

From: David Everist
To: [SENR Exhibits](#)
Subject: Regulations And DEQ EVIDENCE
Date: Tuesday, March 21, 2017 1:38:40 PM

Hollow TO committee I reject Bill SB3 BILL 897 BILL 2705,1706 THESES OUR MINING DISTRICTS ISSUES to coordination GOVERNMENT'S TO GOVERNMENT'S WE THE MINING DISTRICTS SUMMIT TO COORDINATE MINING DISTRICTS ISSUES WE HAVE INVESTED PRESIDENT TRUMP TO COME COORDINATE MINING ISSUES LIKE THESES MINING ISSUES SIGN BY DAVID D EVERIST SECRETARY OF MINING DISTRICT LOCAL GOVERNMENT WITH HOME RULE AND MINING DISTRICTS MAKE THE RULES

From: David Everist
To: [SENR Exhibits](#)
Subject: Regulation DEQ EVIDENCE
Date: Tuesday, March 21, 2017 2:05:27 PM
Attachments: [EthicalViolationsAndMisconductByBLMOfficials_Public \(2\).pdf](#)
[e1fd8f256cbc5cefb421364232bf09dc.pdf](#)

**Hollow TO who is in charge I Am against SB Bill 3 BILL 897 1705,1706 UNDER MINING
GRANT OF MINING DISTRICT LOCAL GOVERNMENT WITH HOME RULE AND
MINING DISTRICTS MAKE THE RULES USC 30 SECTION 28,28f**

From: [Sen Dembrow](#)
To: [SENR Exhibits](#)
Subject: FW: Regulation of DEQ AND emviornmently
Date: Tuesday, March 21, 2017 3:35:16 PM
Attachments: [Executive Order 10997 ASSIGNING EMERGENCY PREPAREDNESS FUNCTIONS TO THE SECRETARY OF THE INTERIOR.html](#)
[PublicHearingSubmissions_File4_of_4_\(2\).pdf](#)
[03-13-13 WBS Min.pdf](#)
[16-970 Rinehart v. California AC Brief FINAL\(1\).pdf](#)
[The General Mining Act of 1872.pdf](#)

LG

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Logan Gilles
Chief Policy Advisor

State Senator Michael Dembrow
District 23 (NE & SE Portland)
503.986.1723 | [@michaeldembrow](#) on twitter

From: David Everist [mailto:twincedarminingdistrict.llc@gmail.com]
Sent: Tuesday, March 21, 2017 3:29 PM
To: Sen.MichaelDembrow@state.or.us
Subject: Regulation of DEQ AND emviornmently

Hollow to the ChairMan I HAVE SOME PDF FILES TO SHARE IN TO THE RECORDER I STAND AGAINST SB BILL 3 AND BILL 987 BILL 1705,1706 BASE MINING GRANT OF 1872 USC 30 SECTION 21 THOUGH SECTION 54 AND LOOK SECTION 28,28 F FOR MINING DISTRICTS MAKE THE RULES UNDER LAW OF GRANT AND TRUST I STAND FOR MINING RIGHTS, PROPERTY RIGHTS I STAND FOR WATER RIGHTS AND THESES REMAIN UN IN CUMBER SIGN BY DAVID EVERIST SECRETARY OF MINING FOR TWIN CEDAR MINING DISTRICT WITH HOME RULE MINING DISTRICTS MAKE THE RULES

From: David Everist
To: [SENR Exhibits](#)
Subject: Re: state laws and DEQ, EPA Regulation
Date: Tuesday, March 21, 2017 10:31:51 PM
Attachments: [INVATION TO PRESIDENT Trump and MINING SUMMIT.pdf](#)
[rare earth.pdf](#)

I TWO MORE FILE FOR RECORDER DAVID D EVERIST SB BILL
3 BILL 897 BILL 1705,BILL 1706 I STAND FOR MINING RIGHTS PROPERTY RIGHTS
AND WATER RIGHTS

On Tue, Mar 21, 2017 at 10:25 PM, David Everist <twincedarminingdistrict.llc@gmail.com>
wrote:

HOLLOW SENR EXHIBITS I HAVE SOME FILES ARE FOR THE RECORDER
THESES SB BILL 3 BILL 897 BILL 1705,1706 ALL FILES FOR ALL BILL

On Tue, Mar 21, 2017 at 7:41 AM, David Everist <twincedarminingdistrict.llc@gmail.com>
wrote:

HOLLOW SENR EXHIBITS I AM STANDING AGAINST BILL 1705, 1706 AS THE
MINING LAWS OF UNITED STATES AND OREGON WATER RIGHTS MINING
DISTRICTS MANGES WATER RIGHTS FOR MINING ISSUE THE MINING
GRANT,LAW WATER RIGHTS AS SENT YOU MINING LAW SIGN BY DAVID D
EVERIST SECRETARY FOR TWIN CEDAR MINING DISTRICT LOCAL
GOVERNMENT WITH HOME RULE AND MINING MAKE THE THE RULES USC
30 SECTION 28,28F COVER MINING DISTRICTS

On Mon, Mar 20, 2017 at 5:53 PM, David Everist <twincedarminingdistrict.llc@gmail.com> wrote:

I ADJECT TO BILL 897 AND THIS VERY BAD FOR COMMUNITY DO FACT
THERE ROUND 40,000,000, TO 68,000,000 IN LOST REVENUE FOR SOUTH
WEST NORTHERN EASTERN OREGON SIGN BY DAVID D EVERIST
SECRETARY OF MINING FOR TWIN CEDAR MINING DISTRICT LOCAL
GOVERNMENT

On Mon, Mar 20, 2017 at 5:40 PM, David Everist <twincedarminingdistrict.llc@gmail.com> wrote:

HOLLOW SENR EXHIBITS THIS BILL SIGN BY DAVID D EVERIST
SECRETARY MINING FOR TWIN CEDAR MINING DISTRICT LOCAL
GOVERNMENT

On Mon, Mar 20, 2017 at 11:05 AM, SENR Exhibits
<SENR.Exhibits@oregonlegislature.gov> wrote:

Mr. Everist,

To be able to accept your testimony for the public record it needs to be attributed to a bill that is *scheduled* for an upcoming public hearing in the Senate Environment and Natural Resources committee. Please let me know what bill your documents should be attributed to.

Respectfully,

Shelley RaSzka | executive Support Specialist

[Legislative Policy and Research Office](#)

Oregon State Capitol

900 Court St Ne Rm. 347

Salem, OR 97301

[503-986-1502](#)

[Senate Committee on environment & Natural Resources](#)

From: David Everist [mailto:twincedarminingdistrict.llc@gmail.com]

Sent: Sunday, March 19, 2017 1:52 PM

To: SENR Exhibits <SENR.Exhibits@oregonlegislature.gov>

Subject: state laws and DEQ, EPA Regulation

HOLLOW TO COMMENT FOR THE RECORDER AND LOOK UP USC 30
SECTION 28,28F

WEEKLY BUSINESS SESSION March 13, 2013, 5:30 p.m.

Anne G. Basker Auditorium
604 N.W. Sixth Street, Grants Pass, OR 97526

Present: Simon G. Hare, Chair; Cheryl Walker, Vice-Chair; and Keith Heck, Commissioner; Kim Kashuba, Recorder

These are meeting minutes only. Only text enclosed in quotation marks reports a speaker's exact words. For complete contents of the proceeding, please refer to the audio recording.

Pursuant to notice through the media and in conformance with the Public Meeting Law, Simon Hare, Chair called the meeting to order at 5:30 a.m. Items discussed were as follows:

BOARD DECISIONS UNDER ADMINISTRATIVE ACTIONS WERE MADE AFTER PUBLIC COMMENT WAS RECEIVED

1. ADMINISTRATIVE ACTIONS IN CONSIDERATION OF:

a. Approval of Order 2013-014 and Report and Recommendation for the Road Closure of Sunny Valley Loop Road during the Restoration of the Grave Creek Covered Bridge (Bridge No. 141005)

Chuck DeJanvier, Public Works, explained that the traffic diversion is necessary while structural cracks in the bridge are repaired.

2. REQUESTS/COMMENTS FROM CITIZENS:

Robert Stumbo, Wolf Creek, stated he had a recent DOGAMI study of the minerals in Josephine County and provided a copy to the Board (**Exhibit A**).

David Everist, Josephine County, submitted and read **Exhibit B**, "Demand for Coordination" and "Claim of Exclusive Possession" regarding his mining claim.

Sandi Cassanelli, Merlin, asked Commissioner Walker to explain the levy information provided to the Grants Pass City Council and advised that the link on the Assessor's website that calculates taxes was not working.

Mark Seligman, Selma, submitted **Exhibit C**, a flyer promoting a "No" vote on the levy, and spoke in opposition to a proposed Board policy regarding recording devices at Public Meetings.

Dale Matthews, Grants Pass, spoke about the harassment complaint filed against him by a County employee and disparaged the Commissioner he believed motivated the filing of that complaint.

Rycke Brown, Grants Pass, submitted and read **Exhibit D** regarding the current structure and broadcast of the Board's public meetings.

Guenter Ambron, Cave Junction, submitted **Exhibit E**, spoke about his neighborhood watch group, and invited the Board to a town hall being held March 21 regarding crime in Josephine County.

Judy Ahrens, Grants Pass, urged the Board to allow everyone an opportunity to speak, submitted **Exhibit F** and spoke about "Agenda 21."

Larry Ford, Grants Pass, spoke in opposition to land trusts and advocated an extension of SRS payments.

Board Action on Agenda Item 1(a)

Commissioner Walker made a motion to approve Order 2013-014 and Report and Recommendation for the Road Closure of Sunny Valley Loop Road during the Restoration of the Grave Creek Covered Bridge (Bridge No. 141005), seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes. One original each of Order and Report and Recommendation signed and retained for recording.

3. CONSENT CALENDAR:

Commissioner Hare briefly described the Consent Calendar items, stating they had been vetted at last week's Administrative Workshop Meeting

a. Approval of Minutes

County Administration Workshop – February 7, 2013
Legislative Phone Conference – February 26, 2013
General Discussion – February 26, 2013

b. Approval of Personnel Action, Public Health, WIC Breastfeeding Peer Counselor

One original Personnel Action signed and returned to Human Resources.

- c. **Approval of Personnel Action, Public Health, Replace Existing Classification – Sr. Administrative Supervisor** One original Personnel Action signed and returned to Human Resources.
- d. **Approval of License Agreement to Locate Improvements in a Public Right of Way**
One original Agreement signed and returned to Public Works for recording in Title Deeds.
- e. **Approval of Resolution 2013-018 In the Matter of a Reappointment to the Josephine County Parks Board**
One original Resolution signed and retained for recording.
- f. **Approval of Resolution 2013-020 In the Matter of an Appointment to the Josephine County Rural Planning Commission** One original Resolution signed and retained for recording.
- g. **Approval of Order 2013-012 In the Matter of Appointments to the Compensation Board for County Elective Officers Designation of Board Members** One original Order signed and retained for recording.

Board Discussion & Action:

Commissioner Walker made a motion to approve Consent Calendar Items 3(a) through 3(g) as listed, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes

4. OTHER:

None reported.

5. MATTERS FROM COMMISSIONERS:

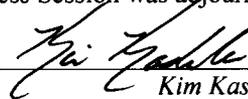
Commissioner Walker advised that the Board was diligently following several pieces of proposed legislation, some of which would be detrimental to Josephine County.

Commissioner Heck expressed his gratitude that we live in a country where we can safely agree to disagree. He also discussed a letter he received from a veteran relaying his positive experience with VSO Lisa Shipley.

Commissioner Walker announced that several informational presentations on the proposed levy would be scheduled in the near future.

Commissioner Hare commented on a response received from proponents of the Oregon Caves Monument expansion, and stressed the lack of forest management already in the protected area. Commissioner Walker added that the U.S. Forest Service's budget was \$600,000 short of being able to care for the monuments they already have. Other data she discovered was that Josephine County is the most fire prone County in the state, largely due to such insufficient forest management practices.

Weekly Business Session was adjourned at 6:29 p.m.



Kim Kashuba, Recorder

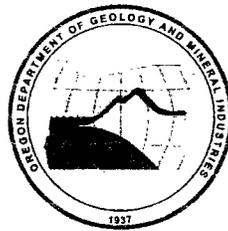
Entered into record:

- Exhibit A – DOGAMI Study from Robert Stumbo**
- Exhibit B – “Demand for Coordination” from David Everist**
- Exhibit C - “Vote No on Levy” flyer, from Mark Seligman**
- Exhibit D - Statement from Rycke Brown**
- Exhibit E - Neighborhood Watch group report, from Ambron**

SCOPING OF MINERAL POTENTIAL: PROPOSED ROGUE WILDERNESS AREA ADDITIONS

Josephine, Curry, Douglas, and Coos Counties,
Oregon

By Clark A. Niewendorp



2012

**Scoping of Mineral Potential:
Proposed Rogue Wilderness Area Additions
Josephine, Curry, Douglas, and Coos Counties, Oregon**

Summary of the Rogue Wilderness Area Expansion Act of 2011

The Rogue Wilderness Area Expansion Act of 2011 (the Act) would add specified federal land managed by the Bureau of Land Management (BLM) to the Wild Rogue Wilderness as a component of the National Wilderness Preservation System (NWPS). It amends the Wild and Scenic Rivers Act to add specified segments of creeks to the designation of the Rogue River in Oregon as a component of the national wild and scenic rivers system. The Act also prohibits (1) the Federal Energy Regulatory Commission (FERC) from licensing the construction of any dam, conduit, reservoir, powerhouse, transmission line, or other project works affecting specified stream segments; and (2) any federal department or agency from assisting in the construction of any water resources project affecting any such segment, except for maintaining or repairing existing projects. In effect, all 143 miles of originally proposed Wild and Scenic Rivers and adjoining lands within the proposed Wild Rogue Wilderness would be withdrawn from mineral entry (Figure 1).

Introduction

The Oregon Department of Geology and Mineral Industries (DOGAMI) has prepared this mineral scoping report that summarizes the mineral resources of the proposed Rogue Wilderness Area Additions (RWAA) in Josephine, Curry, Douglas, and Coos Counties, southwestern Oregon. This land is managed by the BLM.

This report describes the proposed RWAA in terms of identified mineral occurrences, mineral resource potential, mining activity, and mineral setting (if applicable). Understand that this type of scoping report is tenuous and based solely on literature searches. It does not include field studies for data collection, and at best, only provides a low-level of detail for mineral assessments as prescribed in BLM Manual 3031. No attempt is made in this report to assess the development potential of any identified mineral resource, nor recommendations on the management of the mineral resources.

For the convenience of the reader, this document is divided into the following four sections:

- Part I describes the RWAA's location and geologic setting.
- Part II is the text describing the outcome of the desktop assessment.
- Part III is this study's reference list, followed by Appendix (Part IV). The latter gives a brief description of the methodology and limitations of the study, along with the definitions for the Levels of Resource Potential and Levels of Certainty.

Part I Location

The proposed RWAA is approximately 30 miles by road northwest of Grants Pass and is bisected by the Rogue River. Its dimensions are about 18 mi long from northwest to southeast, and as much as 12 mi at its widest, extending from the eastern edge of the Wild Rogue Wilderness in the northwest, to near the town of Galice to the southeast (Figure 1). The proposed RWAA occupies an area of about 91 sq mi or 58,100-acres of O&C lands (acronym for Oregon and California Revested Grantlands) covered by parts of the Dutchman Butte, Kelsey Peak, Bunker Creek, Mount Reuben, Hobson Horn, Mount Peavine, and Galice 7.5-minute quadrangles. The areas of the proposed RWAA would be permanently withdrawn from mineral entry, along with one-quarter mile on each side of 141.1 nautical miles of Rogue River tributaries, if the Act is adopted.

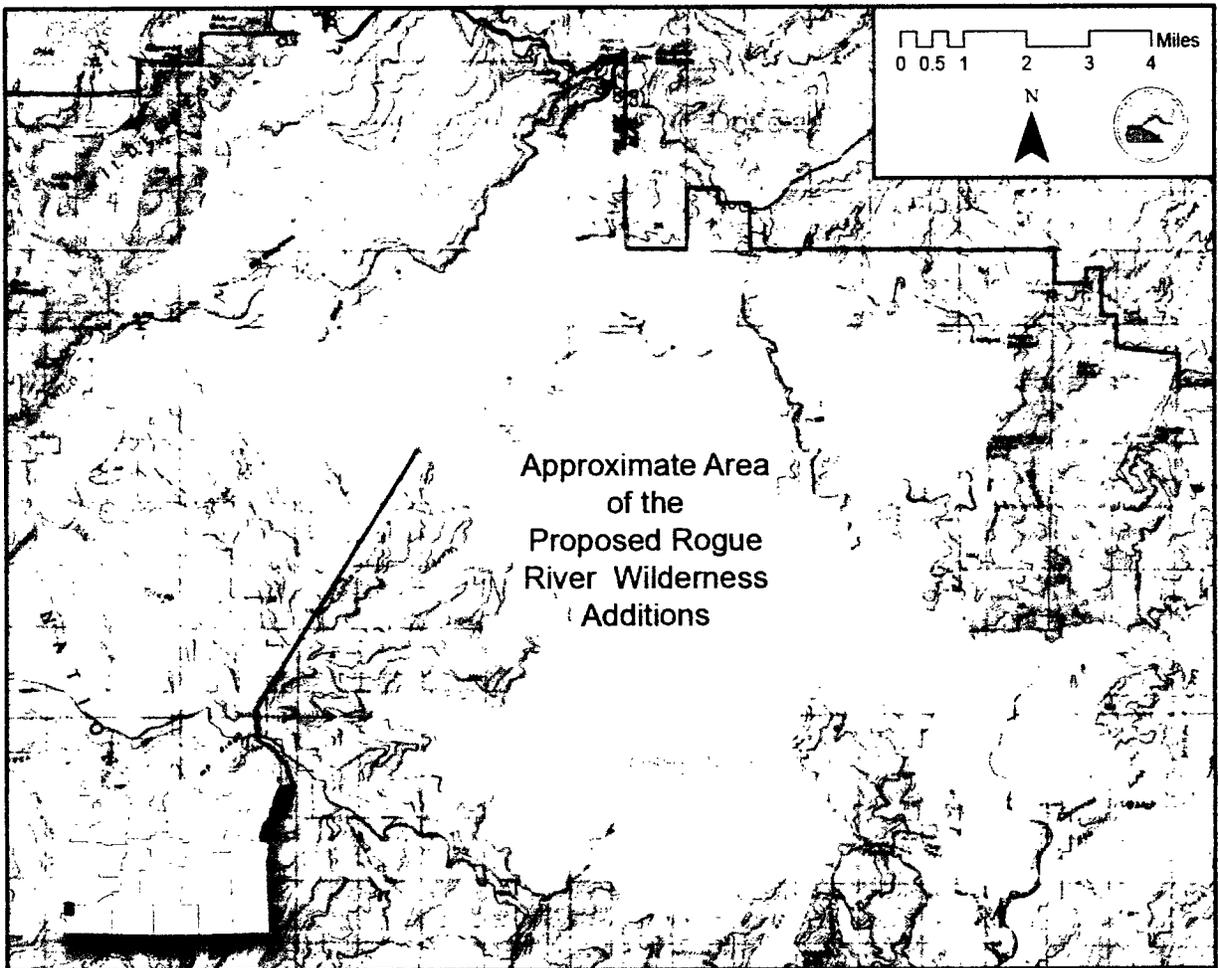


Figure 1: Location of the approximate area of the proposed Wild Rogue Wilderness Area Additions (orange) which includes the proposed Scenic River Additions (not delineated), southwestern Oregon (not an official map of the proposed RWAA)

Geology Pertaining to Mineral Resource Assessment

Previous geologic studies in area of the proposed RWAA were done by Wells and Walker (1953) and later by Ramp and others (1977), Smith (1982), Ramp and Peterson (1979), Gray and others (1982), and Ramp (1986). Resolution of their geologic mapping is 1:48,000-scale to 1:125,000-scale. Understand that geologic maps at these small scales only provide a crude characterization of the mineral setting/geology, and consequently for mineral scoping purposes the geologic mapping available is not ideal.

The proposed RWAA lies within the Western Klamath Mountains geologic province of southwestern Oregon (Figure 2). This geologic province is an assemblage of accreted terranes (and individual subterranes) separated from one another by faults that mark ancient subduction zones or shear boundaries. According to Yule and others (2000), the geologic history here reveals a period of Late Triassic and Jurassic ophiolite and oceanic-arc formation followed by Middle Jurassic terrane accretion, tectonic mélangé formation, and continued oceanic arc magmatism.

