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All That Glitters: Discovering the Meaning of Mineral in the Mining Law of 1872

*Michael Braunstein**

What constitutes a "mineral" within the meaning of the mining law of 1872 and subsequent legislation has baffled the Interior Department, the courts, and the commentators for years. The author considers this definitional problem along with the difficulties of applying the Common Varieties Act and its uncommon varieties exception to the location of a valid mining claim.

"Finders keepers" is the rule established by the mining law of 1872 to govern most of the mineral resources of the federal public domain.¹ Any citizen² of the United States who discovers a "valuable mineral deposit"³ on these public lands is entitled to acquire title to the discovered minerals without payment or royalty of any kind. In addition, the "locator"⁴ of

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1. In the eleven decades since its enactment, some minerals have been withdrawn from the mining law's control. The "fuel and fertilizer" minerals, including coal, oil, oil shale, gas, phosphate, some sodium compounds, potassium, native asphalt, solid and semisolid bitumen and bituminous rock, were withdrawn by the Mineral Leasing Act of 1920, 30 U.S.C. §§ 181-287 (1982), as amended in 1927 by Act of Feb. 7, 1927, ch. 66, 44 Stat. 781 (1927). The "common varieties," such as building stone, sand, and gravel, are subject to disposition primarily by sale under the Materials Act of 1947, 30 U.S.C. §§ 601-04 (1982). The rest of the mineral resources of the public lands, the so-called hard rock minerals, are still subject to disposition under the general mining law.

2. The benefits of the mining law are available only to citizens and those who have declared their intention to become citizens. 30 U.S.C. § 22 (1982).

3. *Id.*

4. The mining law of 1872 is sometimes referred to as a "location" system. The terms "locate" and "location" refer to the series of acts by which the miner marks the boundaries of his claim, posts and records required notices, and performs the labor necessary to preserve and protect the claim. *Cole v. Ralph*, 252 U.S. 286, 296 (1920); *Smelting Co. v. Kemp*, 104 U.S. 636, 649 (1881). These steps taken together comprise the acts of location. The acts of location do not substitute for, but are in addition to, the discovery requirement. Both location and discovery are "essential to a valid claim." *Cole*, 252 U.S. at 296.

a valid mining claim is entitled to buy the land embraced by the claim for only a token payment.⁵

A valid location that will withstand attack by both the United States and rival claimants requires that all of the acts of location specified by the mining law of 1872, the Federal Land Policy and Management Act of 1976,⁶ and applicable state law either be complied with⁷ or excused. The acts of location fall into three categories.⁸ The first category is comprised of those acts designed to give actual notice to other interested parties of the existence of the claim. Included within this category are the dual requirements of posting a notice of location on the claim at the point of discovery⁹ and staking the claim's boundaries.¹⁰ The second category is comprised of those acts of location designed to give record notice of the existence of the claim. This category includes the interrelated filing requirements of the mining law¹¹ and the Federal Land Policy and Management Act of 1976.¹² The third category of acts of location are those designed to demonstrate the good faith of the miner. This category includes the requirements of discovery work and assessment work. Discovery work is required by state law,¹³ and assessment work by federal law.¹⁴ The essence of both these requirements is performance of labor on the claim by the miner to demonstrate his present intent to work the land for the minerals it contains and not to hold it for speculation or other purposes.

While completion of the acts of location is necessary to the existence of a valid claim, it is not sufficient to validate the claim or create in the

5. Lode claims may be purchased for \$5.00 per acre and placer claims for \$2.50 per acre. 30 U.S.C. § 37 (1982). The distinction between a lode and a placer is hazy at best. A lode is a vein of mineralization encased in surrounding country rock; a placer is a deposit of mineral not "in place" within country rock, but scattered along the ground or a stream bottom, usually by mechanical deposition, like loose gravel. See *Iron Silver Mining Co. v. Cheesman*, 116 U.S. 529 (1886); *Bowen v. Sil-Flo Corp.*, 9 Ariz. App. 268, 451 P.2d 626 (1969).

6. Pub. L. No. 94-579, tit. III, 90 Stat. 2769 (codified at 43 U.S.C. §§ 1701-84 (1982)) [hereinafter sometimes referred to as FLPMA].

7. The courts have generally interpreted the applicable state statutes as requiring only substantial compliance. See generally *Tosco Corp. v. Hodell*, 611 F. Supp. 1130, 1193 (D. Colo. 1985) and cases cited therein. The effect of this interpretation is to favor the senior over the junior locator because the junior locator is not permitted to take advantage of minor omissions by the senior locator. This bias is consistent with the mining law's purpose to reward prospectors for taking the risk inherent in the search for minerals. The senior locator is the one who discovered the valuable claim, while the junior locator is seeking to take advantage of some technicality to obtain the minerals without having taken the risk.

8. The acts of location, as well as the waste and inefficiency that they entail, are discussed in detail in Braunstein, *Natural Resources and Natural Environments: An Economic Analysis and New Interpretation of the General Mining Law*, 32 UCLA L. REV. 1133, 1147 (1985).

9. See, e.g., *Anaconda Co. v. Whittaker*, 610 P.2d 1177 (Mont. 1980).

10. See, e.g., *Parker v. Jones*, 572 P.2d 1034 (Ore. 1978).

11. See, e.g., *Lombardo Turquoise Milling and Mining v. Hemanes*, 430 F. Supp. 429 (D. Nev. 1977).

12. 43 U.S.C. §§ 1701-84 (1984). Section 1744 requires annual filings to maintain mining claims. If the filings are not made when due, the claim is deemed abandoned and void. *United States v. Locke*, 105 S.Ct. 1785 (1985).

13. The state law discovery work requirement has been repealed in recent years. See generally Braunstein, *supra* note 8, at 1147.

14. 30 U.S.C. § 28 (1982).

prospector any rights to the public domain. Discovery is the *sine qua non* of a valid mining claim, and it is only through the discovery of a valuable mineral deposit that rights in the public domain are acquired.¹⁵ While failure to comply with the acts of location can invalidate a claim,¹⁶ compliance with them, without discovery, is never enough to validate one. Notwithstanding that discovery is the most important concept of the mining law, what constitutes a discovery is not defined by it. This task has been left to the courts and the Interior Department.

The question of whether a prospector has made a discovery under the mining law is a complex one,¹⁷ and the answer depends on the resolution of four sub-issues. First, it must be established that the substance found by the miner is a mineral. It is only the discovery of "valuable *mineral* deposits"¹⁸ that entitles the prospector to the benefits conferred by the mining law. Second, it must be established that the discovered mineral is located on mineral lands. Third, it must be established that the discovered mineral has not been withdrawn from location under the mining law, and, finally, it must be established that a valuable *deposit* of the mineral has been discovered. Each of these four issues must be resolved in favor of the miner in order to conclude that a discovery has been made within the meaning of the mining law.

This article does not deal with questions concerning what constitutes a valuable mineral deposit. That topic has been covered exhaustively elsewhere.¹⁹ Moreover, this article deals only glancingly with questions relating to the classification of public lands as "mineral lands" because these questions are no longer important. This article deals at length with the questions of what is a mineral within the meaning of the mining law and what minerals have been withdrawn from the mining law by the Common Varieties Act. The thesis of this article is that the courts and Interior Department make a common mistake in trying to answer these questions in particular cases. They approach these questions as though issues of geology or chemistry are central. In fact, public policy, and often conflicting public policies are at the heart of these questions. Only by giving explicit recognition to public policy and the interests it embodies can judicial and administrative decision makers avoid the inconsistent and unprincipled decisions that populate this area of law.

15. It is true that the miner diligently searching for minerals does enjoy *pedis possessio* rights in the public domain. *Pedis possessio* confers on the prospector the limited right to "hold the place in which he may be working against all others having no better right, and while he remains in possession, diligently working towards discovery . . . to be protected against forcible, fraudulent, and clandestine intrusions upon his possession." *Union Oil Co. of California v. Smith*, 249 U.S. 337, 346-47 (1919). *Pedis possessio* does not confer any enforceable property rights in the prospector good against the United States, however. For a fuller discussion of *pedis possessio*, see Braunstein, *supra* note 8, at 1138; Fiske, *Pedis Possessio—Modern Use of an Old Concept*, 15 ROCKY MTN. MIN. L. INST. 181 (1969).

16. See, e.g., *MacGuire v. Sturgis*, 347 F. Supp. 580 (D. Wyo. 1971). In *McGuire* the defendant lost because, among other reasons, he failed to comply with the location requirements of state law.

17. See generally Braunstein, *supra* note 8.

18. 30 U.S.C. § 22 (1982).

19. See Braunstein, *supra* note 8.

THE DEFINITION OF MINERAL UNDER THE MINING LAW OF 1872

Before a determination can be made concerning the validity of a mining claim, it must be concluded that the substance claimed is a mineral and that it is located on lands classified as mineral in character. Today, the classification of public lands as either mineral or non-mineral is of little more than historical interest. The necessity for the classification arose from "the practice of Congress to make a distinction between mineral lands and other lands, to deal with them along different lines, and to withhold mineral lands from disposal save under laws specifically including them."²⁰ The most important of these distinctions was between mineral lands, which were subject to disposition²¹ under the mining laws, and agricultural lands, which were subject to disposition under the Homestead Acts and various preemption statutes. With the closure of the public domain to agricultural entries,²² the usefulness of and necessity for the classification largely ended.²³

Further, the test for determining the mineral character of land has been subsumed by the test for discovery of a valuable mineral deposit.²⁴ The only significant distinction between the two tests is the degree of proof required.²⁵ Thus, lands may be classified as mineral on the basis of "geological inference without the exposure on the land of the minerals believed to be found therein."²⁶ Discovery of a valuable mineral deposit, on the other hand, requires the actual "exposure of mineral upon the land."²⁷ The reason for this difference in proof is that classification of lands as either mineral or nonmineral is but preliminary to entry of those lands and does not divest the United States of title. Determination that a discovery has been made, however, results in the transfer of the title to the land; consequently, more certainty is required for its proof.²⁸ Notwithstanding this distinction with respect to proof, "whether the question is one of discovery under the mining laws or the mineral character of land under a nonmineral land law, the end inquiry is essentially the same, namely, whether or not exploitation of the minerals is believed to be economically feasible."²⁹

20. *United States v. Sweet*, 245 U.S. 563, 567 (1918).

