

Table 7-3

WATER YIELD MINIMUM QUALITY STANDARDS

Remarks	FISCAL YEAR					Acre-Feet Unit of Measure 3/26/80	
	81	82	83	84	85	84-90 Total for all Years	81-2030 Total for all Years
Coyote High	30,370	30,370	30,370	30,370	30,370	151,850	1,214,800
Coyote Low	30,160	30,160	30,160	30,160	30,160	150,800	1,206,400
Cuba High	30,950	30,950	30,950	30,950	30,950	154,750	1,238,000
Cuba Low	30,740	30,740	30,740	30,740	30,740	153,700	1,229,600
Jemez High	24,550	24,550	24,550	24,550	24,550	122,750	984,000
Jemez Low	24,360	24,360	24,360	24,360	24,360	121,800	974,400
Las Vegas High	35,630	35,630	35,630	35,630	35,630	178,150	1,425,200
Las Vegas Low	35,380	35,380	35,380	35,380	35,380	176,900	1,415,200
Pecos High	101,600	101,600	101,600	101,600	101,600	508,000	4,048,000
Pecos Low	100,920	100,920	100,920	100,920	100,920	504,600	4,036,800
Yesuque High	35,900	35,900	35,900	35,900	35,900	179,500	1,436,000
Yesuque Low	35,670	35,670	35,670	35,670	35,670	178,350	1,426,800
Espanola High	33,000	33,000	33,000	33,000	33,000	165,000	1,320,000
Espanola Low	32,770	32,770	32,770	32,770	32,770	163,850	1,310,800
Totals High	292,000	292,000	292,000	292,000	292,000		
Totals Low	290,000	290,000	290,000	290,000	290,000		
5 Yr. Totals High	1,460,000						11,680,000
5 Yr. Totals Low	1,450,000						11,600,000

VIII. Minerals

A. Policy

Forest Service policy toward mineral activity on National Forest System lands has been undergoing refinement in recent years as a result of many influences. Policy at present is implicit in law, existing policy statements in FSM, statements by the President, the Chief, and others, and the facts of mineral demand and supply. FSM 2800 is now in revision. It is understood that statements similar to the following will be incorporated in the final version:

Minerals are fundamental to the Nation's well-being. The National Forest System by coincidence of geology and geography is a principal storehouse of minerals and energy. The search for and removal of minerals and energy resources are authorized uses of the National Forest System, to be encouraged and facilitated in accordance with the National Mining and Mineral Policy Act and conducted in the public interest. Therefore, the minerals management mission is to:

- Respond positively to proposed mineral and energy activity.
- Include professional assessment of mineral and energy resources in land management plans and decision-making.
- Administer the mineral disposal laws and regulations.
- Acknowledge and accept that mineral production from areas having the capability may well be the highest and best use of the land; that the impacts from responsibly conducted mineral exploration, development and production are relatively short-term effects; and that in the long term the impacts may enhance other resources.

The Forest Service objective is to carry out the mineral area management mission in a fair and timely manner, and, consistent with multiple-use management principles, to integrate the exploration, development, and removal of mineral and energy resources with the use and conservation of other resources.

Forest Service policy toward abuse of the mineral laws, primarily the Mining Law, long has been one of prevention of new cases and resolution of existing ones.

B. Authority

The mineral commodities of the National Forest are available for discovery and exploitation under several different laws, each of which contains its own unique authorities, responsibilities, and procedures. These can be categorized, generally, as laws by which rights to minerals can be established by location (appropriation), by lease, or by sale. The differences are defined by the mineral commodity involved and the status of the land.

All minerals on the public domain, except those specifically subjected to other disposal by Congress, are subject to appropriation by the location of mining claims under authority of the 1872 Mining Law. That law was a grant of a right by Congress for individuals to go on the public domain, search for, extract and process minerals to use surface and surface resources necessary to those activities. In carrying out its responsibilities for protection and management of the National Forests, the Forest Service is not authorized to interfere with that right; it only can assure that the mineral activities do not cause unreasonable or unnecessary surface resource disturbance.