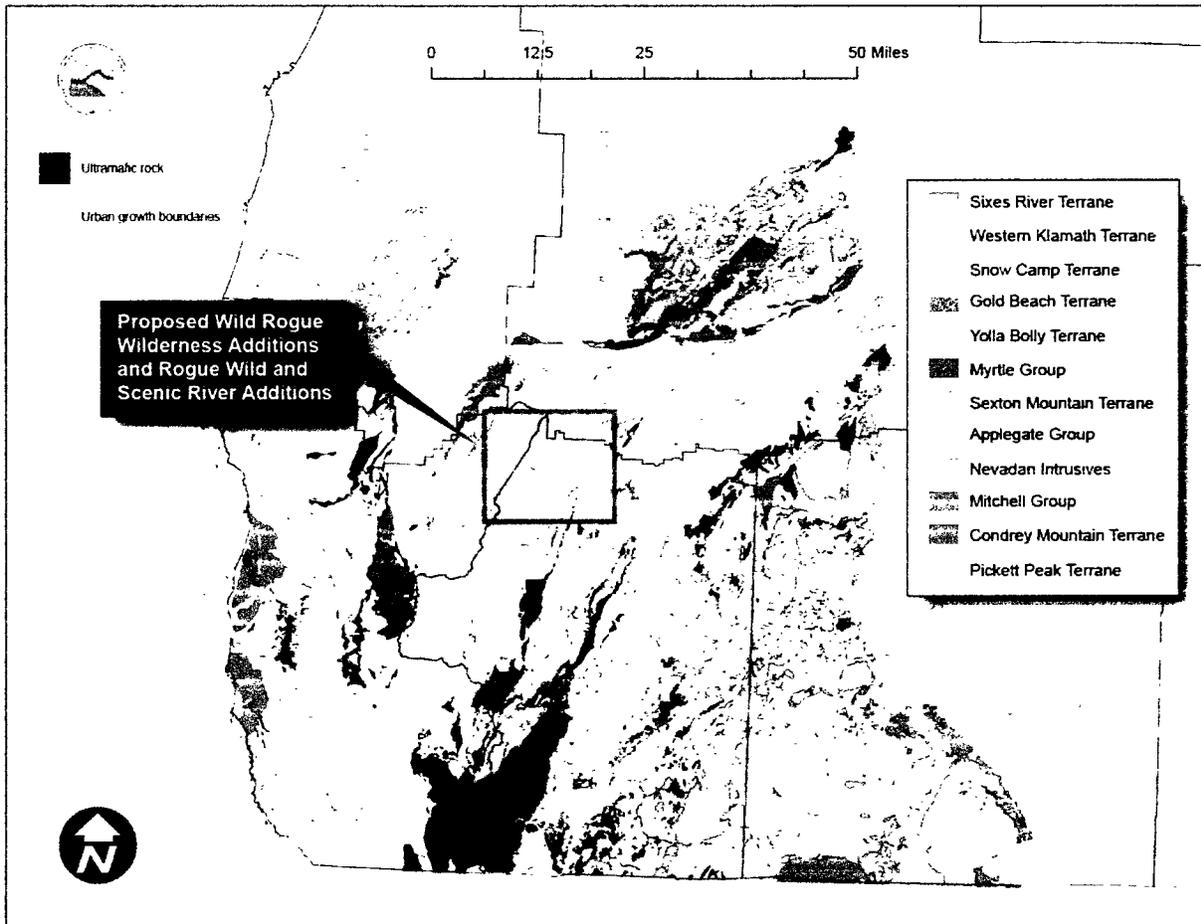


Figure 2: Location of the proposed Rogue Wilderness Area Additions in the Western Klamath Mountains geologic province of southwestern Oregon (modified after Ma and others, 2009)

As can be seen in Figure 3, Pre-Tertiary igneous rocks of the Western Klamath Terrane cover about a third of the proposed RWAA. Western Klamath Terrane is a term applied by Ma and others (2009) to the sequence of fragmental metavolcanic rocks and volcaniclastic metasedimentary rocks (Rogue and Galice Formations, respectively) that lie east of the sedimentary rocks of the Jurassic and Cretaceous age Dothan Formation of the Yolla Bolly Terrane.

Thrust faulting juxtaposed the boundary between these terranes. In the RWAA, thrust faults and faulting occupies an area bounded generally by Whisky Creek and a line running southwesterly across the Rogue River and into Howard Creek.

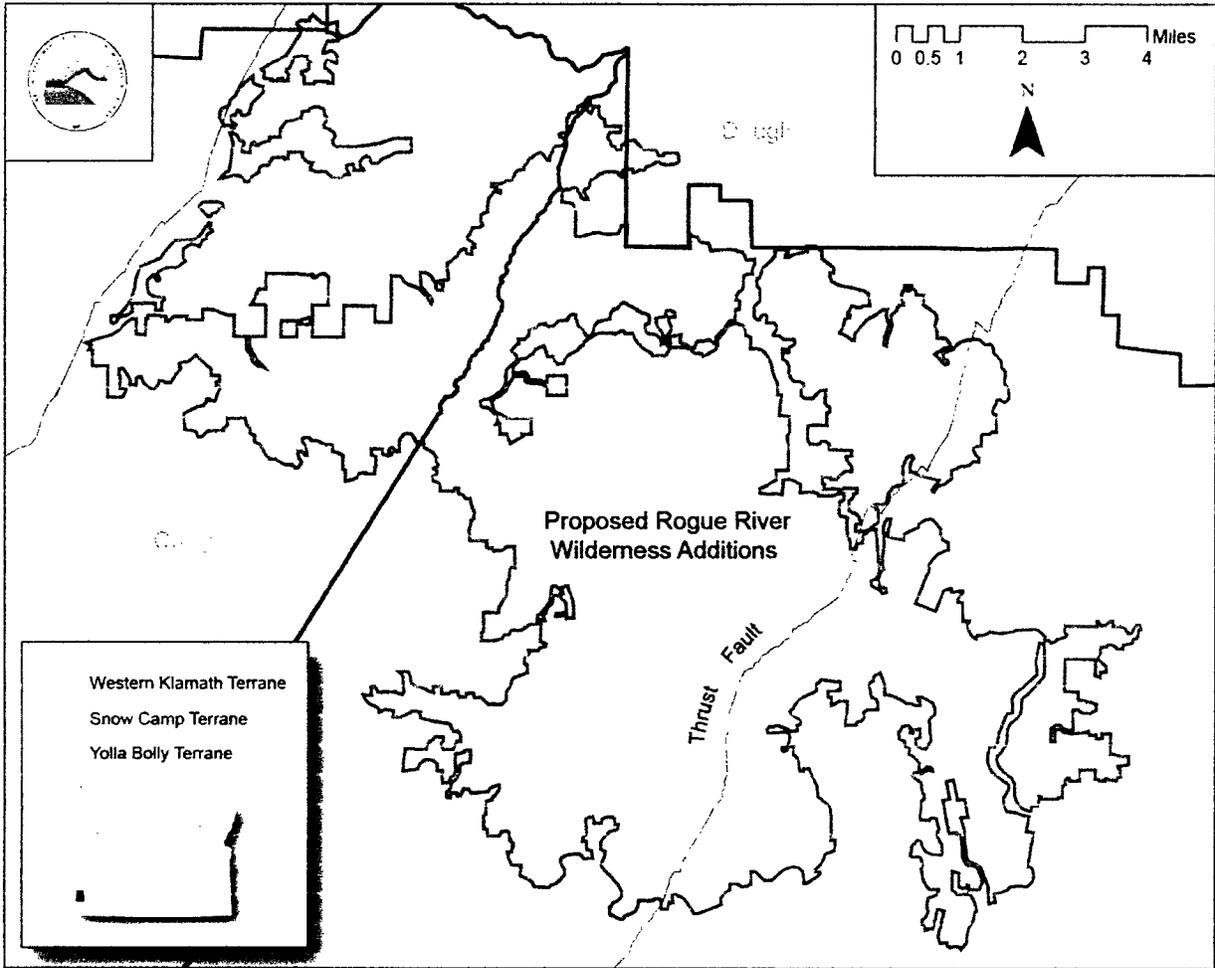


Figure 3: Simplified geologic terrane map (Ma and others, 2009) of the proposed Rogue Wilderness Area Additions (outlined in green)

Rocks in the Western Klamath Terrane consist of serpentine (notably along major shear zones), hornblende gabbro, diorite, quartz diorite, amphibolite, and related rocks, together with

greenstones (metavolcanic rocks) which include meta-andesites, altered basic lava, and andesitic tuff (Figure 4). Some schist are found associated with the metavolcanic rocks. The Dothan Formation consists of massive and thin-bedded sandstones, siltstone, and shales, together with a few chert lenses, lenticular beds of conglomerate, and a few lava flows. A lower greenschist facies assemblages pervades most of the rocks exposed in the proposed RWAA. However, areas of high-grade metamorphism (e.g. amphibolite gneiss) are in fault contact with the less altered rocks (Figure 4).

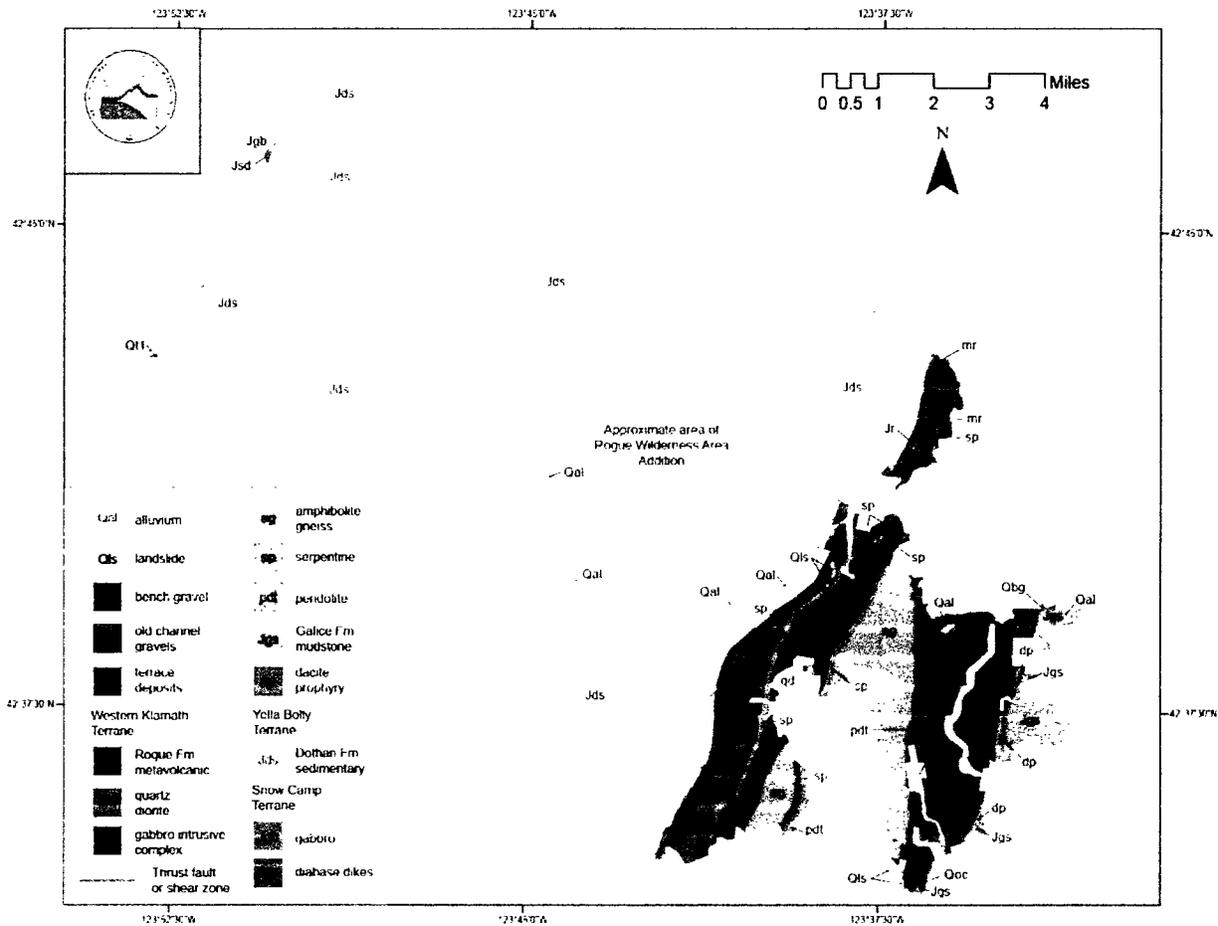


Figure 4: Generalized geologic map of the proposed Rogue Wilderness Area Additions (geology modified after Ma and others, 2009)

Part II

Desktop Assessment

A review of geologic investigations and a survey of mines, prospects, and quarries has been conducted to evaluate the mineral resources potential of the RWAA. Understand that this review did not include a field examination for this study. The geologic environment of the proposed RWAA suggests the possible existence of deposits of the following commodities: gold, silver, copper, lead, and zinc.

Where this review indicates that a potential mineral resource might exist, it is important to understand what a “potential mineral resource” is and means. According to BLM Manual 3031, it means the potential for the occurrence (presence) of a concentration of mineral resources and does not refer or imply there is potential for development or extraction of valuable mineral resources (USDI-BLM, 1985).

Mining Timeline

A general timeline of mining processes and other events provides a basic context for understanding the history of mining included or adjacent to the proposed RWAA.

- The gold rush that started at Sutter’s Mill in California in 1848 spread to southern Oregon by 1851-1852 (Kramer, 1999). Mining activity in the proposed RWAA almost certainly began in 1854 with the discovery of placer gold deposits on the Rogue River (Brooks and Ramp, 1968).
- The richest of the placer deposits along the Rogue River and those tributaries that dissected gold-bearing ground were worked out systematically, and by the 1860’s this placer mining activity had decreased significantly (Brooks and Ramp, 1968).
- In the 1870’s, Chinese miners had placered nearly all of the remaining smaller deposits (Kramer, 1999).
- By the late 1880’s and early 1890’s, lode, “hard rock,” or “quartz” mining in the proposed RWAA outside of the creek beds and placer mining areas were well established (Kramer, 1999).
- During the late-19th and early 20th centuries, sixty or more gold and silver mines or prospects were being worked from Whisky Creek in the Mount Rueben area to Galice Creek (Ramp and Peterson, 1979).
- The period of greatest mining activity at the Almeda Mine was from 1905 to 1915.
- From 1935 to 1942, Whisky Creek was placered again from its junction with the Rogue River to Huckleberry Flat on the East Fork of Whisky Creek, a distance of four miles (Youngberg, 1947).
- The years of the Great Depression saw the Benton Mine, though discovered in the late 1880’s, gain its prominence during this time as the largest underground operation in southwestern Oregon (Youngberg, 1947).

- With the onset of World War II, the War Production Board issued Limitation Order L-208 in October of 1942, effectively closing the mines mentioned above along with the rest of Oregon's gold mines all together.
- In 1945, Order L-208 was rescinded.
- During 1959-1960, an attempt was made at placering in the Rogue River. The Rocky Gulch placer near Galice was worked (Ramp, 1960).
- In the mid-1960's, there was also renewed activity, though limited, at the Benton Mine (Kramer, 1999).
- Mining activity since the 1960's included or adjacent to the proposed RWAA, with the exception of the activity at the Benton Mine, has been of the small placer operations and pocket hunters searching for surface pockets of gold left behind after vein material has been weathered away.
- Exploration activities and prospecting took place within the proposed RWAA as a result of higher gold prices in 1979.
- Mineral entry on the Rogue River itself, which transverses the proposed RWAA in a general east-to-west direction, is no longer possible due to the river's designation as wild and scenic.
- From 1994 to 1996, Dutch Mining, LLC worked to explore and develop the Benton Mine.
- In 2005, Dutch Mining, LLC reopened the Benton Mine and performed a full rehabilitation of the mine, and built a new gold ore mill (near Merlin, Oregon) to process 330 tons of ore per day which could be increased to 450 tons as needed (David Brown & Associates, 2007).
- It is reported in 2006 that the Benton Mine was the only operating underground mine in Oregon (see http://www.infomine.com/index/properties/BENTON_MINE.html).
- In 2007, Dutch Gold Resources, Inc was acquired by Dutch Mining, LLC in a reverse merger transaction. It was announced that a discovery was made of new ore bodies at the mine. As part of its SEC FD disclosure, Dutch Gold Resources, Inc. made available an N.I. 43-101 compliant reserves report which estimates the gold reserves at the Benton Mine.
- In 2008, "test" production from the Benton Mine was halted.
- Today, according to the Dutch Gold Resources, Inc.'s Website (see <http://www.dutchgold.com/>), the mine and milling facility are now in a care and maintenance program (<http://ir.stockpr.com/dutchgold/sec-filings?page=3#document-6923-0001144204-11-050307>). Dutch Gold Resource, Inc. owns the Gold Bug Mine property in fee simple title but has no plans to develop this property in the near future.

Mining Districts and Mineralization

The Galice area (Brooks and Ramp, 1968), as used here, is included or adjacent to the proposed RWAA which embraces the Mount Reuben and Galice mining districts. For its size, the Galice area was one of the richest producers in southwestern Oregon, and has a high concentration of mines. According to a query of BLM's LR2000 database of mining claims, 63 active mining claims are included or adjacent to the proposed RWAA. Of those, 25 are lode claims all of which

are in the vicinity of the Benton Mine; the rest are scattered placer claims. The location of the 27 claims that are within the proposed RWAA are shown in Plate 1.

The mineral locality map (Figure 5) shows the location of individual mines and prospects included or adjacent to the proposed RWAA, based on DOGAMI's Mineral Information Layer for Oregon database (Niewendorp and Geitgey, 2010). As can be seen in this figure and as described by Brooks and Ramp (1968), lode- and placer gold mines occur mostly along a northeast-trending zone, approximately 5 mi wide and 15 mi long, extending from Mount Reuben southward across the Rogue River to the Howland mine near Cedar Mountain on the headwaters of Silver Creek.

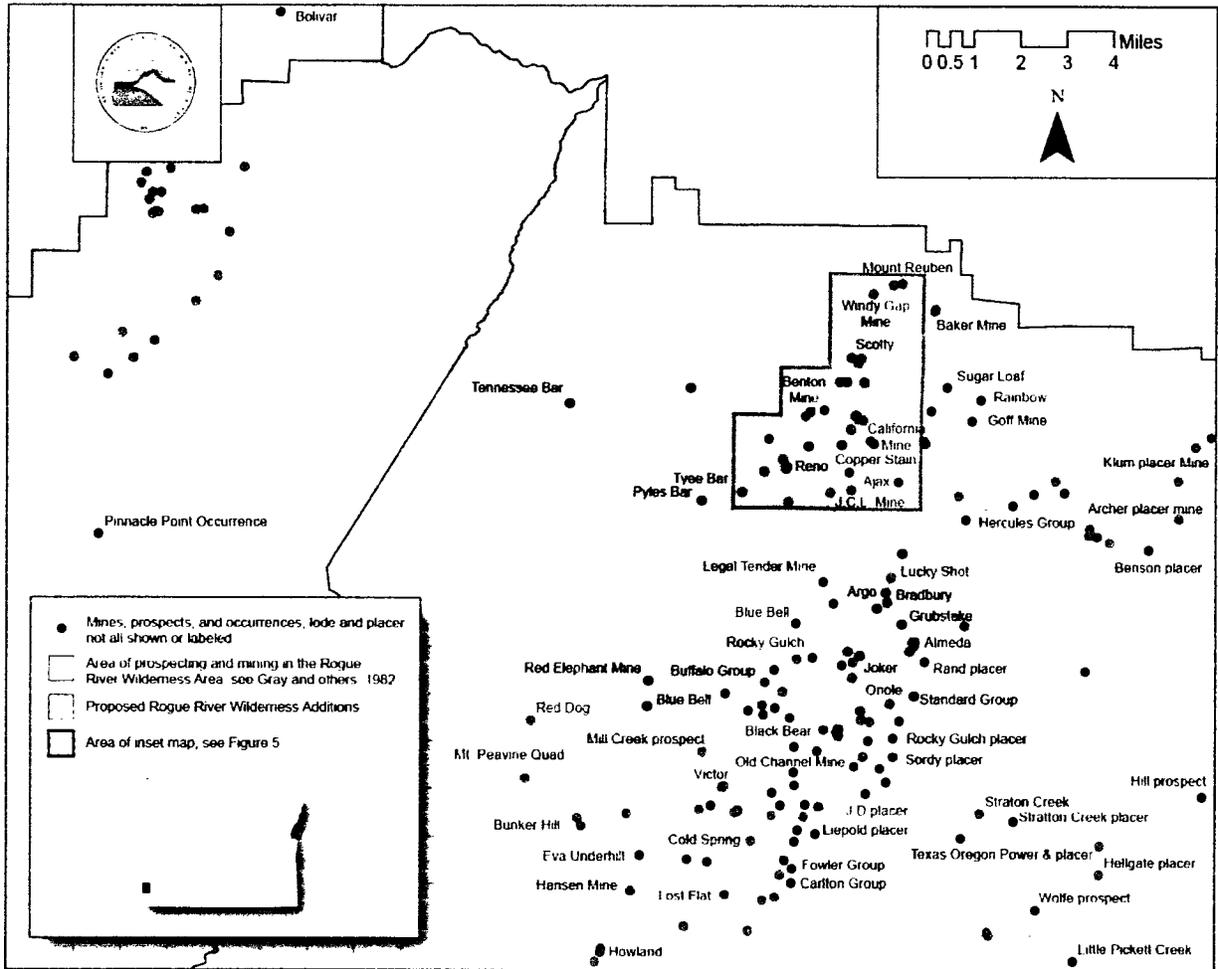


Figure 5: Mineral locality map

According to Ramp (1979), gold production came largely from the Benton Mine (18,500 oz), Gold Bug (37,500 oz), and J.C.L. (5,000 oz). Production of gold and silver was also credited to the Ajax, Copper Stain, and Golden Wedge Mines (not labeled in Figure 5). These mines are concentrated in the northern part of the Galice area, north of the Rogue River, in what was referred to as the Mount Reuben district (see Figures 5 and 6).

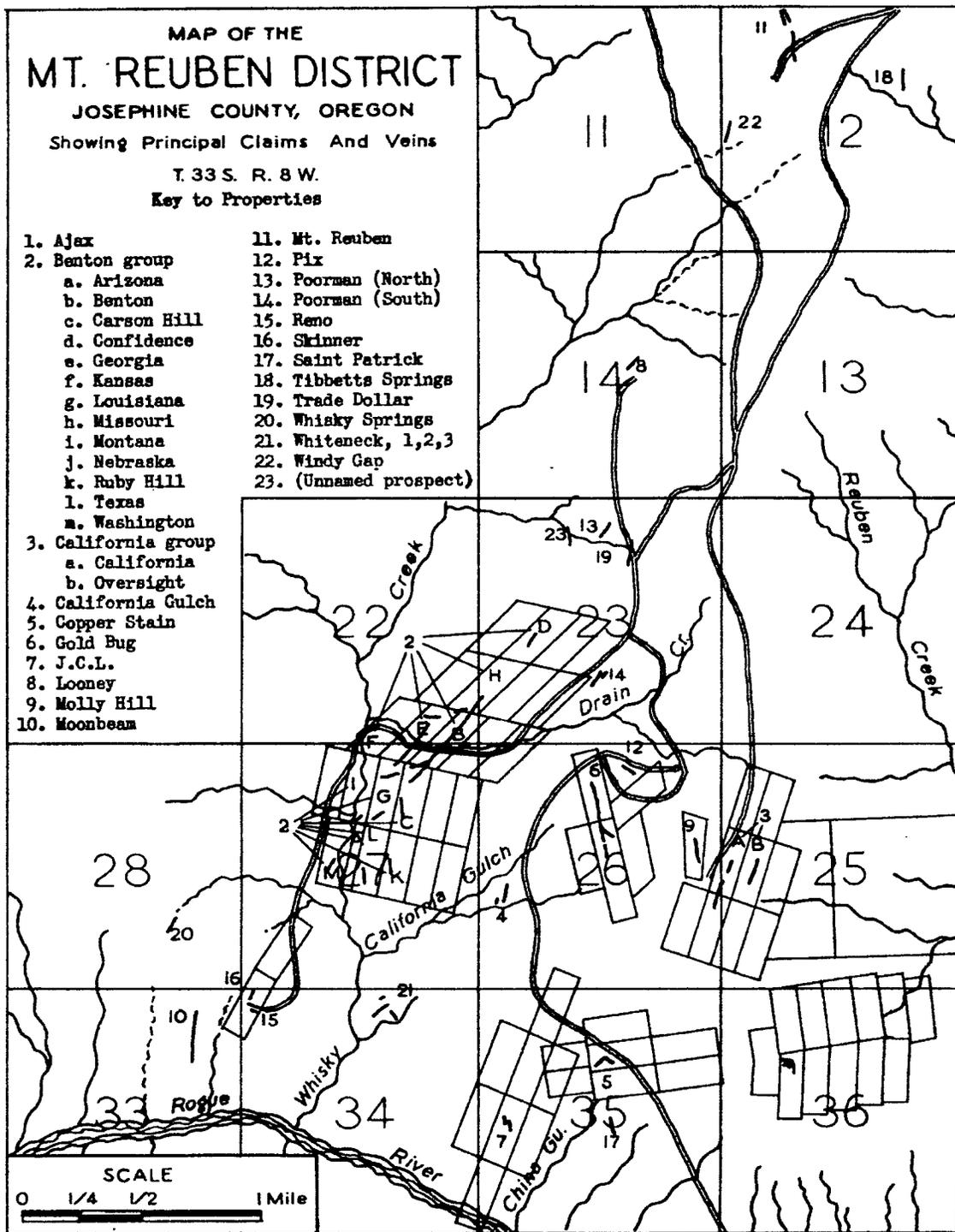


Figure 6: Map of the gold deposits in the Mount Reuben mining district (Youngberg, 1947); see Figure 3 for location of map

Youngberg (1947) called attention to the general relationships for the Mount Reuben district between the geology and lode mineralization (Figure 7). He indicated that the "...greenstone rock...contains numerous veins from which considerable amounts of gold have been mined..." and points out the...favorability of metavolcanics for gold deposits...". He further stated that "...this production has come largely from short and narrow ore shoots along rather prominent major shear zones, usually at their junction with a minor fissure."