21. *See supra* note 1.

22. This closure was accomplished first by the Taylor Grazing Act of 1934, 43 U.S.C. § 315 (1982), and then by the Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701-84 (1982).

23. Classification of lands as mineral in character is still important for certain limited purposes. For example, while placer claims are permitted to be 20 acres in size, 30 U.S.C. § 35 (1982), they may be limited to 10 acres if 10 or more acres embraced within the claim are non-mineral in character. *Snow Flake Fraction Placer*, 37 Pub. Lands Dec. 250 (1908). The distinction is also significant for entries made under the Carey Act with respect to desert reclamation projects, 43 U.S.C. §§ 641-48 (1982) as well as for homestead entries in Alaska. The classification also retains some importance with respect to state "in lieu" land selections. *See, e.g., California v. Roedeffer*, 75 Interior Dec. 176 (1968).

24. *United States v. Williamson*, 75 Interior Dec. 338, 344 (1968).

25. *Id.*; *California v. Roedeffer*, 75 Interior Dec. 176, 180 (1968).

26. *California v. Roedeffer*, 75 Interior Dec. 176, 180 (1968).

27. *Id.* at 181.

28. *Barton v. Morton*, 498 F.2d 288 (9th Cir. 1974).

29. *California v. Roedeffer*, 75 Interior Dec. 176, 181 (1968).

Unlike the distinction between mineral and nonmineral lands, the question of what constitutes a mineral for purposes of the mining law retains great vitality. This is because the mining law is more generous to private claimants of publicly owned minerals than alternative schemes of disposition. If the claimant is able to obtain title to the minerals under the mining law, he does so without charge by or permit from the government. If the minerals are obtained pursuant to one of the alternative schemes of disposition, however, the claimant must first obtain permission from the government to mine, for these other schemes all vest substantial discretion in the government concerning whether mining will be permitted. Moreover, under these schemes, the miner is required to pay a royalty or rent to the government for the privilege of mining government owned minerals. If the minerals are obtained under the mining law, however, no rent or royalty is due.³⁰ For these reasons, miners and the Interior Department often find themselves in a Procrustean struggle over the meaning of the term "minerals." Miners and their lawyers try to stretch the term to cover as many substances as possible; the Interior Department and its advocates try to shrink it, so that it just covers the core substances to which the mining law was most clearly intended to apply.³¹

The issue of what is a mineral for purposes of the mining law appears deceptively simple. One might think that a chemical examination of the substance under consideration ought to be sufficient to resolve it. This is not the case, however. The determination of whether a substance is a mineral is not a question of fact, but a conclusion of law. Consequently, whether something is properly classified as a mineral depends on the purpose of the intended classification.³² In the context of the mining law, calling something a mineral means that it is subject to being located under that law. For a court to make this determination, it must first decide that the transfer of the substance and the lands containing it from public to private ownership under the mining law is appropriate in light of contemporary concerns and policies. Indeed, the question of whether a substance is a mineral is almost entirely a question of policy and only incidentally a question of chemistry.

30. For a discussion of some of the differences between the mining law and the mineral leasing act in this context, see Leshy, *The Perpetual Motion Machine (An Affectionate Discourse on the Origin, Implementation, Evolution and Future of the Federal Mining Law of 1872)* at 130 (unpublished manuscript on file at THE LAND & WATER L. REV.).

31. It is not my intention to imply that the Interior Department and mining industry are always antagonistic. Indeed, depending on the current Administration, they may frequently be on the same side and urge the same point of view.

32. See, e.g., Robert L. Beery, 25 IBLA 287, 292, *GOWER'S FED. SERV. (MINERAL)* 41 (1976) ("[W]hether water is considered a mineral generally depends on the context."); *Northern Pacific Ry. Co. v. Soderberg*, 188 U.S. 526, 530 (1903) ("The word 'mineral' is used in so many senses, dependent on the context, that the ordinary definitions of the dictionary throw but little light upon its signification in a given case."). *Soderberg* was quoted approvingly in *Watt v. Western Nuclear, Inc.*, 462 U.S. 36, 41-42 (1983). Compare *Andrus v. Charlestone Stone Products*, 436 U.S. 604 (1978) (water is not a mineral for purposes of the mining law) with *United States v. Union Oil of California*, 549 F.2d 1271 (9th Cir. 1977) (steam is a mineral for purposes of a mineral reservation in the Stock Raising Homestead Act) and *United States v. Shurbet*, 347 F.2d 103, 107 (8th Cir. 1965) (water is a mineral for purposes of I.R.C. § 611).

Two cases will illustrate. In *Andrus v. Charlestone Stone Products*³³ the Supreme Court held that subsurface groundwater is not a mineral subject to location under the mining law. It might seem logical, therefore, to conclude that geothermal steam is likewise not a mineral. In fact, this very issue was before the Ninth Circuit in *United States v. Union Oil of California*.³⁴ There, the court considered whether geothermal steam was a mineral for purposes of a mineral reservation contained in the Stock Raising Homestead Act (SRHA).³⁵ All patents³⁶ issued under the SRHA are "subject to and contain a reservation to the United States of all the coal and other minerals in the lands so entered and patented, together with the right to prospect for, mine, and remove the same."³⁷ The Ninth Circuit held in *Union Oil* that steam was a mineral within the meaning of this reservation. The Ninth Circuit did attempt, in part, to justify its decision based on the physical characteristics of the steam.³⁸ The true basis of the court's decision, however, was policy. The court reasoned that "[t]he substantial question is whether it would further Congress's purpose to interpret the words" of the SRHA as reserving the geothermal steam. On the basis of congressional policy of retaining subsurface resources "in public ownership for conservation and subsequent orderly disposition in the public interest"³⁹ the court concluded that steam was not a mineral.⁴⁰

The important point that emerges from the comparison of *Charlestone Stone Products* and *Union Oil* is that whether water or any other substance is a mineral depends more on the context in which the issue arises than on the physical characteristics of the substance. The mining law operates as a grant of minerals and land from the United States to individuals. Patents issued pursuant to the SRHA, on the other hand, operate as a reservation of the minerals in the public lands to the United States. The policy of the United States is to retain public ownership of the public domain.⁴¹ It is perfectly logical and consistent, therefore, to hold that water is not a mineral for purposes of construing a *grant* of minerals, but that water, or hot water at any rate, is a mineral for purposes of construing a *reservation*.⁴²

33. 436 U.S. 604 (1978).

34. 549 F.2d 1271 (9th Cir. 1977).

35. 43 U.S.C. §§ 291-302 (1982).

36. A patent is a deed from the United States conveying a portion of the public domain.

37. 43 U.S.C. § 299 (1982) (emphasis added).

38. This attempt was largely unsuccessful. The court sought to distinguish steam from water on the ground that steam is useful as a source of energy, like many other "fuel" minerals. This ignores the fact, of course, that water is often useful as a source of energy. Witness all of the hydroelectric projects in the western United States.

39. *Union Oil*, 549 F.2d at 1274.

40. See also *Watt v. Western Nuclear, Inc.*, 462 U.S. 36 (1983). The issue in *Western Nuclear* was whether sand and gravel was a mineral for purposes of the mineral reservation contained in land patents issued pursuant to the Stock Raising Homestead Act, 43 U.S.C. §§ 291-302 (1982). In both the majority and dissenting opinions, the issue was addressed on the basis of policy, not chemistry.

41. The Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701-84 (1982). For a discussion of public policy respecting the public lands and the resources they contain, see Braunstein, *supra* note 8, at 1173-75 (1985).

42. See, e.g., *United States v. Union Pacific R. Co.*, 353 U.S. 112, 116 (1957) ("[T]he established rule [is] that land grants are construed favorably to the government, that nothing

The problem of defining "mineral" is compounded by the failure of the mining law to provide any meaningful guidance. Section 23 of Title 30 of the United States Code provides that deposits of "gold, silver, cinnabar, lead, tin, copper [and] other valuable minerals" are locatable. This section is the only provision of the mining law that contains an enumeration of locatable minerals. Since all the minerals referred to are metallic, application of the doctrine of *ejusdem generis* would lead to the conclusion that nonmetallic substances are not subject to location. Such a construction would have been desirable and would have avoided many of the problems that have arisen in interpreting the mining law. In 1872, however, when the Attorney General was called upon to decide whether diamonds were locatable under the mining law, he concluded that they were and opined that:

[T]hese acts [the mining law] ought to be most liberally construed, so as to facilitate the sale of such lands; for in that and not otherwise, can they be made to contribute something to the revenues of the Government, and controversy and litigation in the mining localities, to a great extent be prevented.⁴³

This opinion was followed by the Commissioner of the General Land Office⁴⁴ in subsequent rulings concerning the scope of the mining law, and applied to such diverse substances as borax,⁴⁵ fire clay,⁴⁶ guano,⁴⁷ slate,⁴⁸ amber,⁴⁹ limestone and marble,⁵⁰ onyx,⁵¹ and kaoline.⁵² Today, it is accepted that whether a substance is metallic or not has no direct bearing on whether it is a mineral for purposes of the mining law.

Even as the list of substances categorized as mineral under the mining law was increasing, however, those charged with administering the law despaired of defining the term. Thus, in 1873 the Commissioner of

passes except what is conveyed in clear language, and that if there are doubts, they are resolved in favor of the government, not against it.") *quoted approvingly in* *Watt v. Western Nuclear, Inc.*, 462 U.S. 36 (1983). *See also* *Caldwell v. United States*, 250 U.S. 14, 20-21 (1919); *Northern Pacific Ry. Co. v. Soderberg*, 188 U.S. 526, 534 (1903). Just as grants from the government are construed narrowly, so the "principle of construction in favor of the sovereign" requires that mineral reservations to the United States be construed broadly in favor of the United States. *Western Nuclear*, 462 U.S. at 60 (1983). The misapprehension of this point led to a mistaken decision in *Poverty Flats Land and Cattle Co. v. United States*, No. 84-1515, Slip Op. (10th Cir. April 11, 1986).

