cattle and provision of a blacksmith. [7] This 1825 treaty also established a reservation in modern-day Kansas for the Osage, for "so long as they may choose to occupy the same…."[8] In 1865, the Osage Reservation in Kansas was diminished through the sale of approximately 850,000 acres of "surplus lands" to the United States in exchange for $300,000, and the transfer to the United States of approximately 3.2 million acres for later sale, the proceeds of which were to be held in "credit" for the Osage.[9]

In 1870, Congress authorized the sale of the diminished Osage Reservation in Kansas—approximately four million acres—and directed that proceeds from such sale be used to provide

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[3] *See* Andrea A. Hunter, *Osage Cultural History*, The Osage Nation, (excerpt from Osage Nation NAGPRA Claim for Human Remains Removed from Clarksville Mount Group (23P16), Pike County, Missouri), www.osagenation-nsn.gov/who-we-are/historic-preservation/osage-cultural-history; *see also* Louis F. Burns, *Osage*, The Encyclopedia of Oklahoma History and Culture, www.okhistory.org/publications/enc/entry.php?entry=OS001.

[4] Treaty with the Great and Little Osage (Nov. 10, 1808), 7 Stat. 107.

[5] *Id.*, arts. 1, 3, and 6.

[6] Treaty with the Great and Little Osage (Sep. 25, 1818), 7 Stat. 183.

[7] Treaty with the Osage (Jun. 2, 1825), arts. 1, 3-4, and 12, 7 Stat. 240. A later treaty, also in 1825, finalized approximately two months later adjusted certain rights described in the early treaty. *See* Treaty with the Great and Little Osage (Aug. 10, 1825). For completeness, an earlier treaty between the Osage and the United States in 1822 addressed issues unrelated to land cessions. *See* Treaty with the Great and Little Osage (Aug. 21, 1822).

[8] *Id.*, art. 2. A later treaty in 1839 resolved overlapping land claims between the Osage and other tribes such as the Cherokee, Kansa (Kaw), Seneca, and Shawnee. In exchange for the Osage ceding title to such lands, the United States agreed, among other things, to make payments for 20 years of $12,000 and $8,000 "in goods, stock, provisions, or money…." *See* Treaty with the Great and Little Osage (Jan. 11, 1839), arts. 1-2, 7 Stat. 576.

[9] Treaty with the Great and Little Osage (Sep. 29, 1865), arts. 1-2, 14 Stat. 687 [hereinafter "1865 Treaty"].

the Osage a "permanent home in the Indian Territory."[10] The Osage subsequently assented to these terms,[11] and lands within the existing Cherokee Reservation were identified for purchase and settlement.[12] In 1872, Congress established the Osage Reservation within modern-day Oklahoma, consisting of approximately 1.47 million acres at a cost to the Osage Nation of $1,099,137.41.[13]

As discussed more fully below, Congress in 1906 enacted legislation that "severed the surface estate of the [Osage] Reservation from the subsurface mineral estate...."[14] This severance allowed for the allotment of surface estate lands to individual Osage and the continued reservation of "all subsurface mineral estate in trust for the benefit of [Osage] Nation."[15] Over the past 120 years, there have been very few disputes over the scope of the reserved mineral estate, and in those cases that have been litigated, Osage Nation interests have prevailed.[16]

Recent developments that incentivize the storage of carbon dioxide gas ("CO2") within subsurface pore space have triggered new attempts at challenging Osage Nation ownership of pore space within its reserved mineral formations.[17] The financial benefits associated with such developments have led to interest from CO2 storage companies in exploiting this pore space. Despite decades of Osage Nation-authorized pore space use by producers injecting CO2 to engage in enhanced oil recovery, the Oklahoma Opinion now seeks to revisit the issue, primarily based on a 2011 state law that defines pore space as belonging to the surface estate.[18] For the reasons explained below, that may be true elsewhere in Oklahoma, but not within the Osage Reservation.

IV. Statutory interpretation and the Indian canons.

When ascertaining the meaning of a statute, we begin with the text.[19] If the statute is unambiguous, that generally concludes any analysis.[20] But if the text is ambiguous, the meaning is discerned by applying various tools of statutory interpretation. Where federal legislation concerns Indian tribes, "the standard principles of statutory construction do not have their usual

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[10] Act of July 15, 1870, ch. 296, § 12, 16 Stat. 335, 362 [hereinafter "1870 Relocation Act")]. This removal to the Indian Territory following the sale of the diminished Osage Reservation was originally contemplated in the Article XVI of the 1865 Treaty.

[11] Osage Agreement of Sep. 10, 1870 (implementing the 1870 Relocation Act). This assent is sometimes referred to as the Drum Creek Treaty of 1870 [hereinafter the "Drum Creek Treaty"].

[12] Cherokee Nation previously agreed in 1866 to the terms of such possible settlement. *See* Treaty with the Cherokee (July 19, 1866), arts. 16, 14 Stat. 799. A quitclaim deed from Cherokee Nation to the United States was executed after receipt of all payments owed by Cherokee Nation Principal Chief Charles Thompson on June 14, 1883.

[13] Act of June 5, 1872, ch. 310 17 Stat. 228-229. *See also United States v. Cherokee Nation*, 474 F.2d 628, 634 (Ct. Cl. 1973).

[14] Letter from Tara Sweeney, Assistant Secretary - Indian Affairs, to Geoffrey Standing Bear, Principal Chief, Osage Nation, at 26 (June 26, 2020) (describing the 1906 Act).

[15] *Id.*

[16] *See, e.g., Brewer-Elliott Oil & Gas Co. v. United States*, 260 U.S. 77 (1922); *United States v. Osage Wind, LLC*, 871 F.3d 1078 (10th Cir. 2017).

[17] The first CO2 storage well in the United State was permitted in 2011 and began injecting CO2 stored from ethanol productions in 2017. *See* U.S. Dep't of Energy, Archer Daniels Midland Company – Illinois Industrial Carbon Capture and Storage (ICCS) Project (project page, updated 2017).

[18] 60 Okla. Stat. § 6-11 (2011).

[19] *BedRoc Ltd., LLC v. United States*, 541 U.S. 176, 183 (2004) (citing cases) ("Thus, our inquiry begins with the statutory text, and ends there as well if the text is unambiguous.").

[20] *Id.*

force."[21] Instead, interpretation requires application of the Indian canons, which "are rooted in the unique trust relationship between the United States and the Indians."[22] These "statutes are to be construed liberally in favor of the Indians, with ambiguous provisions interpreted to their benefit."[23] A corollary to this principle is that "congressional intent to extinguish Indian title must be plain and unambiguous and will not be lightly implied."[24]

Courts, however, "cannot ignore plain language that," viewed in historical context and upon "fair appraisal," clearly forecloses a tribe's later claims.[25] The inquiry, therefore, turns on the statutory text's "ordinary and popular" meaning.[26] "Importantly, the proper inquiry focuses on the ordinary meaning of the reservation *at the time Congress enacted it*."[27] As Justice Gorsuch has cautioned, "if judges could freely invest old statutory terms with new meanings, we would risk amending legislation outside the single, finely wrought and exhaustively considered, procedure the Constitution commands."[28] Applying new meanings to terms used in the past "would risk, too, upsetting reliance interests in the settled meaning of a statute."[29]

V. Question 1: The 1906 Act does not convey pore space to Osage Nation allottees as part of the surface estate.

Determining whether the 1906 Act conveyed title to pore space to individual Osage allottees or instead left pore space as an incident of the Osage Mineral Estate requires careful attention to both the Act's text and the contemporaneous understanding of what the Act would have been understood to convey. Accordingly, this Section examines the text of the 1906 Act and draws on contemporaneous case law addressing mineral estates and the rights attendant to them to illuminate how the Act would have been interpreted at the time of enactment. This section then turns to relevant modern decisions, which further support the conclusion that pore space within the Osage Reservation was retained by the Osage Mineral Estate.

a. The 1906 Act does not discuss whether pore space attaches to the surface estate or the mineral estate.

As mentioned above, this Opinion first analyzes whether the 1906 Act unambiguously severed and conveyed to surface estate owners the subsurface voids within the mineral formations reserved to the Osage Nation, or whether those voids were left as an incident of the Osage Mineral Estate. Beginning with the text, Section 2 of the 1906 Act set out a process to divide "all lands belonging to" the Osage Nation "among the members of said tribe...."[30]

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[21] *Montana v. Blackfeet Tribe of Indians*, 471 U.S. 759, 766 (1985).

[22] *Oneida Cnty. v. Oneida Indian Nation*, 470 U.S. 226, 247 (1985).

[23] *Montana*, 471 U.S. at 766 (citing *McClanahan v. Arizona State Tax Comm'n*, 411 U.S. 164, 174 (1973) and *Choate v. Trapp*, 224 U.S. 665, 675 (1912)).

[24] *Oneida Cnty.*, 470 U.S. at 247–48 (cleaned up).

[25] *Oregon Dep't of Fish & Wildlife v. Klamath Indian Tribe*, 473 U.S. 753, 774 (1985) (citations omitted).