The major leasable commodities on reserved public domain land are: oil, gas, oil shale, coal, geothermal resources, potassium, phosphate, and salines. For these the Forest Service recommends to the BLM whether the commodity should be leased and under what surface-protective conditions. On land with "acquired" status and for geothermal resources it determines, rather than recommends, on these same points.

Privately-owned minerals beneath National Forest surface are subject to State laws and to such provisions as are specified or implied in the deeds which separated mineral and surface. Through the latter the Forest Service is involved in surface resource protection during exploitation of privately-owned minerals.

C. National Needs and State Production

Annually, about 11 tons of newly-produced non-fuel minerals and 9 tons of energy minerals are used by or on behalf of each person in the United States. Much of it comes from within National Forest boundaries and in future the National Forest share is expected to grow considerably.

New Mexico has a long history of mining and a large variety of mineral commodities. It is a major producer of both energy minerals and non-fuel minerals, with important production of coal, petroleum products, natural gas, uranium, potassium salts, perlite, copper, and molybdenum. About 5.6 percent of the State's workforce is employed directly in the mineral-extraction industry and they account for about \$500 million of its payroll. It ranks first in the State's income sources; about 25 percent greater than manufacturing and 5-times greater than agriculture. Manufacturing itself, is about 20 percent mineral-related.

New Mexico is the nation's leading producer of uranium; accounting for nearly half its annual production and exceeding its nearest competitor, Wyoming, by about 50 percent. It also is the leading producer of potash and perlite; ranks third in copper; and fourth in pumice. Taken together these five account for about 20 percent of the State's total mineral production. And although coal, natural gas, and petroleum do not rank extremely high nationally, they are responsible for about 75 percent of New Mexico's mineral production value.

D. Minerals on the Santa Fe National Forest

Both energy minerals and non-fuel minerals are present in, and have been produced from, the Santa Fe National Forest. Interest in the location and production of them is expected to continue and to increase.

1. Locatable-Precious Metals

Gold and silver have been found and produced from the Bland area, and along the Pecos and upper Santa Fe Rivers and their tributaries. The elevated price of gold and silver is expected to revive interest in those areas and in others.

2. Locatable - Base Metals

Copper, lead, and zinc sulfides with accompanying gold and silver have been found at the Pecos mine in northwest San Miguel County and at La Bajada.

An expanded discovery in the central Pecos River drainage is expected to result in mining, starting in the latter 1980's. The prospecting impetus from this recent discovery will affect the Pecos District and a small part of the Las Vegas District.

Copper mining east of Cuba has been intermittent, fluctuating with the price of copper. Exploration extends to portions of both the Coyote and Cuba Districts.

3. Locatable - Uranium

Uranium occurrences are known in or near the forest in the vicinity of Coyote. Continuing, perhaps intermittent, exploration is expected.