43. 14 Op. Att'y Gen. 115, 116 (1872). It is ironic that the inclusion of nonmetallic minerals within the coverage of the mining law, rather than preventing litigation, has been the source of much of the litigation under the mining law. *See infra* text accompanying notes 100-68.

44. The General Land Office was the predecessor of the present-day Bureau of Land Management and, like its present-day counterpart, was charged with administering the nation's public lands. *United States v. Bolinder*, 28 IBLA 187, 195, *GOWER'S FED. SERV. (MINERAL)* 78 (1976).

45. Commissioner's Ruling (1873); H. COPP, *MINERAL LANDS* 100 (2d ed. 1882).

46. H. COPP, *supra* note 45, at 121.

47. *Richter v. Utah*, 27 Pub. Lands Dec. 95 (1898).

48. H. COPP, *supra* note 45, at 143.

49. *Id.* at 161.

50. *Id.* at 176.

51. *Utah Onyx Development Co.*, 38 Pub. Lands Dec. 504 (1910).

52. *Id.*

the General Land Office, in concluding that soda, alum and sulphur were minerals, wrote:

In the sense in which the term minerals was used by the Congress, it seems difficult to find a definition that will embrace what mineralogists agree should be included. The several authorities consulted in this connection seem to find it an *easier task to determine what is not, than what is, mineral.*⁵³

Some years later, Curtis Lindley, an early and noted commentator on the mining law, developed what seemed to be a workable definition of the term. He defined mineral for purposes of the mining law as a substance which:

- (a) Is recognized as a mineral, according to its chemical composition, by the standard authorities on the subject; or
- (b) Is classified as a mineral product in trade or commerce; or
- (c) Such a substance (other than the mere surface which may be used for agricultural purposes) as possesses economic value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts. . . .⁵⁴

This test was adopted by the Interior Department in *Layman v. Ellis*,⁵⁵ and was codified in regulations promulgated by the Interior Department.⁵⁶ The difficulty with the Lindley test, however, is that it proved to be insufficiently discriminating, particularly when applied to nonmetallic minerals of widespread occurrence. Thus, many substances that satisfied the test were nevertheless not believed to be "the type of valuable mineral that the 1872 Congress intended to make the basis of a valid claim."⁵⁷ Ultimately, therefore, Lindley's test was abandoned.

Today the Interior Department appears no closer to a comprehensive definition of the term 'mineral' than when the mining law was enacted. Indeed, in language reminiscent of the Commissioner's despair in 1873, the Interior Board of Land Appeals (IBLA) recently wrote that it could not "fashion a definition of 'common clay' which would satisfy lexicographers. . . ."⁵⁸

While the history of the mining law suggests that the term 'mineral' is not susceptible to a single comprehensive definition, it can be predicted

53. H. COPP, *supra* note 45, at 50 (emphasis added). See also *Northern Pacific Ry Co. v. Soderberg*, 188 U.S. 526, 536-37 (1903), where the Supreme Court, after struggling to find a definition of "mineral lands," could do no better than to conclude that they included "not merely metalliferous lands, but all such as are chiefly valuable for their deposits of a mineral character." A definition that can do no better than to define mineral lands in terms of mineral character is hardly a definition at all.

54. 1 C. LINDLEY, *A TREATISE ON THE AMERICAN LAW RELATING TO MINES AND MINERAL LANDS* § 98 (3d ed. 1914).

55. 52 Interior Dec. 714 (1929).

56. 43 C.F.R. § 2710.0-5(e) (1979).

57. *Andrus v. Charlestone Stone Products*, 436 U.S. 604, 612 n.8 (1978). See generally 1 *AMERICAN LAW OF MINING* § 6.044 (2d ed. 1984).

58. *United States v. Peck*, 84 Interior Dec. 137, 139 (1977). See also *United States v. Bolinder*, 28 IBLA 187, 199-200, *GOWER'S FED. SERV. (MINERAL)* 78 (1976), where the Board

with a degree of accuracy whether a particular substance will be held to be a mineral. This prediction is based not on the rote application of a definition or other verbal formula, but on the consideration of a triad of policy considerations.

The first of these considerations⁵⁹ is the extent to which the classification of a particular resource as mineral for purposes of appropriation under the mining law would disrupt existing statutory schemes for the allocation of that resource among competing uses. For example, water is not a mineral, not because it has or is lacking in some chemical or physical property, but because to treat it as a mineral under the mining law would wreak havoc with the prior appropriation system in effect in all the western states. In *Charlestone Stone Products v. Andrus*, for example, the district court⁶⁰ held that the locator of a valid mining claim was entitled to access to unappropriated water on the public lands. On review, the Ninth Circuit held that the locator was entitled not only to access, but also to claim the water as a locatable mineral under the mining law and, assuming the claim was otherwise valid, to exclusive possessory rights to the water and the land under which it was located.⁶¹ The Supreme Court conceded that water was a mineral and that it was valuable;⁶² the Court nevertheless held that it was not locatable. The Court's holding was based in large part on its belief that in passing the mining law, Congress intended to preserve the "legislation and judicial decisions of the arid-land states"⁶³ with respect to water and, thus, concluded:

One can readily imagine the legal conflicts that might arise from these differing approaches if ordinary water were treated as a federally cognizable "mineral." A federal claimant could, for example utilize all of the water extracted from a well like respondent's, without regard for the settled prior appropriation rights of another user of the same water. Or he might not use the water at all and yet prevent another from using it, thereby defeating the necessary Western policy in favor of "actual use" of scarce

deduced the issue entirely and concluded that geodes were a mineral because there was no good reason for holding they were not. *See also* *United States v. Schaub*, 163 F. Supp. 875, 876 (D. Alaska 1958) ("The decisions of the Land Department, supplemented by judicial interpretations of the Act of 1872, have failed to set forth a clear and consistent formula as to what may be considered a mineral within the meaning of the mining laws. *To this extent no real precedent has been established as to the scope of mineral as embraced in the mining statutes.*") (emphasis added).

59. It might be argued, logically, that the first consideration ought to be the past decisions of the courts and Interior Department. After all, the mining law has been around long enough, and the question of what is a mineral has been litigated frequently enough that precedent can be found on point for most substances. The present discussion, however, is concerned with substances on the fringe, whose classification as mineral is still uncertain, and not with substances whose status has been settled by litigation.

60. The district court opinion is unreported. The opinion is described, however, in *Charlestone Stone Products*, 436 U.S. at 609.

61. *Charlestone Stone Products v. Andrus* 553 F.2d 1209 (9th Cir. 1977).

62. *Charlestone Stone Products*, 436 U.S. at 610.

63. *Id.* at 615-16 (quoting *California Oregon Power Co. v. Beaver Portland Cement Co.*, 295 U.S. 142, 154-55 (1935)).

water resources. We decline to effect so major an alteration in established legal relationships. . . .⁶⁴

Similarly, a substance will not be considered a mineral for purposes of the mining law if it is subject to disposition under the mineral leasing acts. The Mineral Leasing Act of 1920⁶⁵ provides that sodium compounds are subject to disposition only under its provisions and are not locatable under the mining law.⁶⁶ The question arose, however, whether materials whose molecular structure included sodium in combination with other locatable minerals were subject to disposition under the mining law or the leasing act. *Wolf Joint Venture*,⁶⁷ for example, involved dawsonite, a substance composed of both aluminum, admittedly a locatable mineral, and sodium carbonate, a leasing act mineral. The Board held that the aluminum was not locatable separate from the sodium compounds with which it was associated. *United States v. Union Carbide Corp.*⁶⁸ involved the locatability of zeolite, another sodium-aluminum compound. This time the Board held that the substance was a locatable mineral because (1) the presence of the sodium was not essential to the existence of the zeolite,⁶⁹ and (2) the sodium was not present in sufficient quantities to be commercially valuable. The Board therefore concluded that zeolite was not the type of deposit that Congress intended to make subject to disposition under the leasing acts.

By making the presence of commercial quantities of leasing act minerals a part of the test of locatability of a substance under the mining law, the Board in *Union Carbide* implicitly recognized the potential of the mining law to disrupt other later-enacted statutory schemes of resource disposition and, at the same time, took steps to protect against this result. If a leasing act substance is not present in commercial quantities, then allowing that substance to be appropriated under the mining law will not be disruptive of the Mineral Leasing Act. If the leasing act mineral is present in commercial quantities, the appropriation of the substance under the mining law would be disruptive because it would foreclose the possibil-

64. *Charlestone Stone Products*, 436 U.S. at 615-16. See also Robert L. Beery, 25 IBLA 287, GOWER'S FED. SERV. (MINERAL) 41 (1976). In that case the locator attempted to claim certain "mineral" springs under the mining law. One of the reasons for the Board's rejection of the claim was its conviction that "Congress could not have intended that water be locatable" because it specifically provided elsewhere that federally owned water was subject to appropriation under state law. "Because the usufructory right to water was to be disposed of in accordance with state law, it could not at the same time be disposed of under the general mining law." *Id.* at 299 (emphasis in original). See also *Pagosa Springs*, 1 Pub. Lands Dec. 562 (1882) (mineral springs are not locatable under the mining law); *Walter A. Chessman*, 2 Pub. Lands Dec. 774 (1883) (water rights can not be patented under the mining law); *Letter from Commissioner Wilson to Fairplay, Colo., U.S. MINING DECISIONS 22* (1874) (sulphur springs are not mineral and not within the purview of the mining law).

65. 30 U.S.C. §§ 181-287 (1982).

66. *Id.* § 261.

67. 75 Interior Dec. 137 (1968).

68. 84 Interior Dec. 309 (1977).

69. The Board found that "[t]he structure of zeolite . . . has no molecular requirement for sodium, but merely for a cation. The molecular structure of zeolite does not vary essentially dependent on which cation is present. It is structurally immaterial whether the cation be calcium, sodium, potassium, or magnesium." *Id.* at 312.

ity of leasing the tract involved. Hence, commercially valuable deposits of leasing act minerals are not considered minerals within the meaning of the mining law and, under the *Union Carbide* test, are disposed of exclusively pursuant to the Mineral Leasing Act.