[26] *BedRoc Ltd., LLC v. United States*, 541 U.S. 176, 184 (2004) (citations omitted).

[27] *Id.* (citations omitted) (emphasis added).

[28] *New Prime Inc. v. Oliveira*, 586 U.S. 105, 113 (2019) (citation and internal quotation marks omitted).

[29] *Id.*

[30] 1906 Act, § 2. The "members of said tribe" are those individuals who are included on the Osage roll, which is described more particularly in Section 1 of the 1906 Act.

The 1906 Act divided the Osage Nation's land through a sequence whereby each member selected three tracts of 160 acres of land, with any remaining lands "divided as equally as practicable among said members...."[31] Members were required to designate which of their three 160-acre selections would be their "homestead" and thus "inalienable and nontaxable until otherwise provided by Act of Congress."[32] The other two selections were then designated "surplus land,"[33] which were inalienable for a period of 25 years and non-taxable for a period of three years.[34]

These conveyances were undeniably broad. For example, Section 7 of the 1906 Act stated that these lands were set aside for—

> the sole use and benefit of the individual members of the tribe entitled thereto, or to their heirs, as herein provided; and said members, or their heirs, shall have the right to use and to lease said lands for farming, grazing, or any other purpose not otherwise specifically provided for herein, and said members shall have full control of the same, including the proceeds thereof: *Provided...* That all leases given on said lands for the benefit of the individual members of the tribe entitled thereto, or for their heirs, shall be subject only to the approval of the Secretary of the Interior.[35]

Despite the breadth of these surface estate conveyances, Section 7 of the 1906 Act also contains a clear structural limitation. The clause "not otherwise specifically provided for herein" confirms that this provision does not override the 1906 Act's separate treatment of the Osage Mineral Estate. Instead, it reinforces that the 1906 Act contains an equally significant reservation: "[N]othing herein shall authorize the sale of the oil, gas, coal, or other minerals covered by said lands, said minerals being reserved to the use of the tribe for a period of twenty-five years...."[36] This reservation period was subsequently extended, first to 1958,[37] then to 1984,[38] and finally to a perpetual period of federal supervision.[39] Congress in 1984 further clarified that the Osage Mineral Estate was a trust asset, defining it as "any right, title, or interests in any oil, gas, coal, or other mineral held by the United States in trust for the benefit of the Osage Tribe of Indians under section 3 of the [1906 Act]."[40]

None of the 1906 Act nor subsequent related statutes expressly discuss ownership or control of subsurface voids within the reserved mineral formations. Therefore, the 1906 Act is

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[31] *Id.* at § 2(5). Certain lands within the Osage Reservation were reserved from selection. *See* 1906 Act, §§ 2(8)-(12).
[32] *Id.* at § 2(4).
[33] *Id.*
[34] *Ib.* at §§ 2(4) and (7). Despite this restriction on alienability, "surplus land" could be conveyed if the Secretary of the Interior issued the Osage allottee a "certificate of competency." *Id.*, at § 2(7).
[35] *Id.* at § 7.
[36] *Id.* at § 2. *See also id.* at § 3 ("the oil, gas, coal, or other minerals covered by the lands for the selection and division of which provision is herein made are hereby reserved to the Osage tribe for a period of twenty-five years from [April 8, 1906]...."). (extending the supervision period to 1984); Pub. L. 98-608, 98 Stat. 3163 (1984) (extending in perpetuity supervision of the Osage Mineral Estate).
[37] Act of March 2, 1929, ch. 493, 45 Stat. 1478
[38] Act of June 24, 1938, 52 Stat. 1035.
[39] Pub. L. 95-496, § 2(a), 92 Stat. 1660 (1978). Note that the Oklahoma Opinion incorrectly attributes the "in perpetuity" amendment to Pub. L. No. 88-632, 78 Stat. 1008 (1964).
[40] Pub. L. 98-605, 98 Stat. 3163, §2(h) (1984).

ambiguous as to whether such voids were conveyed as part of the surface estate or retained as an incident of the reserved mineral estate. The Oklahoma Opinion reaches the opposite conclusion. It asserts, without citation to any authority, that—

> pore space is not "oil, gas, coal, or other minerals covered by the lands," but instead is part of the surface estate, particularly given the broad power granted to individual allottees to "use and to lease" the lands for "any ... purpose not otherwise specifically provided" in the [1906] Act.[41]

As explained below, this conclusion is inconsistent with the understanding of pore space at the time the 1906 Act was passed and is thus incorrect.

b. Contemporaneous case law makes clear that mineral estates were commonly understood to include subsurface voids.

Property law has long recognized the concept of split estates, which most commonly occur where mineral interests are severed from the surface estate and conveyed to mining companies. Disputes are not uncommon between owners of the surface estate and the mineral estate, and a distinct body of law has therefore developed to adjudicate competing claims to subsurface voids. In the late 1800s, courts in the United States frequently relied on English-derived principles that recognized the mineral estate's corporeal estate in the stratum, including the space occupied by the minerals and the openings created by their removal. Referred to as the "English Rule," this common law approach has been summarized in a leading case from Kentucky discussing such ownership as follows:

> The rule in England is that in case of a grant of the minerals under land the grantee has the exclusive right of possession of the whole space occupied by the layer containing the minerals, and after the minerals are taken out, is entitled to the entire and exclusive use of that space for all purposes.[42]

Although many states in the United States now reject the English Rule following certain common law developments and/or the enactment of a clarifying statute, the 1906 Act's silence regarding pore space ownership must be evaluated through the contemporaneous understanding. The cases discussed below are particularly instructive as to the rights and incidents of a severed mineral estate absent an express reservation to the surface owners. To the extent such cases concern distinguishable facts, the Indian canons resolve any ambiguity in favor of the Osage Nation. Taken together, there is strong support to read the mineral reservation in the 1906 Act as leaving subsurface voids within the reserved formation as an incident to the Osage Mineral Estate.

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[41] Oklahoma Op. at 4 (quoting 1906 Act, §§ 3,7) (alterations in original).

[42] *Cent. Ky. Natural Gas Co. v. Smallwood*, 252 S.W.2d 866, 868 (Ky. Ct. App. 1952) (referencing *Bowser v. Maclean*, 17 Eng.Rul. Cas. 452; *Batten Pool v. Kennedy*, 1 Ch. 256, 76 L.J.Ch.N.S. 162).

i. *Lillibridge v. Lackawanna Coal Co.*[43]

In 1891, the Pennsylvania Supreme Court addressed whether "the chamber or space left by the removal of the coal under the mining operations of the defendants" was owned by the surface estate or the mineral estate.[44] At that time, this question was described as "a novel one."[45] The Pennsylvania Supreme Court observed that plaintiff cited no authority in support of the position that the surface estate held such title, "and it seems quite incongruous with the admitted ownership and [mineral] estate of the defendant in the coal displaced."[46]

Lillibridge provides historical context through which the 1906 Act would be understood. After summarizing general principles of split estates, the Pennsylvania Supreme Court explained that "a conveyance of the coal in fee carries everything with it, just as fully and completely as a conveyance of the soil above."[47]

> How [then] could the defendant own the coal absolutely and in fee-simple, and not own the space it occupied? Or how is it possible to conceive of such a thing as the ownership of the space independently of the coal?[48]

These questions could not be resolved in favor of the surface estate. Instead, "the plaintiffs, as owners of the surface, have no right or title" to the "chamber[s]" in the mineral estate.[49] As such, "[t]he right to use that space is exclusively in the [mineral estate holder], and that use is not, and cannot be, questioned by the" surface estate.[50] This historical baseline supports the conclusion that, absent express divestiture, the United States and Osage Nation in 1906 would have understood that a reservation of the mineral estate carried the incidents of a corporeal estate in mineral formations, including the voids and caverns within them.[51]

ii. *Webber v. Vogel*[52]

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[43] 143 Pa. 293 (1891).
[44] *Id.* at 300.
[45] *Id.* at 301.
[46] *Id.*
[47] *Id.* at 302.
[48] *Id.* at 301.
[49] *Id.* at 303.
[50] *Id.*
[51] *Lillibridge*'s holding is, of course, not without limits. Specifically, the Pennsylvania Supreme Court made clear that the mineral estate owns only those pores that are "exclusively within [its] own property...." *Id.* at 308. This limitation is of minimal applicability to the 1906 Act. In *Lillibridge*, the defendant had purchased only "all the merchantable coal." *Id.* at 299–300. The United States, on the other hand, reserved to the Osage Nation the far greater estate of "oil, gas, coal, and other minerals." The Supreme Court has recognized the broad reach of a reservation of "minerals" generally. *Compare Watt v. W. Nuclear, Inc.*, 462 U.S. 36, 53 (1983) ("we interpret the mineral reservation in the [1916 Stock-Raising Homestead] Act to include substances that are mineral in character (*i.e.*, that are inorganic), that can be removed from the soil, that can be used for commercial purposes, and that there is no reason to suppose were intended to be included in the surface estate.") *with BedRoc Ltd., LLC v. United States*, 541 U.S. 176, 183 (2004) ("we will not extend *Western Nuclear*'s holding to conclude that sand and gravel are 'valuable minerals.'"). The 1906 Act is more like *W. Nuclear* than *BedRoc*, as it has proven difficult to identify the precise contours of the Osage Mineral Estate, making the limits imposed in *Lillibridge* unworkable and inapplicable. *See* discussion *infra*: *United States v. Osage Wind, LLC*, 871 F.3d 1078 (10th Cir. 2017).
[52] 189 Pa. 156 (1899).