4. Leasable - Uranium

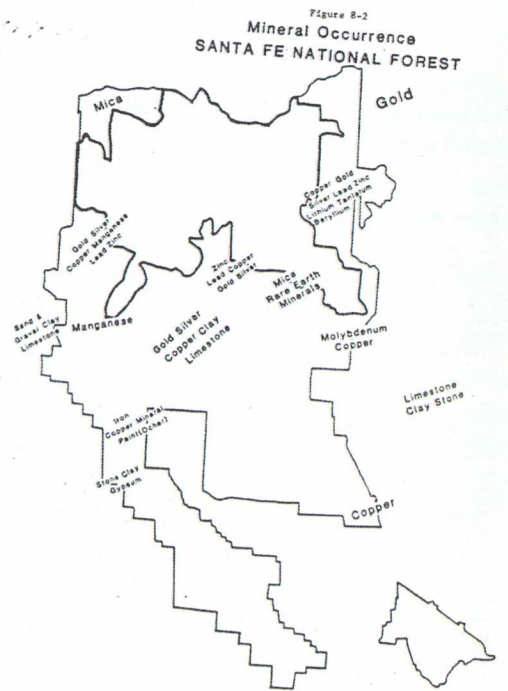
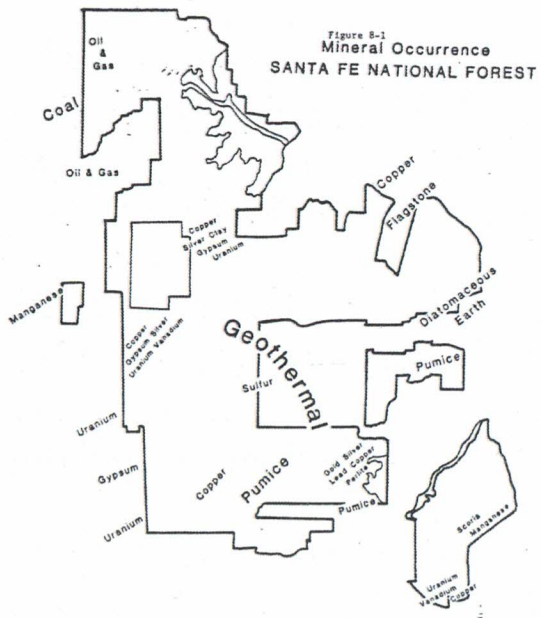
Uranium is known to occur on the Tesuque District near La Majada on acquired lands. The mineral rights were acquired with the surface.

5. Leasable - Oil and Gas

Oil and natural gas are produced on the north end of the Cuba District in the San Juan Basin. The search for additional resources is beginning to expand to the Coyote and Tesuque Ranger Districts, and will continue.

6. Leasable - Coal

Coal of relatively high quality occurs on the extreme west side of the forest, but at depths great enough to make it economically unattractive for several decades. Minor occurrences of low quality coal which outcrop within the



boundary of the Forest will be of interest for local consumption and will result in small scale activity.

7. Leasable - Geothermal

The U.S. Geological Survey (USGS) has classified an area of about 175,000 acres as the Baca Known Geothermal Resource Area (KGRA) centered on the Valles Caldera and privately-owned Baca Location No. 1 (a land grant of approximately 100,000 acres). The KGRA surrounding the Baca Grant is about 52,000 acres of National Forest and 23,000 acres of intermingled private holdings. Federal geothermal resources within the KGRA are available by competitive bid; outside the KGRA they are subject to non-competitive leasing.

A Forest Service Environmental Statement on Geothermal Leasing has been prepared for National Forest lands in the Jemez Mountain division of the Santa Fe National Forest. (This statement is available for review at the Forest Supervisor's Office.) It covered the KGRA and a portion of the 497,000 acres (gross) identified by the USGS as Prospectively Valuable for Geothermal Resources. On the basis of the Statement certain portions of the KGRA have been offered for competitive leasing and have been leased. Applicants for non-competitive leases adjacent to the KGRA have been granted leases. Other non-competitive applications remain to be addressed.

The USGS has estimated a geothermal energy resource potential of 2000 megawatts for the KGRA and adjacent areas. Development companies have estimated that half of that could be available for electric transmission by the year 2000. Thus far, the resource has been tested only in the Baca Grant. The discovery there of a resource capable of development, has led to interest in exploration activity in nearby leased areas. Continued success would be expected to result in ever-widening interest in the non-competitive lease areas, private lands, and privately-owned mineral rights.