A second policy to be considered in determining whether a particular substance is a locatable mineral is the extent to which the classification might result in the overinclusion of unintended substances within the category of minerals. In *United States v. Toole*⁷⁰ the issue was whether peat moss was a mineral. The court held that it was not because:

It is inconceivable that the United States Mining Laws . . . were intended to apply to any substance which, was primarily vegetable or organic matter.^[71] To so hold would lead to the absurd result that grasses, plants, shrubs, etc., either growing or dead, could be acquired by location under laws which historically have been applied only to inorganic substances.⁷²

Similar reasoning early lead the courts and the Interior Department to conclude that clay was not a locatable mineral.⁷³ In *Holman v. Utah*,⁷⁴ for example, the Board concluded that clay was not considered a mineral not because of its chemistry or lack of value, but because to classify it as a mineral would result in the appropriation of vast quantities of agricultural land under the mining law. Numerous decisions of the Interior Department are to the same effect.⁷⁵

Additionally, the problem of overinclusion has resulted in dicta in a number of decisions to the effect that if a substance is so widespread that categorization of it as a locatable mineral is likely to lead to the same types of abuses that prompted the enactment of the Common Varieties Act,⁷⁶

70. 224 F. Supp. 440 (D. Mont. 1963), *quoted approvingly in*, *Watt v. Western Nuclear, Inc.*, 462 U.S. 36, 43 (1983).

71. It is to be noted that guano is a locatable mineral under the mining law. *See supra* note 47. Guano is an organic substance "comprised chiefly of [the] partially decomposed excrement" of sea fowl. UNITED STATES DEPARTMENT OF THE INTERIOR, A DICTIONARY OF MINING AND MINING RELATED TERMS 516 (Thrush ed. 1968).

72. *Toole*, 224 F. Supp. at 446 (emphasis added). *See also* *Rummell v. Bailey*, 320 P.2d 653, 655 (1958):

It must be appreciated that under the common generality . . . that matter is divided into three categories: animal, vegetable and mineral, a very high proportion of the substances of the earth are in that sense "mineral." . . . The discovery necessary under the mine location statutes is not satisfied by a discovery of "mineral" in that very broad sense. If it were there would be justification for making mine locations on virtually every part of the earth's surface.

73. "Early in the administration of the General Mining Laws . . . it was held that ordinary brick clay suitable for making ordinary brick and tile products did not make the land mineral in character and the deposit was not locatable under the mining laws." *United States v. Peck*, 84 Interior Dec. 137, 142 (1977).

74. 41 Pub. Lands Dec. 314 (1912).

75. *See, e.g.*, *United States v. O'Callaghan*, 79 Interior Dec. 689 (1972); *United States v. Matthey*, 67 Interior Dec. 63 (1960); *King v. Bradford*, 31 Pub. Lands Dec. 108 (1901); *Dunluce Placer Mine*, 6 Pub. Lands Dec. 761 (1888).

76. Some of the most flagrant of these abuses are catalogued *infra* notes 166 and 168.

then that categorization will be withheld and the mineral deemed nonlocatable. In *Robert L. Beery*,⁷⁷ for example, the Board stated that “[b]ecause of the widespread occurrence of water, the Department would be inviting a repeat of the abuses attending the locatability of sand and gravel [prior to the enactment of the Common Varieties Act], if it were to hold water locatable.”⁷⁸ Similarly, in *Andrus v. Charlestone Stone Products Co. Inc.*,⁷⁹ the Supreme Court concluded that “the concerns that the Congress addressed in the [Common Varieties Act] indicate that water, like the listed materials, should not be considered a locatable material under the 1872 mining law.”⁸⁰ Nor is this dicta limited to water. In *United States v. Bolinder*⁸¹ and *United States v. Kaycee Bentonite Corp.*⁸² the Interior Department indicated that any material that is as widespread as the materials listed in the Common Varieties Act will be treated as a common variety and hence nonlocatable.⁸³ Thus, the simple over-abundance of a substance, with the consequence that its classification as a locatable mineral would subject too much land to disposition under the mining law, is itself a sufficient reason to withhold such classification.⁸⁴

A third policy consideration that bears on whether a particular substance is a locatable mineral is the use to which the substance is put. Certain uses are considered to be “nonvalidating.” “For example, mineral material of indiscriminate nature used only for road base, fill or similar purposes for which almost any earth material may be used has consistently been declared not subject to location under the mining laws.”⁸⁵ So, soil additives that are simply physical amendments to the soil designed to increase its friability are not locatable because the use is nonvalidating. These additives are indistinguishable from the soil itself and are used for the same purpose as the soil. On the other hand, additives that change the chemical composition of the soil are locatable. In *United States v. Bunkowski*,⁸⁶ for example, the Board held that gypsum used as a soil additive was locatable because the gypsum altered the chemical composition of the soil by making it less alkaline and thus more productive.⁸⁷ In *United*

77. 25 IBLA 287, GOWER'S FED. SERV. (MINERAL) 41 (1976).

78. *Id.* at 297.

79. 436 U.S. 604 (1978).

80. *Id.* at 618.

81. 83 Interior Dec. 609 (1976).

82. 89 Interior Dec. 262 (1982).

83. *Id.* at 276-77; *United States v. Bolinder*, 83 Interior Dec. 609 (1976).

84. Alternatively, even if the substance is classified as a mineral, its overabundance may lead the Interior Department and the courts to classify it as a common variety. See *infra* text accompanying notes 144 to 152.

85. *United States v. Bolinder*, 28 IBLA 187, 198, GOWER'S FED. SERV. (MINERAL) 78 (1976). See also *United States v. Harenberg*, 11 IBLA 153, 156, GOWER'S FED. SERV. (MINERAL) 65 (1973); *United States v. Barrows*, 76 Interior Dec. 299, 306 (1969), *aff'd sub. nom.*, *Barrows v. Hickle*, 447 F.2d 80 (9th Cir. 1971); *United States v. Verdugo & Miller, Inc.*, 37 IBLA 277, 279 (1978) (“Material which is principally valuable for use as fill, sub-base, ballast, riprap, or barrow was *never* locatable.”) (emphasis in original); *United States v. Black*, 64 Pub. Lands Dec. 93, 96 (1954); *Holman v. Utah*, 41 Pub. Lands Dec. 314 (1912); *Gray Trust Co.*, 47 Pub. Lands Dec. 18 (1919).

86. 79 Interior Dec. 43 (1972).

87. See also *United States v. Beal*, 23 IBLA 379, GOWER'S FED. SERV. (MINERAL) 11 (1976).

States v. Robinson,⁸⁸ however, "bog iron" was nonlocatable because the claimant failed to establish by a preponderance of the evidence that the bog iron "chemically improve[d] the alkali soil to which it was added" or that it was "chemically available to the plants."⁸⁹ In sum, the Board concluded that the bog iron's only use was as a physical amendment to the soil, a nonvalidating use.

Another example of a nonvalidating use that renders a substance not mineral is found in the "natural curiosity" cases. In *Earl Douglass*⁹⁰ the claimant alleged that his claim was valuable on account of the fossil remains of prehistoric animals that it contained.⁹¹ The Interior Department ruled that the claim was not valid under the mining law because the prehistoric remains were valuable "not as minerals, but as natural curiosities."⁹²

Although a number of the natural curiosity cases may appear, at least to a geologist, to be inconsistent, they are not. In *South Dakota Mining Co. v. McDonald*,⁹³ for example, the question was whether geodes⁹⁴ were a mineral subject to location under the mining law. The Interior Department held that they were not,⁹⁵ though in *United States v. Bolinder*,⁹⁶ the Interior Department held that they were. These cases are easily reconciled once it is accepted that whether something is properly classified as a mineral depends not on the chemical composition of the substance, but on the policy considerations previously discussed, including the use to which it is put. The geodes in *South Dakota Mining* were found in caverns along with "[l]arge quantities of crystalline deposits, and formations of various kinds." Their primary use was as an attraction to entice visitors to pay for "admittance to the cavern [where they were found] and for the privilege of viewing" them.⁹⁷ In *Bolinder*, on the other hand, the geodes were being mined at a profit from the claim and were being used for purposes characteristic of minerals. These geodes were being used "for decorative purposes in homes," and were also "made into typical gemstone products such as rings, necklaces and bolo ties."⁹⁸ Reconciliation of the natural curiosity cases is thus based not on the chemical composition of the substance involved, but on the use to which that substance is put.⁹⁹

88. 82 Interior Dec. 414 (1975).

89. *Id.* at 424.

90. 44 Pub. Lands Dec. 325 (1915).

91. *Id.* at 326.

92. *Id.*

93. 30 Pub. Lands Dec. 357 (1900).

94. A geode is "[a] hollow nodule or concretion, the cavity of which is commonly lined with crystals of calcite or quartz. . . ." UNITED STATES DEP'T OF THE INTERIOR, A DICTIONARY OF MINING AND MINING RELATED TERMS 487 (THRUSH ED. 1968).

95. *South Dakota Mining*, 30 Pub. Lands Dec. at 360. See also *United States v. Bienick*, 14 IBLA 290, 296, GOWER'S FED. SERV. (MINERAL) 18 (1974) ("As to the sales of crystalline deposits [such as geodes], such specimens are valuable as natural curiosities, but are not subject to location under the mining law.") (emphasis added).

96. 83 Interior Dec. 609 (1976).

97. *South Dakota Mining*, 30 Pub. Lands Dec. at 360.

98. *Bolinder*, 83 Interior Dec. at 611.

99. Cf. *Lovely Placer Claim*, 35 Pub. Lands Dec. 426 (1907). There, a location was made under the Act of January 31, 1901, ch. 186, 31 Stat. 745 (1901). Even though the claim was

THE COMMON VARIETIES ACT

The structure of the Common Varieties Act is straight forward. Certain common varieties of nonmetallic minerals of widespread occurrence are removed from location under the mining laws.¹⁰⁰ These minerals are instead subject to sale or other disposition under the Materials Act of 1947.¹⁰¹ The most important issue that has arisen under the Common Varieties Act is whether a particular deposit of a common variety mineral is possessed of such special and distinct characteristics that it comes within an exception to the Act. The issue arises because not all substances named in the Common Varieties Act are withdrawn from location. The Act provides that " 'Common Varieties' as used in this subchapter . . . does not include deposits of such materials which are valuable because the deposit has some property giving it distinct and special value. . . ."¹⁰² Substances that qualify as locatable within this exception, that is, uncommon varieties of a common variety, are referred to in this article simply as uncommon varieties.