The most productive veins, however, were in a quartz diorite stock at the Benton Mine, where eight persistent veins containing ore shoots as much as several hundred feet long were found either in an oblique-slip fault system or shear couplet structures (David Brown & Associates, 2007). This stock is about 1.75 miles long with an average outcrop width of about 2,500 feet (Youngberg, 1947).

Veins in the gabbros have been essentially nonproductive in terms of gold, although they are fairly persistent with chalcopyrite and pyrite as the principal sulfide minerals. Rare gold-quartz veins crop out near and in serpentine.

Lode veins consist of quartz-filled fissures; quartz in the veins is typically massive and containing inclusions of silicified and altered wall rock. The principal mineralogy of the veins is quartz and pyrite with gold associated with pyrite. The quartz-vein systems in the metavolcanics are as thick as 1 to 4 ft and as long as 2,000 ft long. Veins of the greater size are associated with the quartz diorite stock. Gold content, especially if high, is generally unevenly distributed. Overall minable gold content in mineralized quartz veins is probably 0.06 to several ounces per ton.

Deposits in the southern part of the Galice area are mainly east of the gabbro intrusive complex (see Figure 2). Most of the mines and prospects are in a belt of amphibolite gneiss (amphibolite-grade metamorphic rocks) that lie between a narrow wedge of metavolcanic rocks of the Rogue Formation and the gabbroic intrusive complex. A few are in Rogue Formation greenstones and a few are in the gabbroic rocks of the complex. Vein structure and mineralogy overall in the southern part of the Galice area are similar to those in the northern portion (Kotz, 1971).

The exception is the Almeda Mine, a volcanogenic deposit (see Figure 5 for mine location; Figure 2 for geologic setting). This mine is situated on the north bank of the Rogue River at the contact between the Galice and Rogue Formations. The geologic setting, stratigraphy, and composition of the Almeda deposit resembles Kuroko-type characteristics, similar to a black smoker on the sea floor, associated with massive sulfides and barite deposition. The mine produced byproduct gold and silver from copper ores (with barite) and the deposit yielded 259,800 pounds of copper, 7,197 pounds of lead, 1,540 troy ounces of gold, and 48,387 troy ounces of silver (Koski, 1981).

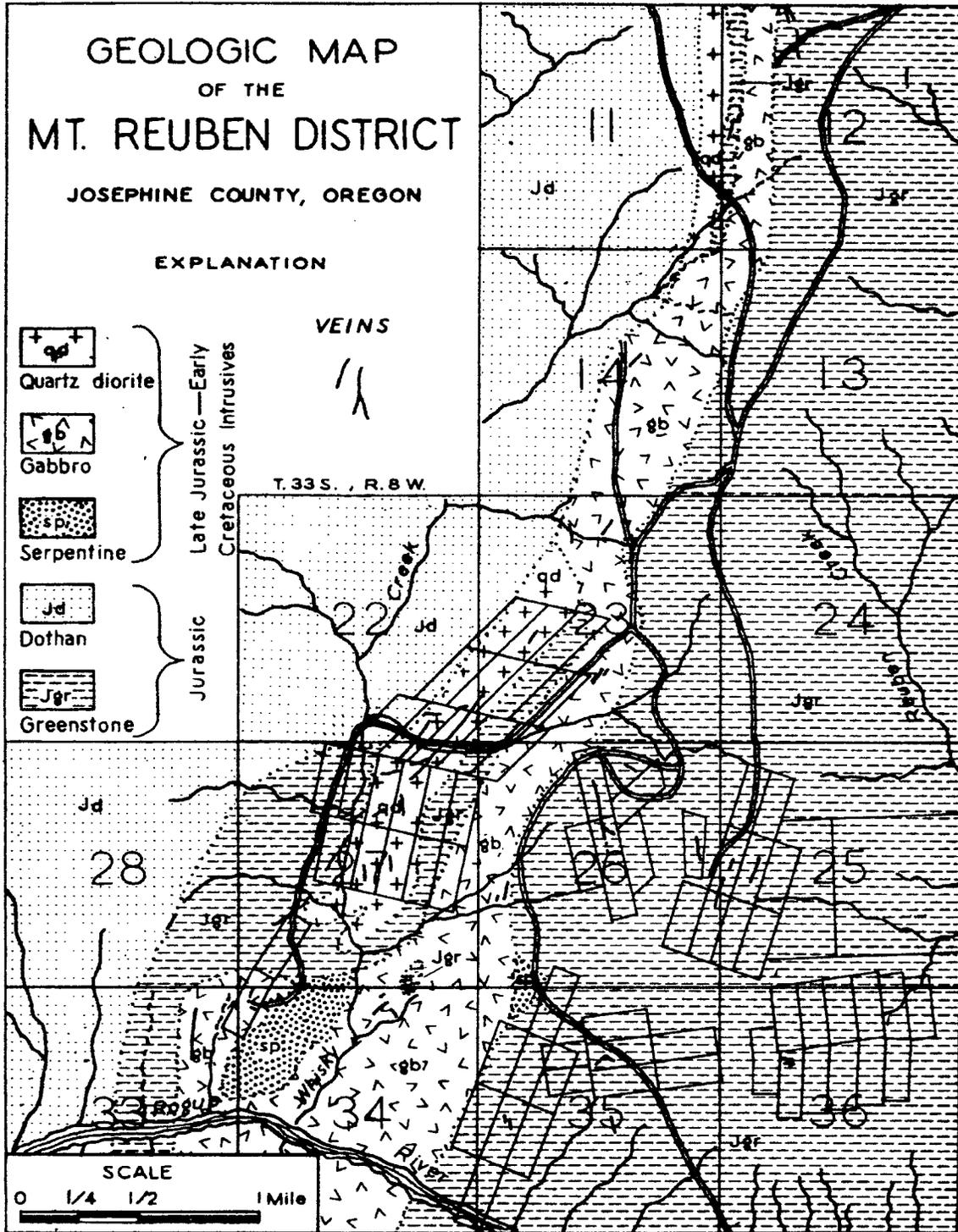


Figure 7: Map showing the relationship between geology and mineralization (Youngberg, 1947); see Figure 3 for location of map

Assessment of Mineral Resource Potential

On the basis of this desktop mineral scoping investigation by DOGAMI, areas within the RWAA have been classified according to their mineral resource potential. Figure 8 delineates general areas in the proposed RWAA in which there is a potential for various types of mineral deposits.

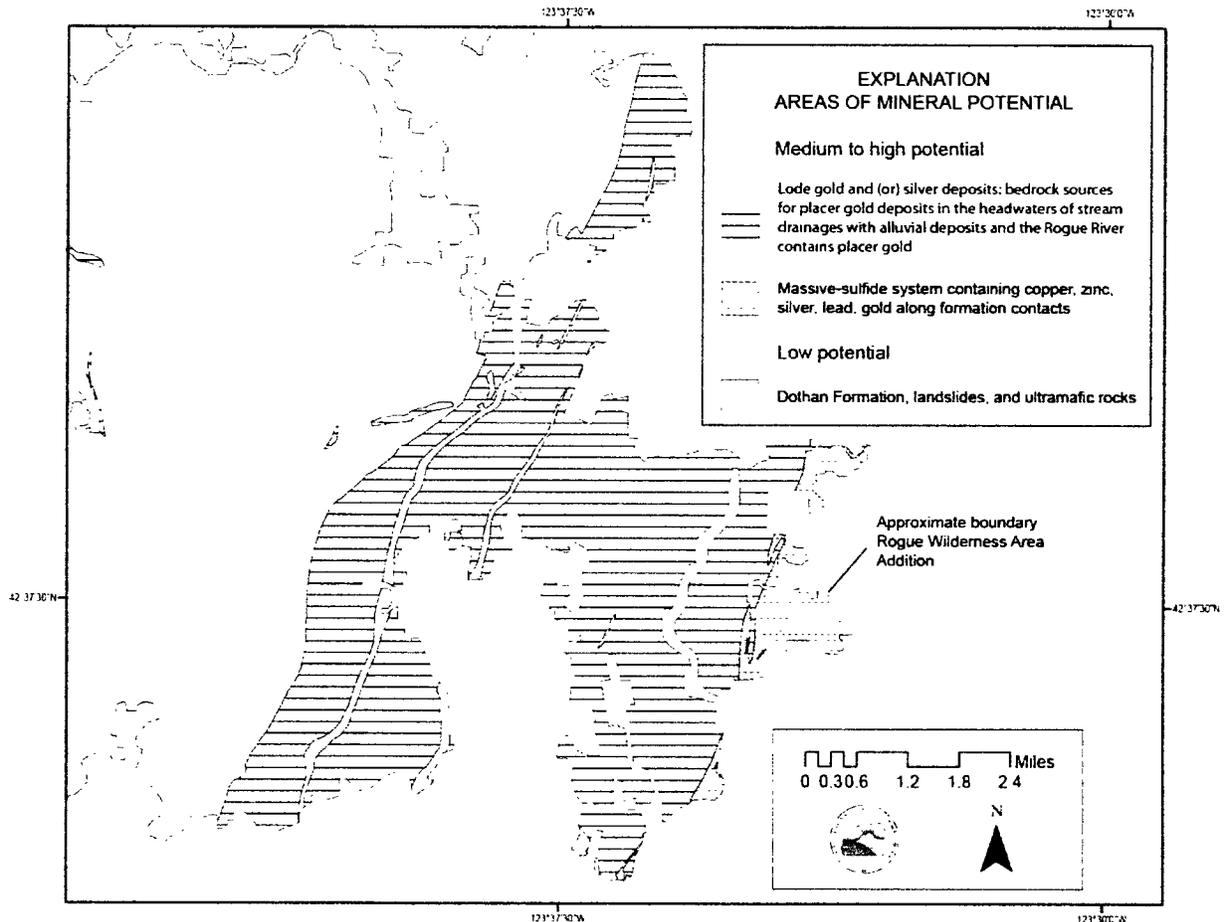


Figure 8: Sketch map showing areas of mineral resource potential in the eastern-half of the proposed RWAA

The potential for more gold and silver, together with copper, production within the proposed RWAA is in the areas where the early-day mining was done. Mineral deposits that have identifiable resource potential in the RWAA include massive sulfides, lode gold, and placer gold. The geologic criteria and mining history favorable for the occurrence of these deposits are evaluated in Tables 1 through 3, respectively.

The potential for copper, lead, and zinc resources exists in volcanogenic deposits in the form of massive sulfide deposits in felsic and intermediated volcanic rocks (Figure 8; see Unit dp in Figure 4). Previous investigations by Shenon (1933) and Libbey (1967) suggest that there may still be a large deposit of mineralized rock at the Almeda Mine and others may possibly occur associated with similar host rocks along the contact between the Galice and Rogue Formations.

Gold and silver potential, considered **Medium to High** (certainty level D) in the eastern third of the proposed RWAA, exists as vein gold and silver in quartz veins. Favorable host rocks include metavolcanic (the most common host), quartz diorite, amphibolite, and gabbroic rocks (Figures 4, 7, and 8). The creeks with these bedrock sources of gold also contain associated placer gold deposits.

The existence of a mineral resource is permissive (a **Low** potential, certainty level C) in the Dothan Formation, as well as areas composed of landslides and ultramafic rocks (serpentine and peridotite) (Figures 4 and 8).

Table 1: Conditions favorable for the occurrence and mining of mineral resources for copper, zinc, lead, silver, and gold in volcanogenic deposits of the proposed RWAA (modified after Gray and others, 1982)

Conditions	Conditions met in the RWAA?
Presence of compositionally intermediate to felsic calc-alkaline volcanic rocks indicative of late-state volcanic activity in a subaqueous island-arc environment for example, pyroclastic rocks interbedded with immature volcanoclastic sedimentary rocks and silicic volcanic rocks.	Yes
Occurrences of stratabound lenses of pyritic base-metal sulfide in clusters with intragroup spacing of one to several miles.	Partially to Yes
Low-grade dissemination of vein mineralization, and hydrothermal alteration is typically stratigraphically lower than stratabound lenses.	Yes
Abundance of pyroclastic and rhyolitic rocks in the volcanic sequence, usually restricted to the late stages of volcanism in the area	Yes
Adequate tonnage and grade	Partially
Simple geology with limited faulting	Partially
Ease of underground mining.	Partially to Yes
Ease of milling and concentration techniques available for this type of deposit; flotation would probably work well for concentration.	Yes

Table 2: Conditions favorable for the occurrence and mining of mineral resources for lode gold deposits of the proposed RWAA (modified after Gray and others, 1982)

Conditions	Conditions met in the RWAA?
Occurrence of gold in quartz veins.	Yes
Presence of favorable host rocks, including metavolcanic, quartz diorite, and gabbroic rocks.	Yes
Presence of rocks broken up by faults/shearing along with gold-bearing veins may occur.	Yes
Presence of quartz veins on the surface with hydrothermal circulation patterns superimposed on the host rocks.	Yes
Grades in the range of 2 or more ounces gold per ton for small deposits, and 0.5 or more oz per ton for deposits of 50,000 tons. 50,000 tons with 0.5 oz gold per ton probably is near the smallest tonnage and lowest grade feasible for a 15- to 20-person mine, when at 50 tons per day (1982 conditions) †.	Partially to Yes
Ease of underground mining.	Partially to Yes
Concentration techniques available for this type of deposit.	Yes

† Cutoff grades could be substantially less given today's higher market gold price

Table 3: Conditions favorable for the occurrence and mining of mineral resources for placer gold deposits of the proposed RWAA (modified after Gray and others, 1982)

Conditions	Conditions met in the RWAA?
Presence of known resources of placer gold	Yes
Occurrence of alluvial and river-terrace deposits	Yes
Presence of a bedrock source for gold in the headwaters of the stream drainages with alluvial deposits	Yes
Presence of quartz veins on the surface with hydrothermal circulation patterns superimposed on the host rocks	Yes
Grades in the range of at least 0.05 ounce per cubic yard (when mined at 5yds ³ per day), or at least 0.005 ounce gold per cubic yard (when mined at 2,000 yd ³ per day). 2,000 yd ³ per day at 0.005 ounce gold per yd ³ would be near the minimum viable range for a 15- to 20-person mine (1982 conditions) [†] .	Partially to Yes
Availability of water. Water to work the bench gravel deposits probably would have to be pumped from the Rogue River. Most river-terrace gravel deposits are at least 50 ft above the present river level.	Yes

[†]Cutoff grades could be substantially less given today's higher market gold price

Part III References

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PART IV Appendix

Method and Limitations:

For this mineral scoping report, DOGAMI did not conduct site-specific work (a field examination) or related activities (e.g., systematic geological, geophysical, and geochemical and hydro-geochemical examination) as a basis for determination or confirmation that a mineral resource potential, deposit, or mineral occurrence exists. Statements in this mineral scoping report relating to geology and mineral resource potential are based solely on basic desktop research, outcome of which is limited to the available literature sources – their deficiencies notwithstanding – as the means to profile the mineral potential.

For the desktop research, heavy reliance is made on review of published and unpublished geology and mineral/material resource literature available at DOGAMI. Also, extensive use is made of two geospatial datasets: Mineral Information Layer for Oregon (MILO-Release 2) and Mineral Lands Regulation and Reclamation's (MLRR) database of mining operations permitted since 1972.

Where this review indicates a low resource ranking might exist, it is important to understand that it could reflect a lack of information rather than a lack of a potential resource. User of this report is advised to consult with DOGAMI to gain a better understanding of the inherent limitations of the information presented in this report and its scope of inference. The user of this report is also responsible for the appropriate use of the information contained herein. Definitions for the levels of mineral resource potential and levels of certainty of the assessment are below (modified after Goudarzi, 1984).

Finally, there is one more area that is relevant to this statement of context: based on an inventory of mineral occurrences. It is not possible to accurately identify the concentration and occurrence of material in relation to its particular geographical controls, its inherent physical (volume of material present or removed, and reserves remaining) and chemical properties, the quantity of valuable mineral or rock that it contains, its applicable extraction and processing methods, or its geographic location with respect to the markets for its products. Nor can an inventory of mineral occurrences alone be used for appraisal or basis for other generally accepted industrial standard for valuing the property.

Levels of Resource Potential:

HIGH mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for resource occurrence, where interpretations of the data indicate high degree of likelihood for resource accumulation, where data support mineral-deposit models indicating presence of resource, and where evidence indicates that mineral concentration has taken place. Assignment of high resource potential to an area requires some positive knowledge that mineral-forming processes have been active in at least part of the area.

MEDIUM mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for resource occurrence, where interpretations of the data indicate high degree of likelihood for resource accumulation, and (or) where an application of mineral-deposit models indicates favorable ground for the specified type(s) of deposits.

LOW mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics define a geologic environment in which the existence of resource is permissive. This broad category embraces areas with dispersed but insignificantly mineralized rock, as well as areas with obvious site limitations and little or no indication of having been mineralized.

NO mineral resource potential is a category reserved for a specific type of resource in a well-defined area.

UNKNOWN mineral resource potential is assigned to areas where information is inadequate to assign a low, moderate, or high level of resource potential.

Levels of Certainty:

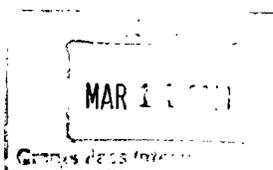
- A. Available information is not adequate for determination of the level of mineral resource potential.
- B. Available information only suggests the level of mineral resource potential.
- C. Available information gives a good indication of the level of mineral resource potential.
- D. Available information clearly defines the level of mineral resource potential.

Weekly Business Session

3-13-13 Exhibit B

David D Everist
Secretary of Mining
Twin Cedar Placer

REC'D 13 MAR 11 12:12 USDC-ORH



BLM#160-574
Case#1;12-po-0000 1-PA
Cr 09-479-MO

To the BROAD OF JOEPHINE COUNTY COMMISSIONERS. USDA USFS RANGER DONNA MICKLEY, USDI BLM DINNA PERRY AND SHEIFF GILBERTSON

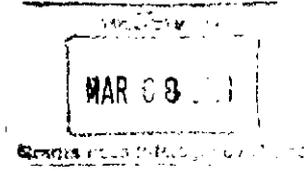
Mining District under 30 USC sec 28 the enabling acts for Mining District As Local Governments.

I David D Everist Demand COORDINATION meetings under 43 USC sec 1711, 1712 through 1714 To coordinate an constructive trust and constructive fraud against USDA USFS and coordinate USDI BLM for a breach of the grant, the grantee for not defending the grant, grantee and breach their duties of trust as trustees to the grant. To all of the JOHN AND JANE DOES AGENTS in agency for PUBLIC, PRIVATE PARTNERSHIPS, ETAL.ATL.

REC'D 13 MAR 11 12:11 USDC-ORM

David D Everist
7447 Thompson Cr Rd
Applegate Oregon 97530

Date 5-28-2012



112-PO-0000-1-PA
0509-479MO

I David D Everist as original Locator of my Locatable Valuable minerals claim, exclusive possession. For my partners as there agent in agency is to defend right possession as agent of me, my partners. I David D Everist to declare that to form a Mining District Twin Cedar Placer Mining District Local Government As agent I appoint David D Everist to secretary of Mining TO defend, Prosecute the Grant the Miner of the District, to Defend the District. I am also member Jefferson Mining District a District with in a District a local Government with in local Government

David D Everist

Twin Cedar Placer Mining District

Weekly Business
Session
3-13-13 Exhibit C

R.I.P

Measure 17-49

Dead on Arrival

May 21, 2013

Criminal Justice and Public Safety Three year Local Option Tax Measure

VOTE NO!

WWW.w4acg.com

paid for by: We're for A Constitutional Government

→ VOTE NO BECAUSE

- The Board of County Commissioners, along with their predecessors, have collectively **failed** to implement non-taxing means of funding Josephine County government.
- The BCC has **failed** to standup to Salem, by refusing to accept and fund, Oregon's unfunded mandated services, also by not making the state take back the control of the Animal Control Department, which the state once operated.
- The BCC refuses to act on their own and force the Federal government to **release our O & C lands**, for breach of contract.
- The salaries of each of the current commissioners is more than **twice** the amount that our Home Rule County Charter allows, by law. (*Oregon Constitution Article VI Section 10 adopted by the people May 23, 1978*) **Why?**
- The yearly **fringe benefits** for county employees, salaried personal and all the elected officials of the county totals more than half of their annual pay. And they wonder **why they are broke?**
- The BCC **Refused** to draft a Resolution in support of our Sheriff's defense of our **2nd Amendments Rights**, there by publicly stating that this is a non-issue here in Josephine County. (*Oregon Constitution Article I, Bill of Rights Section 27 & our Home Rule Charter Amendment Section 29.1 sub-section 1-5*) Their non-action is **disgraceful !!!**
- Josephine County currently has an **unemployment rate** of more than 12 percent which has not gone down. **Why?** Because the businesses and property owners are **over-regulated** to the point stagnation, robbing us our basic unalienable rights of life, liberty and the pursuit of happiness. When a business or property owner can't expand, the county can not prosper.
- Much of our population is made-up of retired and elderly people, who live on **fixed incomes**. Any increase in their expenses cuts down on their quality of life. Young families are also struggling to make ends meet with the constant raise in the cost of food, gas, utilities, and everything else that is going up.
- Josephine County government is trapped in their own bureaucracy which controls their every move. They need to break-the-chains and **solve this economic emergency** that will require drastic and decisive action by all departments.