Within the Baca Grant, a hot-water-dominated resource has been proven capable of producing steam to power a 50 megawatt electrical generating plant, with production of 150 megawatts possible by the mid-1990's. An Environmental Impact Statement for these geothermal operations and the associated 115 KV transmission lines has been prepared by the Department of Energy. Assuming that the geothermal potential of the area actually can be developed, Public Service Company of New Mexico has envisioned two 345 KV transmission lines in separate powerline corridors from the Valles Caldera Area to existing transmission lines located outside of the National Forest. Such lines would be needed between the years 1995 and 2000 to handle geothermal electric energy development within the KGRA and non-competitive lease areas. Proposed power plant size is expected to be 50/100 megawatts, with plant locations corresponding to systematic collection of energy from geothermal well sources.

Thus by the year 2000, the 1,000 megawatt potential could be reached with developments consisting of:

- two 345 KV transmission lines and corridors;
- one 115 KV transmission line and corridor;
- ten to twenty 50/100 megawatt power plants;
- 150 to 300 geothermal wells;
- associated pipelines and structures.

At Fenton Hill, west of the Valles Caldera, Los Alamos Scientific Laboratory and others are doing research in utilizing the energy in hot-dry-rock, seeking practical ways to convert the heat to electricity through the steam produced from water introduced into the hot rock. This effort will be experimental for many years. A 10 megawatt generating plant is envisioned as part of the experiment.

8. Salable-Common Variety Materials

Pumice mining is active in the Jemez Mountains south of the Baca Location No. 1, and west of Espanola. Most of the production goes into building block. Minor quantities are used in the manufacture of paints and toothpaste. The Jemez and Espanola Districts share this activity. It is not anticipated that the other Ranger Districts will be involved with commercial pumice operations.

Permits for common variety materials, sand, gravel, rock, flagstone, etc., are issued forest-wide. Road construction creates much of the local demand.

9. Reserved Minerals

Mineral rights are held in private ownership on several thousand acres where the United States has surface ownership. In such cases the Forest Service must allow surface uses necessary to mineral exploration and production, and has limited authority to constrain the methods. Geothermal interest in the vicinity of the Valles Caldera has extended to the San Diego Grant, an area of about 88,000 acres in which the Forest Service has only surface ownership. Lessees of the mineral owner have plans for geothermal exploration.

10. Mineral Withdrawals

All land is considered to be available for mineral search and development unless withdrawn from operation of the various mineral disposal laws. The Federal Land Management and Planning Act requires a review by November 12, 1991, of all existing withdrawals. Only those withdrawals which meet the criteria of that Act, under which new withdrawals are judged, will continue.

Less than 10 percent of the Forest is in outstanding or reserved mineral right or existing withdrawals. Over the next 11 years, many of the withdrawals will be revoked. Withdrawals are accurately portrayed in the Forest or District status book and are continuously updated.

E. Historical Production - Last 10 Years

Exact figures are not available, but the Carson and the Santa Fe National Forests share about equally in the production of approximately 107,000 barrels of oil, and 9,570,000 MCF of gas each year. Over the last 10 years these figures have been, more or less, constant. The prediction is that the same production will be firm or perhaps slightly increased over the next 10 years.

After 1990, the prediction is that as each 10 year period passes, production may be decreased by 50 percent until recoverable supplies are exhausted in presently known fields.

Other production in the last 10 years includes copper and pumice. The copper production could be rated insignificant. The pumice production was significant enough to meet regional building trade demand (building blocks) and some minor uses. Other production such as sand, gravel, and crushed rock is important to the construction industry.

F. Current Targets

Current targets are to expedite processing of all leasing proposals and plans of operation so as to minimize delays in energy mineral development. The current expected workload is 213 cases of energy-mineral related actions. These actions will take place principally on Ranger Districts in the Western Division of the Forest. As funds are available, one or two abandoned mine workings will be rehabilitated each year to reduce hazards and halt environmental degradation.

G. Current Direction

The Forest Service function primarily is to assure that disturbance of surface resources is minimized, regardless of the authority under which a mineral activity may be conducted.