In 1899, the Pennsylvania Supreme Court declined to overrule *Lillibridge* and noted that its holding "has become a settled rule of property in the great mining regio[n]s of the commonwealth."[53]Thus, a mere seven years before the enactment of the 1906 Act, the Pennsylvania Supreme Court confirmed that the prevailing historical understanding of pore space ownership was that it followed the mineral estate.

Webber did, however, limit the reach of *Lillibridge*. The Pennsylvania Supreme Court explained that while a "deed to the grantee" creates "an estate in fee simple in the severed coal, and his right to the space mined out will not be distinguished from that in which the coal remains unmined, that estate, except in very rare cases, has no badge of perpetuity."[54] The written instrument conveying the mineral estate "discloses the intention of the parties that the coal shall be mined; that is, that the subject of the grant shall soon be exhausted or consumed."[55] Therefore, *Webber* clarified that "while the purchaser of the coal was in good faith mining out his coal, his right to the use of the space made vacant by his workings as they progressed could not be successfully obstructed by the owner of the surface; and not that by the purchase of the coal he obtained an undisputed and perpetual right of way under another's land."[56]

Notably, the constraints expressed in *Webber* support the view that the 1906 Act did not convey to surface estate allottees the pore space beneath their lands. First, although the 1906 Act initially reserved "oil, gas, coal, and other minerals" for a term of 25 years, Congress later extended the reservation in perpetuity—confirming that the Osage Mineral Estate is not akin to a time-limited commercial grant that underlies *Webber*'s exhaustion rationale. Relatedly, the Osage Mineral Estate is not the result of a lessee purchasing coal from a landowner for the specified purpose of mining and, in so doing, obtaining a determinable fee simple in the coal estate. To the contrary, Osage allottees were allocated surface land by the United States—something even the Oklahoma Opinion acknowledges.[57]

Therefore, *Webber* confirms the result of *Lillibridge* and reinforces the conclusion that in 1906, mineral estate lessees or owners would expect to have unfettered control over pore space. To the extent these cases purport to impose limits on the use of pore space, they are inapposite because (1) the 1906 Act is not governed by Pennsylvania state law, and (2) the Pennsylvania Supreme Court was discussing limitations inherent in commercial transactions where landowners leased their mineral estate to private companies. Since that is not the case here, such limitations do not map neatly onto a federal statutory reservation of a mineral estate held in perpetual trust.

iii. *Moore v. Indian Camp Coal Co.*[58]

In 1907, the Ohio Supreme Court considered the question of pore space ownership. Similar to *Webber*, the opinion began by acknowledging that the severance of the mineral estate from the

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[53] *Id.* at 159 (it was "not the intention of this court to overrule [*Lillibridge*].").
[54] *Id.* at 160.
[55] *Id.*
[56] *Id.*
[57] Oklahoma Op. at 2 ("With these principles in mind, you ask whether the Osage Allotment Act ('Osage Act') transferred ownership of pore space in Osage County from the United States to individual members of the Osage Nation. As explained in Section III(A), the answer is yes.").
[58] 75 Ohio St. 493 (1907).

surface estate "confers upon the owner of the mineral a fee-simple estate, which is, of course, determinable upon the exhaustion of the mine."[59] In explaining the right of the mineral estate owner "to use as he may choose, but without injury to the owner of the soil, the space left by excavation of the mineral,"[60] the Ohio Supreme Court held that a reversion of empty space to the surface estate owner would be "impracticable and unjust" and "result in embarrassments to the mining industry and would be intolerable."[61] More specifically, the Ohio Supreme Court noted that the grantor could negotiate for limitations on pore space use, "but, in the absence of such restrictions, we think that the rulings in [*Lillibridge*, *Webber*, and others] are sound law and should be followed."[62]

Moore makes clear that, around the time of the 1906 Act, multiple states determined that the voids in mineral estates do *not* belong to the surface estate. Additionally, the Ohio Supreme Court clarified that in the context of private mineral leasing transactions, a contrary result would require landowners to expressly reserve their rights to caverns within the mineral estate. This presumption supports the conclusion that the 1906 Act did not convey pore space to surface estate allottees, as it would be "impracticable and unjust" to restrict the mineral estate without a clear statement of intent. This is especially the case here, where the Indian canons require that the 1906 Act be liberally construed in favor of the Osage Nation.

Moore, like *Lillibridge* and *Webber*, presumes that the severance of mineral estates occurs in commercial leasing contexts and therefore discusses incidental uses of pore space against that backdrop. Namely, *Moore* held that the mineral estate "may use the space created by removal of mineral within the grant, as a way for the carriage of minerals from his adjoining lands, or, if he prefers to do so he may cut a passage through the minerals and use it for the carriage of minerals from his other lands."[63] This limitation reflects the historical expectations regarding mineral estates in 1906 and is not directly applicable to the Osage Mineral Estate, as it was not created through leases or grants to surface estate allottees. Further, unlike the mining leases at issue in *Moore* and other cases, the 1906 Act does not state a specific purpose "within the grant" (e.g., coal extraction for so long a period as such activity is productive), so it follows that certain presumptions in *Moore* would not meaningfully restrict how pore space is utilized within the reserved mineral estate.[64]

iv. *Middleton v. Harlan-Wallins Coal Corp.*[65]

Two decades after the enactment of the 1906 Act, it was still commonly understood that the mineral estate owns the pore space within the minerals conveyed. In *Middleton*, the Kentucky Supreme Court resolved a dispute in which the surface estate owners claimed that use of "apertures and openings" in the mineral estate beneath plaintiff's land to transport coal from adjacent landowner parcels constituted a trespass.[66] The Kentucky Supreme Court observed that the

[59] *Id.* at 499.
[60] *Id.* at 500.
[61] *Id.* at 500–01.
[62] *Id.* at 501.
[63] *Id.*
[64] *See* 1906 Act, § 3.
[65] 252 Ky. 29 (1933).
[66] *Id.* at 30.

contract at issue was silent on pore space ownership and therefore, "the rights of the parties will be governed by the principles of law to be deduced from the mere fact of such separate ownerships, with the incidental rights flowing therefrom to the respective owners."[67] And despite other states such as Ohio and Pennsylvania opining on this issue years earlier, this "precise question . . . [was] one of first impression in this jurisdiction."[68]

The *Middleton* Court began by reviewing "cases from many of the courts of the different states of the Union, as well as some federal and English cases, and also text authorities."[69] It paraphrased these materials as "holding and announcing the correct rule to be that, as to subterranean passages and openings made by the extraction of mineral by its owner, or lessee of the right to mine it, the owner or lessee has the right, in the absence of contract restrictions, to use such openings in the transportation of mineral taken from other adjoining or adjacent mining operations without infringing upon any right of the surface owner or committing any trespass to or on his property."[70]

According to the Kentucky Supreme Court, the various authorities reached this conclusion by adopting one of three theories: "(a) that one who purchases or obtains the right to market the mineral in place likewise purchases or obtains the right in the soil in which the minerals are embodied, and becomes the owner of such encasement the same as he does of the minerals enclosed therein;" (b) "so long as there is any of the immediate mineral in place, the owner of it, or the one who has the right to extract it, may use the tunnels and other necessary subterranean passages and openings, not only for the removal of the mineral taken therefrom and embedded under the same surface rights, but also for all other lawful purposes so long as it is necessary to maintain such openings to extract and remove the mineral under the particular surface;" or (c) "an absolute owner of land possesses the title to the skies above its surface and to the center of the earth below it, and may divide his title perpendicularly into longitudinal stratas and which he does when he sells the minerals under his surface to the extent of the space occupied by the mineral while in place, and that the purchaser whose title is so obtained takes an absolute title to the space occupied by the minerals purchased by him."[71]

While the Kentucky Supreme Court found theory (b) to be "sound," it took no position on the merits of theories (a) or (c).[72] Nevertheless, it concluded that transporting "foreign mineral[s] through subterranean tunnels and passages" interferes with "no right of the owner of the surface ... in the slightest degree" and the surface estate "has no occasion to use any such subterranean tunnels in exercising any of his reserved surface rights and privileges."[73]

Despite this developed body of law dealing with split estates, the Oklahoma Opinion invokes the later "American Rule" to interpret the 1906 Act, which would hold that "in the absence of language in the severing deed dictating a different construction ... the cavern is owned by surface