The Common Varieties Act, like the mining law, fails to define its essential terms.¹⁰³ When the Act was passed it left the Interior Department with the task of giving content to the phrase "property giving it distinct and special value."¹⁰⁴ The Department had a number of alternatives. It could, for example, have defined "special and distinct property" so narrowly that virtually all deposits of the enumerated substances would be found lacking and, therefore, not subject to location. This undoubtedly would have pleased some of the Department's constituents. On the other hand, it could have defined "special and distinct property" so liberally that virtually any deviation from the norm in weight, color, location, mixture, or chemical composition would suffice to remove a particular deposit from the operation of the Act. This undoubtedly would have pleased others of its constituents. The Department "took a more intermediate course, relating the presence or absence of 'a distinct special economic value' or 'distinct and special properties' to the use potential

for saline lands, the Interior Department held that it was invalid because the claim was being used not for "the production of salt, but . . . as a sort of health resort where the patients may enjoy the benefits of the saline baths there provided." This use was nonvalidating. *United States v. Stevens*, 81 Interior Dec. 83 (1974) is similar. There, the mining claimant was selling permits that allowed the public to enter his mining claims and search for "gemstone" chert. The Board found that the claims were invalid in part because of the use to which they were being put: "Here the claimant is marketing permits [to the public], not mineral material." *Id.* at 88.

100. 30 U.S.C. § 611 (1982). The first sentence of the Act provides in pertinent part that "[n]o deposit of common varieties of sand, stone, gravel, pumice, pumicite, or cinders and no deposit of petrified wood shall be deemed a valuable mineral deposit within the mining laws of United States."

101. 30 U.S.C. §§ 601-04 (1982). Although the common varieties are disposed of pursuant to the Materials Act of 1947, they were not actually withdrawn from location under the mining law until the enactment of the Surface Resources Act of 1955, 30 U.S.C. §§ 611-15 (1982). Section 611 of the Act is generally referred to as the Common Varieties Act.

102. *Id.* § 611.

103. See *supra* text accompanying notes 16-17.

104. *Id.*

of the deposit compared to the general run of such deposits."¹⁰⁵ Unfortunately, the department's compromise failed to satisfy many of its constituents¹⁰⁶ and probably engendered more technical legal problems than it resolved.

The remainder of this section considers and critiques the most important of the judicial and administrative decisions implementing the Department's interpretation of the uncommon varieties exception to the Common Varieties Act, and then concludes by suggesting how economic analysis can be brought to bear to more satisfactorily resolve the key issues of the Common Varieties Act.

In *United States v. Matthey*¹⁰⁷ the question was whether a sedimentary clay used in the manufacture of vitrified sewer pipe was locatable under the mining law. The case did not involve the Common Varieties Act because clay is not one of the enumerated common varieties. Even so, the case is relevant to Common Varieties Act questions because the analysis used by the Interior Department in the clay cases is the same as that employed in the common variety cases.¹⁰⁸ Thus, while ordinary clay is not locatable, "clay of an exceptional nature"¹⁰⁹ is. In *Matthey* the Board held that the clay was not locatable even though it was, arguably, used for a special and unusual purpose. The Board reasoned that "the use to which a common clay is put cannot make the lands in which it is found subject to location under the mining laws, if the use is not dependent upon any *unusual characteristics of the clay itself*."¹¹⁰ The mere suggestion of an unusual use for a common variety is not enough to make that material locatable. In addition, the use must take advantage of some unusual characteristic of the material. Even conceding, therefore, that vitrified sewer pipe was an unusual use of clay, the deposit of clay from which it was made was still not locatable because any common variety of clay could be put to the same use.

In *United States v. Henderson*¹¹¹ the Board took this analysis one step further. The mineral at issue there was a deposit of sand and gravel "free from blow sand and caliche"¹¹² and almost "perfect" for "construction use."¹¹³ In addition, concrete made from this sand and gravel could be ground and polished to produce an attractive stone of various colors, re-

105. SENATE COMM. ON ENERGY AND NATURAL RESOURCES, 95TH CONG., 1ST SESS., REVISION OF THE MINING LAW OF 1872 (1977).

106. *Id.*

107. 67 Interior Dec. 63 (1960).

108. It is apparent from *United States v. Peck*, 84 Interior Dec. 137 (1977), that the Board believed that the test for "uncommon" varieties of clay was different from the test for "uncommon" varieties of other substances because the Board relied only on clay cases as precedent. This aspect of *Peck* was disapproved by the Board in *United States v. Kaycee Bentonite Corp.*, 89 Interior Dec. 262, 274 (1982).

109. *Matthey*, 67 Interior Dec. at 66.

110. *Id.* at 68 (emphasis added).

111. 68 Interior Dec. 26 (1961).

112. "Caliche is a hard soil layer cemented by calcium carbonate." *Dredge Corp. v. Conn*, 733 F.2d 704, 707 n.5 (9th Cir. 1984).

113. *Henderson*, 68 Interior Dec. at 28 (1961).

ferred to as "poor man's terrazzo." The Board held that these characteristics were insufficient to render the deposit of sand and gravel locatable. "The fact that these sand and gravel deposits may have characteristics superior to those of other sand and gravel deposits," the Board explained, "does not make them an uncommon variety of sand and gravel so long as they are used only for the same purposes as other deposits which are widely and readily available."¹¹⁴

Mattey and *Henderson*, when read together, leave little room for any uncommon variety to qualify as locatable. *Mattey* requires that the deposit have special characteristics giving it a special value, while *Henderson* requires, in addition, that the special value be for an unusual use. Since all of the common varieties are building materials¹¹⁵ and since no common varieties deposit will be locatable so long as it is used as a building material, the net effect of *Mattey* and *Henderson* was to render all building materials nonlocatable as a matter of law.¹¹⁶

This created a dilemma for the Interior Department. On one hand, the Department wanted to construe the Common Varieties Act in a way that would prevent the abuses that Congress intended the Act to correct. On the other hand, the Department was bound to obey its other master, the United States Supreme Court. One issue before the Supreme Court in *United States v. Coleman*¹¹⁷ was whether all building stone was locatable under the mining law or whether the law covered only uncommon varieties of building stone. The issue was complicated by the existence of the Building Stone Act of 1892.¹¹⁸ The purpose of that act was to legislatively overrule *Conlin v. Kelly*,¹¹⁹ which held that stone chiefly valuable for building material was not locatable.¹²⁰ "Congress regarded . . . that case

114. *Id.* at 29-30.

115. Congressman Engle, a sponsor to the Common Varieties Act, explained the necessity for withdrawing common variety minerals from location under the mining law in the following terms:

The reason we have done that is because sand, gravel, pumice and pumicite are really building materials and are not the type of material contemplated to be handled under the mining laws, and that is precisely where we have had so much abuse of the mining laws, because people can go out and file mining claims on sand, stone, pumice and pumicite taking in recreational sites and even taking in valuable stands of commercial timber in the national forests and on the public domain.

101 CONG. REC. H7454 (daily ed. June 20, 1955). See also 1 AMERICAN LAW OF MINING, *supra* note 57, at § 8.01[4][i].

116. See *McClarty v. Secretary of Interior*, 408 F.2d 907, 908 (9th Cir. 1969) (The decisions of the Secretary of the Interior are subject to the "cogent charge that his rulings had the effect of vitiating 30 U.S.C. § 161 [the Building Stone Act] with the result that no building stone deposits are locatable under the mining laws."). The Secretary responded to this charge in *United States v. U.S. Minerals Development Corp.*, 75 Interior Dec. 127 (1968). There, the Secretary conceded that "the language used in some of the Department's decisions on common varieties could lead to the conclusion that the Department would hold to be a common variety any mineral" that was used as building material. *Id.* at 133.

117. 390 U.S. 599 (1968).

118. Act of Aug. 4, 1892, ch. 375, §§ 1, 3, 27 Stat. 348 (1892) (codified at 30 U.S.C. § 161 (1982)).

119. 12 Pub. Lands Dec. 1 (1891).

120. *Id.* at 3.

as a departure from the liberal construction theretofore adopted by the Land Department, to such an extent as to demand legislative action disapproving the result thereof."¹²¹ The task of the Supreme Court in *Coleman* was to reconcile the Building Stone Act with the provision of the Common Varieties Act that common varieties of stone shall not be deemed a valuable mineral.¹²² The Supreme Court accomplished this by holding that the Common Varieties Act amended the Building Stone Act of 1892 by "removing from the coverage of the mining laws 'common varieties' of building stone, but leaving . . . the 1892 Act entirely effective as to building stone that has 'some property giving it distinct and special value' . . ."¹²³ *Coleman* is, thus, inconsistent with *Mattey* and *Henderson*. Those decisions make all stone used for building purposes nonlocatable while *Coleman* holds that uncommon varieties of building stone *are* locatable.¹²⁴

This dilemma was resolved by the Interior Department in *United States v. McClarty*.¹²⁵ The issue there was whether a building material called heatherstone was locatable. The unique property of the stone was that it naturally fractured into regular shapes with flat surfaces suitable for laying without further fabrication. Clearly this material would not be locatable under *Henderson* since it was used "for the same purposes as other deposits which are widely and readily available." The Board avoided this result by adopting a different test. It held that the difference between a common and an uncommon variety was to be determined in the following way:

(1) there must be a *comparison* of the mineral deposit in question *with other deposits of such minerals generally*; (2) the mineral deposit in question must have a unique property; (3) the unique property must give the deposit a distinct and special value; (4) if the special value is for uses to which ordinary varieties of the mineral are put, the deposit must have some distinct and special value for such use; and (5) the distinct and special value must be reflected by the higher price which the material commands in the market place, [or by reduced costs or overhead resulting in increased profits to the producer at the same market price].¹²⁶

121. *Pacific Coast Marble Co. v. Northern Pacific R.R. Co.*, 25 Pub. Lands Dec. 233, 244 (1897).

122. 30 U.S.C. § 611 (1982).

123. *Coleman*, 390 U.S. at 605.