Locate your Tax Code 1 through 19 in the table below: The total amount your currently paying per \$1000 assessed value is shown in Green, the Red amount would be your new total if measure 17-49 passes, May 21, 2013.

Tax Code 1 - City of GP	Tax Code 2 - City of CJ	Tax Code 3 - JOCO	Tax Code 4 - IV RFPD #1	Tax Code 5 - JOCO
School District #7	3 Rivers School District	School District #7	3 Rivers School District	3 Rivers School District
<i>Current total Tax Rate</i> \$13.9592 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 9.9747 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 7.6304 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 8.0788 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 5.9103 per \$1000 assessed value
<i>Measure 17-49 total Tax Rate</i> \$15.4392 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$11.4547 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 9.1104 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 9.5588 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 7.3903 per \$1000 assessed value in 2013 / 2014
Tax Code 6 - Williams RFPD	Tax Code 9 - RWD Sewer Dist	Tax Code 10-RWD Sewer Dist	Tax Code 11-Wolf Cr. RFPD	Tax Code 14-App RFPD#9
3 Rivers School District	School District #7	3 Rivers School District	3 Rivers School District	3 Rivers School District
<i>Current total Tax Rate</i> \$ 7.4955 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 7.6304 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 5.9103 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 8.7868 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 8.3911 per \$1000 assessed value
<i>Measure 17-49 total Tax Rate</i> \$ 8.9755 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 9.1104 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 7.3903 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 10.2668 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 9.9190 per \$1000 assessed value in 2013 / 2014
Tax Code 15 - City of GP	Tax Code 16 - City of GP	Tax Code 18-IV RFPD #1	Tax Code 19 - JOCO	Tax Table Obtained from Fiscal Year Ending June 30, 2012, Assessment 2011 pamphlet
3 Rivers School District	Redwood Sewer District	Kerby Water District	Kerby Water District	All Property Taxes will increase up too 3% per year by Law.
<i>Current total Tax Rate</i> \$ 12.2391 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 13.9592 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 11.2144 per \$1000 assessed value	<i>Current total Tax Rate</i> \$ 9.0459 per \$1000 assessed value	
<i>Measure 17-49 total Tax Rate</i> \$ 13.7191 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 15.4392 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 12.6944 per \$1000 assessed value in 2013 / 2014	<i>Measure 17-49 total Tax Rate</i> \$ 10.5259 per \$1000 assessed value in 2013 / 2014	

The above information provided and paid by **"We're for A Constitutional Government"**
Why? Because we feel it's imperative that government lives within their means, like we have too!

Donations are accepted make checks payable to WACG mail to P.O.Box 706 Selma, Oregon 97538
or Call us (541) 471-4942

Stop Punishing the Innocent

Speech to the Josephine County Commissioners, 3/13/13. Video on RVTV Channel 14 (roguetv.org) and at "Televised meetings" on the Commissioners' page on the County's web page.

Honorable Chairman:

Last week, after I once again objected to your meeting structure, in which we are allowed only one three-minute commentary per meeting, you said that I can handle several subjects in 3 minutes. I prefer to stick to one subject per comment, even if I don't use up my whole three minutes. Since I am only allowed to speak once per meeting, you lose my uninterested, objective comments on items on the agenda.

Last week, I came without a prepared speech for your meeting, because I wanted to comment on a proposed ordinance, restricting the time and place of taping in the Anne Basker Auditorium during and directly after your meetings. While Cheryl Walker said that it was because of a commercial television camera placed nearly level with the dais, the only person it would greatly inconvenience is Dale Matthews, who must sit with his tripod in the front row to catch everything that is said with his equipment. But the reasons given for such restriction, safety and access, are not a problem; his camera is out of the way of traffic where it has sat for years. It would be more in the way where the ordinance would put it.

These two subjects have one person in common: Dale Matthews. You started restricting comment to once per meeting because of Matthews' constant attacks on the Board and individual members, as well as people who do likewise. Attempts to pass some kind of restrictions on taping have been aimed squarely at Matthews and the location of his camera.

You have no expectation of privacy in a public place or a public meeting. The Board cannot stop him from taping. But you can stop him from advertising his taping and attacking commissioners in your meetings. Simply don't recognize him nor allow him to speak. He has a right to tape you. He has no right to address the Board; that is a privilege granted by you, the Chair.

We are glad that you are again broadcasting the Weekly Business Session; we hope that the Admin sessions will soon be broadcast as well. You take public comment to gather information to make decisions, not to allow people to beat you up on TV. By now, you know that Dale Matthews will not supply you with any useful information, but will advertise his taping and attack you personally. Please stop punishing yourselves, the county, and the people who want to give you useful advice, and instead personally punish those who simply want to attack you, by not allowing them the opportunity.

(The ordinance restricting taping was tabled until Wednesday, March 13th, the evening Weekly Business Session for the month, 5:30 PM.)

Changing public servants' minds takes eloquence and numbers. One eloquent person with numbers of people chiming in can work wonders.

Rycke Brown, Natural Gardener 541-955-9040 rycke@gardener.com

Seek Uninterested Comment

Speech to the Josephine County Commissioners, 3/7/12. Video on RVTV Channel 14 (roguetv.org) and at "Televised meetings" on the Commissioners' page on the County's web page.

Honorable Commissioners:

Last week, directly after I asked you to let us comment on all agenda items as well as making requests on non-agenda items, a gentleman got up to tell you that he is perfectly happy with his single chance to speak to you. It was not surprising, as he is one of the many who come before you only when there is something specific on the agenda in which he has an interest. In this case, he and a lot of other people were here to talk about a letter the Board is considering regarding a proposal to lock up more of our land in wilderness.

You will always hear from people who have a strong interest in a matter before you. Any controversial issue before the Board is bound to draw out a meeting; this matter created an hour of comment from people who really cared.

You should really seek out comment, however, from people who don't have a strong interest, and therefore have a more objective point of view. And you should seek comment on items that do not draw much interest at all.

Just because an item doesn't immediately catch the public's attention doesn't mean that it's a good idea or a bad idea, or that it's safe to pass it. You never know what might come back and bite you years later, like the City's bus shelter project, a vague idea that took 5 years and over \$80,000 for a bridge building company to flesh out into a real project. Or it can bite you within a year, like the county's Canola scandal.

City meetings have historically been so long and boring that few people have been willing to sit and listen to the whole meeting every time. They are actually happy to hear uninterested comment from the public most of the time.

County business sessions have usually been shorter, and therefore attract more spectators. The Canola grant was decided in an Admin session, over the objections of a Commissioner. If it had been brought to the Weekly Business Session, I could have warned the Board, speaking as a professional gardener, that the proponents' plans wouldn't work. But by the time that we heard about it, it was already done and they got to waste over \$40,000 trying to plant canola in spring instead of fall, and their crops and project failed.

With a single chance to talk to you each meeting, I have to stick to matters in which I have a strong interest. You lose my uninterested, objective comments.

Published at Yahoo Voices. To follow Rycke's writing, send her an e-mail.

Rycke Brown, Natural Gardener

541-955-9040

rycke@gardener.com

Date: March 11th, 2013

REPORT ON THE SOUTH CAVE JUNCTION NEIGHBORHOOD WATCH GROUP Formed January 28th.

A Neighborhood South of Cave Junction has been actively addressing crime in their area. At it's 3rd meeting in a month, a proposal has been extended to the Illinois Valley communities for a Town Hall meeting to expand the support of Neighborhood Watch Programs.

Here is their Story:

In April of 2012 neighbors, in the Ken Rose/Logan Cut Rural Home Division, South of Cave Junction, were invited to a Josephine County Stewardship Group planning session held at the Kerby Belt Building to participate in a Public Lands 'clean up project' in collaboration with The Clean Forest Project (nonprofit), Rotary, I.V. Watershed Council, and the BLM. The area for clean up was the BLM land just past Fernwood Ave. on Road 4048 and the extended Logan Cut Creek area which has generated a litany of incidences like: dead animal dumping, trash dumping, excessive shooting range litter, wood poaching and citizen harassment. A range of incidences and confrontations were reported by the neighbors. A list was also developed by one of the residents interested in forming a Neighborhood Watch. A few weeks later the cooperative clean up project was implemented with several of the neighbors participating. Two dumpsters worth of trash and materials were extracted from the Logan Cut Creek Area (a historic site). In January of 2013, 3,000 feet of fencing was installed to deter dumping.)

On Christmas day, while visiting relatives, one of our neighbors on Fernwood received an unwelcomed trio of armed visitors who looted, vandalized, and used his property for target practice. As a result, a Neighborhood Watch meeting was held on January 28th at Wild River Pizza with about 45 people in attendance. The Fernwood perpetrators were captured on film and a presentation was given by the Fernwood neighbor on that incident. Sam Nichols, O'Brien's 'Citizens Against Crime' group coordinator talked about the progress of their group. He stated, " We haven't had a single incident since our patrol started". At the end of the meeting several neighbors volunteered to help organize each of their streets. Street Captains were designated for Ken Rose Ave., Cascade, Mesa Verde, Fernwood, White Oak, Ivy Dr./Simmons Cut Dr., and Logan Cut Dr.

The Captains met a week later and discussed watch initiatives, communications, and outreach to expand neighborhood watch participation. More neighbors were contacted by the Captains to attend the next meeting held on Monday, March 4th, at Wild River Pizza. Sheriff Gil Gilbertson attended and gave a fine talk about working with Neighborhood Watch Programs. He commended the O'Brien Group for doing a good job. He shared how he used the American Neighborhood Watch as a model for law enforcement in Kosovo and offered to facilitate a training workshop for citizens and detailing 'How much force you can use' as a citizen. Sheriff Gilbertson also talked about the Levy proposed by the County Commissioners and the need for the citizens of this County to address supporting a competent level of law enforcement services. Sheriff Gilbertson educated in constitutional law is dedicated to serving the Citizens of Josephine County under oath to be directly responsible to us. He will stand to protect our rights, he said, regardless of State or Federal intervention. Also attending were residents from Dick George, Holland Loop, Selma, and O'Brien. A few other incidences of casing, harassment, and bodily injury were reported. Prompted by the Sheriff, information was shared about a suspect, including his name and license plate number at the meeting.

A proposal to cohost a Town Hall Meeting to discuss Law Enforcement, the Levy, and expand support for neighborhood watches throughout the valley was adopted by the Captains. Also briefly mentioned was rights based organizing and 'the Community Rights Movement' (local law building and ordinances crafted to support a community's vision for it's welfare and future.

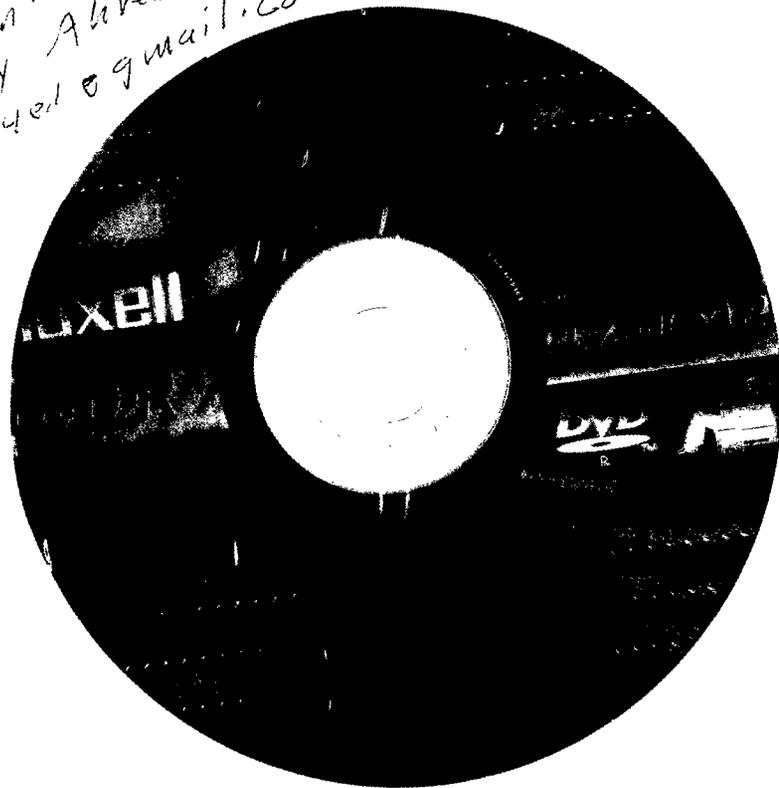
The Captains of the South Cave Junction/Ken Rose Ave. Neighborhood watch cordially invites representatives from your street to attend a Town Hall meeting on Neighborhood Watch. Contact Guenter - the Town Hall Coordinator at cmec@cavenet.com

A thank you to all our neighbors, community organizers, organizations, and businesses that are working together on solutions supporting the general welfare of our communities in the Illinois Valley. A Salute to all from the Captains and a pledge to work with you on your watch.

Approved by the Street Captains of the South Cave Junction / Ken Rose Ave. Neighborhood Watch
Submitted by: Guenter Ambron

Weekly Business
Review
3.13.13 Exhibit F
1 of 2

From: Alexei
Judy
judy4ed@gmail.com



Talking Points – Exposing and Opposing UN Agenda 21 - The Global Blue Print for Transforming America by Orlean Koehle

1. **Agenda 21 is a United Nations' comprehensive plan, created in 1992 in Rio de Janeiro, which seeks to transform our nation. The action plan to implement Agenda 21 is a nicer sounding name - "Sustainable Development," adopted by President Bill Clinton by Executive Order, June 29, 1993. Together they are a complete plan for the reshaping and control of America but without any vote by Congress or by the American people.**
2. **Agenda 21 is already found in every city and county and is transforming our representative republic into a socialist state, where instead of being governed by elected officials, we are becoming governed by unelected, appointed planning commissioners and other NGOs.**
3. **ICLEI (a United Nations NGO) plays a major role in promoting Agenda 21 and the transformation of local government. ICLEI stands for "The International Council for Local Environmental Initiatives," but is now known as "Local Government for Sustainability." There are more than 600 cities and counties that belong to ICLEI in the USA - 150 in California alone. What does membership in ICLEI mean? It means that city or county is now indirectly under the control of the UN, and UN controls, regulations, and restrictions begin. Is this constitutional? The Constitution prohibits states [or local governments] from entering into any agreement or compact with a foreign power. (Article 1, Sec.10) (www.iclei.org.)**
4. **"The Three E's of Sustainable Development - Economy, Equity, and Environment" are based on Marxist central planning - not a free enterprise system. What do they really mean?**
 - **Equity** means to restructure human nature and our form of justice so it is no longer about equal justice but now "social justice," a Marxist term. And what is social justice? Redistribution of wealth and no private property rights. Owning property makes some people "not equal" with other people. Therefore, we should all give up our ownership of property.
 - **Economy** means shifting from a free enterprise system to a **public-private-partnership** system where government and private corporations are in a partnership together. What happens whenever such has been tried before in history? It is called fascism - private ownership but with total government controls. It means the establishment of a global economy where goods and services - wealth and energy - are redistributed to foreign nations.
 - **Environment** means giving plants, animals and even inanimate objects (like Indian arrowheads) more rights or at least equal rights with humans. It is also promoting nature worshiping or worship of "Mother Earth or Gaia."
5. **Agenda 21 seeks to limit and redistribute energy: Using Smart Meters, Smart Grids, and Smart Growth, an international energy grid will be established and controlled from a central location. A nation's entire electrical grid can then be controlled, limited, restricted, and redistributed.**
6. **Transform education: Agenda 21 seeks to transform schools and universities into propaganda and indoctrination centers, where "green" fear tactics are used and false information is taught to unite students into supporting any trumped up environmental cause. Children are taught that animals should have the same or more rights than humans, and the pledge to "Mother Earth" or the "Pledge to the World" is becoming more important than any pledge to a national flag.**
7. **Attack on rural property rights: By using environmental scare tactics and the cloak of "green," and following guidelines from the American Planning Association, Agenda 21 seeks to: regulate, restrict and take away rural property rights; regulate and limit the food you eat and the water you drink. Why? Abolishment of private property is the #1 goal of the *Communist Manifesto*.**
8. **Transform cities: By using "urban growth boundaries," "redevelopment districts," and "visioning" - regional plans such as "One Bay" involving nine counties in the San Francisco area, Agenda 21 seeks to transform our cities into crowded "sustainable development communities" with "stack em and pack em housing" and limited parking spaces. Why? People are more easily controlled, tracked and "kept an eye on" when they are crowded together.**

9. **Transform transportation:** There will be limited use of cars. Only silly, unsafe, unreliable electric "Smart Cars" will be allowed. People are encouraged to walk, use bicycles, use mass transit busses or short rail systems. Why? Again people are more easily controlled, tracked, and kept an eye on when they are in public transportation or are walking or using bicycles, or driving small electric cars that can't travel very fast or go very far.
10. **Agenda 21 seeks to transform traditional American society:** It seeks to change traditional family structure, values and morality; it seeks to destroy the Judeo-Christian foundation of our nation and replace it with secular humanism and a new-age, earth-worshipping religion. Why? A moral people are too hard to control. They are responsible, use self-control, self-restraint and self government. They have no need for a big powerful central government. People who have no moral compass to guide them are in greater need of a police state to control them and tell them what to do. That is the goal of Agenda 21- to exercise "uber" control over every aspect of our lives; but to do it in such a way that the people expect it, appreciate it, and are grateful for it.
11. **Techniques being used to promote Agenda 21:** 1) **Everyone's doing it** - City leaders are told "to get on the Green Band Wagon" or you will not be worthy of reelection. You will lose your job, not get funding, etc. If you do join ICLEI, you can be called a "Cool City" and have a "Cool Mayor." 2) **The Delphi Technique** - carefully trained facilitators manipulate elected officials and citizens and move them to consensus in accepting pre-conceived policy changes, making them think it is their own idea. 3) **The Hegelian Dialectic** - thesis, antithesis, and synthesis. The thesis is a trumped-up created crisis such as "global warming or climate change." The antithesis is whom it is blamed upon - mankind, of course. The synthesis is the solution - bigger government controls over man and all of his activities, especially his use of cars and his use of energy. 4) **"Newspeak"** - New words and new definitions of old terminology are used that give them an entirely different meaning. The new terminology confuses people, and they support policies that are taking away their liberties, not really understanding what they are supporting.
12. **Agenda 21 supports the "Wildland's Project":** This is the product of the radical extreme eco-group called "Earth First." The Wildland's Project seeks to re-wild 50% of our nation and turn it back into "pre-Columbian" conditions, where animals will have free reign and humans will be confined to little islands or "sustainable communities." To accomplish this there will be roadways that are not maintained or deliberately destroyed; dams will be blown up; fires will be allowed to burn destroying millions of acres of forests or good farmland; weather modification will cause terrible storms and flooding destroying other farmlands. People will be forced to leave their rural lands to eke out an existence in the cities. (www.wildlandsprojectrevealed.org)
13. **Agenda 21 and population control:** Those behind Agenda 21 believe the earth is overcrowded and it must be drastically reduced in number. The UN Global Biodiversity Assessment Report calls for an 85 percent reduction in the human population. Some, like Ted Turner, blatantly call for 95% reduction.
14. **Agenda 21 seeks for a "wrenching transformation":** In his book, *Earth in the Balance*, Al Gore wanted a "wrenching transformation" to take place to lead America away from the "horrors of the Industrial Revolution." Agenda 21/Sustainable Development is the process of how that is being done. It calls for changing the very infrastructure of the nation away from private ownership and control of property to nothing short of central planning of the entire economy. Truly, Sustainable Development is a Master Plan designed to change our way of life, environmentally, economically, and socially.

For more information go to: Henry Lamb, *Sustainable Development or Sustainable Freedom*, www.freedom21.org;; Michael Shaw, *Understanding Sustainable Development - Agenda 21* www.freedomadvocates.org;; Orlean Koehle, *By Stealth and Deception USA Transformation*, Xlibris, 2010; and *Just Say No to Big Brother's Smart Meters*, www.refusesmartmeters.com;; www.eagleforumofcalifornia.com/ExposeAgenda21Taskforce;; Tom DeWeese, www.americanpolicy.org;; Kevin Eggers www.exposeagenda21.com;; Niki Raapana [blogspot.com](http://www.blogspot.com). "Living Outside the Dialectic;" Rosa Koire - www.DemocratsAgainstUNAgenda21.com;; Michael Coffman, www.environmentalperspectives.inc, http://www.discerningtoday.org/dr_michael_coffman.htm;; Patrick Wood, "Technocracy Papers," www.AugustReview.com; and www.theEastBayTeaParty.com.

No. 16-970

In the
Supreme Court of the United States

BRANDON LANCE RINEHART,
Petitioner,

v.

PEOPLE OF CALIFORNIA,
Respondent.