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[67] *Id.*
[68] *Id.*
[69] *Id.*
[70] *Id.*
[71] *Id.* at 31.
[72] *Id.*
[73] *Id.*

owners."[74] In support of this result, the Oklahoma Opinion cites an order from the U.S. District Court for the Eastern District of Oklahoma, but that order acknowledges that as late as 1978, "the Oklahoma Supreme Court ha[d] not directly addressed ownership of pore space."[75]

The Oklahoma Opinion's reliance on the American Rule is not supported by contemporaneous authority or the interpretive rules applicable to federal Indian legislation. Whatever the modern preference in Oklahoma or elsewhere, the relevant question must be how the 1906 Act would have been understood in 1906, and contemporaneous authorities treated the surface-ownership view as a minority position. In its survey of other states, the Kentucky Supreme Court in 1933 rejected surface ownership of pore space (i.e., the American Rule) in favor of what it then described as the "majority rule" (i.e., the English Rule). In fact, it explained that Virginia "is *the only case* to be found" that presumes surface estate ownership over pore space.[76] Notably, in reviewing this referenced case, the Virginia court itself acknowledged it had adopted a minority view:

> The prevailing, if not wholly unbroken, current of authority supports the general proposition that a grantee of coal in place is the owner, not of an incorporeal right to mine and remove, but of a corporeal freehold estate in the coal, including the shell or containing chamber, and that as such owner he has the absolute right, until all of the coal has been exhausted, to use the passages opened for its removal for any and all purposes whatsoever, including in particular the transportation of coal from adjacent lands, so long as he operates and uses the passages with due regard to the rights of the surface owner.[77]

This understanding is consistent with the general body of case law during this period. From the late 1800s through the early 1900s, state courts relied on English legal principles in resolving pore space disputes, which nearly always resulted in application of the English Rule.[78]

The Oklahoma Opinion's interpretation of the 1906 Act under a minority rule thus seeks to "invest old statutory terms with new meanings," which Justice Gorsuch decried as running the "risk [of] amending legislation outside the single, finely wrought and exhaustively considered, procedure the Constitution commands."[79] This is especially true here, where a federal court acknowledged in 1978 that the Oklahoma Supreme Court had not yet opined on the issue of pore-space ownership. Far better it is to interpret the 1906 Act in accordance with the "prevailing, if not

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[74] Oklahoma Op. at 5 (quoting *Ellis v. Ark. La. Gas Co.*, 450 F. Supp. 412, 421 (E.D. Okla. 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979)).

[75] *Id.* (summarizing *Ellis*, 450 F. Supp. at 421) (emphasis added).

[76] *Middleton*, 252 Ky. at 31 (discussing *Clayborn v. Camilla Red Ash Coal Company*, 128 Va. 383 (1920) as a single outlier and noting that the Supreme Court of Alabama and Supreme Court of Arkansas have adopted the *Lillibridge* and *Moore* doctrines).

[77] *Clayborn*, 128 Va. at 388 (citations omitted).

[78] *See, e.g.*, *Jones v. Wagner*, 66 Pa. 429, 435 (1870) (relying on "English cases," which "emanate from great ability, and from a country in which mining, its consequences and effects are more practical, and the experience greater, than in any other country of which we possess any knowledge" and noting that "[w]e have no case strictly of authority in our books" or "in the books of our sister states"); *Yandes v. Wright*, 66 Ind. 319, 322–23 (1879) (applying English law in holding that mineral estate is obligated to support surface estate); *Youghiogheny River Coal Co. v. Allegheny Nat. Bank*, 211 Pa. 319, 323–24 (1905) (similar and applying "the law of England").

[79] *New Prime Inc. v. Oliveira*, 586 U.S. 105, 113 (2019) (citation and internal quotation marks omitted).

wholly unbroken" view of the early twentieth century that owners of the mineral estate rightly control use of the caverns and voids therein.

c. Case law published prior to and around 1906 makes clear that mineral estates were understood as separate estates with expansive rights.

Beyond cases directly addressing ownership of subsurface caverns and voids, decisions that discuss the rights and incidents of severed mineral estates provide further context for how the Osage Nation would have reasonably understood its negotiated rights in 1906.

First, the Osage Nation would have expected that the Osage Mineral Estate carried the ordinary incidents of mineral ownership, subject to any express limitations in the 1906 Act and a general constraint that they may not unreasonably interfere with or injure the surface estates.[80] As the Illinois Supreme Court explained in its 1890 opinion in *Consolidated Coal Co. of St. Louis v. Schmisseur*, use of the granted mineral "cannot be questioned" so long as it does not injure the surface estate.[81] And because the 1906 Act did not create a limited mineral grant but instead conveyed the surface while broadly reserving the mineral estate, such reservation could reasonably be understood to include the ordinary incidents of reserved subsurface formations, such as caverns and voids.

This conclusion is further supported by the presumption that written conveyances must expressly state that surface estates retain ownership of pore space. In 1912, the Illinois Supreme Court in *Schobert v. Pittsburg Coal & Min. Co.* refused to consider the plaintiff's claim that, in conveying subsurface coal to a mining company, "nothing passed by the grant except the coal and the right to remove it, and that, when removed, the rooms, entries, and tunnels should revert to the grantor."[82] The Illinois Supreme Court instead found that *Lillibridge*, *Moore*, and *Consolidated Coal* were "in point" and held that because the void was entirely within the mineral estate, "the plaintiffs, as owners of the surface, have no right or title" to it.[83] The Illinois Supreme Court required that any deviation from this rule be included in the conveyance instrument. Any attempt to read the 1906 Act's silence on this issue as impliedly conveying to surface owners the subsurface openings within the reserved mineral stratum should be similarly rejected as inconsistent with contemporaneous understanding of mineral estate rights and incidents.

In a case before the Ohio Supreme Court in 1906, the opinion advises that "[t]he construction of the deed [or conveyance] is to be drawn from the circumstances of each case and from all the words of the instrument, the object being to ascertain and give effect to the intention of the parties."[84] There is no textual basis to infer that Congress intended to convey the pore space within the reserved mineral estate to surface estate allottees. As discussed above, the prevailing view treated mineral estates as corporeal interests that included the chambers and openings within them. Courts favored this understanding because the mineral estate could use such spaces, whereas

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[80] *Consol. Coal Co. of St. Louis v. Schmisseur*, 135 Ill. 371, 376, 381 (1890).

[81] *Id.* at 381; *see also Schobert v. Pittsburg Coal & Min. Co.*, 254 Ill. 474, 479 (1912) ("[P]laintiffs, as owners of the surface, have no right or title" to the voids within a severed mineral estate—"They have no access to it; they cannot use it; they are in no manner obstructed or injured by it.").

[82] 254 Ill. 474, 475–77 (1912).

[83] *Id.* at 478–79.

[84] *Gill v. Fletcher*, 74 Ohio St. 295, 304–05 (1906).

finding them to be part of the surface estate would simply result in frustration and interference. Congress's subsequent decision to transform the Osage Mineral Estate from a temporary one to one existing in perpetuity lends further weight to this conclusion. Therefore, traditional canons of statutory interpretation support a finding that caverns and voids within the reserved mineral formations belong to the Osage Mineral Estate. This is true without applying the Indian canons and is a required conclusion when they are employed.

d. Modern case law illustrates that statutory mineral reservations may carry subsurface incidents, including storage, absent express divestiture.

Modern case law does not supply the meaning of the 1906 Act's terms or the Osage Nation's reasonable expectations. Still, such cases can be instructive in confirming that mineral conveyances have long been understood as creating a separate estate in minerals in place. And while modern courts may no longer apply certain of the English-derived doctrines discussed above, at least one court has interpreted a statutory reservation of minerals to include disputed subsurface storage interests.

i. *Cuff v. Koslosky*[85]

Certain Oklahoma Supreme Court decisions that post-date the 1906 Act (and therefore cannot help in interpreting the scope of the Osage Mineral Estate) recognize that mineral conveyances can create a separate, property-like estate in the minerals in place. That conceptualization is consistent with the contemporaneous authorities discussed above, treating a severed mineral estate as a corporeal interest associated with the stratum itself, including the containing chamber and voids therein, while the mineral estate endures.

For example, in 1933, the Oklahoma Supreme Court recognized that "[t]he usual mineral deed ... amounts to the creation of a separate estate."[86] Such a deed is "an absolute conveyance of [] minerals in place with title vesting in the oil and gas deferred until they are reduced to actual possession, when property in them becomes absolute."[87] Although *Cuff* does not govern the 1906 Act, it confirms that later Oklahoma precedent supports the conclusion that a mineral conveyance may amount to "an alienation of a property right, a dismemberment of ownership, a creation of a separate estate."[88] Consistent with the majority view in 1906, the owner of such a separate subsurface estate would not be understood as holding merely an incorporeal right to extract substances while the surface owner retained title to the containing chamber and subsurface openings within the conveyed mineral estate.

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[85] 1933 OK 487, 25 P.2d 290.