Current direction is to manage and maintain a development program of all mineral resources needed for the National well being. This includes compliance with 36 CFR 252 by operators and the Forest Service; assuring full coordination and support with other resources; ending mineral related trespass; abatement of degradation to the environment from abandoned mine workings, and securing compliance with reclamation stipulations in operating plans.

This direction crosses all time periods to the year 2030. Forest Service direction is compatible with leasing practices and lease administration of the Bureau of Land Management and is in accord with administration of operations by the U.S. Geological Survey.

TABLE 8-1
MINERALS - SANTA FE NATIONAL FOREST

Minerals	Occurrence or Probability	Acres Involved
Oil and Gas	High; primarily Cuba District.	250,000±
Geothermal	High; in vicinity of Baca Location.	100,000±
Precious Metals	Low; in vicinity of Bland.	1,500±
Base Metals	Moderate; primarily Pecos and Cuba Districts	200,000±
Uranium	Moderate; primarily Coyote District; also Tesuque District	100,000±
Common Varieties	High; Forest-wide.	30,000±

Inventory of Active Mines

1. Copper Mining - East of Cuba, New Mexico. Actual activity fluctuates as price of copper fluctuates.
2. Pumice Mining Continuous on Jemez District and Espanola District.
3. Sand, gravel, rock, and crushed rock. Minor operations Forest-wide at times when needed.

Inventory of Known Potential Mines

1. Uranium Mining - SW of Santa Fe.
2. Base and Precious metals - North of Pecos.
3. Coal - North of Cuba (long range prospect).
4. Humate - NE of Cuba.
5. Pumice - Referred to above in active mining.
6. Gypsum - Random Forest locations.

H. Condition of the Forest If Present Direction is Continued to 2030.

Minerals activity on the Forest will increase as energy related minerals are developed on the western division, and as the large locatable-mineral discovery on the eastern division is developed. Both are showing strong beginnings. Surface-use stipulations are adequate to protect surface resources, and to provide reclamation of disturbed areas such that renewable resources may be re-established, and again support forest productivity. Careful planning of mining activity, close management of other resource coordination and reclamation will leave the Forest in a good and acceptable condition without a great reduction in its level of productive capability.

The acreage withdrawn from mineral entry will increase over time to 2030 from development of new recreation sites, Native American Religious sites, Archeological and Historical sites nominated to the National Register of Historic Places, further entry in designated wildernesses after the cut-off date of December 31, 1983, the Santa Fe Municipal watershed, Electronic sites, Administrative Sites, and Monument Canyon Research Natural Area. These expected and potential withdrawals will not reduce commodity production any significant amount because their area does not contribute materially to it. Some existing withdrawals may be lifted such that the overall effect of withdrawals is mitigated.

I. Capability to Resolve Issues and Concerns

Issues and concerns derive principally from the larger, long-term impacts expected from development of mineral resources. During the public involvement phase, a few people expressed concerns over mining activities on the Forest. Generally, these people felt that tight controls should govern mining operations and that no mills should be built on the Forest.

Mineral activities, especially on the lessables, are subject to Federal and State regulations. Activities related to locatables are guided by regulations agreeable to the industry and the Forest Service. Issues and concerns related to environmental impacts, therefore, are capable of resolution in a reasonable and satisfactory manner. Forest environments affected by mineral activities while not identical with their previous condition, will not have been destroyed by the activity, and are capable of continued production of amenity and commodity values during and after the activity.

J. Capability to Meet Targets

The capability to meet targets is inherent in the program planning and budgetary system of the Forest Service. Administrative capability appropriate with known and foreseeable minerals activities is planned two years ahead of the need. This means having the managers to administer the case-load. Close coordination between the Forest Service and mineral developers on current and future activities provides the basis for having on hand the capability to meet administrative requirements as programed.

K. Research Needs

Drought resistant species - plants - for revegetation use; recycling of water systems used in powdered coal transportation.

Mass production of economical man-made topsoil substitute(s).

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