On Petition for a Writ of Certiorari to the
Supreme Court of California

**BRIEF OF WESTERN MINING ALLIANCE, ET
AL., AS *AMICI CURIAE* IN SUPPORT OF
PETITION FOR WRIT OF CERTIORARI**

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TABLE OF CONTENTS

TABLE OF AUTHORITIES..... ii

IDENTITY AND INTERESTS OF AMICI
CURIAE1

INTRODUCTION.....3

SUMMARY OF THE ARGUMENT5

ARGUMENT.....6

 I. THE UNITED STATES CONGRESS
 CONSISTENTLY HAS PROMOTED
 THE DEVELOPMENT OF ALL
 MINERAL RESOURCES ON
 FEDERAL LANDS, AND HAS
 ASSERTED FEDERAL
 GOVERNMENT CONTROL OVER
 THAT ACTIVITY AND ITS EFFECTS,
 FOR OVER 150 YEARS6

 II. SUCTION DREDGING REPRESENTS
 THE ONLY COMMERCIALY VIABLE
 WAY TO MINE FOR SUBMERGED
 PLACER GOLD14

CONCLUSION19

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>California Coastal Commission v. Granite Rock Co.</i> , 480 U.S. 572 (1987).....	4, 14, 15
<i>High Country Citizens Alliance v. Clarke</i> , 454 F.3d 1177 (2006).....	7
<i>Orion Reserves Ltd. Partnership v. Salazar</i> , 553 F.3d 697 (2009).....	6
<i>People v. Rinehart</i> , 1 Cal. 5th 652, 664 (2016).....	9, 10, 12, 18
<i>Siskiyou Regional Educ. Project v. Rose</i> , 87 F. Supp. 2d 1074 (D. Oregon 1999)	15
<i>Woodruff v. North Bloomfield Gravel Min. Co.</i> , 18 F. 753 (D. Cal. 1884)	11, 12, 13
Statutes	
16 U.S.C. § 528	10
30 U.S.C. § 21(a).....	9
30 U.S.C. § 22	3, 6, 7
43 U.S.C. § 1701(a)(12).....	9

TABLE OF AUTHORITIES – CONTINUED

	Page(s)
Caminetti Act of 1893	12, 14
General Mining Law of 1872	<i>passim</i>
Lode Law of 1866 and the Placer Act of 1870	6
Mining and Minerals Policy Act of 1970	7, 9
 Other Authorities	
33 U.S.C. § 661, <i>et seq.</i>	12
Barry Burkhardt & Melody R. Holm, “Multiple Use of National Forest System Lands—Is Minerals Part of the Mix?,” U.S.D.A. Forest Service at 4 (March 10, 2013).	10
California Department of Fish and Game, Draft Subsequent Environmental Impact Report, Ch. 3, at 3-1 (February 2011), available at https://nrm.dfg.ca.gov/FileHandler.ashx? DocumentID=27392&inline (last visited on March 5, 2017)	15, 16

TABLE OF AUTHORITIES - CONTINUED

	Page(s)
California Geological Survey, “Map of California Active Gold Mines: 2000-2001, available at http://www.conservation.ca.gov/cgs/geologic_resources/mineral_production/Documents/yellowau.pdf (last visited on March 7, 2017).	16
Final Environmental Impact Report (2012).....	3, 4
Internal Mining Report, “Mineral Examination of the RMH #1 Placer Mining Claim, Shasta-Trinity National Forests” (March 13, 1989).....	17
Joseph J. Hagwood, Jr., “The California Debris Commission: A History,” U.S. Army Corps of Engineers, Sacramento District, at 32-33 (1981), available at http://www.dtic.mil/dtic/tr/fulltext/u2/a436413.pdf (last visited on March 5, 2017).....	13, 14
NASDAQ LATEST COMMODITY PRICES, http://www.nasdaq.com/markets/commodities.aspx (last visited Feb. 16, 2017).....	18
PRO-MACK MINING SUPPLIES, https://www.promackmining.com/mining_supplies/ (last visited Feb. 16, 2017)	17

TABLE OF AUTHORITIES - CONTINUED

	Page(s)
Salmon River Ranger District, Klamath National Forest, “Environmental Analysis Report: Suction Dredging” (1979).....	17
U.S.D.A. Forest Service at 4 (March 10, 2013), available at www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5167484.pdf (last visited on March 3, 2017)	10

**IDENTITY AND INTERESTS OF AMICI
CURIAE¹**

This brief is respectfully submitted by three organizations with members in the Western United States whose mining interests have been adversely affected by the lower decision of the California Supreme Court that upholds California’s ban on suction dredge mining—the only commercially feasible form of mining for those members.

Amicus Western Mining Alliance is a Nevada Corporation organized to defend the rights of individual miners in the West.² Founded in 2011 in response to California mining bans, the Alliance is a litigant in the ongoing legal challenges to the dredging ban in California. The Western Mining Alliance has participated in numerous settlement discussions concerning the regulation of suction dredging, and has provided testimony before the California legislature and briefings to the United States Congress on mining-related issues.

¹ Pursuant to Supreme Court Rule 37.6, Amici Curiae certifies that no counsel for any party authored this brief in whole or in part, and that no entity or person, aside from Amici Curiae, made any monetary contribution toward the brief’s preparation and submission. All counsel for parties have consented to the brief’s filing in letters that are on file with the Clerk’s office. Counsel for Petitioner received timely notice of intent to file; counsel for Respondent received such notice six days in advance of this filing, and waives any objection to the filing of this brief based on the notice’s timing.

² Petitioner Brandon Rinehart is a member of Western Mining Alliance, but he did not in any way contribute to or direct the content of this brief.

The Western Mining Alliance has a unique perspective on the practice and economics of suction dredge mining. As federal mining claimants, the Alliance's members have extensive experience in the operation of the prohibited equipment for which the petitioner in this case, Brandon Rinehart, was cited, and have financially contributed to his defense. The Alliance's members have been harmed by the motorized mining bans enacted by the States of California and Oregon. The Western Mining Alliance represents the views of citizens who have operated legally for over sixty years under a federal management regime that balances state environmental concerns against a national policy promoting prospecting and mining on federal lands.

Amicus American Mining Rights Association ("AMRA") is a non-profit organization that promotes mining education, and is an advocate for mining rights and public land access. AMRA is a member-supported organization that has rapidly gained the support of thousands of public land users. AMRA's objective is to maintain access to public lands for multiple uses as envisioned by Congress. AMRA works with federal and state agencies to implement reasonable land-use regulations while promoting access to public lands.

Amicus Waldo Mining District was established on April 1, 1852, in the Oregon Territory and is recognized as the first government in southwest Oregon. The District is an unincorporated association of miners, roughly half of whom hold one or more mining claims within the Siskiyou or other national forests. Historically, and pursuant to the

Mining Law of 1872, 30 U.S.C. § 22, *et seq.*, mining districts were considered government entities, and could make binding rules and regulations within their jurisdictions. Today, one of the principal purposes of the District is to promote the interests of its approximately 125 members, many of whom the United States Forest Service has characterized as finding their livelihood, recreation and, for some, their identity, in suction dredge mining.

The decision below by the California Supreme Court will indefinitely halt the dredging operations of many members of Amici. Members will not be able to work the claims that they own, nor will prospectors be permitted to explore for new claims using suction dredging. These undesirable effects will ensue notwithstanding the fact that suction dredging is the only reasonable and commercially viable method to recover gold from underwater streambed sediments.

Amici intend to provide the Court with a reasonable and balanced perspective on the circumstances surrounding this case, from a miner's perspective.

INTRODUCTION

In 2009, the State of California issued a statewide ban on suction dredge mining—a type of mining permitted by the State for over a half century—pending environmental review of its impacts. Appendix (“App”) at A-2—A-3. In 2012, the State issued a final Environmental Impact Report, *id.* at A-3, which supported continued use of suction dredges for the majority of submerged placer claims,

including Petitioner Brandon Rinehart's claim, but the State failed to establish a permitting system. The fact that California *could* have established a permitting system is evidenced by its issuance of permits for the use of suction dredge equipment from 1961 to 2009. *Id.* at A-2.

Mr. Rinehart was cited for possessing and operating his suction dredge equipment without a permit. *Id.* at A-3. In the California trial court, Mr. Rinehart claimed that the federal policy of strongly promoting mining on federal lands preempted the State's scheme purporting to require permits that were impossible to obtain. *Id.* at A-4—A-5. He made an offer of proof showing that the State's ban on suction dredging rendered a particular use of federal lands—placer gold mining—unviable. *Id.*

The trial court refused to allow a preemption defense and convicted Mr. Rinehart of the misdemeanor. *Id.* at A-5. Mr. Rinehart appealed, and the state court of appeals agreed that he should be allowed to present his preemption defense and remanded the case back to the trial court. *Id.* The State then petitioned the California Supreme Court, which held that the federal mining laws only granted a possessory right to a mining claim, but provided no right to mine. *Id.* at A-10, A-12.

Mr. Rinehart is now petitioning this Court to review the California Supreme Court's decision. If left standing, the lower court's decision will improperly extend this Court's decision in *California Coastal Commission v. Granite Rock Co.*, 480 U.S. 572, 587 (1987) to allow states to dictate land use on

federal lands, by denying thousands of miners the only commercially viable method of mining their federal mining claims.

SUMMARY OF THE ARGUMENT

The petition in this case asks whether the California Supreme Court erred in holding that the General Mining Law of 1872 does not preempt a California ban on mining on federal land, contrary to the decisions of two federal circuit court of appeals decisions and a Colorado Supreme Court decision. The answer to the question turns, in part, on two sub-questions: (1) Do federal mining laws plainly evince a purpose and objective to encourage and promote mining on federal lands?, and (2) Is suction dredge mining the only commercially viable means of gold mining, such that California's ban on suction dredge mining is effectively a ban on an entire category of land use (namely, gold mining on federal lands)?

The answer to both questions is "yes." There is a venerable and robust tradition of unqualified promotion of mining on federal lands, embodied in over 150 years of federal legislation. Moreover, the only commercially feasible means of mining submerged placer³ deposits is by way of suction dredge mining. To ban that method is to, in effect, change the land use classification of federal lands from promoting mineral-development entry to

³ "A lode is a vein or body of minerals embedded in fixed rock. A placer is an area where minerals are found at or near the surface in loose earth, sand, or gravel, often by a riverside or in a riverbed." App. at A-4.

effectively shutting it down. In light of those undisputable facts, and the resulting court conflicts and national importance of the questions implicated by the California Supreme Court's decision below, Amici urge the Court to grant that petition.

ARGUMENT

I. THE UNITED STATES CONGRESS CONSISTENTLY HAS PROMOTED THE DEVELOPMENT OF ALL MINERAL RESOURCES ON FEDERAL LANDS, AND HAS ASSERTED FEDERAL GOVERNMENT CONTROL OVER THAT ACTIVITY AND ITS EFFECTS, FOR OVER 150 YEARS

For over a century and a half, this Nation has promoted a federal policy of encouraging the development of mineral resources on federal lands. The first comprehensive piece of federal legislation to express that policy was the General Mining Law of 1872, tellingly entitled: "An Act to promote the Development of the Mining Resources of the United States."⁴ 17 Stat. 91 (May 10, 1872); *see also Orion Reserves Ltd. Partnership v. Salazar*, 553 F.3d 697, 699 (2009) ("To encourage mining in the western United States, Congress enacted the General Mining Law of 1872"). The General Mining Law allows citizens to enter federal land freely and explore for valuable minerals. 30 U.S.C. § 22. The statute

⁴ Congress enacted legislation in the 1860s to begin addressing mining on federal lands, in a more limited way. The 1872 Mining Law essentially served to combine and fine-tune two earlier acts: the Lode Law of 1866 and the Placer Act of 1870.

liberally provides that “*all* valuable mineral deposits in lands belonging to the United States . . . shall be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States.” *Id.* (emphasis added). In short, the General Mining Law “creates a presumption in favor of mining that is difficult—if not impossible—to overcome” and “is the Magna Carta of mining on public land,” so that “its provisions have a status higher than that of ordinary law.” *High Country Citizens Alliance v. Clarke*, 454 F.3d 1177, 1186 (2006) (internal quotation marks omitted) (*quoting* C. Meyer & G. Riley, *Public Domain, Private Dominion: A History of Public Mineral Policy in America*, pp. 46, 52, 56, 78 (1985)).

Notably absent from the General Mining Law of 1872 is reference to *state power* to regulate (let alone prohibit) mining practices and activities on federal lands. Section 22, Title 30, of the United States Code makes no mention of such power. Instead, the only limitations on the otherwise free and open development of mineral resources on federal lands are “regulations prescribed by law” (of the federal variety) and “local customs or rules of miners in the several mining districts.” 30 U.S.C. § 22.

Over the next 120 years following the General Mining Law of 1872, Congress enacted legislation that continued to reaffirm the Federal Government’s commitment to encourage, promote, and protect all mining on federal lands, and its intent to maintain ultimate land-use authority over that important economic activity. The Mining and Minerals Policy Act of 1970—codified as a preface to the Mining

Law—succinctly states the Federal Government’s objective concerning the development of the country’s mineral resources:

The Congress declares that it is the continuing policy of the Federal Government in the national interest to ***foster and encourage*** private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries, (2) the orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help assure satisfaction of industrial, security and environmental needs, (3) mining, mineral, and metallurgical research, including the use and recycling of scrap to promote the wise and efficient use of our natural and reclaimable mineral resources, and (4) the study and development of methods for the disposal, control, and reclamation of mineral waste products, and the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities.

For the purpose of this section “minerals” shall include all minerals and mineral fuels including oil, gas, coal, oil shale and uranium.

It shall be the responsibility of the Secretary of the Interior to carry out this

policy when exercising his authority under such programs as may be authorized by law other than this section.

30 U.S.C. § 21(a) (emphasis added).

Thus, the Mining and Minerals Policy Act of 1970, which remains in full force and effect, restates—almost 100 years after the General Mining Law—the Federal Government’s encouragement and promotion of mining. And it reaffirms the federal policy favoring *federal* land-use regulation of mining activities. If California has effectively banned gold mining on federal lands by banning the only commercially viable means of engaging in that activity (which it has, as explained *infra*), then that ban must by definition be at odds with the federal policy embodied in the Mining and Minerals Policy Act of “foster[ing] and encourag[ing] private enterprise in . . . the development of economically sound and stable domestic mining.”⁵

That same federal objective is upheld time and again in other federal legislation. 43 U.S.C. § 1701(a)(12) (“Federal Land Policy and Management of 1976,” reaffirming that “the policy of the United States” is that “the public lands be managed in a

⁵ The California Supreme Court concluded that section 21(a) of the Mining and Minerals Policy Act does not convey Congress’s intent for “mining to be pursued at all costs.” *People v. Rinehart*, 1 Cal. 5th 652, 664 (2016). But that is not the same as saying that Congress intended to allow states to effectively ban particular mining activities altogether—without regard to environmental impacts and the availability of mitigation. The Mining and Minerals Policy Act does not endorse that view.

manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands ***including implementation of the Mining and Mineral Policy Act of 1970*** (emphasis added); 16 U.S.C. § 528 ("Multiple-Use Sustained-Yield Act of 1960," which establishes a federal regulatory regime for the development and administration of renewable surface resources for multiple use and sustained yield of products and services, but reaffirming that "[n]othing herein shall be construed so as to affect the use or administration of the mineral resources of national forest lands or to affect the use or administration of Federal lands not within national forests"); *see also* Barry Burkhardt & Melody R. Holm, "Multiple Use of National Forest System Lands—Is Minerals Part of the Mix?," U.S.D.A. Forest Service at 4 (March 10, 2013)⁶ ("References to mineral resource management in key laws cited herein indicate that in most cases, minerals need to be a primary consideration in multiple use management of NFS lands and should not be unduly constrained by management prescriptions for other resources. . . . ***In short, mineral resources are to be managed on an equal—if not priority—basis with other resources.***" (emphasis added)).

In its decision, the California Supreme Court tried to cast doubt on that long-standing and consistent federal policy promoting the development of all mineral resources on federal lands. *People v. Rinehart*, 1 Cal. 5th 652, 667-70 (2016). As an

⁶ Available at www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5167484.pdf (last visited on March 3, 2017).

example, it cited *Woodruff v. North Bloomfield Gravel Min. Co.*, 18 F. 753 (D. Cal. 1884).⁷ In that case, a federal court granted a property owner an injunction against a mining company, on public nuisance grounds, for dumping mining debris into rivers, causing flooding of nearby properties. *Id.* at 808-09. The issue there was not whether federal policy encourages and promotes mining in a manner that precludes state **bans** on mining practices, irrespective of their environmental impacts. Indeed, the case involved no state action purporting to ban a mining method or mining altogether in spite of federal policy to the contrary. Rather, the case involved only the narrow question of whether the company had the right to mine in a way that constituted a **public nuisance**. *Id.* at 806 (“We are simply to determine whether the complainant’s rights have been infringed, and, if so, afford him such relief as the law entitles him to receive, whatever the consequence or inconvenience to the wrong-doers or to the general public may be.”); see also *id.* at 810 (Deady, J., concurring) (“Undoubtedly the acts of the defendants constitute a public nuisance, and the plaintiff being specially injured thereby, both in his farm and city property, has an undoubted right to maintain this suit for relief.”).

The decision below by the California Supreme Court asserts that *Woodruff* “had the practical effect of banning the mining practice” of hydraulic mining, with the consent of the Federal Government; from that premise, the decision concludes that there must

⁷ The case also is known as the “Sawyer decision,” after Judge Lorenzo Sawyer, who wrote the opinion.

be no federal policy encouraging or promoting mining to the preclusion of state bans. *See Rinehart*, 11 Cal. 5th at 668. Setting aside for the moment that *Woodruff* was not a “state ban” case, the California Supreme Court’s historical account is simply inaccurate.

Nine years after *Woodruff*, a new federal law—the Caminetti Act of 1893—was enacted. 33 U.S.A. § 661, *et seq.* The Act again reasserted federal control and regulation over mining, with a specific focus on the hydraulic practice that was at issue in *Woodruff*. It established the California Debris Commission, consisting of officers of the Army Corps of Engineers. *Id.* § 661. The Act granted the Commission jurisdiction over mining “carried on by the hydraulic process . . . in the territory drained by the Sacramento and San Joaquin River systems in the State of California.” *Id.* § 663. The Act also declared “prohibited” and “unlawful” any hydraulic mining that “directly or indirectly injur[es] the navigability of said river systems” without a permit as required by the Act. *Id.* Finally, consistent with federal policy promoting the development of all mineral resources on federal land, the Act regulated the effects of hydraulic mining (i.e., the mining debris it produces) and reiterated that such regulation “shall not be construed as in any way affecting the right of such owner or owners to operate said mine or mines by any other process or method in use . . . on March 1, 1893.” *Id.* § 670. Notably, the Caminetti Act did not require that the Commission consult with or seek approval from any state agency for permitting hydraulic operations.

Contrary to the narrative of the decision below, hydraulic mining persisted after *Woodruff*. In its first year of operation, the California Debris Commission issued over 60 permits to operate hydraulic mines and by 1896 had issued 166 permits to operate. The Federal Government, through the California Debris Commission built over 20 debris storage reservoirs on the tributaries of the Sacramento and San Joaquin rivers. Many of these reservoirs still exist today. See Joseph J. Hagwood, Jr., "The California Debris Commission: A History," U.S. Army Corps of Engineers, Sacramento District, at 32-33 (1981).⁸

As important, the creation and operation of the California Debris Commission reflected the federal policy that regulation of the effects of mining would occur at the federal, not state, level. As one U.S. Army Corps of Engineers historian wrote:

The Commission was an extremely powerful body, and, in cases dealing with hydraulic mining, it constituted judge, jury and executioner. It was the supreme authority in all matters related to the subject. In addition, the three Corps of Engineers officers were empowered to establish their own operating procedures and to interpret them as they deemed appropriate. Finally, the Commission was granted the right to use any of the public lands of the United States, or any rock, stone, timber, trees, brush or

⁸ Available at <http://www.dtic.mil/dtic/tr/fulltext/u2/a436413.pdf> (last visited on March 5, 2017).

material thereon, or therein, for any of the purposes of this act Few groups in history have been afforded such absolute authority over a private commercial sector of society as was given the California Debris Commission.

Hagwood, *supra*, at 31 (internal quotation mark omitted).

Eventually, miners shifted from hydraulic mining to other technologies, including suction dredging. By the 1920s, gold produced by the hydraulic method dropped in value from \$10,000,000 to \$122,000 annually. *Id.* at 38. But hydraulic mining's fate was not the result of a *state ban* on that method of mining. And importantly for this case, whatever the reasons for hydraulic mining's eventual unviability, Congress expressed a clear intent to preempt state laws restricting or banning hydraulic mining on federal lands. The Caminetti Act, among other federal legislation, is evidence of that purpose and objective.

II. SUCTION DREDGING REPRESENTS THE ONLY COMMERCIALLY VIABLE WAY TO MINE FOR SUBMERGED PLACER GOLD

A key question in this case is whether California's ban on suction dredge mining is a "state environmental regulation [that is] so severe that a particular land use would become commercially impracticable." In *Granite Rock Co.*, 480 U.S. at 587, the Court suggested that such a regulation would be preempted. This is the case to test the important

preemption boundary that *Granite Rock* identifies. Here, the land use in question is gold mining on federal lands. And there is no question that California’s ban on suction dredging renders that particular land use—which federal mining laws have consistently promoted over the last century and a half—“commercially impracticable.”

A suction dredge is akin to a floating vacuum cleaner. Its operation is simple: A hose sucks rocks, gravel, sand and gold from a river bed and processes the material through a sluice box, which filters out the gold and deposits the rest back into the water. *See, e.g., Siskiyou Regional Educ. Project v. Rose*, 87 F. Supp. 2d 1074, 1081 (D. Oregon 1999) (describing in detail the method of suction dredging).

Given its elegant simplicity, suction dredging emerged in the 1950s as an inexpensive and efficient means of mining. California Department of Fish and Game, Draft Subsequent Environmental Impact Report for Suction Dredge Permitting Program (hereinafter, “DEIR”), Ch. 3, at 3-1 (February 2011).⁹ The number of general suction dredge permits issued annually by the Department “increased dramatically from 3,981 in 1976 to a peak of 12,763 in 1980, echoing the steep rise in gold prices in the late 1970s.” *Id.* The Department issued, on average, about 3,200 suction dredge permits to California residents *annually* from 1994 to 2009, when the

⁹ Available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=27392&inline> (last visited on March 5, 2017).

state's ban on suction dredging took effect. *Id.*, 3-1—3.2.

Suction dredge miners mine for valuable placer deposit that is submerged in streambeds. Suction dredge mining accounts for the majority of gold mining on federal lands in California, with the other kind of mining consisting of lode (i.e., “hard rock”) mining. In contrast to the 3000+ suction dredge permits issued to California residents annually from 1994 to 2009, in 2000-2001, there were only 16 registered lode mines throughout the entire State. California Geological Survey, “Map of California Active Gold Mines: 2000-2001.”¹⁰

As the experience of Amici's many members attests, suction dredging is the most cost-effective and efficient method to recover minerals from underwater streambed sediments (which, again, is where the vast majority of gold mining occurs). Amici are not aware of a single river placer miner who uses any equipment other than a suction dredge. It also creates the least environmental impact. In fact, Mr. Rinehart's claim underwent a full Environmental Impact Report in 1994 and a second full Environmental Impact Report in 2012. In both reports, the location of his claim was determined to be permissible. In a unique Catch-22, California issued regulations which would have allowed Rinehart to operate a suction dredge on his claim, but refused to establish a permitting system whereby he could obtain a permit.

¹⁰ Available at http://www.conservation.ca.gov/cgs/geologic_resources/mineral_production/Documents/yellowau.pdf (last visited on March 7, 2017).