[86] *Cuff*, 1933 OK 487 at ¶ 18; *see also id.* at ¶ 27 ("a mineral grant which provides for the transfer of an interest in and to the oil and gas and mineral rights lying in and under a certain tract of land conveying to the grantee the right to dig, explore, and extract mineral from the granted premises without limitations as to time….").

[87] *Id.* at ¶ 18; *see also id.* at ¶ 21 ("After oil and gas have been discovered and produced from the premises under either the oil and gas lease or the mineral deed, the corpus of the land becomes changed and depleted in proportion to the amount of the oil and gas lifted, captured, and severed from the soil. The removal of a portion of the corpus of the land from its unseen mineral reservoirs is not replaceable. After this removal, depletion, or production, there has been to that extent an alienation and dismemberment of the common-law freehold estate in the land.").

[88] *Id.* at ¶ 27.

ii. *City of Kenai v. Cook Inlet Nat. Gas Storage Alaska, LLC*[89]

In 2016, the Alaska Supreme Court adopted an approach consistent with the English Rule. In *City of Kenai*, a gas storage company asserted it had the right to use "pore space in a large limestone formation about a mile underground" based on leases from the State of Alaska, which held the mineral rights pursuant to Alaska Statute 38.05.125(a).[90] The City of Kenai, "which owns a significant part of the surface estate above the reservoir," sought compensation on the theory that, under the American Rule, it owns the pore space and therefore controls the storage rights.[91]

Although the Alaska statute did not expressly mention pore space, the Alaska Supreme Court interpreted the statutory reservation as encompassing the disputed subsurface storage interest. Critically, *City of Kenai* rejected as "too simplistic" the view that pore space is merely "the absence of something—a void constituted by surrounding structures."[92] Instead, "[p]ore space is defined by an inextricable part of the rock strata in which it is found."[93]

While *City of Kenai* is not controlling here,[94] it is instructive because it treats pore space as an incident of the formations within the reserved mineral estate, rather than a free-floating void. This is contrary to the position in the Oklahoma Opinion that "pore space is not a substance at all, nor can it be removed from the soil...."[95] *City of Kenai* also illustrates that statutory reservations of minerals do not necessarily lose every interest or incident of the reserved subsurface formation that is not expressly referenced. This is consistent with the historical understanding discussed above that severed mineral estates were commonly understood to be corporeal interests associated with the subsurface stratum itself, including the containing chamber and voids within the reserved formation, for so long as the mineral endures.

City of Kenai confirms the historical understanding of the 1906 Act. It rightly interpreted the silence of the applicable state statute regarding pore space ownership as ambiguity and thereafter construed it to avoid divesting by implication incidents of Alaska's reserved mineral estate. This underscores the importance of faithfully applying the Indian canons, including that "congressional intent to extinguish Indian title must be plain and unambiguous and will not be lightly implied."[96] Statutory silence is insufficient to divest the Osage Nation of valuable trust assets absent clear language; the presumption is that valuable incidents of its reserved mineral formations are not presumed to have been conveyed away.

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[89] 373 P.3d 473 (Alaska 2016).
[90] *Id.* at 475.
[91] *Id.*
[92] *Id.* at 481.
[93] *Id.*
[94] This opinion takes no position on whether the term "other minerals" in the 1906 Act includes pore space. Resolving this question is unnecessary because the historical context of the 1906 Act makes clear that the default presumption was that mineral estates constituting incorporeal interests owned such spaces. For that reason, this Opinion does not thoroughly address the argument in the Oklahoma Opinion that the term "other minerals" unambiguously does not include pore space." *See* Oklahoma Op. at 6.
[95] Oklahoma Op. at 4 (quoting 60 O.S.2021, § 6(B)(1)).
[96] *Oneida Cnty.*, 470 U.S. at 247–48 (cleaned up).

Also relevant, the Alaska Supreme Court held that its statutory interpretation was "supported by the statute's apparent purpose," which is to "maximize revenue for the state."[97] Likewise, Congress treated the Osage Mineral Estate as an economic trust asset—not merely an estate within which mining may occur. In 1984, Congress clarified that the Osage Mineral Estate includes "any right, title, or interests in any oil, gas, coal, or other mineral held by the United States in trust for the benefit of the Osage Tribe of Indians under section 3 of the [1906] Act."[98] Section 3 of the 1906 Act, in turn, "reserve[s] to the Osage tribe" the oil, gas, coal or other minerals covered by the lands conveyed to individual members.[99] And although the 1906 Act does not expressly address later-developed subsurface uses, such as storage in reserved formations, the historical context in which Congress legislated, and the requirement to resolve ambiguities in favor of the Osage Nation, compels the conclusion that Congress *did not* implicitly transfer that incident to the surface estate.

Nor is the Osage Nation limited to utilizing its mineral estate in the manner known to it in 1906. Principles of federal Indian law reject such "frozen-in-time" approaches to developing reserved rights—absent express limitations, tribes may employ modern methods to pursue commercial enterprises, subject principally to necessary conservation regulations.[100] The same interpretive premise applies here. Congress broadly reserved to the Osage Nation a mineral estate as an economic asset. It did not restrict the permissible uses of that estate to then-known practices. Again, statutory silence should not be treated as implicitly divesting the Osage Nation from using future technologies to extract economic benefit from its mineral estate. Instead, any ambiguity about whether the reserved estate includes economically valuable modern uses should be resolved, consistent with the Indian canons, to preserve the Osage Nation's beneficial interest.

Finally, *City of Kenai* addressed and distinguished *Ellis v. Arkansas Louisiana Gas Co*—which the Oklahoma Opinion relies on to assert "that pore space presumptively belongs to the owner of the surface estate."[101] Namely, the Alaska Supreme Court declined to apply *Ellis*'s analysis because it concerned a private deed and thus focused on the intent of the conveying parties, rather than on how to properly interpret a statutory reservation of minerals. That distinction is equally relevant here.

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[97] *City of Kenai,*373 P.3d at 481.

[98] Act of Oct. 30, 1984, Pub. L. 98-605, 98 Stat. 3163, § 2(h).

[99] 1906 Act, § 3.

[100] *See, e.g., Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. State of Wis.*, 653 F. Supp. 1420, 1430 (W.D. Wis. 1987) ("Plaintiffs are not confined to the hunting and fishing methods their ancestors relied upon at treaty time. The method of exercise of the right is not static."); *Mille Lacs Band of Chippewa Indians v. State of Minn.*, 861 F. Supp. 784, 838 (D. Minn. 1994), *aff'd*, 124 F.3d 904 (8th Cir. 1997), *aff'd sub nom. Minnesota v. Mille Lacs Band of Chippewa Indians*, 526 U.S. 172 (1999) ("The privilege granted [to the Mille Lacs Band of Chippewa Indians] in 1837 was not limited to use of any particular techniques, methods, devices, or gear... Neither the treaty journal nor the language in the treaty indicates that the Band should be confined to techniques, methods, devices, and gear existing in 1837."); *Puyallup Tribe v. Dep't of Game of Wash.*, 391 U.S. 392, 398 (1968) ("[T]he manner of fishing, the size of the take, the restriction of commercial fishing, and the like may be regulated by the State in the interest of conservation, provided the regulation meets appropriate standards and does not discriminate against the Indians.").

[101] Oklahoma Op. at 5.

iii. *Ellis v. Arkansas Louisiana Gas Co.*[102]

Even assuming *Ellis* is instructive, it cannot define the meaning of the 1906 Act because it post-dates the 1906 Act by over 70 years. Nevertheless, *Ellis* does not compel the conclusion that the surface estate owns the subsurface voids therein. There, the severance of the mineral estate by the surface estate owner was a commercial transaction between private parties; further, the U.S. District Court for the Eastern District of Oklahoma cautioned that its holding was limited to the particular circumstances of the case.[103]

Ellis identified "several factors which should be considered in arriving at a decision concerning whether the mineral owner or the surface owner has the right and power to grant the storage right and to receive the compensation therefor."[104] First, it looked to the intent reflected in the severing instrument.[105] Unlike the private-party conveyance at issue in *Ellis*, here the instrument is the 1906 Act, which reserved to the Osage Nation a trust-asset mineral estate. Considering both the legal presumptions of mineral estates at the time of enactment and the Indian canons, it would be incorrect to infer that Congress silently transferred subsurface voids within the reserved formations to surface estate allottees.[106]

Second, *Ellis* distinguished between deeds conveying incorporeal rights to explore for and produce oil, gas, and other minerals, and deeds conveying minerals in place and "the stratum of rock containing the pore spaces within which the oil and gas may be found."[107] *Ellis* relied on the Oklahoma Supreme Court's holding in *Sunray Oil Co. v. Cortez Oil Co.* to conclude that the surface estate held the power to convey gas storage rights.[108] But *Sunray Oil Co.* concerned a limited incorporeal grant that "vest[ed] no title to any oil or gas which [the grantee] does not extract and reduce to possession, and hence no title to any corporeal right or interest."[109] A conclusion based on *Sunray Oil Co.* does not map cleanly onto the 1906 Act's reservation of a broad mineral estate held in trust for the Osage Nation, particularly in light of the contemporaneous authorities treating severed minerals as corporeal estates that own the voids within such minerals.