124. After *Coleman*, the Building Stone Act has no sphere within which to operate. Prior to the Common Varieties Act, all building stone was locatable. After the Common Varieties Act as interpreted in *Coleman*, only "uncommon" varieties of building stone are locatable. The existence of the Building Stone Act is superfluous to this result since the Common Varieties Act provides that "uncommon" varieties are locatable.

125. 17 IBLA 20, GOWER'S FED. SERV. (MINERAL) 55 (1974).

126. *United States v. Mineral Development Corp.*, 75 Interior Dec. 127 (1968) (emphasis added). The material contained in brackets is a refinement to the *U.S. Minerals* test added by *United States v. McClarty*, 17 IBLA 20, 42 (1974). See also *United States v. Smith*, 66 IBLA 182, 184, GOWER'S FED. SERV. (MINERAL) 254 (1982); *United States v. Schneider Minerals, Inc.*, 36 IBLA 194, 197-98, GOWER'S FED. SERV. (MINERAL) 82 (1978).

Under *McClarty* a mineral may be an *uncommon* variety even though it is used for the same purposes as a common variety if the other requirements of the test are satisfied. The problem with *McClarty* is that it glosses over the most important issue in Common Varieties Act cases, namely what the deposit in question should be compared to. For clarity in the discussion that follows, the mineral deposit that is the basis of the miner's claim will be referred to as the "claimed deposit," while "deposits of such mineral generally" will be referred to as the "background deposit."

McClarty requires a comparison of the claimed deposit with the background deposit, but the decision offers no guidance or criteria by which to determine what characteristics or properties the background deposit possesses. This omission is critical because the resolution of that issue alone determines the outcome of the *McClarty* test; the other requirements are just window dressing. In *McClarty* heatherstone was compared to other building stone that did not naturally fracture into regular shapes. In consequence, the heatherstone was observed to have a unique quality that gave it special and distinct value. Suppose instead that heatherstone had been compared only to other regularly fracturing stone. In that case, heatherstone would have faded into and been indistinguishable from the background deposit. Based on such a comparison, heatherstone would not have possessed a unique property or special and distinct value and, therefore, would not have been locatable.¹²⁷ The critical question, therefore, in applying the *McClarty* test is what background deposit should be used for comparison with the claimed deposit.¹²⁸ *McClarty* provides no guidance in this regard. The result of this defect in the analysis in *McClarty* and other similar decisions is a series of cases in which the Board and the courts have held that a particular mineral is nonlocatable without any real analysis or exposition of a principled basis for the decision.

One illustration of how the choice of the background deposit affects the decision whether a substance is locatable is found in a comparison of *Zimmerman v. Brunson*¹²⁹ with *Layman v. Ellis*.¹³⁰ In *Zimmerman* the issue was whether sand and gravel was a mineral for purposes of rendering the lands in which it was found mineral lands within the meaning of the mining law. The Department held that it was not a mineral because the claimed deposit had no peculiar value or special characteristics distinguishing it from "numerous other like deposits of the same character in the public domain."¹³¹ Thus, the Department determined in *Zimmer-*

127. The Interior Department is aware of the way in which the selection of the background deposit can affect the outcome of common varieties cases and the importance, therefore, of articulating a principled basis for selection. Thus, in *United States v. Kaycee Bentonite Corp.*, 89 Interior Dec. 262, 276 (1982) the Board wrote that "gemstones would become common varieties of stone if comparison were limited only to other gemstones." Having recognized the problem, the Board was nevertheless unable to solve it.

128. "[T]he threshold question is the yardstick by which 'uniqueness' and 'special and distinct value' [are] to be measured, i.e., unique and with special value compared to what?" *United States v. Pope*, 25 IBLA 199, 203, GOWER'S FED. SERV. (MINERAL) 40 (1976).

129. 39 Pub. Lands Dec. 310 (1910).

130. 52 Pub. Lands Dec. 714 (1929).

131. *Zimmerman*, 39 Pub. Lands Dec. at 313.

man that sand and gravel was not a mineral by comparing it to other deposits of *sand and gravel*.

Thirty years later, in *Layman v. Ellis*,¹³² the Department was again confronted with the question of whether sand and gravel was a mineral. This time the Secretary reversed his earlier position and held that it was a mineral. The Secretary's basis for overruling *Zimmerman* was stated as follows:

Good reason also exists for questioning the statement [in *Zimmerman*] that gravel has no special properties or characteristics giving it special value. While the distinguishing special characteristics of gravel are purely physical, notably small bulk, rounded surfaces, hardness, these characteristics *render gravel readily distinguishable by any one from other rock and fragments of rock*.¹³³

The explanation for the different outcomes in *Layman v. Ellis* and *Zimmerman v. Brunson* lies entirely in the choice of the background deposits rather than in any differing quality of the sand and gravel involved. In *Zimmerman*, the secretary used other deposits of sand and gravel, and in comparison the claimed deposit was unremarkable. In *Layman*, the secretary chose common rock as the background deposit, and by comparison the claimed deposit of sand and gravel seemed extraordinary.¹³⁴

Both *Zimmerman* and *Layman* suffer from the same deficiency as *McClarty*: they neglect to explain how the background deposit was or ought to be selected. Recent cases also exhibit this deficiency; they appear to be decided ad hoc and provide little meaningful guidance about the way future controversies will be resolved. In *Boyle v. Morton*¹³⁵ decoratively colored, decomposed granite was compared with similarly decorative material and not with the general run of decomposed granite because "a large quantity of colored decorative decomposed granite similar to appellee's was available."¹³⁶ In *Brubaker v. Morton*,¹³⁷ attractively colored stone that sold for as much as fifty percent more than "normal gray stone,"¹³⁸ was compared with deposits of colored stone only since "comparable colored stone was in common supply."¹³⁹ In both cases the mining claim was held invalid because the background deposit chosen by the court possessed the very characteristic, distinctive coloration, alleged to make the claimed deposit special and distinct.

132. 52 Pub. Lands Dec. 714 (1929).

133. *Id.* at 720 (emphasis added).

134. The result in *Layman v. Ellis* has, of course, been legislatively overruled by the Common Varieties Act.

135. 519 F.2d 551 (9th Cir. 1975).

136. *Id.* at 552.

137. 500 F.2d 200 (9th Cir. 1974).

138. *Id.* at 202.

139. *Id.*

*United States v. Dunbar Stone Co.*¹⁴⁰ is similar to *Boyle and Brubaker* but with an interesting twist. In *Dunbar*, the mining claimant alleged that his schist deposit¹⁴¹ was uncommon because it did not "feather" when "blasted out and broken." This characteristic made the claimed deposit especially suitable for "laying up in a wall" and an "uncommonly good schist."¹⁴² In *Boyle and Brubaker*, the Board compared the claimed deposit not with all granite, but just with colored granite. In *Dunbar*, the mining claimant argued that the Board should take a similar approach and compare his schist not with all building stone but just with other schist. The Board refused, however, and selected as the background deposit "the broad range of common building stone."¹⁴³ Since many other building stones may be broken without feathering, the Board held that the claimed deposit lacked a unique property. The Board gave no indication, however, why it was appropriate to contract the range of materials included in the background deposit from all granite to just colored granite in *Boyle and Brubaker*, but to expand the range of materials included in the background deposit from just schist to all common building materials in *Dunbar*.

In two other recent cases the claimed deposit was found to be special and distinct and, hence, locatable. In these cases too, however, the decisions are conclusory and gloss over the issue of how the background deposit is selected. *United States v. Kaycee Bentonite Corp.*,¹⁴⁴ involved a government contest of bentonite claims.¹⁴⁵ Bentonite is a form of clay, and clay, at least in its common forms, is not a locatable mineral.¹⁴⁶ Uncommon varieties of clay, however, are locatable.¹⁴⁷ Compared to common clay the bentonite deposits in question were unusual. The deposits were not nearly so widespread as common clay, they had physical characteristics unlike common clay, they could be used for purposes for which no other variety of clay was useful and they had value far in excess of com-

140. 56 IBLA 61, GOWER'S FED. SERV. (MINERAL) 194 (1981).

141. Schist is a crystalline rock. UNITED STATES DEP'T OF THE INTERIOR, A DICTIONARY OF MINING AND MINING RELATED TERMS 967 (Thrush ed. 1968).

142. *Dunbar*, 56 IBLA at 65 (emphasis omitted).

143. *Id.* at 66.

144. 89 Interior Dec. 262 (1982).

145. Although clay is not a Common Variety Act mineral, the issues raised in *Kaycee Bentonite* as well as the Court's handling of them are equally applicable to Common Variety Act minerals. "[T]he distinction [between the test used to determine common clay and the test used to determine common varieties under the Common Varieties Act] is not so great as the parties and the Judge [below] would have us believe, and as we shall demonstrate, it has no effect here." *Id.* at 274. Some attempts have been made to keep separate the lines of authority involving common varieties and common clay. See *United States v. Peck*, 84 Interior Dec. 137, 146 (1977) ("[A]lthough many of the criteria in determining what constitutes a common variety . . . may be applicable in determining whether a deposit of clay is locatable generally, the basis for determination should not be confused.") In fact, the language of the Common Varieties Act making "uncommon varieties" locatable is derived from *Zimmerman v. Brunson*, 39 Pub. Lands Dec. 310 (1910), overruled by *Layman v. Ellis*, 52 Pub. Lands Dec. 714 (1929). The authorities relied upon by *Zimmerman* in formulating its test were *Dunluce Placer Mine*, 6 Pub. Lands Dec. 761 (1888) and *King v. Bradford*, 31 Pub. Lands Dec. 108 (1901). Both *Dunluce* and *King* involved deposits of common clay.

146. See, e.g., *United States v. Peck*, 84 Interior Dec. 137, 139 (1977); *Holman v. Utah*, 41 Pub. Lands Dec. 314 (1912).