Multiple claim validity tests undertaken by the United States Forest Service conclude that suction dredge equipment is the only commercially viable means of recovering mineral deposit—and the least environmentally harmful. *See, e.g.*, Internal Mining Report, “Mineral Examination of the RMH #1 Placer Mining Claim, Shasta-Trinity National Forests” (March 13, 1989) (“The only reasonable mining method available for working the alluvial [i.e., placer] gravels within the active river channel in the RMH #1 PMC would be the use of a small suction dredge, with an intake no larger than 6 inches.”). In fact, both the State of California and the Forest Service have attested to the fact that, in some cases, suction dredge mining *improves* the environment. *See, e.g.*, Salmon River Ranger District, Klamath National Forest, “Environmental Analysis Report: Suction Dredging” (1979) (“Representatives of the California Department of Fish and Game and the State Water Quality Control Board have stated that the actual dredging operation is more beneficial than harmful to the aquatic environment. The reason for this is that heavily sedimented areas do not provide the interparticle spaces needed for good habitat and fish spawning areas.”).

The suction dredge is affordable, with commercial versions start at less than \$1,700.¹¹ The average suction dredge miner spends a mere \$6,000 to purchase all the necessary equipment to start a suction dredge mining operation. Cal. Dep’t of Fish

¹¹ PRO-MACK MINING SUPPLIES, https://www.promackmining.com/mining_supplies/ (last visited Feb. 16, 2017).

and Game, Suction Dredge Permitting Program, Literature Review 4.6-1 (2009) (on file with the California Department of Fish and Game). That small investment is all it takes to start a business that has the potential to strike gold, which currently sells for more than \$1,200 per *ounce*.¹² That low capital investment, coupled with the efficiency of a suction dredge, makes this the only reasonable and commercially practicable method of mining for placer gold.

As an allegedly viable alternative to suction dredge mining, California has proposed that miners return to 1848 methods and pan for gold. Without reference to any competent evidence from experienced miners or experts in the industry, California has argued that using a gold pan is commercially practicable. Amici are unaware of any commercial mining operation that uses gold pans.

In yet another ill-conceived proposal, the United States—who participated in the proceedings before the California Supreme Court—has argued that the alternative mining methods of “bucket-line dredging, dragline, or floating a backhoe and feeding a sluice” are viable substitutes for the banned suction dredge. Brief of the United States As Amicus Curiae, p. 27, *Rinehart*, 1 Cal. 5th 652. It strains credulity to believe that the State would permit a bucket line dredge operating on a river when it refuses to permit a lawnmower-sized device. The proposed

¹² NASDAQ LATEST COMMODITY PRICES, <http://www.nasdaq.com/markets/commodities.aspx> (last visited Feb. 16, 2017).

alternatives are also considerably more environmentally harmful than suction dredging. The proposal made by the United States in proceedings before the California Supreme Court in this case merely reflects a lack of expertise in mining techniques rather than a legitimate alternative.

California's ban on suction dredge mining is tantamount to a state banning engine-powered flight and then arguing that the airline industry will survive, because alternative methods of air transportation exist. While it may be true that hang gliders can get people from point A to B, the airline industry—and air travel itself—would be wiped out. The same is true here. There exists no other economically practicable method of river mining other than suction dredging, and thus any ban on that method amounts to a ban on river mining.

CONCLUSION

For the reasons stated above, and those stated in the petition, the Court should grant the petition.

DATED: March 2017 Respectfully submitted,

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ACT

of 9 June 2011,

Geological and Mining Law ^{1) 2)}

DIVISION I GENERAL PROVISIONS

¹⁾ This Act implements in respect of its regulation the following acts of European Communities:

- 1) Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving safety and health protection of workers in mineral-extracting industries through drilling (eleventh individual Directive within the meaning of Art. 16 (1) of Directive 89/391/EEC). (L 348, 28/11/1992 P. 0009 - 0024, with further amendments; O.J Polish Special Edition chapter 5, t. 2, p. 118);
- 2) Council Directive 92/104/EEC of 3 December 1992 on the minimum requirements for improving safety and health protection of workers in surface and underground mineral-extracting industries (twelfth individual Directive within the meaning of Art. 16 (1) of Directive 89/391/EEC). (O.J L 404, 31/12/1992 P. 0010 - 0025, with further amendments.; O.J Polish Special Edition chapter 5, t. 2, p. 134, with further amendments);
- 3) Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorizations for prospection, exploration and production of hydrocarbons (OJ L 164, 30.6.1994, p. 3–8 ; O.J Polish Special Edition chapter 6, t. 2, p. 262);
- 4) Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (O.J. L 182, 16/07/1999 P. 0001 - 0019, with further amendments; O.J Polish Special Edition chapter O.J Polish Special Edition chapter 15, t. 4, p. 228, with further amendments.);
- 5) Council Decision 2003/33/EC of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Art. 16 of and Annex II to Directive 1999/31/EC (O.J. L 011 , 16/01/2003 P. 0027 - 0049, with further amendments O.J Polish Special Edition chapter 15, t.7, p. 314, with further amendments;).

²⁾ This Act amends the following laws: the Law of 3 February 1995 on the protection of agricultural and forest land, the law of 21 August 1997 on real estate, the law of 21 June 2002 on explosives for civil uses, the law of 2 July 2004 on freedom of economic activity, the Act of 28 July 2005 on the judgment costs in civil matters, the law of 17 February 2006 on the grant foreseen for particular entities, the law of 16 November 2006 on treasury fee, the law of 7 September 2007 on the functioning of coal mining in 2008-2015, the law of 10 July 2008 on mining wastes, the law of 3 October 2008, on the Provision of information on environment and its protection, participation of the society in environmental protection and estimation of impact on the environment, the law of 29 January 2009 on the Voivod and local government in the province.

Art. 1.

1. The Act defines the terms and conditions for undertaking, execution and completion of activities in the scope of:

- 1) geological works;
- 2) minerals exploitation from deposits;
- 3) non-reservoir storage of substances in the subsurface;
- 4) storage of waste in the subsurface.

2. The Act also sets out requirements for the protection of mineral deposits, groundwater, and other components of the environment in connection with the activities referred to in par. 1.

Art. 2.

1. Provisions of the Act, except of Chapter III, shall apply to:

- 1) construction, expansion and maintenance of drainage systems of liquidated mining plants;
 - 2) the excavation works carried out in closed underground mining plants listed in the regulations issued under par. 2, for purposes other than those specified by law, in particular in touristic, curative and recreational purposes;
 - 3) underground works conducted for scientific, research, experimental and training purposes for the needs of geology and mining;
 - 4) tunnelling by using mining techniques;
 - 5) decommissioning of entities, equipment and installations referred to in points 1 – 4
2. Minister responsible for Environment, by the way of regulation, shall define underground mining facilities referred to in par. 1 point 2, following the natural and technical conditions existing in these plants, as well as the need to ensure the safety and health and life of people staying in them.
3. Provisions of the Act concerning the entrepreneur shall apply mutatis mutandis to the entities which have obtained decisions other than a concession, constituting the basis for undertaking the activities regulated by the Act.

Art. 3.

This Act shall not apply to:

- 1) the use of water to the extend regulated by separate regulations;
- 2) the execution of pits and boreholes to a depth of 30 m in order to use the heat of the Earth, beyond the mining areas;
- 3) research and teaching activities carried out without the execution of geological operations;

- 4) acquisition of samples of minerals, rocks and fossils for scientific, collecting and teaching purposes carried out without performing of mining operations;
- 5) carrying out operations related with artificial supplying of the shoreline zone with sand coming from the sea bottom sediments of the maritime areas of the Republic of Poland;
- 6) the exploitation of aggregates to the extent necessary to complete urgent work to prevent flooding during the term of state of natural disaster;
- 7) determining the geotechnical conditions of foundation of buildings without performing geological works.

Art. 4.

1. The provisions of Chapter III - VIII and Art. 168-174 does not apply to extraction of sand and gravel for the physical person's own needs, of the property which is the subject of property rights (perpetual use), without the right to dispose of excavated deposits, if at the same time the mining:
 - 1) will be performed without the use of blasting agents;
 - 2) is not greater than 10 m³ per calendar year;
 - 3) does not violate the destination property.
2. Anyone who intends to undertake excavation referred to in par. 1, is required to notify the Starost with 7 days notice in writing, specifying the localization of intended works and the intended duration of their execution.
3. In case of violation of requirements referred to in par. 1 and 2:
 - 1) the competent mining supervision authority, orders by a decision, the suspension of mineral exploitation; copy of this decision forthwith transmit the Starost;
 - 2) The Starost defines for the exploiting person the increased charge, referred to in Art. 140, par. 3 point 3

Art. 5.

1. The water is not defined as the minerals, with the exception of the curative and thermal waters and brines.
2. Water:
 - 1) curative water is the groundwater, which in terms of chemical and microbiological conditions is not contaminated, is characterized by natural variability of physical and chemical features and contains:
 - a) dissolved solid minerals - not less than 1 000 mg/dm³ or
 - b) ferrous ion - not less than 10 mg/dm³ (ferruginous water), or
 - c) fluoride ion - not less than 2 mg/dm³ (fluoride water), or
 - d) the iodide ion - not less than 1 mg/dm³ (iodide water), or

- e) a divalent sulfur - not less than 1 mg/dm³ (sulfurous waters), or
 - f) meta-silicic acid - not less than 70 mg/dm³ (water containing silica), or
 - g) radon - not less than 74 Bq/dm³ (radon water), or
 - h) unbound carbon dioxide - not less than 250 mg/dm³, considering that the quantities between 250 to 1 000 mg/dm³ is called carbonic acid water, and above 1 000 mg/dm³ is called –szczawa” water;
- 2) thermal water is an underground water, which at the outflow of intake has a temperature of not less than 20 C.
3. Brine is the groundwater containing dissolved solid minerals, not less than 35 g/dm³.
4. The draining waters from mining excavations are not curative waters, thermal waters nor brines.

Art. 6.

1. The meaning of the Act:
- 1) geological data - are the results of direct observations and measurements obtained in the course of geological works;
 - 2) geological information - data and geological samples together with the results of their processing and interpretation, particularly given in the geological documentation and recorded on data carriers;
 - 3) excavated minerals – means the whole of minerals disconnected from the deposits;
 - 4) the establishment of the mining plant - means the establishment founded outside of the underground mining excavation of the mining plant, which is the construction object within the meaning of the Act of 7 July 1994 - Construction Law (O.J 2010 No 243, item. 1623, with further amendments.³⁾), used directly to carry out activities regulated by the Act on the exploitation of minerals from the deposits, and in case of underground mining plants exploiting coal with technology remaining in connection with the preparation of the exploitation of minerals, exploited minerals for sale, underground non-reservoir storage of substances or underground storage of waste;
 - 5) mining area – means a space within which the entrepreneur is entitled to mineral exploitation, the underground non-reservoir storage of substances or underground storage of waste, and conducting the necessary mining works to perform the concessions;
 - 6) an underground landfill - means a part of the rock mass, including underground mining excavation, used for waste disposal by land filling;

³⁾ Amendments in the consolidated text of the Act were published in the Journal. Laws of 2011, No. 32, pos. 159, No. 45, pos. 235 and No. 94, item. 551st

- 7) prospecting for - means to carry out geological work to identify and initially document the mineral deposits or ground water;
- 8) geological work - means designing and conducting of investigations aimed at identification of the geological structure of the country, in particular prospecting for and exploration of mineral deposits and groundwater deposits, determination of geological-engineering conditions and preparation of geological maps and documentation as well as designing and carrying out research for the purposes of the Earth heat exploitation or the use of groundwater;
- 9) entrepreneur - means the party that has a concession for conducting the activities regulated by this Act,
- 10) restoring to the previous state - means to restore to the state from before the damage, in particular by ensuring to the building objects, devices and installations an unimpaired state of resistance, heat absorbance, tightness and technical-functional utility;
- 11) geological operation - means carrying out, within the framework of geological works, any activities below the surface, including those requiring the use of explosives, as well as the closing down of excavations arising after such operations,
- 12) a mining operation - means the performance, protection or closing down of mining excavations in relation to the activity regulated by this Act,
- 13) prospecting for - means the performance of geological works in the area of a mineral or groundwater deposits with respect to which preliminary documentation was performed,
- 14) blasting agents - are explosives in the terms of the Act of 21 June 2002 on explosives earmarked for civil usage (Official Journal No. 117/1007 with further amendments);
- 15) a mining area is the space subjected to the expected damaging effects of the mining operations of a mining plant,
- 16) hydrocarbons - are crude oil, natural gas and its natural derivatives, as well as the methane in coal deposits, with the exception of methane occurring as accompanying mineral
- 17) a mining excavation - means the space on a land real estate or in the subsurface developed as a result of mining operations,
- 18) a mining plant is a technically and organizationally separate set of means that is used directly to the pursuit of activities regulated by the Act relating to the exploitation of minerals from deposits, and in the underground mining plants exploiting hard coal along with the remaining due to mineral exploitation technology of preparation of exploited minerals for sale, underground non-reservoir storage of substances or underground storage of waste, including mining excavations, the building objects, equipment and installations;

⁴⁾ Amendments to the Act were published in the Journal. Laws 2002, No. 238, item. 2019, 2004, No. 222, pos. 2249, 2006, No. 104, pos. 708 and 711, of 2007 No. 176, pos. 1238, of 2008 No. 214, pos. 1347, from 2010, No. 155, pos. 1039 and 2011, No. 106, item. 622.

- 19) mineral deposit - means a natural accumulation of minerals, rocks and other substances excavation of which can bring economical benefits ;
- 20) tipping of overburden - means a set of activities conducted in open pit mining excavations, inherent technically and organizationally with the movement and storage of masses of soil and rocks removed from above the deposits, to allow exploitation of useful minerals.

2. Whenever it is mentioned in this Act:

- 1) starosts - means also presidents of towns with the rights of a district;
 2) districts - means also the towns with the rights of a district.

Art. 7.

1. Undertaking and execution of activities defined by this law is allowed only if it doesn't violate any specific destination of the properties foreseen in the local urban spatial development plan and in separate regulations.
2. In case of the absence of the local urban spatial development plan, undertaking and execution of activities defined by this law is permissible only in case if it doesn't violate the way of using the property foreseen in the study of conditions and directions of spatial management, and in separate regulations.

Art. 8.

1. Decisions issued under this Act which apply to internal marine waters and territorial sea as well as the coastal belt, need to be agreed with the Director of the competent Maritime Authority.
2. Decisions issued under this Act which relate to the exclusive economic zone, require consultation with the minister responsible for maritime economy.

Art. 9.

1. In case if this Act subordinates the decision making of the administrative organ of the cooperation (arrangements or expressing an opinion) to another administrative body, it shall express its opinion no later than 14 days from the date of delivery of the draft decision.
2. If the consulted administrative body does not express its opinion within the period specified in the par. 1, it is considered to approve the submitted draft decision.
3. The deadline to take a position is considered to be kept if within 14 days from the receipt of a request for comments, the administrative body did deliver its opinion or dispatched it.

DIVISION II
MINING OWNERSHIP, MINING USUFRUCT AND OTHER MINING RIGHTS

Art. 10.

1. Deposits of hydrocarbons, hard coal, methane occurring as accompanying mineral, lignite, metal ores with the exception of soddy iron ores, native metals, ores of radioactive elements, native sulfur, rock salt, potassium salt, potassium-magnesium salt, gypsum and anhydrite, gemstones, despite the place of their occurrence, are covered by the mining ownership.
2. Deposits of curative waters, thermal waters and brines are also covered by the mining ownership.
3. Deposits of minerals not listed in the par.1 and 2 are covered by the law of real estate ownership of land.
4. Mining ownership covers also parts of the rock mass located outside the spatial borders of the land property, in particular located within the borders of maritime areas of the Republic of Poland.
5. The right of mining ownership is owned by State Treasury.

Art. 11.

In matters not regulated by this Act on mining ownership and in case of disputes between the State Treasury and the owner of the land, the provisions of the Civil Code shall be used, as well as the provisions of geodetic and cartographic law on land properties, including their demarcation.

Art. 12.

1. Within the bounds specified by Acts, the State Treasury, with the exclusion of other persons, can benefit from the subject of mining properties or dispose of it's rights of property exclusively by establishing the mining usufruct.
2. The rights of State Treasury arising from the mining ownership with reference to the activities:
 - 1) which requires a concession, are performed by the competent concession authorities;
 - 2) referred to in Art. 2 par.1, are performed by the boards of voivodeships.
3. If the subject of mining ownership is located within the maritime areas of Republic of Poland, the performance of the ownership rights requires the agreement with a minister responsible for maritime economy.
4. The rules concerning the mining usufruct do not apply to geological works, which do not require a concession.

Art. 13.

1. The establishment of mining usufruct shall be done in the way of written agreement under pain of nullity.
2. The agreement referred to in par. 1, is signed for the restricted period, no longer than 50 years.
3. The agreement referred to in par.1, determines the remuneration for the setting up of mining usufruct and the manner of its payment.
4. The remuneration for the establishment of mining usufruct is the income of State Treasury.

Art. 14.

1. With the exception for the situations as specified in Chapter III, Section 2, the establishment of mining usufruct may be preceded by a tender, in particular when more than one entity is striving for that.
2. The intention to establish a mining usufruct by tender shall be notified by the concession authority in each case by the way of notice.
3. The tender requirements shall be non-discriminatory and shall be based on the following criteria:
 - 1) technical and financial capability of bidder;
 - 2) the proposed technology of works;
 - 3) the proposed amount of remuneration for the establishment of mining usufruct.
4. Council of Ministers shall specify by the way of ordinance, the rules of placing notices concerning the collection of tenders for the acquisition of the right of mining usufruct, the data that shall be included in the notice, the requirements to be satisfied by the offer, the deadline for the submission of tenders and tender-end procedure, organization and the manner of conducting of the tender, including the appointment and work of the bid commission, guided by the need to present comprehensive information in the notice of invitation as well as to provide clear and non-discriminatory conditions for the tender and the competition protection, including a fair assessment of the tenders submitted.

Art. 15.

1. The one who explored the mineral deposit, being the subject of mining ownership, and documented in sufficiently to enable preparation of deposit development plan as well as obtained a decision approving the geological documentation of the deposits, may demand the establishment of the mining usufruct for its own benefit, with priority over other parties.
2. Any disputes regarding the matters specified in par. 1 shall be resolved by common courts competent for the seat of the Concession Authority, which represents the State Treasury.
3. The claim referred to in par. 1, shall expire after 5 years from the date of notification of the decision approving the geological documentation.

Art. 16.

1. Within the bounds specified by Acts and by the mining usufruct agreement the mining usufructuary may, in order to undertake the activities regulated by this Act, with the exclusion of other parties, use the space covered by this usufruct. In particular, he may undertake appropriately the geological operations, exploit minerals from deposits, undertake the activity of underground non-reservoir storage of substances or underground storage of waste, and perform activity defined in Art. 2 par. 1.
2. The facilities, equipment and installations built in the area covered by the mining usufruct are the property of the mining usufructuary. This ownership is a right related to the mining usufruct.
3. Unless the agreement for the establishment of mining usufruct provides otherwise, before the expiry of the mining rights the usufructuary is required to secure or remove facilities, equipment and installations referred to in par. 2nd.

Art. 17.

In the matters not regulated in this Act concerning the usufruct the regulations of Civil Code shall apply *mutatis mutandis*.

Art. 18.

1. If another party's real estate, or a part thereof, is necessary to carry out the activities regulated by the Act, the entrepreneur may demand the right to use that real estate or a part thereof, for the defined period with the remuneration.
2. The right referred to in par. 1 can not include the rights to gain profits from the property.
3. If, due to the restrictions of the rights, the real estate or a part thereof can not be used for the existing targets, the owner (perpetual usufructuary) may demand the entrepreneur to buy out the real estate.
4. In case of any disputes the matter shall be resolved by common courts.

Art. 19.

1. The entrepreneur who has been granted a concession for exploitation of hydrocarbons, hard coal, lignite, or non-reservoir underground storage of hydrocarbons, may demand the buyout of the real estate or a part thereof located in the mining area, to the extent necessary to perform the intended activities.
2. In case of any disputes the matter shall be resolved by common courts.

Art. 20.

The use of mining water for the needs of the mining plant is free of charge.

**DIVISION III
CONCESSIONS**

**Chapter 1
The concession rules**

Art. 21.

1. The activities in the scope of:

- 1) prospecting for or exploration of mineral deposits, referred to in Art. 10 par.1,
- 2) exploiting minerals from deposits,
- 3) underground non-reservoir storage of substances,
- 4) underground waste storage

- can be executed after granting of concession.

2. For the issues not regulated in this Act, with respect to granting concessions, shall be regulated by the provisions of the Act of 2 July 2004 on freedom of economic activity (O.J. 2010 NO 220/1447, with further amendments⁵⁾), with the exception for Art.11 par. 3-9 of this Act.

3. For licensing of the activities relating to prospecting for or exploration of hydrocarbons deposits and exploiting hydrocarbons from deposits, the provisions of the present Chapter shall apply, subject to the provisions of Chapter 2.

4. Concessions shall be granted for a period no shorter than 3 years and not longer than 50 years, unless the entrepreneur submitted an application for granting concession for shorter period.

5. The concession entitles to pursue an economic activity within the indicated space.

Art. 22.

1. A concession for:

- 1) prospecting for or exploration of mineral deposits, referred to in Art. 10 par.1,
- 2) exploitation of minerals referred to in Art. 10 par. 1, from the deposits,

⁵⁾ Amendments in the consolidated text of the Act were published in the Official Journal 2010 No 239/1593 as well as O.J. 2011 No 85/ 459, No 106/662 and No 112/ 654.

- 3) exploiting minerals from deposits located within the boundaries of the maritime areas of the Republic of Poland,
 - 4) underground non-reservoir storage of substances
 - 5) underground waste storage
 - shall be granted by the minister responsible for the environment.
2. Concessions to exploit minerals from deposits, where at the same time, the following requirements are met:
- 1) the area of documented deposit not covered by the usufruct rights does not exceed 2 ha,
 - 2) the mineral exploitation from the deposit does not exceed 20,000 m³ during a calendar year,
 - 3) activities will be conducted with open pit method and without the use of explosives
 - shall be granted by the Starost
3. The entrepreneur who was granted with the concession by the Starost to exploit minerals from the deposit adjacent to the deposits already covered by a concession granted to the same entrepreneur for the same type of activity, shall start the exploitation of deposits from no earlier than the date on which the decision stating the expiry of the earlier concession becomes final.
4. In the scope not determined in Art. 1 and 2 the concession for exploitation of minerals from deposits shall be granted by the Marshal of the Voivodship.

Art. 23.