Third, *Ellis* considered the practical consequences of who owns the pore space, paying particular attention to ensuring that the general welfare was promoted and energy production was encouraged.[110] The Court noted that if the "mineral interest owner and not the surface owner [] had the power to grant storage rights, it would typically mean that hundreds of severed mineral interest owners would have to be contacted if those rights were to be obtained privately."[111] While the Court acknowledged "there may be instances where ... it will be necessary to secure the consent of a large number of surface tract owners" it failed to engage with this possibility as it found "no evidence before this court to suggest that it is the case here."[112] Even if practical consequences are

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[102] 450 F. Supp. 412 (E.D. Okla. 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979).
[103] *Id.* at 419.
[104] *Id.* at 420.
[105] *Id.*
[106] *See supra*, at § IV.(a)–(b).
[107] *Ellis*, 450 F. Supp. at 421.
[108] *Id.*
[109] *Sunray Oil Co. v. Cortez Oil Co.*, 1941 OK 77, ¶ 8, 112 P.2d 792.
[110] *Ellis*, 450 F. Supp. at 422.
[111] *Id.*
[112] *Id.*

considered as a tertiary interpretive aid, they favor inclusion of the pore space within the Osage Mineral Estate. Treating pore space as incidental to a single owner—the Osage Nation—would require only a single authorization to engage in energy storage projects, whereas assigning pore space ownership to highly fractionated surface estates may impose prohibitive barriers to initiating subsurface storage projects. Taken together, even under *Ellis*'s noncontrolling framework, the better reading is that subsurface voids within reserved mineral formations were not transferred by implication to surface estate allottees.

e. Recent Tenth Circuit authorities confirm that the Osage Mineral Estate should be construed broadly.

The Oklahoma Opinion wrongly asserts that "Federal courts have construed 'the other minerals' being held in trust for the Osage Nation in a manner that does not encompass empty space."[113] In support of this proposition, it first cites *Millsap v. Andrus*, then cites *United States v. Osage Wind, LLC*.[114] As explained below, both cases support—or, at a minimum, are not inconsistent with—the positions expressed in this Opinion. As previously discussed, the dispositive question is not whether pore space is itself a mineral; it is whether Congress, in reserving the Osage Mineral Estate as a trust asset, conveyed an incident of the reserved subsurface formations to surface estate owners.

i. *Millsap v. Andrus* [115]

In *Millsap v. Andrus*, the Tenth Circuit determined that "the mining of dolomite falls within the reservation of 'oil, coal, gas, or other minerals'" of the 1906 Act.[116] *Millsap* did not, however, consider the ownership of pore space. Nonetheless, the decision's positive outcome for the Osage Nation resulted from an interpretation of the 1906 Act advanced throughout this Opinion.

Consistent with this Opinion, the Tenth Circuit noted that "proper construction ... depends on what Congress intended to reserve to the tribe."[117] Because the term "other minerals" was, at best, unclear, it "look[ed] to the purposes of the Act for guidance in construing [its] meaning."[118] According to *Millsap*, the 1906 Act reflected a balance between "bring[ing] the Osages to complete autonomy by progressively increasing their property rights and responsibility" and "maintain[ing] control over the more valuable resources to prevent their improvident depletion by individual tribe members."[119] "*Nothing in the scheme or the legislative history suggests any intent to limit the mineral reservation.*"[120]

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[113] Oklahoma Op. at 4.
[114] *Id.* at 4-5.
[115] 717 F.2d 1326 (10th Cir. 1983).
[116] *Id.* at 1327.
[117] *Id.* at 1328. However, the following sentence in *Millsap* appears to erroneously consider whether "[c]ontemporary definitions of 'minerals'" shed any light on the issue. The Court determined such definitions "are at best unclear" and so did not consider them. Nevertheless, the position herein is that "contemporary definitions" are irrelevant—what matters is what the terms were understood to mean at the time of drafting.
[118] *Id.*
[119] *Id.*
[120] *Id.* (emphasis added).

The Tenth Circuit concluded that the vague term "other minerals" in combination with the "absence of any congressional intent to employ a specialized meaning" required that it "apply the general rule that statutes passed for the benefit of dependent Indian tribes are to be liberally construed with doubtful expression being resolved in favor of the Indians."[121] Accordingly, the meaning of "other minerals" must be read to incorporate a broad definition.[122] The *Millsap* Court noted this was consistent with the regulations promulgated by the U.S. Department of the Interior that set royalties for the extraction of "all types of minerals and ore," and "clearly includes non-hydrocarbon minerals such as limestone and dolomite."[123] The Tenth Circuit rejected the argument that its holding left "virtually nothing left" to the surface owner as "of little persuasive value even if true since it was rejected by the Supreme Court," which held that even gravel was a mineral.[124]

While the issue here is whether the statutory silence regarding ownership of voids in the reserved subsurface formations must be resolved in favor of the Osage Nation, *Millsap* confirms three salient points. First, the Osage Mineral Estate is construed broadly and in favor of the Osage Nation, where there is ambiguity. Second, this reservation extends beyond hydrocarbons and includes porous minerals such as limestone and dolomite—materials whose economic value often depends in part on their physical structure and porosity. Third, Congress intended to "maintain control over the more valuable resources"—i.e., not to convey them to surface estates. *Millsap* therefore undercuts the Oklahoma Opinion's attempt to treat the term "other minerals" as limited to specific extractable substances and confirms that the scope of what was reserved to the Osage Nation turns on Congress's protective purpose, as well as the historical baseline expectations discussed above and the Indian canons. Together, the most plausible conclusion is that the 1906 Act reserved subsurface formations to the Osage Mineral Estate.

ii. *United States v. Osage Wind, LLC*[125]

The Oklahoma Opinion curiously argues that *Osage Wind* supports its conclusion that the 1906 Act conveyed pore space to surface estate allottees.[126] It incorrectly reads *Osage Wind*'s discussion of surface rights to mean that "the right to use or lease empty pore space falls within the surface-estate owners' right to virtually uninhibited use of their land."[127] As discussed below, *Osage Wind* did not address pore space ownership and cannot support an inference that the 1906 Act conveyed such ownership to surface estate owners.

In *Osage Wind*, the Tenth Circuit considered whether the terms "mining" and "mineral development" in 25 C.F.R. § 211.3 (the 1906 Act's implementing regulations) include "extraction, sorting, crushing, and use of minerals as part of excavation work."[128] "Because there is ambiguity in the scope of 'mineral development'" the court twice interpreted the term in favor of the Osage

[121] *Id.* at 1328–29.
[122] *Id.* at 1329.
[123] *Id.*; *see also* 25 C.F.R. § 211.3 ("Minerals includes both metalliferous and non-metalliferous minerals; all hydrocarbons, including oil and gas, coal and lignite of all ranks; geothermal resources; and includes but is not limited to, sand, gravel, pumice, cinders, granite, building stone, limestone, clay, silt, or any other energy or non-energy mineral.").
[124] *Id.* at 1329 n.6 (discussing *Watt v. Western Nuclear*, 462 U.S. 36, 103 (1983)).
[125] 871 F.3d 1078 (10th Cir. 2017).
[126] Oklahoma Op. at 4–5.
[127] *Id.* at 5.
[128] 871 F.3d at 1081.

Nation: first, it concluded that "mineral development" includes "acting upon the minerals to exploit the minerals themselves"; and second, that the phrase "includes the sorting and crushing of minerals for the purpose of backfilling and stabilization."[129]

The Tenth Circuit rejected Osage Wind's argument that these broad constructions in favor of the Osage Nation "contradicts the [1906] Act itself."[130] While the 1906 Act grants "expansive authority" to surface estates, this was "necessarily limited by [its] reservation of the mineral estate to the Osage Nation."[131] Thus, "surface construction activities may often implicate and disrupt the mineral estate—building a basement or swimming pool necessarily involves digging a hole in the ground, displacing rock and soil in the process."[132] However, *Osage Wind* clarified that merely "encountering or disrupting the mineral estate does not trigger the definition of 'mining' under 25 C.F.R. § 211.3."[133] This holding is consistent with the structure of 25 C.F.R. § 211.3, which exempts from the definition of mining "any use of common-variety minerals that is less than 5,000 cubic yards."[134] This structure makes intuitive sense, as the purpose of the regulations is not to require a mining lease for each and every instance in which a surface owner may dig into the surface. Thus, *Osage Wind* held that certain conduct on the surface may not constitute "mining activity" even if it disrupts or encounters the mineral estate.