147. *United States v. Peck*, 84 Interior Dec. 137, 139 (1977).

mon clay.¹⁴⁸ The Bureau of Land Management (BLM) argued that bentonite itself was so widespread that it ought to be considered a common variety and, therefore, that the deposits in question should be compared with other deposits of bentonite.¹⁴⁹ If this comparison were made, then the bentonite at issue would have been unexceptional and probably not locatable.¹⁵⁰

The Board in *Kaycee Bentonite* rejected the BLM's argument, holding that the proper background deposit was not bentonite but common clay. This holding was based on the Board's conclusion that bentonite was not sufficiently widespread to make it appropriate for use as a background deposit. The Board gave no indication how widespread a deposit need be before it would be used as the background deposit. Similarly, in *United States v. Bolinder*¹⁵¹ the Board held that geodes were locatable. The basis of the decision was that the "proper basis of comparison was with deposits of stone generally, not other deposits of geodes."¹⁵² In *Bolinder*, as in *Kaycee Bentonite*, the Board neglected to explain what policy considerations guided its decision or how many geodes there must be in the world before they and not stone would be chosen as the background deposit.

The courts and the Interior Department have been unable to articulate a principled basis for selecting the background deposit is because of fundamental error they made in interpreting the Common Varieties Act. The Department and courts have phrased the test for locatability in terms of "unique properties" of the claimed deposit.¹⁵³ Thus, the Interior Department regulation that defines "common varieties" provides that:

"Common varieties" includes deposits which, although they may have value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts, do not possess a distinct, special economic value for such use over and above the normal uses of the general run of such deposits. Mineral materials which occur commonly shall not be deemed to be "common varieties" if a par-

148. *Kaycee Bentonite*, 89 Interior Dec. at 265-66.

149. *Id.* at 273.

150. The Board in *Kaycee Bentonite* was acutely aware of the problem which it faced. At one point, for example, it stated that if too strict a test were adopted no minerals would be locatable because, for example, "even gemstones would become common varieties of stone if comparison were limited only to other gemstones." *Id.* at 276.

151. 83 Interior Dec. 609 (1976).

152. *Kaycee Bentonite*, 89 Interior Dec. at 276 (1982).

153. See, e.g., *United States v. U.S. Minerals Development Corp.*, 75 Interior Dec. 127, 134 (1968); *United States v. DeZan*, A-30515 (July 1, 1968), GOWER'S FED. SERV. (MINERAL) 30-31 (1968); *United States v. Pfizer*, 76 Interior Dec. 331, 342-43 (1969); *United States v. Guzman*, 81 Interior Dec. 685, 693 (1974); *United States v. Dunbar Stone Co.*, 56 IBLA 61, 64, GOWER'S FED. SERV. (MINERAL) 194 (1981); *United States v. Smith*, 66 IBLA 182, 185, GOWER'S FED. SERV. (MINERAL) 254 (1982). Some of the decisions speak in terms of unique properties and commercial value as tests for uncommonness. It is clear from these decisions, however, that these requirements are cumulative. "In other words, . . . to make a deposit locatable as an uncommon variety: (1) it must have distinct and special properties, and (2) those properties must make it commercially valuable." *United States v. Mt. Pinos Development Corp.*, A-30823 at 6 (September 27, 1968), GOWER'S FED. SERV. (MINERAL) 49 (1968). See also *United States v. Brandt*, 21 IBLA 166, 168, GOWER'S FED. SERV. (MINERAL) 40 (1975).

ticular deposit has *distinct and special properties* making it commercially valuable for use in a manufacturing, industrial or processing operation.¹⁵⁴

The problem with this definition is its misplaced emphasis. It emphasizes the physical characteristics of the substance under consideration, looking to see if the substance in question has "distinct and special properties." The Common Varieties Act, however, is different; it speaks in terms of a substance's *value* rather than its physical properties. This shift in emphasis is significant, and is the source of the difficulty that the courts and Interior Department have had in articulating a principled basis for selecting the background deposit. Emphasizing the physical properties of a substance requires that the substance under consideration be compared with other substances more or less similar to it. Not only is this comparison difficult to make, as the common variety cases demonstrate, but it has the further disadvantage of disguising the important policy choices that are at the heart of the common variety cases.

In each of these cases the Interior Department is being asked to decide whether public lands, an asset that the government "holds in trust for all the people,"¹⁵⁵ should be transferred into private ownership. The public policy embodied in the mining law is to encourage mineral exploration and development. The mechanism that the mining law uses to effectuate this policy is to reward successful prospectors by transferring to them the minerals they discover without charge and the land in which the minerals are found for only a token charge.¹⁵⁶ Competing with this policy, however, is the public policy of the United States to retain the public lands in federal ownership.¹⁵⁷ Since the decision whether a claimed substance is an uncommon variety determines whether that substance and the lands containing it are to be transferred to private ownership, that decision must necessarily involve the resolution of these important and conflicting policy issues. A test for uncommon varieties phrased in terms of value instead of physical properties, while still requiring comparisons, would be much easier to apply in a rational and predictable way. Moreover, it would have the added advantage of calling attention to, rather than disguising, the policy considerations at issue.

By way of introduction to the discussion of a value-based test for uncommon varieties, it is helpful to consider *Andrus v. Charlestone Stone Products*.¹⁵⁸ There, the issue before the Supreme Court was whether water was a locatable mineral. The Court held that it was not for a number of reasons,¹⁵⁹ including:

Water, of course, is among the most common of the earth's elements. While it may not be as common in the federal lands sub-

154. 43 C.F.R. § 3711.1(b) (1985) (emphasis added).

155. *Utah Power and Light Co. v. United States*, 243 U.S. 389, 409 (1917).

156. The charge for mining claims is set by statute at either \$2.50 or \$5.00 per acre, depending on the type of claim. 30 U.S.C. § 37 (1982). See *supra* note 5.

157. 43 U.S.C. § 1701(a)(1) (1982).

158. 436 U.S. 604 (1978).

159. *Id.* at 617.

ject to the mining law as it is elsewhere, it is nevertheless *common enough to raise the possibility of abuse by those less interested in extracting mineral resources than in obtaining title to valuable land*. . . . [T]he concerns that Congress addressed in the 1955 legislation [the Common Varieties Act] indicate that water, like the listed materials, should not be considered a locatable mineral under the 1872 mining law.¹⁶⁰

The problem with the Court's rationale is that all minerals are subject to the sorts of abuses that prompted Congress to enact the Common Varieties Act. These abuses result not because a mineral is widespread, but because in a given case the *value of the land* in which the mineral is found is greater than the *value of the mineral* claimed under the mining law. Whenever this situation exists, one can expect that some people will come forward to claim the land under the mining law even though they really desire the land for some other purpose. An example will illustrate.

Suppose two miners, S and G, each discover a mineral deposit in a national forest located near a large urban area. Miner S discovers a deposit of sand and gravel on her claim while Miner G discovers a deposit of gold on his. Assume further that the land on which both claims are located is worth \$5,000 per acre to area residents who desire it in its unspoiled condition for recreation, but once the claims are mined the land will be unsuited for recreation, and its market value will fall to \$500 per acre. To simplify the example, assume that all other costs of mining are negligible and can be ignored. It is apparent that whether S or G will mine their respective claims depends not at all on the type of mineral that they are mining, but solely on the value of the deposit of mineral that they have discovered. In each case, mining will occur only if the anticipated revenue from mining is greater than the anticipated cost. If the value of the sand and gravel deposit is greater than \$4,500 (the net cost of mining), Miner S will mine her deposit and the mining law will not be abused. If the anticipated revenue from mining the gold deposit is less than \$4,500 then Miner G will not mine. Even though gold is not a common variety, it is Miner G, not Miner S, who, in the words of *Charlestone Stone Products*, is "less interested in extracting mineral resources than in obtaining title to valuable land."¹⁶¹ Thus, it is not the value of a mineral per unit of weight that determines whether the mining law is likely to be abused in a particular case, but rather the value of a mineral deposit in comparison to the value of the land in which it is found that is determinative.

Although the *Charlestone Stone Products* test is insufficient, it does point in the right direction.¹⁶² The Common Varieties Act and, particular-

160. *Id.* (emphasis added).

161. *Id.*

162. The *Charlestone Stone Products* rationale has not been adopted by the Interior Department. The Interior Board of Land Appeals held recently that a mineral should not be treated as common variety just because "its development poses the same problems . . . as the development of other common variety minerals." *United States v. Kaycee Bentonite Corp.*, 89 Interior Dec. 262, 265 (1982).

ly, the uncommon varieties exception to it ought to be interpreted in such a way as to minimize the likelihood that the mining law will be abused by those who desire to obtain title to public lands for reasons other than their mineral content. This objective cannot be achieved by a test phrased in terms of 'commonness' because it is the difference between the value of a particular parcel of the public domain for mining and its value for other alternative uses, and not the total reserves of a given substance that makes it susceptible to abuse. When the mining value is less than the value of alternative uses there is an incentive to claim the land under the mining law but to use it for the higher-valued nonmining purpose.¹⁶³

Such abuse of the mining law is obviously undesirable. It results in the total store of publicly owned lands being depleted in contravention of federal policy.¹⁶⁴ While bad faith mining claims are an obvious problem, even mining claims made in good faith may result in the public lands being used wastefully. This occurs whenever the highest valued use of a parcel is for something other than mining, but the parcel is nevertheless used for mining. The miner is acting in good faith in these cases. He is claiming the land for its mineral values and intends to mine. This nonetheless results in waste because the highest-valued use of the land is not mining but something else. Another example will illustrate.

Recall the previous example of Miner S and Miner G in the national forest near a large urban area. Miner S will mine in all events because her claim is worth more for mining than any other purpose. Miner G, however, might not mine. Miner G's gold claim was assumed to be worth less for mining than the land embraced by the claim was worth to local residents for recreation. That is, the highest-valued use of the land is for recreation, not mining. Miner G has an incentive, therefore, not to mine the land but to sell it to the local area residents who can then use it as they desire.

Even though this sale would be in the interest of everybody concerned, it might not occur if the costs of consummating the transaction are too high. Previously it was assumed that the value of the land for recreation was \$5,000 per acre, and that the value of the land after mining was \$500 per acre. Let us now further assume that net revenue from mining is \$2,500 per acre. The anticipated gain to Miner G from mining is \$3,000 (the \$500 salvage value of the land plus the \$2,500 net revenue from mining). If

163. A series of Nevada cases illustrate this point. See *Foster v. Seaton*, 271 F.2d 836 (D.C. Cir. 1959); *Mendenhall v. United States*, 556 F. Supp. 444 (D. Nev. 1982); *Osborne v. Hammit*, 377 F. Supp. 977 (D. Nev. 1964). In these cases federal land close to Las Vegas was claimed under the mining law. It is apparent that the land was desired not for the sand and gravel it contained, but because of the commercial development value that its proximity to Las Vegas gave it. The mining claims were held invalid. "One BLM official has noted that the government failed to prevent some sand and gravel claims from being patented for \$2.50 per acre, which were shortly thereafter sold for a thousand times their cost. The only sand and gravel removed was to improve the land for nonmineral use." *Leshy*, *supra* note 30, ch. 5, n.70.