1. Granting of the concession for:
 - 1) prospecting for or exploration of ores of radioactive elements and exploitation of these ores from the deposits as well as underground storage of radioactive wastes shall require an opinion of the President of the State Atomic Agency;
 - 2) exploitation of minerals from deposits from the subsurface underneath inland waters and on the areas exposed to direct or potential flood hazard shall require consultations with the authority competent for water maintenance the water recourses and the opinion of the authority competent for granting Water Law permit;
 - 3) exploitation of minerals referred to in Art. 10 par. 1, from deposits, and underground non-reservoir storage of substances requires a consent of the minister responsible for the economy.
2. In relation to activities undertaken outside the boundaries of maritime areas of the Republic of Poland, granting the concession for:
 - 1) prospecting for or exploration of mineral deposit shall require opinion of the head of the municipality, town mayor or city president competent for the place of the intended activity;
 - 2) exploiting minerals from deposits, underground non-reservoir storage of substances or underground storage of waste shall require consent of the head of the municipality, town mayor or city president competent for the

place of the intended activity;

12

the criterion of consent shall be the compliance of intended activity with the purpose or manner of the use of real estate set out in the manner foreseen in Art.7.

3. Granting the concession by the Starost requires the opinion of the Voivodship Marshal.

Art. 24.

1. In the application for granting the concession, in addition to the requirements laid down in the regulations on environmental protection and economic activities, the following shall also be specified:

- 1) the legal status of the real estates in the boundaries of which the proposed Activities are to be conducted and in case of real estate, an owner of which is not defined in the land and mortgage register – data from the land and property register shall be accepted; these requirements shall not apply to prospecting for or exploration of the hydrocarbons;
- 2) the applicant's rights to the real estate (space), within the boundaries of which the intended activities shall be performed, or specification of the right that the applicant seeks to obtain;
- 3) the period for which the concession is to be granted, together with designation of the commencement date of the activities;
- 4) the resources available to the applicant to ensure the proper performance of the intended activities;
- 5) the areas covered by specific forms of protection, including nature conservation and protection of monuments;
- 6) the manner of counteracting the negative influence of the intended activity on environment.

2. To the application for a concession shall be attached:

- 1) The evidences of the circumstances referred to, in particular extracts from relevant registers;
 - 2) information on the allocation of real estate, within which the intended activity is to be performed, in particular those provided by local urban spatial development plan or the separate provisions.
3. Graphical attachments shall be prepared in accordance with the requirements for mining maps, indicating the boundaries of the territorial division of the country.
4. In justified cases, the concession authority may require submission of a copy of the application for granting the concession with the attachments.
5. If for the area covered by the application the geological documentation has already been drawn, the concession authority may require its submission.

Art. 25.

1. In the application for granting a concession for prospecting for or exploration of mineral deposits, the purpose, scope and type of geological work shall also be determined, as well as the information on the works to be done to achieve the intended purpose, including their technologies shall be included.

2. In the case of deliberate performance of geological works, to the application referred to in par. 1, two copies of the project of geological works shall be attached.

Art. 26.

1. In the application for granting the concession to exploit minerals from deposits the following shall also be determined:
 - 1) mineral deposit or part thereof, to be the subject of mining;
 - 2) quantities and the intended method of extraction of minerals;
 - 3) the degree of intended utilization of the resources of a mineral deposit, including the accompanying minerals and useful trace elements co-occurring, as well as available resources to achieve this objective, and in the case of curative water, thermal waters and brines – exploitation of water intake resources;
 - 4) the proposed location of the mining area and mining protective area, presented in accordance with the requirements for mining maps, indicating the boundaries of the territorial division of the country
 - 5) geological and hydro geological conditions of exploitation and, if necessary, the conditions for injecting waters into the formation.
2. To the application referred to in par. 1, shall be attached the evidence of:
 - 1) the right to use geological information to the extent necessary to perform the intended activity possessed by Applicant, and copy of the decision approving the geological documentation;
 - 2) the right to the land real estate within the boundaries of which the intended open-pit operation of mineral exploitation is to be conducted, or evidence of the promise of establishing such a right. This obligation does not apply to lignite.
3. To the application referred to in par. 1, the deposit development plan shall be attached, specifying the requirements for the rational management of minerals deposit, in particular through a comprehensive and rational use of the main mineral as well as accompanying minerals, and exploitation technology ensuring the reduction of the adverse environmental impacts. This obligation does not apply to the concession granted by the Starost.
4. In the application for the concession granted by the Starost the expected manner of operation of the mining plant shall be determined, with respect to the requirements laid down in Art.108, par. 2, as well as foreseen mining plant closure method, with respect to the obligations defined in Art.129, par.1.
5. The Minister responsible for Environment shall specify by the way of ordinance, the detailed requirements for deposit development plans, taking into account the need of ensuring the rational management of the deposit, environmental protection and ensuring the protection of human health and life.

Art. 27.

1. In the application for granting the concession for underground non-reservoir

storage of substances or underground storage of waste the following shall also be determined:

14

- 1) the type, quantity and characteristics of the substance or waste;
 - 2) current and anticipated geological, hydro-geological and geological-engineering conditions;
 - 3) warehousing or storage technology;
 - 4) the foreseen location of the mining area and mining protective area, presented in accordance with the requirements for mining maps, indicating the boundaries of the territorial division of the country
2. To the application referred to in par. 1, the proof of existence of the right to use geological information shall be attached, to the extent necessary to perform the intended activity possessed by Applicant, and copy of the decision approving the geological documentation;

Art. 28.

1. The concession for underground storage of waste shall be granted subject to establishing a collateral to secure the claims that may arise as a result of carrying out that activity.
2. If this is warranted by a particularly important interest of the state or by a particularly important public interest, in particular an interest associated with environmental protection or economy of the country, granting of a concession for activities other than those specified in the par. 1, may be subject to establishing a collateral to secure the claims that may arise as a result of carrying out that activities,
3. The collateral may in particular take the form of civil insurance of the entrepreneur, bank guarantees etc.
4. The form, scope and the manner of the collateral, and in case of activities other than the one referred to in par. 1 also the need of such collateral, shall be resolved by the concession authority acting by way of a resolution, which may be subject to appeal.
5. In cases when the collateral is established, the concession may only be granted if the proof of its establishment is presented.
6. The entrepreneur shall submit the current evidence of collateral establishment on the yearly basis till the end of January each year.

Art. 29.

1. The concession authority refuses to grant a concession if the intended activity is detriment to the public interest, particularly related to national security or the environment protection, including the rational management of mineral deposits, or would prevent the use of real estate in accordance with the purposes specified respectively by the local urban spatial development plan or by the separate regulations, and in case of the absence of local urban spatial development plan - would prevent the use of the real estate as defined in the study of conditions and directions of spatial management of the municipality, or in the separate regulations,

2. The concession for underground storage of waste may be refused also if there is a technically, environmentally or economically reasonable possibility of recycling or the possibility of disposing of waste in the manner other than by its storage.

Art. 30.

1. The concession shall specify:
 - 1) the type and manner of performance of the intended activity;
 - 2) the space, within the boundaries of which the intended activity is to be performed;
 - 3) the validity period of the concession;
 - 4) the commencement date of activities specified by the concession and, if necessary – the conditions on which the activities will start.
2. The concession may stipulate other requirements on the performance of activities covered by it, in particular the general safety and environmental protection.
3. The concession does not exempt from the requirements specified in separate regulations, including gaining decisions foreseen by it.

Art. 31.

1. The concession for prospecting for or exploration of mineral deposit shall also determine :
 - 1) the purpose, scope and nature of the intended geological works;
 - 2) the scope and schedule for the transfer of geological information and samples obtained in result of the geological works execution;
 - 3) the amount of the charge for the activities specified in the concession.
2. The surface of the area covered by the concession for prospecting for or exploration of mineral deposit may not exceed 1 200 km².

Art. 32.

1. The concession for exploitation of minerals from deposits, underground non-reservoir storage of substances or underground storage of waste shall also designate the boundaries of the space and mining area.
2. The basis for demarcation of the mining area is a geological documentation and deposit development plan.
3. If this does not jeopardize the proper use of the deposit, the mining area defined in the concessions for exploitation of minerals from the deposit may cover the part of the deposit.
4. A concession for exploitation of mineral from a deposit may also determine:
 - 1) the minimum resource utilization and the operations necessary for the rational development of the deposit;
 - 2) the conditions for injection into the formation of water originating from mines

and quarries, formation waters or used brines, curative and thermal waters; in such cases the regulation on use of water and the charges for using the environment shall not apply.

16

5. The concession granted by the Starost shall also determine the performance of operations in the mining plant, taking into account the requirements of Art. 108 par. 2, as well as the manner of mining plant's closure, taking into account the obligations set out in Art. 129 par. 1.
6. The concessions for underground storage of waste also defines the type of underground storage, the type and amount of waste allowed to be stored and the scope and manner of monitoring the landfill.

Art. 33.

If the concession is preceded by a decision taken on the environmental conditions in the proceedings of public participation, the provisions on the participation of social organizations shall not apply in the concession proceedings.

Art. 34.

1. The modification of the concession shall apply *mutatis mutandis* to an amendment thereof. The cooperation with the authorities defined by the Act applies in such cases only to those matters which are the subject of the intended changes, in particular as regards to compliance with the destination of, or use of the real estate specified in the manner subject to Art. 7.
2. The entrepreneur is obliged to submit the application for modifications of the concession without any delay, in case of the actual harmful effects of mining works in the mining plant will exceed the boundaries of the mining area set out in concession.
3. In case of default of the obligation referred to in par. 2, the concession authority shall proceed *ex officio*. The entrepreneur is charged with the costs of the modification of concession. .

Art. 35.

1. The mining area shall be entered into the mining areas register. The entry shall be done *ex officio*, on the basis of decisions issued on matters subject to the current division.
2. The mining areas register is led by the state geological service.
3. The concession authority shall forward the documentation to the competent service running the register constituting the basis for an entry into the mining areas register.
4. The minister responsible for environment shall specify by the way of ordinance, the data which shall be registered in the registration of mining areas, timing and manner of transmission of the documents being the basis of data entry into the register, the manner of maintaining the register, the types of documents stored in the register, as well as the deadline for submission of the maps of mining areas to the entrepreneur and the competent concession authority, mining supervision authority as well as the head of the municipality, town mayor or city president.
5. By issuing the ordinance, pursuant to par. 4, the minister responsible for

environment shall ensure that the register is an exhaustive record of all the mining areas as well as ensure punctual transfer of maps of the mining areas to the entrepreneur and the competent authorities.

6. The boundaries of the mining area specified in the concession shall be publicized in the manner customary in the community.

Art. 36.

1. It is not to the detriment of the public interest, particularly related to the national safety or the environment protection, including the rational management of the mineral deposits, with the consent of the entrepreneur, who was granted the concession, the concession authority shall transfer a concession, by the way of decision, to the entity that:
 - 1) meets the requirements stipulated by the regulations of conducting business activity;
 - 2) agrees to accept all the conditions arising from the concession;
 - 3) in the extent necessary for performing the intended activity, demonstrates the right to the land real estate, the right for mining usufruct, or the promise of obtaining those rights;
 - 4) in the extent necessary for performing the intended activity, demonstrates the right to use the geological information,
 - 5) demonstrates that is capable to meet the requirements concerning performance of the intended activity
2. The requirement of demonstrating a right to use the land real estate or the promise of obtaining those rights shall not apply to concessions for lignite exploitation.
3. The transfer of the concession shall be done at the request of the entity that applies for this transfer.
4. The parties to proceedings concerning the transfer of concession are the entrepreneur and the entity which applies for a concession transfer.
5. Before the transfer of the concession, the concession authority may change the form, scope or manner of collateral. The provisions of Art. 28 shall apply mutatis mutandis.
6. The transfer of concessions is subject to the submission by the entity to which the concession is transferred, the proof of a bank account creation for the fund mining plant closure and collecting there the funds in the amount of the financial resources gathered by the current entrepreneur.
7. The transfer of concession shall also cause the transfer of the rights and obligations arising from other decisions issued under the Act.
8. The provisions of par. 1-7 do not apply if the separate provisions foresee the legal succession in the scope of decisions.
9. Who, under separate regulations, did receive the rights arising from the decisions issued under the Act, is obliged to provide the authority competent with the evidence confirming the legal succession, within 30 days from receiving of those rights.

10. In the case of infringement of the deadline, referred to in par. 9, the concession authority summon to immediate submission evidence of succession rights.

Art. 37.

1. If the entrepreneur violates the requirements of the Act, in particular concerning the environment protection and the rational development of the deposit, or fails to comply with conditions specified in the concession, including not undertaking the foreseen activity or permanently stops thereof, the concession authority summon it to cease the infringements. The concession authority may, by the way of decision determine the date and manner of removal of the infringements.
2. If the entrepreneur did not remove the identified infringements nor did follow the decision referred to in par.1, the concession authority may withdraw granting the concession or limit its scope, without compensation.

Art. 38.

1. The concession expires:
 - 1) when the period for which it was granted has lapsed;
 - 2) when it has become purposeless;
 - 3) in the case of the death of the entrepreneur being physical person;
 - 4) in case of liquidation of the entrepreneur other than referred to in par. 3;
 - 5) in case of the surrender of the concession.
2. In the cases referred to in par. 1, the concession authority, by the way of decision, proclaims the expiry of the concession.
3. The cases referred to in par. 1, do not cause the expiry of the collateral, referred to in Art. 28. The expiration date of the collateral shall be determined by the decision, referred to in par. 2.

Art. 39.

1. The withdrawal of the concession, the expiry or loss of its validity, despite the reason, does not exempt the hitherto entrepreneur from carrying out the obligations concerning environmental protection and those related to the closing down of the mining plant.
2. The scope and manner of fulfilling the obligations referred to in par. 1 shall be defined in the mining plant closure operations plan. If the regulations on mining plant operation plans do not apply, the scope and manner of the obligations fulfilment referred to in the par.1 are defined by the concession authority in the decision proclaiming the expiry of the concession after consultations with the head of the municipality, town mayor or city president.

3. If the entrepreneur does not exist, the obligations specified in par.1 shall be performed by his legal successor, and if the entrepreneur and his legal successor do not exist - the obligations set out in par. 1 shall be carried out by the owner or person holding the rights, other than ownership, legal title to the real estate.

19

In case of need the obliged person as well as the scope and manner of the obligations fulfilment set out in par. 1 shall be defined by the way of decision, by the concession authority.

4. For an entity on which the obligations defined in par. 1 and 3 were imposed, the regulations concerning the entrepreneur shall apply *mutatis mutandis*.

Art. 40.

The copies of the decisions made pursuant to the provisions of this Chapter shall be forwarded without delay to the concession authorities, mining supervision authorities municipality heads (mayors, presidents of cities) with local competence and the National Fund for Environmental Protection and Water Management. The copies of the decisions on the maritime areas of the Republic of Poland shall be immediately delivered to the competent local authority of the maritime administration.

Art. 41.

1. If the Act does not provide otherwise, the parties in the proceedings conducted on the basis of the present chapter, in relation to activities carried out within the boundaries of the land real estate, are the owners of land (perpetual usufructuaries).
2. The parties to the proceedings conducted pursuant to this chapter are not the real estate's owners (perpetual usufructuaries) located outside the boundaries of the foreseen or existing mining area or the places of performance of the geological works.
3. If the number of parties in the proceeding is greater than 20, the authorities shall notify about the decisions and other activities through announcements made at the Public Information Bulletin on the websites of these authorities as well as in the manner customary accepted in a given location.
4. Making a notice in the manner specified in par. 3 does not exclude the obligation to handle the decisions and letters to the applicant, entrepreneur and the entities subject to the obligations set out in the Act or established pursuant to the provisions of the Act.
5. Regardless of the number of parties in the proceedings under this chapter, the provisions of par. 3 shall apply in proceedings relating to proclamations of the concession expires due to death or liquidation of the entrepreneur.
6. The notice published in the Public Information Bulletin referred to in par. 3, shall be deleted after one year from the date on which the decision becomes final.

Art. 42.

1. In the cases regulated by this chapter:
 - 1) starting the activity covered by the concession is considered as the appearance of the irreversible legal consequences;
 - 2) the repeal (modification) of the concessions as a result of the resumption of the

proceedings shall not be done before the end of one year from the date of starting the defined activity.

2. The provision of par.1 does not prejudice the obligation of the compensation of harm.

20

Chapter 2

Concessions for prospecting for or exploration of hydrocarbons and exploitation of hydrocarbons from deposits

Art. 43.

1. Granting of the concession for activities defined by this chapter shall be preceded by a tender, unless the Act provides otherwise.
2. The intention of granting the concession *ex officio* by the way of tender shall be notified by the concession authority each time by the way of notification, specifying therein:
 - 1) the location of the area of the intended activity;
 - 2) detailed conditions of the tender;
 - 3) the intended starting date of activity;
 - 4) the period for which the concession will be granted;
 - 5) the conditions for environmental protection and rational utilization of mineral deposit;
 - 6) the requirements necessary to ensure public safety;
 - 7) the conditions for collateral for claims – if it needs to be established;
 - 8) the important conditions of the agreement for establishment of mining usufruct, and in particular determining the space within the boundaries of which the activities will be performed, its period of duration and the minimum amount of remuneration for the establishment of mining usufruct;
 - 9) documents required from applicants.
3. The notification referred to in par. 2, shall be published on the website of the Bulletin of Public Information of the concession authority as well as in the Official Journal of the European Union.

Art. 44.

1. The tender conditions shall be non-discriminatory, and give the priority to the best systems of prospecting for and exploitation of hydrocarbon and exploration of the hydrocarbons from the deposits, and it shall be based on the following criteria:
 - 1) technical and financial capabilities of the bidder;
 - 2) the proposed technology for performance of works;
 - 3) the proposed amount of remuneration for the establishment of mining usufruct.
2. Before publishing a notification referred to in Art. 43 par. 2, the concession

authority shall, in turn:

- 1) obtain a decision on the environmental conditions, if required;
- 2) make arrangements or get opinions necessary to grant the concession;

21

- 3) define a deadline for submission of applications for a concession, not shorter than 3 months.
3. In the cases referred to in par. 2, points 1 and 2, the concession authority holds the rights of the party in the proceedings.
4. The result of the tender shall immediately be published by the concession authority in the manner determined in Art. 43 par. 3. After 14 days from the date of publication of the Notification and the provisions of the decision on the matters referred to in par. 2, points 1 and 2 become effective in relation the winner of the tender.
5. The provisions of par. 1-4 shall not apply in case of the modification of the concessions granted in result of the tender.

Art. 45.

1. The concession authority grants the concession to the winner of the tender and immediately after granting thereof concludes the contract for the establishment of mining usufruct.
2. Detailed conditions of the mining usufruct, in particular the determination of the space in which activities will be performed, its duration and the amount and manner of payment of remuneration for its establishment are specified in the agreement concluded between the entrepreneur who has been granted the concession and the concession authority. Detailed conditions for the mining usufruct as well as the amount of remuneration for its establishment as defined in the agreement shall not deviate from the notification referred to in Art. 43 par. 2.
3. Who obtained a concession under the terms of this chapter, under the law enters into the rights and obligations of the party in the proceedings terminated by the decision and the provisions referred to in Art. 44 par. 2, points 1 and 2.
4. The proceedings on granting the concession in result of the submission of applications, in accordance with the procedure referred to in Art. 43, started by bidders other than the winner of the tender, under the law are subject to redemption.
5. The Council of Ministers shall define, by the way of ordinance, the detailed conditions of tendering proceedings for granting the concession referred to in the current Chapter, including the appointment and operations performed by the tender committee and the requirements that should be met by the offer, guided by the need to ensure transparent and non-discriminatory conditions of the tender and the competition protection, including a fair assessment of the tenders submitted.

Art. 46.

1. The concession authority may grant a concession of the interested entity. Information concerning the submission of application by the interested entity shall immediately be published by the concession authority on the Public Information Bulletin of the concession authority and the Official Journal of the European Union. The notice shall include:
 - 1) information on the submission of concession application;

2) information on the nature of the activities for which the concession is to be granted;

3) geographical coordinates of the area covered by the application;

22

4) The deadline for submission of concession applications by the other parties who are interested in the activities, for which a concession is to be granted, not less than 90 days from the date of publication.

2. In the case referred to in par. 1, interested entities may submit concession applications for the activities for which the concession is to be granted, within the period specified in the notice.
3. After the deadline specified in the notice referred to in par. 1, the concession authority shall compare the applications on the basis of the criteria determined in Art. 44 par. 1. The entity whose proposal received the highest rating in a comparison of schedules for the concession applications, is granted with the concession by the concession authority, after the performance of the proceedings taking into account the position of the authorities referred to in Art. 23, and concludes a contract with the entity for the establishment of mining usufruct. The proceedings for granting the concession initiated in result of the submission of other concession applications, in accordance with the procedure referred to in par. 1 and 2 are discontinued.

Art. 47.

1. Granting the concession for activities subject to this Chapter does not require announcement of the tender if:
 - 1) the area, which will apply to the concession, is always available and it is listed on the register of areas, where granting the concession is not required to be preceded by the tender, or
 - 2) the area, which will apply to the concession was subject to the tender procedures, in accordance with Art. 43, but in result of which the concession was not granted, or
 - 3) concerns an area covered by the concession from which the entrepreneur did resign and which is not an area referred to in par. 1, or
 - 4) the space is covered by the priority to establish a mining usufruct, referred to in Art. 15 par. 1.
2. The list referred to in par. 1, point 1, shall be published for public by the concession authority by the way of announcement in Public Information Bulletin and in the Official Journal of the European Union.

Art. 48.

1. If granting the concession for activity subject to this Chapter, without the tender procedure is acceptable, the information on initiating the procedure and the results thereof shall be published without delay in the Public Information Bulletin by the concession authority.
2. On the day of its publication in the Public Information Bulletin a notice of initiation of procedure, referred to in par. 1, the area covered by the application

can not be brought into any other proceedings concerning matters governed by this Chapter. If following the day of notice publication such proceedings have been initiated, it shall be discontinued.

23

Art. 49.

1. The transfer of the concessions, referred to in this chapter, will also cause transfer of mining usufruct.
2. For modifications of the concessions subject to the provisions of this chapter the tender procedure is not required, unless those modifications are aimed at enlargement of the covered area.

DIVISION IV

QUALIFICATIONS, EXPERTS AND PROFESSIONAL LIABILITY

Chapter 1

Qualifications in the scope of geology

Art. 50.