The Oklahoma Opinion misreads these portions of *Osage Wind* as supporting the conclusion that "using pore space does not necessarily entail the extraction and development of oil and gas or other minerals," and therefore, "the right to use or lease empty pore space falls within the surface-estate owners' right."[135] This is incorrect for the reasons explained above and summarized as follows: first, *Osage Wind* merely held that not all removal of minerals from the surface constitutes "mining" under 25 C.F.R. § 211.3; second, the Tenth Circuit expressly recognized that such conduct may nevertheless "implicate and disrupt" the Osage Mineral Estate; and third, *Osage Wind* did not address pore space ownership. As demonstrated by the admonitions in *Osage Wind* itself, activity implicating minerals within the Osage Reservation requires a fact-specific statutory analysis that often involves the invocation of the Indian canons in favor of the Osage Nation.

f. The 1906 Act cannot be interpreted to abrogate the Osage Nation's reserved rights.

As explained in this Opinion, the text of the 1906 Act itself, as well as the legal presumptions at the time of its enactment, compel the conclusion that ownership of pore space within the reserved mineral formations was *not* conveyed to surface estate allottees. This conclusion is reinforced by the rule that Congress must speak clearly to divest a tribe of treaty-recognized property rights. Nothing in the 1906 Act reflects an intent to transfer rights that would

[129] *Id.* at 1092; *see also id.* at 1091 (noting that *Osage Wind* construction of "mineral development" was "reasonable" but because the term was "ambiguous in this regulation, the Indian canon of interpretation tilts our hand toward a construction more favorable to Osage Nation, so we adopt the broader definition," which "includes acting upon the minerals to exploit the minerals themselves.").

[130] *Id.* at 1092.

[131] *Id.*

[132] *Id.*

[133] *Id.*

[134] *Id.*

[135] Oklahoma Op. at 5.

have been understood as incidental to the mineral formations identified as part of the Osage Reservation pursuant to a negotiated treaty and agreement with the United States.

Under the 1865 Treaty, the Osage sold or otherwise transferred certain reservation lands in Kansas to the United States, with lands not conveyed referred to thereafter as the Osage "diminished reservation."[136] Among other things, the 1865 Treaty further contemplated that the Osage would relocate to a different reservation in modern-day Oklahoma:

> It is also agreed by said contracting parties, that if said Indians should agree to remove from the State of Kansas, and settle on lands to be provided for them by the United States in the Indian Territory on such terms as may be agreed on between the United States and the Indian tribes now residing in said Territory or any of them, then the diminished reservation shall be disposed of by the United States ... [and] proceeds of the sale of said diminished reserve may be used by the United States in the purchase of lands for a suitable home for said Indians in said Indian Territory.[137]

Less than five years later, Congress passed legislation which provided the terms and conditions governing this relocation.[138] Relevant here, when the Osage assented to such terms and conditions in the Drum Creek Treaty of 1870, it explicitly understood that it was transferring to the United States its reservation in Kansas for "a permanent home in the Indian Territory."[139]

In 1872, Congress established the Osage Reservation in the Indian Territory, consistent with the 1865 Treaty, the 1870 Relocation Act, and the Drum Creek Treaty of 1870.[140] This reservation became part of the Oklahoma Territory in 1890,[141] and was not subject to any relevant legislation until the 1906 Act, which severed the surface estate from Osage Mineral Estate for transfer to individual Osage allottees.[142]

This history makes clear that interpreting the 1906 Act requires attention to the Osage Nation's treaty-protected land rights. It is beyond doubt that the Osage Reservation included pore space when it was established by Congress in 1872. The Oklahoma Opinion does not assert otherwise. Therefore, abrogation of the Osage Nation's rights to own and develop this trust asset can be realized only if "Congress' intention is ... clear and plain."[143]

The 1906 Act contains no "explicit statutory language"[144] that would divest the Osage Nation of its pore space. As such, abrogation can be found only if the applicable statute's text, structure, and history make "clear and plain" Congress's intent. The Oklahoma Opinion fails to undertake this analysis, and this Opinion finds no basis for concluding that Congress intended the 1906 Act to abrogate the Osage Nation's treaty-recognized rights to its reserved pore space,

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[136] 1865 Treaty, arts. 1-2, 12.
[137] *Id.* at art. 16.
[138] 1870 Relocation Act.
[139] *Id.* at 362.
[140] Act of June 5, 1872, ch. 310 17 Stat. 228.
[141] Act of May 2, 1890, ch. 182, 26 Stat. 81.
[142] Letter from Tara Sweeney, Assistant Secretary - Indian Affairs, to Geoffrey Standing Bear, Principal Chief, Osage Nation at 1-2 (June 26, 2020).
[143] *United States v. Dion*, 476 U.S. 734, 738 (1986) (citing F. Cohen, Handbook of Federal Indian Law 223 (1982)).
[144] *Washington v. Washington Commercial Passenger Fishing Vessel Assn.*, 443 U.S. 658, 690 (1979).

especially as there was a contemporaneous presumption that mineral estates were understood as corporeal estates, including the rights to use those caverns, voids, and spaces within the mineral formations.

VI. Question 2: Oklahoma law does not control the interpretation of the 1906 Act.

The analysis in the Oklahoma Opinion is largely guided by its starting point that the "'rights attached to the ownership of property conveyed by the [Federal] government will be determined by the states' so long as state law does not 'impair the efficacy of the grants or the use and enjoyment of the property by the grantee.'"[145] Because current Oklahoma law "unquestionably supports the allottees' rights," and the 1906 Act "does not disclaim the application of state law," the Oklahoma Opinion concludes that "Oklahoma law defines the rights attached to the individual allottees' ownership of the surface," which includes "the right to use and lease pore space."[146] This Opinion finds the Oklahoma Opinion's framing to be doctrinally unsound.

The Oklahoma Opinion's first authority, *Choctaw & Chickasaw Nations v. Board of County Commissioners of Love County, Oklahoma*,[147] is inapplicable here. It is correct that the Tenth Circuit held that the "disposition of Indian lands under the guardianship of the United States is a matter of intention of the grantor and if its intention be not otherwise shown, it will be taken to have assented that its conveyance should be construed and given effect in this particular according to the law of the State in which the land lies."[148] But in *Choctaw & Chickasaw Nations*, land was conveyed without reserving or severing the surface estate from the subsurface mineral estate. As such, the Tenth Circuit did not consider state law as relevant in defining the outer limits of a reserved trust asset.[149] Moreover, the applicable federal statute in *Choctaw & Chickasaw Nations* was passed *after* Oklahoma achieved statehood in 1907. The 1906 Act, on the other hand, *predates* statehood, reserves an asset in trust for the Osage Nation beneath the surface estates, and specifies those instances where Oklahoma law applies (i.e., probate matters).[150] Therefore, the portion of the rule stated in *Choctaw & Chickasaw* regarding the application of state law is here misplaced.

The Oklahoma Opinion's second authority, *Oneida Indian Nation of N.Y. v. Oneida Cnty.*,[151] does not compel a different result. There, the Supreme Court stated that "whatever incidents or rights attach to the ownership of property conveyed by the government will be determined by the states, subject to the condition that their rules do not impair the efficacy of the grants or the use and enjoyment of the property by the grantee."[152] However, the Court in the very next sentence explained that questions involving the "possessory rights to tribal lands" are "wholly apart from the application of state law principles which normally and separately protect a valid

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[145] Oklahoma Op. at 4, 5 (quoting *Oneida*, 414 U.S. at 677).
[146] *Id.*
[147] 361 F.2d 932 (10th Cir. 1966)
[148] *Id.* at 933 (cleaned up).
[149] *Id.* at 934.
[150] 1906 Act, § 6 ("That the lands, moneys, and mineral interests, herein provided for, of any deceased member of the Osage tribe shall descend to his or her legal heirs, *according to the laws of the Territory of Oklahoma, or of the State in which said reservation may be hereinafter incorporated....*" (emphasis added)).
[151] 414 U.S. 661 (1974).
[152] *Id.* at 677 (quotation marks and citation omitted).

right of possession."[153] Rather, questions involving tribal property and the extinguishment of Indian title arise under federal law, not state law.[154]

Justice Rehnquist's concurrence further confirms this:

> Commonly, the grant of a land patent to a private party carries with it no guarantee of continuing federal interest.... On the contrary, as the majority points out, the land thus conveyed was generally subject to state law thereafter.... The majority today finds this strict rule inapplicable to this case, and for good reason. In contrast to the typical instance in which the Federal Government conveys land to a private entity, the Government, by transferring land rights to Indian tribes, has not placed the land beyond federal supervision. Rather the Federal Government has shown a continuing solicitude for the rights of the Indians in their land. The Nonintercourse Act of 1790 manifests this concern in statutory form. Thus, the Indians' right to possession in this case is based not solely on the original grant of rights in the land but also upon the Federal Government's subsequent guarantee. Their claim is clearly distinguishable from the claims of land grantees for whom the Federal Government has taken no such responsibility.[155]

Under *Oneida Indian Nation of N.Y.*, federal law thus controls the analysis here, not Oklahoma state law, including its law addressing pore space ownership enacted over 100 years after the 1906 Act.[156]

The judicial precedents regarding pore space at and around 1906 provide a historical baseline for what the Osage Nation would have understood to be reserved to it in the 1906 Act. As

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[153] *Id.*

[154] *Id.* at 678.