164. For a catalogue of some of the most egregious abuses of the mining law by those intent on obtaining title to federal land because of nonmineral values, see *Leshy*, *supra* note 30, at 110, and cases and other references cited therein.

Miner G can sell his claim to the area residents for any amount greater than \$3,000, it is in his interest to do so. Since the area residents will buy the claim for any amount below \$5,000, there is plenty of room for both the miner and the residents to gain from exchange. At \$4,000, for example, the miner will be \$1,000 richer than if he had mined and the area residents will have acquired the land for \$1,000 less than they would have been willing to pay. But even so, if the cost of negotiating the sale is more than \$2,000 no exchange will occur. Transaction costs will eat up the entire potential gain.

In mining law cases, transaction costs can be expected to be high. In the example we have been using, it might be very expensive to identify all the local area residents who valued the land in question for recreation, and then to negotiate with each of them to determine how much they are willing to pay to keep the land in its natural state and then, assuming agreements could be made, to collect the payment agreed upon from each of the area residents. If these costs are high enough to prevent the transaction, then the abuse of the mining law will result not from Miner G's bad faith intent to use the land for nonmining purposes but, ironically, from his good faith intent to mine it.¹⁶⁵ The highest-valued use of the land is for recreation, but the land will be mined anyway because high transaction costs prevent it from moving to its highest-valued use.

The legislative history of the Common Varieties Act reveals that Congress was concerned with both these types of abuses. Clearly one objective was to remove from the operation of the mining law those minerals that lent themselves most readily to schemes designed to use the mining law to obtain private ownership to public lands for values other than their mineral content.¹⁶⁶

Congress was also concerned with mining claims made in good faith. The Common Varieties Act was passed in 1955. The uranium boom of the early 1950's resulted in greatly increased numbers of mining claims and consequent increased pressure on the public domain as competing surface uses came with accelerating frequency into contact and conflict with

165. The interrelated problems of transaction costs, externalities, and strategic behavior are discussed in this context, but in greater detail, in Braunstein, *supra* note 8.

166. See H.R. REP. No. 730, 84th Cong., 1st Sess. 6 (1955) where the Committee on Interior and Insular Affairs found that:

The ingenuity of American citizens which has made our Nation strong has also operated to develop new and better ways of *abusing public land resources through obtaining color of title under the mining law.*

Some locators in reality, desire their mining claims for commercial enterprises such as filling stations, curio shops, cafes, or for residence or summer camp purposes. . . .

Under existing law, fishing and mining have sometimes been combined in another form of nonconforming use of the public lands: a group of fisherman[sic]-prospectors will locate a good stream, stake out successive mining claims flanking the stream, post their mining claims with "No trespassing" signs, and proceed to enjoy their own private fishing camp. So too, with hunter-prospectors, except that their blocked-out "mining claims" embrace wildlife habitats; posted, they constitute excellent hunting camps.

mining and other subsurface uses.¹⁶⁷ One way to reduce this pressure was to reduce the total number of mining claims, even valid ones. Thus, the Common Varieties Act was passed in recognition that the minerals involved were so widespread and easily accessible that even claims located in good faith, supported by a valid discovery and actually worked for the minerals they contained generally were not worth the social costs incurred in extracting them. These costs were perceived by the Congress as opportunity costs necessarily incurred as a result of the appropriation of public lands to mining. They included the gain that might otherwise have been realized by the United States from the sale of the minerals involved pursuant to the Materials Act of 1947, the value of the surface resources of the mining claim, particularly timber, that would be consumed by mining the claim, the value of the land while owned by the United States for ingress and egress to other public lands and resources and, not least, the value of the land to the public for recreation that would be precluded by mining.¹⁶⁸ Balanced against these costs, the benefit of one more supply of one of the common varieties was found wanting.¹⁶⁹

Both of Congress' objectives in enacting the Common Varieties Act can be achieved if the uncommon varieties exception to the Act is interpreted to require that the deposit in question possess not special and distinct physical *properties*, but special and distinct *value*. Thus, the test for the locatability of a common variety should be: A deposit of a substance which is designated a common variety is nevertheless locatable if the value of the deposit of the substance is greater than the total social cost that will be incurred in mining the deposit. This is to say that a deposit has "special and distinct value" when the anticipated revenue from mining the deposit is greater than the sum of all of the costs of mining, including the opportunity cost¹⁷⁰ of using the land in question for mining rather than some other alternative use that is precluded by mining.

167. See Leshy, *supra* note 30, at 100.

168.

[E]ven on perfectly valid mining claims in national forests, such claims often have the effect, even though unintended, of blocking access to tracts of mature and merchantable Federal timber resulting in waste of this resource and loss to the local and national treasuries.

On nonforest lands, mining locations made under existing law may, and do, whether by accident or design, frequently block access to water needed for grazing on public lands, to valuable recreational areas, and to agents of the Federal Government desiring to reach adjacent lands for purposes of managing wild-game habitat or improving fishing streams so as to thwart the public enjoyment and proper management of fish and game resources on the public lands generally, both on the located lands and on adjacent lands.

S. REP. NO. 544, 84th Cong., 1st Sess. 5 (1955).

169. It might well be true that the benefits derived from a valid common varieties claim are less than the social costs, but this cannot be determined by looking only at the value of the mineral involved. The value of the land in which the mineral is found must also be known. See *supra* text following note 160. Indeed, sand and gravel mining in the United States is more important than gold and silver mining combined. See Table 1. — *Nonfuel Mineral Production in the United States*, II UNITED STATES DEP'T OF THE INTERIOR, MINERALS YEARBOOK 2-3 (1983).

170. The opportunity cost for a given activity is the most valuable alternative that must be foregone in order to engage in that activity. See generally, A. ALCHIAN AND W. ALLEN, EXCHANGE AND PRODUCTION: COMPETITION, COORDINATION AND CONTROL 4 (3d ed. 1983).

The adoption of this test would prevent the abuses about which Congress was concerned in enacting the Common Varieties Act. The claimant who sought to acquire title to federal lands for values other than their mineral content would be easily foiled by this test. The claimant would have to demonstrate that the value of the claimed minerals was greater than the value of the land in which they were found. He would be unable to do this for the very reason that the nonmineral values were greater, which is the reason he wanted the land in the first place.¹⁷¹ The proposed test would also eliminate the waste resulting from good faith mining of land that is more highly valued for nonmining purposes. The miner will have to demonstrate that the anticipated revenue from mining the deposit he has discovered is greater than all costs, including land costs. For this purpose, land costs are defined as the highest-valued alternative to mining that is precluded by mining. Thus, to show special and distinct value the miner will have to show that mining the deposit in question is the highest-valued use of the land in which the deposit is found.

Finally, the suggested test avoids the difficulties that have been observed in applying the test presently used by the Interior Department. Difficult comparisons are avoided altogether. In each case the question would simply be whether the claimed deposit is more valuable than the land in which it is found. If it is, then the deposit should be held to have special and distinct value. If it is not, then no matter what its other physical characteristics, it lacks such value. The need for selecting a background deposit and the difficulty of articulating a rational basis for doing so are entirely avoided.

CONCLUSION

Just as all that glitters is not gold, so all the substances that a physical scientist might classify as mineral are not locatable minerals under the mining law of 1872. This is not the result of ignorance or obstinance on the part of judges and administrators. The definition of mineral for purposes of the mining law must differ from the definition of the geologist for the simple reason that judges and geologists are concerned with different things. The geologist is concerned with studying the physical characteristics of a substance. The judge in mining law cases, however, is concerned with allocating a scarce resource, the public lands and the mineral and other wealth they contain, among all those who are competing for them, including conservationists, preservationists, miners and other developers.

The resolution of this competition depends not on the physical characteristics of the substance that is the focus of the competition, but on policy. If a substance is classified as mineral, it means that it is likely to be mined and that conservationists and others will not have the right to enjoy the lands in which it is found. If it is not classified as a mineral, it means that the substance is not locatable and that miners will not have

171. See *supra* note 169.

the right to profit from its exploitation. Obviously, the outcome of this sort of competition cannot be determined solely on the basis of the chemistry of the substance involved.

Although they do not always articulate it clearly, judges and administrators approach questions concerning the locatability of a substance more on the basis of policy than chemistry or geology. When the question is whether a substance is a mineral within the meaning of the mining law, the courts and Interior Department look to a triad of policy considerations in making the determination. A substance will not be classified a locatable mineral if to do so would (1) disrupt other statutory schemes for allocating the substance among competing uses, (2) result in the overinclusion of unintended substances or lands within the coverage of the mining law, or (3) permit substances whose value is for nonvalidating uses to be claimed under the mining law.

More difficulty has been encountered in determining whether a particular substance has been withdrawn from location under the mining law by the Common Varieties Act. This difficulty derives from a mistake the courts and Interior Department made in interpreting the Act. They interpreted the uncommon varieties exception of the Act to require that a substance have "unique properties" in order to be locatable. Whether something has a unique property depends on what background deposit it is compared to. The courts and Interior Department have been unable to articulate a principled standard to govern the selection of the background deposit, and attempts to do so have led them into a quagmire of inconsistent decisions.

This quagmire could be avoided, and the mining law made less wasteful, if the courts and Interior Department would interpret the uncommon varieties provision to require special and distinct value rather than special and distinct properties. Such an interpretation would be truer to the language of the Act, which speaks in terms of value and not physical properties. Moreover, such an interpretation has the additional advantage of requiring explicit consideration of public policy and interests in deciding common variety cases. Finally, the proposed interpretation would render the mining law less wasteful because a substance enumerated in the Common Varieties Act would be locatable as an uncommon variety only if mining was the highest-valued use of the land in which the substance was found.