[155] *Id.* at 683-84 (Rehnquist, J. concurring).

[156] *See* 60 Okla. Stat. § 60-6 (2011). The Oklahoma Opinion's remaining authorities are inapposite. *United States v. Oklahoma Gas & Elec. Co.* considered whether maintenance of electrical service lines within a highway running over Indian allotments constituted highway use. 318 U.S. 206, 207 (1943). The Court concluded that "the explicit reference ... to state law ... indicate that the question in this case is to be answered by reference to that law." *Id.* at 210. The 1906 Act contains no such reference. *See also*, *Millsap v. Andrus,* 717 F.2d at 1328 (determining whether "other minerals" in the 1906 Act included dolomite without reference to state law). The Oklahoma Opinion then quotes *Montana v. United States* out of context. *See* Oklahoma Op. at 6–7. While it is correct that the Court held that "title to the land is governed by state law," the preceding sentences make clear that this discussion was limited to lands underlying navigable waters. 450 U.S. 544, 551 (1981) ("[T]he ownership of land under navigable waters is an incident of sovereignty. As a general principle, the Federal Government holds such lands in trust for future States, to be granted to such States when they enter the Union and assume sovereignty on an 'equal footing' with the established States. After a state enters the Union, title to the land is governed by state law." (citations omitted)). The Oklahoma Opinion's reliance on *Oklahoma v. Castro-Huerta*, fares no better, as that case concerned state criminal jurisdiction in Indian country. 597 U.S. 629, 638 (2022) ("The central question that we must decide, therefore, is whether the State's authority to prosecute crimes committed by non-Indians against Indians in Indian country has been preempted."). The Oklahoma Opinion similarly misapplies *Plains Commerce Bank v. Long Fam. Land & Cattle Co.* Oklahoma Op. at 7 (discussing *Plains Com. Bank*, 554 U.S. 316, 331 (2008) (considering whether tribe may regulate the sale of non-Indian fee land). A tribe's authority to regulate the sale of non-Indian fee land has no bearing on whether the Osage Mineral Estate includes pore space. Therefore, the Oklahoma Opinion's position that these authorities support the application of state law here is incorrect.

discussed above, the 1906 Act predates Oklahoma statehood, but notably, even its earliest, post-1906 Act property laws do not support a contrary result.

In 1910, Oklahoma defined real or immovable property to consist of "land, that which is affixed to land, that which is incidental or appurtenant to land, and that which is immoveable by law."[157] It then defined land as "the solid material of the earth, whatever may be the ingredients of which it is composed, whether soil, rock or other substance."[158] Only in 2011—the same year the first CO2 storage well was permitted—did Oklahoma amend its statutory definition of land to include pore space: "Land is the solid material of the earth, whatever may be ingredients of which it is composed, whether soil, rock or other substance, *and includes any pore space*."[159] In that same amendment, Oklahoma added new language to further clarify that—

> pore space is real property and, until title to the pore space or rights, interests or estates in the pore space are separately transferred, pore space is property of the person or persons holding title to the land surface above it.

This Opinion declines to interpret the 1910 statute as including pore space by implication, as that would render the later inclusion of pore space surplusage.[160] Such an inference is similarly rejected by the federal district court in *Ellis*, which described pore space ownership in Oklahoma as unsettled as late as 1978.[161]

The Supreme Court in 1979 provided additional clarity in *Wilson v. Omaha Indian Tribe*, where it evaluated the appropriateness of relying on state law to decide a property dispute between the tribe and non-Indians: "[W]here the Government has never parted with title and its interest in the property continues," tribal property rights "depend[] on federal law, 'wholly apart from the application of state law principles which normally and separately protect a valid right of possession.'"[162] While *Wilson* ultimately found that state law principles should be borrowed *in that case*, it did so after asking whether there was (1) a "need for a nationally uniform body of law to apply in situations comparable to this," (2) "whether application of state law would frustrate federal policy or functions," and (3) "the impact a federal rule might have on existing relationships under state law."[163]

Here, the application of state law would create both legal and practical concerns. First, a uniform body of law is necessary for the United States to manage subsurface trust assets across reservations located in states with varying pore space laws. Second, application of Oklahoma law in this instance would frustrate the BIA's attempt to regulate development within the Osage Mineral Estate and lead to disputes between the Osage Nation and surface estate owners regarding primacy and interference by one estate in the rights of the other. Third, refusal to apply Oklahoma law in this instance would have little to no impact on existing relationships under state law, as

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[157] R.L.1910, § 6588 (cleaned up).
[158] *Id.*, § 6590 (amended language emphasized).
[159] 60 Okla. Stat. § 60-6(A) (2011).
[160] *See Williams v. Taylor*, 529 U.S. 362, 404 (2000) ("It is, however, a cardinal principle of statutory construction that we must 'give effect, if possible, to every clause and word of a statute.'") (O'Connor, J. concurring) (quoting *United States v. Menasche,* 348 U.S. 528, 538–539 (1955)).
[161] 450 F. Supp. at 421.
[162] 442 U.S. 653, 670 (1979) (quoting *Oneida Indian Nation*, 414 U.S., at 677).
[163] *Id.* at 672-73.

Oklahoma enacted its pore space law in 2011 and has yet to permit pore space activity within the Osage Reservation.[164]

VII. Conclusion

Based on the foregoing analysis, this Opinion concludes that the 1906 Act did not convey pore space within reserved mineral formations to surface estate allottees. The statute contains no explicit language authorizing such conveyance, and without a clear and plain statement divesting the Osage Nation of this treaty-recognized trust asset, title to pore space was unaffected by the 1906 Act and remained with the United States in trust for the Osage Nation.

Assuming one finds the 1906 Act's silence regarding pore space ownership to create ambiguity, a review of contemporaneous property law principles in and around 1906 provides a historical baseline. Under the prevailing view, severed mineral estates were understood as corporeal estates to minerals in place, carrying with them the right to use and control the openings, chambers, and voids within the severed mineral formations, subject to limited and irrelevant constraints. Later authorities reinforce the same conceptual framework, with at least one court interpreting a statutory mineral reservation as reserving subsurface storage rights to the mineral estate, even where the statute did not expressly reference pore space. With this understanding, this Opinion again concludes that the 1906 Act did not divest the Osage Nation of ownership in its pore space. This determination is reached without applying the Indian canons. Applying such canons—a requirement where there is ambiguity in federal legislation impacting Indian tribes—compels the result.

This conclusion also makes practical sense. The Osage Mineral Estate includes porous minerals such as limestone and dolomite, and treating the voids and porosity within those reserved formations as belonging to the surface would fracture control of a single subsurface formation in a manner that would predictably force either the mineral estate or the surface estate to interfere with the other's rights to develop the resource. Absent clear statutory language requiring that outcome, this Opinion will not read implied divestiture into the 1906 Act.[165]

For these reasons, this Opinion finds that pore space within the reserved mineral formations of the Osage Reservation remains a trust asset of the Osage Nation.

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[164] The Osage Nation enacted its own pore space law in 2024. *See* 22 ONC § 2-104 (2024). In contrast to Oklahoma's pore space law—seemingly enacted only after new commercial opportunities presented themselves—Osage Nation law confirmed decades of past practice in which the Osage Minerals Council authorized CO_2 injection of pore space for enhanced oil and gas recovery. While this extraction technique is but one of many ways in which Osage Nation pore space can be utilized, it further demonstrates that both Oklahoma and the Osage Nation have long understood that pore space within reserved mineral formations belong to the Osage Mineral Estate.

[165] Oklahoma law is in accord. For example, in 2024, the U.S. District Court for the Northern District of Oklahoma held that the Osage Mineral Estate may assert a claim for trespass where one "occup[ies] [] the mineral estate" without consent. *United States v. Osage Wind, LLC*, 2024 WL 5158188, at *16 (N.D. Okla. Dec. 18, 2024); *see also Edwards v. Lachman*, 1974 OK 58, ¶ 1, 534 P.2d 670, 672 ("The drilling of [a] well into the adjacent property constituted a sub-surface trespass."); *DuLaney v. Oklahoma State Dep't of Health*, 1993 OK 113, ¶ 10, 868 P.2d 676, 681 (Permit for landfill that would pollute groundwater "granted by the Department of Health allows the use of the surface estate in a manner which may impair recognized and well-defined property rights of the mineral interest owner.").

The Oklahoma Opinion's attempt to compel a different result by importing after-the-fact Oklahoma state law is legally unfounded. The 1906 Act contains no reference to state law on this topic; the Osage Mineral Estate is a trust asset held for the benefit of the Osage Nation; and Oklahoma did not enact its pore-space statute until 105 years after the passage of the 1906 Act. Applying that later-enacted state law here would conflict with longstanding Supreme Court precedent limiting the application of state law to Indian trust assets and would disrupt more than a century of the Osage Nation's settled expectations.

This Opinion therefore finds that Oklahoma law cannot control the interpretation of the 1906 Act, including ownership of pore space within the reserved mineral formations of the Osage Reservation.

Respectfully submitted,

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