1. Persons undertaking the operations consisting of performing, supervising and directing the geological works should have the qualifications specified by the Act.
2. The categories of qualifications in the scope of performing, supervising and directing the geological works are specified as follows:
 - 1) category I - prospecting for and exploration of hydrocarbons deposits;
 - 2) category II – prospecting for and exploration of mineral deposits covered by the mining ownership, except for crude oil and natural gas deposits, brines, curative and thermal waters as well as prospecting for and exploration of mineral deposits covered by the legislation on deveoped land;
 - 3) category III - prospecting for and exploration of mineral deposits covered by the legislation on developed land;
 - 4) category IV - prospecting for and exploration of groundwater deposits, including brines and curative and thermal waters, determining the hydro-geological conditions for the intended: drainage systems for minerals exploitation, injection of water into the formation, drainage systems for construction areas with boreholes, executing the projects which might have a negative impact on groundwater, including the contamination thereof, underground non-reservoir storage of substances or underground storage of waste, disposal of waste on the surface, the establishment of protected areas for groundwater reservoirs, termination or modification in level of drainage in closed mining plants and the execution and documentation of geological works

aiming at using the Earth's heat, as well as design and construction of boreholes;

24

5) category V – prospecting for and exploration of groundwater resources, with the exception of brines, curative and thermal waters, determining of hydro-geological conditions of the intended: performance of drainage systems for construction areas with boreholes, executing the projects which might have a negative impact on groundwater, including the contamination thereof , underground non-reservoir storage of substances or underground storage of waste, disposal of waste on the surface, the establishment of protected areas for groundwater reservoirs, termination or modification in level of drainage in closed mining plants and the execution and documentation of geological works aiming at using the Earth's heat, as well as design and construction of boreholes;

6) category VI – determining the engineering-geological conditions for the purposes of: spatial management, the foundation of buildings, including the foundation of buildings of the mining plants and water contractions, underground non-reservoir storage of substances or underground waste storage as well as disposal of waste on the surface;

7) category VII determining the engineering-geological conditions for the purposes of: spatial management, the foundation of buildings, excluding the foundation of buildings of the mining plants and water contractions;

8) category VIII – performance of geological mapping works, along with designing and documenting of these works, with the exception of maps drawn up within the other categories of qualifications;

9) category IX - directing and performing geophysical surveys in the field, including seismic surveys and geophysics of drilling, also with the use of explosives, together with the design and documentation of these studies;

10) category X - directing and performing geophysical surveys in the field, together with the design and documentation of these studies, except for seismic surveys and geophysics of drilling,

11) category XI - executing the tasks of geological supervision over geological works, with the exception of geophysical surveys;

12) category XII – directing geological field works performed outside the mining area, performed without the use of the explosives, or when the planned depth of excavation does not exceed 100 m.

3. Qualifications specified in par. 2, points 1-5 and 8 authorize to the execution and directing of geological works carried out in scientific and research purposes.

Art. 51.

The confirmation of qualifications in the scope of performing, supervising and directing the geological works:

- 1) in terms of categories I-X, is done by a certificate issued by the minister responsible for environment;

2) in terms of categories XI and XII, is done by a certificate issued by the Marshal of Province of:

- a) dolnośląskie – for persons resident in the following provinces: dolnośląskie, lubuskie, opolskie i wielkopolskie,
- b) małopolskie – for persons resident in the following provinces: małopolskie, podkarpackie, śląskie and świętokrzyskie,
- c) mazowieckie – for persons resident in the following provinces: lubelskie, łódzkie, mazowieckie i podlaskie,
- d) pomorskie – for persons resident in the following provinces: kujawsko-pomorskie, pomorskie, warmińsko-mazurskie i zachodniopomorskie

Art. 52.

1. A person who holds a university degree relevant to the categories of qualifications for confirmation of which the person is seeking, and the professional experience, hereinafter referred to as "experience" can apply for confirmation of qualifications in categories I to X.
2. A person who has at least a matriculation certificate and professional title or the diploma confirming the qualifications in the profession of geologist technician or holds a university degree in the scope of geological science, and has the professional experience can apply for confirmation of qualifications in category XI.
3. A person who has at least a general certificate of education and a certificate or a diploma for gaining the professional title or a diploma confirming the qualifications in the profession of geologist technician, mining technician or drilling technician or holds a university degree in the scope of geological science, and has professional experience can apply for confirmation of qualifications in category XII.
4. Experience is defined as:
 - 1) participation in the performance of supervision of the geological works or performing geological mapping works or carrying out the field geophysical survey or directing the geological field works;
 - 2) participation in drafting of plans for geological works and geological documentation, or designing and documenting the works of geological mapping or geophysical surveys.
5. The experience can be gained under supervision of the persons having the qualifications confirmed in the same category as the person is applying for.
6. The experience within the scope regulated by this Chapter are also periods of work of the personnel of geological administration units and mining supervision units in the scope of controlling, evaluating, accepting or approving the plans of geological works, geological documentation and geological-measuring documentation.

Chapter 2

Qualifications in the field of mining and mine rescue services

Art. 53.

1. The persons performing the activities:

- 1) Manager and Deputy Manager for operations of the mining plant or entities in the following types of active or liquidated mining plants, the following types of active or liquidated entities performing the geological works, and the following types of production facilities performing the activities referred to in Art. 2 par. 1:
 - a) in underground mining plants exploiting hard coal,
 - b) in underground mines exploiting metal ores,
 - c) in the underground mining plants exploiting minerals other than hard coal and metal ores,
 - d) in the open pit mining plants exploiting lignite or exploiting the minerals with the use of explosives,
 - e) in the open pit mining plants exploiting the minerals other than lignite without the use of explosives,
 - f) in the mining plants exploiting hydrocarbons by boreholes,
 - g) in the mining plants exploiting minerals other than hydrocarbons by boreholes
 - h) in the mining plants engaged in underground non-reservoir storage of substances
 - i) in the mining plants engaged in the underground storage of waste with the underground method,
 - j) in the mining plants engaged in the underground storage of waste with the borehole method,
 - k) in the plants carrying out geological works by underground method
 - l) in the plants carrying out geological works by the method of open pit,
 - m) in the plants carrying out geological works by the method of boreholes
 - n) in establishments engaged in activities referred to in Art. 2 par. 1 point 1 or 5,
 - o) in establishments engaged in activities referred to in Art. 2 par 1 point 2 or 5,
 - p) in establishments engaged in activities referred to in Art. 2 par 1 point 3 or 5,
 - q) in establishments engaged in activities referred to in Art. 2 par 1 point 4 or 5,

2) Manager and Deputy Manager for operations of the mining plant or the establishment of the particular types of mining plants or the plants subject to par. 1,

3) in the higher mining plant operations supervision or the establishment of the particular types of mining plants or the plants subject to par. 1,

4) in the middle level and lower mining plant operations supervision in different types of mining plants as listed in point 1. a-c,

5) the mining surveyor:

a) in the mining plants and the establishments performing an activities subject to Art. 2 par.1,

b) in the mining plants other than underground mining facilities,

6) mining geologist:

a) in the mining plants and establishments performing activities subject to Art. 2 par. 1,

b) in the mining plants other than underground mining facilities,

7) mining geophysician in underground mining plants,

8) the management in the entities professionally engaged in mining rescue services,

9) the specialists in the entities professionally engaged in mining rescue services,

10) specialized in the operations of the mining plant

- are required to possess the qualifications specified by the Act.

2. The persons performing the activities in the middle and lower level operation supervision of the mining plant, in particular in different types of mining plants referred to in par. 1 point 1 d-m or establishments listed in par. 1 point 1 n-q are required to have background and work experience to perform these activities, determined by an entrepreneur or an entity which was granted with decision other than concession creating the basis to perform the activities determined by the Act, as well as knowledge of:

1) the provisions of geological and mining law and other provisions applicable for the operations in mining plant,

2) issues regarding the operations in particular types of mining plants and dangers occurring in it

- to the extent necessary to perform these activities.

3. **The activities of operation manager, deputy operations manager, manager of**

the operation department and the deputy manager of the operation department are the activities in the operation management unit and the manager of the operation department and the deputy manager of the operation department are the activities in the operation management unit.

4. The persons performing operations management in the entities professionally dealing with the mine rescue services are the following:

28

- 1) the manager of the mine rescue unit and the manager of the district mine rescue service, as well as their deputies – in the entities performing the activities for underground mining plants;
 - 2) the manager of the mine rescue unit, and his deputy – in the entities performing the activities for mining plants other than the underground mining plants.
5. The persons performing the activities of specialists in the entities professionally dealing with the mine rescue services are the following:
- 1) The manager on duty of mining rescue unit and the manager of district specialized professional emergency station - in entities engaged in activities for underground mines;
 - 2) Head of the territorial branch of mining rescue unit and his deputy or emergency occupational specialist - in entities performing steps for mining plants other than underground mining plants.
6. Persons performing specialist operations in mining plant are:
- 1) in the underground mines:
 - a) the miner rounds,
 - b) the publisher of blasting agents,
 - c) the instructor rounds,
 - d) the signaler shaft,
 - e) the driver hoists,
 - f) the auditor lifts,
 - g) the operator: front mobile machines, blasting machines for construction , ripping machines, machines for putting the support housing or housing machinery for placing anchor,
 - h) the operator: aside vehicles and mobile auxiliary machinery, vehicles for the carriage of persons or vehicles to transport of blasting agents,
 - i) driver: locomotives, underground railways suspended thill or underground railways,
 - j) the auditor of the communication devices, alarms and security,
 - k) welder,
 - l) electrician of electrical machinery and equipment with voltage up to 1 kV,
 - m) electrician of electrical machinery and equipment with a voltage above 1 kV;

2) in the open-pit mines:

- a) rounds,
- b) the publisher of blasting agents,
- c) welder,
- d) electrician of electrical machinery and equipment with voltage up to 1 kV,

29

e) electrician of electrical machinery and equipment with a voltage above 1 kV;

3) in the mineral-exploiting industries through drilling:

- a) rounds,
 - b) the publisher of blasting agents,
 - c) welder,
 - d) electrician of machinery and electrical equipment with voltage up to 1 kV,
- e) electrician of electrical machinery and equipment with a voltage above 1 kV,
f) drilling engineer,
g) the operator of cementing units, trays and equipment intensive diversification into crude oil and natural gas.

Art. 54.

1. The performance of activities referred to in Art. 53 par.1 point 1-9, requires the possession of general and professional qualifications.
2. General qualifications are:
 - 1) in the case of activities referred to in Art. 53. par. 1 point 1-4 - familiarity of:
 - a) the provisions of geological and mining law and other provisions applicable in the operations of the mining plant,
 - b) the matters relating to the management of operations in certain types of the mining plants and the hazards present in them- to the extent necessary to perform these activities;
 - 2) in the case of activities referred to in Art. 53 par.1 point 5 - the knowledge of the matters necessary to perform the activities of the mining surveyor, the activities within the higher mining plant operations supervision, and management of the operations in the open pit mining plants exploiting the minerals other than lignite without the use of explosives;
 - 3) in the case of activities referred to in Art. 53 par. 1 point 6 - the knowledge of the matters necessary to perform the activities of the mining geologist, the activities within the higher mining plant operations supervision, and management of the operations in the open pit mining plants exploiting the minerals other than lignite without the use of explosives;
 - 4) in the case of activities referred to in Art.53 par. 1 point 7 - knowledge of the matters necessary to perform the activities of the mining geophysician the activities within the higher mining plant operations supervision,
 - 5) in the case of activities referred to in Art. 53 par. 1 point 8 and 9 – the

knowledge of:

a) the provisions determining the rules for performance of operations in the mining plant and the performance of the rescue operations and the preventive works in that plant,

b) the organization and tasks of the mine rescue

30

c) the mine rescue units equipment,

d) methods of rescue actions and preventive works,

e) methods of trainings and rescue exercises,

f) rules for first medical aid,

g) the activities of emergency operations specialist.

3. the professional qualifications are:

1) professional titles or diplomas confirming the professional qualifications in the professions specified in regulations issued under Art. 69 par. 1 point 2, graduation of higher education stipulated in those provisions or the postgraduate studies referred to in those provisions;

2) in cases specified in regulations issued under Art. 69 par.1 point 2 - having the appropriate qualifications in the profession or relevant professional qualifications;

3) the experience gathered, even before obtaining the professional qualifications:

a) within the scope of the activities referred to in Art. 53 par.1 point 1-4, or within the operations of the mining plant, the plant performing geological work or performing an activity referred to in Art. 2 par.1,

b) for activities referred to in Art.53 par.1, point 4 or par. 2 or within the operations of the mining plant, the plant performing geological work or performing an activity referred to in Art. 2 par.1- in the case of activities referred to in Art. 53 par. 1 point 3,

c) measuring

d) geological,

e) geophysical,

f) rescue

- specified in the regulations issued under Art. 69 par.1 point 2 with the period of its duration and type of activities performed.

Art. 55.

1. The experience within the scope of the activities referred to in Art. 53 par. 1, points 1-4 and par. 2, or operations of the mining plant, or within the operations of the mining plant, the plant performing geological works or performing an activity referred to in Art. 2 par.1 is a period of work:

1) in the operations department or technical specialties department:

a) in the mining plants operating the same methods, or

b) in the plants performing geological works with the same methods, or

c) in the plants performing the same kind of activities referred to in Art.2 par.1, or

31

d) in the entities performing activities within their profession that are assigned to them within the scope of mining plant operations performing the activities by the same method;

2) underground, if the management of mining plant operations or within higher mining operations supervision are to be performed in the underground mining plant.

2. At least half of the experience within the scope of activities referred to in Art. 53 par. 2, cover a period of work with the middle level operations supervision.
3. The surveying experience is the period of work in the surveying of mining in:
 - 1) the mining plant;
 - 2) the entity performing its professional activities entrusted to him activities within the mining plant operations.
4. The geological experience is a period of work within the mining geology in:
 - 1) the mining plant;
 - 2) the entity performing its professional activities entrusted to him activities within the mining plant operations.
5. Geophysical experience is a period of work in the field of mining geophysics in:
 - 1) the mining plant;
 - 2) the entity performing its professional activities entrusted to him within the mining plant operations.
6. Rescue experience is, depending on the type of activity, duration of work:
 - 1) in mine rescue services of the entrepreneur of the type of the mining plant referred to in Art. 53 par. 4 and 5;
 - 2) on the position of mining rescuer in the type of the mining plant referred to in Art. 53 par. 4 and 5;
 - 3) on the position of professional mining rescuer in the entities professionally engaged in the mining rescue, performing the rescue services in type of the mining plant referred to in Art. 53. 4 and 5;
 - 4) on the position of manager or specialists in the entities professionally engaged in the mining rescue, performing the rescue services in type of the mining plant referred to in Art. 53. 4 and 5;
7. As the experience within the scope regulated by this Chapter are also considered the periods of employment in the mining supervision authorities or other authorities of supervision and control of working conditions, including the performance of supervision and control over the activities laid down in Art. 53

Performing of activities referred to in Art. 53 par. 6, requires:

1) possession of education, by:

32

a) the completion of secondary school or upper secondary school of the general profile or

b) the completion of secondary school and possession of qualifications within the profession set out in the classification of vocational education in the professional group "technicians" or in "industrial workers and craftsmen" or

c) the completion of upper secondary school and possession of qualifications in the profession set out in the classification of vocational education in the professional group "technicians" or in "industrial workers and craftsmen" or

2) having the experience as defined in regulations issued under Art. 69 par. 1 point 2 as years of service or a period of practical training on the position and type of activities performed;

3) the completion of a specialist course specified in the regulations issued under Art. 69 par. 1 or - in the case of the activities listed in Art.53 par. 6 point 1. a-c and j-m, point 2. a-c and point 3. a-e – completing such course, with the frequency specified in the legislation;

4) possession of additional qualifications specified in the regulations issued under Art. 69 par. 1 point 2 – in case of the activities listed in Art.53 par. 6 point 1. k-m, point 2. c-e, and point 3. c-e;

5) possession of a current medical certificate stating the lack of mental disorders, referred to in the Act of 19 August 1994 on the protection of mental health (O.J. No. 111, item. 535, with further amendments⁶⁾), or a current psychological statement confirming the absence of significant psychological disorders; the extent and frequency of medical examinations for the individual activities are defined by the provisions issued under Art. 69 par. 1 point 2;

6) possession of the minimum age specified in regulations under Art. 69 par. 1 point 2;

Art. 57

1. Completion of the university studies shall be certified by a university degree confirming the obtaining of the professional title.

2. The scope of completed university studies shall be documented according to the names of fields of studies, as defined in regulations issued under Art. 9 point 1 of the Act of 27 July 2005 - Law on Higher Education (O.J. No. 164, item. 1365, with further amendments⁷⁾) and the groups of contents of the fields of studies, as defined in regulations issued under Art. 9 point 2 of this Act.

⁶⁾ Amendments to the Act were published in the O.J. of 1997. No 88/554 and No 113/731, of 1998 No 106/668, of 1999 No 11/ 95, of 2000 No 120/1268, of 2005. No 141/1183, No 167/1398 and No 175/1462, of 2007 No 112/766 and No 121/831, of 2008 No 180/1108, of 2009 No 76/641 and No 98/817, of 2010 Nr 107/679 and No 182/1228 as well as of 2011 No 6/19 and No 112/ 654.

⁷⁾ Amendments to the Act were published in the O.J. of 2006 No 46/328, No 104/708 and 711, No

144/1043 and No 227/1658, of 2007 No 80/542, No 120/818, No 176/1238 and 1240, No 180/1280, of 2008 No 70/416, of 2009 No 68/584, No 157/1241, No 161/1278 and No 202/1553, of 2010 No 57/359, No 75/471, No 96/620 and No 127/ 857 as well as of 2011 No 45/ 235, No 84/ 455 and no 112/ 654.

3. If within the educational standards for a particular direction of higher education there is a possibility to complete any specialty or specialization, the scope of completed studies is the specialty or specialization defined on the diploma of graduation.
4. The completion of postgraduate studies shall be documented with the certificate of its completion.
5. The completion of secondary school or post-gymnasium school of general profile shall be documented with the certificate of its completion.
6. The possession of professional qualifications shall be documented with the certificate or diploma of obtaining a professional title or a diploma certifying the professional qualifications.
7. The completion of specialist course shall be documented with the certificate of its completion.

Art. 58

1. The statement of qualifications to perform the following activities:

1) managers of operation departments in: mining, blasting techniques, crump, ventilation, energo-mechanical, energo-mechanical for basic facilities, surveying, geological and environmental protection, as well as the activities within the higher operation supervision in the fields of specialties in : mining, geophysics, mining shaft lifts, mechanical – undersurface machinery and equipment, electricity – undersurface machinery and equipment, electrical - telecommunication and automatics, surveying, geologic, construction and environmental protection – in the underground mining plants exploiting the hard coal, in the underground mining plants exploiting metal ores, in the underground mining plants exploiting minerals other than the hard coal and metal ores, in the entities performing the underground storage of waste with the underground method, in establishments engaged in geological works by underground methods or in particular types of establishments engaged in activities referred to in Art. 2 par. 1,

2) within the middle level and lower operations supervision in the specialties in: mining, geophysics, mining shaft lifts, mechanical – undersurface machinery and equipment, electricity – undersurface machinery and equipment, electricity - telecommunication and automatics, surveying, geology, construction and environment protection – in the underground mining plants exploiting the hard coal, in the underground mining plants exploiting metal ores, in the underground mining plants exploiting minerals other than the hard coal and metal ores,

3) the manager of operations - in the open-pit mining plants exploiting lignite or exploiting the minerals with the use of explosives, in the open-pit mining plants exploiting minerals other than lignite without the use of explosives, or in the establishments performing the geological works with the open-pit method, the managers of the operations units in: mining, energo-mechanical, surveying, geology and environmental protection - in the open-pit mining plants exploiting lignite or exploiting the minerals with the use of the explosives or in the establishments performing the geological works with the open-pit method, the managers of operations departments in: mining, energo-mechanical, and environmental protection - in the open-pit mining plants exploiting the minerals other than lignite without the use of explosives

as well as within a higher operations supervision in specialties of : mining, surveying, geology, construction and environmental protection - in the open-pit mining plants exploiting lignite or exploiting the minerals with the use of the explosives, in the open-pit mining plants exploiting minerals other than lignite without the use of explosives, or in the establishments performing the geological works with the open-pit method.

4) the manager of operations and the managers of operations departments in : mining, energo-mechanical, surveying, geology and environmental protection, as well as activities within the higher operations supervision in the specialties of: mining, surveying, geology, construction and environmental protection - in the mining plants exploiting hydrocarbons by drilling method, the mining plants exploiting minerals other than hydrocarbons with drilling method, in the mining plants performing the underground non-reservoir storage of substances in the mining plants performing the underground storage of waste with the drilling method,

5) the manager of operations and the managers of operations departments in: drilling, geophysics and blasting engineering, energo-mechanical, surveying, geology and environmental protection, as well as activities within the higher operations supervision in the specialties: drilling, geophysics and blasting technology, surveying, geology, construction and environment protection - in the plants performing the geological works with the drilling method

- is confirmed by a certificate issued by the director of the District Mining Office.

2. The affirmation of qualifications to perform the following activities:

1) the manager of underground operations of the mining plant - in the underground mining plants exploiting the hard coal, in the underground mining plants exploiting the metal ores, in the underground mining plants exploiting minerals other than hard coal and metal ores, in the establishments performing the underground storage of waste with the underground method, in the establishments performing the geological works by underground method or in particular types of establishments operating under Art. 2 par.1,

2) mining surveyor - in the mining plants and the establishments performing the activities referred to in Art. 2 par.1 or in the mining plants other than underground mining plants,

3) mining geologist - in the mining plants and the establishments performing the activities referred to in Art. 2 par.1 or in the mining plants other than underground mining plants,

4) mining geophysics in the underground mining plants,

5) the manager of the mine rescue unit or the head of the regional mine rescue station - in the establishments professionally engaged in rescue operations, performing the activities for underground mining plants, or

The manager of mine rescue unit - in entities professionally engaged in the mining rescue, performing the services for mining plants other than underground mining plants

- is confirmed by a certificate issued by the Head of the State Mining Authority.

Art. 59

1. The confirmation of qualifications to perform the operations of the manager of operations in mining plant or the manager of the plant, managers of the operations department in mining plants or of the plant, the manager of the mine rescue unit and the manager of the district mine rescue station - in the entities engaged in professional mining rescue, performing the services for the underground mining plants, as well as the manager of the mine rescue unit in the entities engaged in professional mining rescue, performing the services for the mining plants other than the underground mining plants,, is simultaneously a confirmation of qualifications to perform the activities of the deputies of such persons.

2. The confirmation of qualifications to perform the activities of the operations manager, the operations department manager as well as within a higher operations supervision in the open-pit mining plants exploiting the lignite or exploiting the minerals with the use of explosives, is simultaneously a confirmation of qualifications to perform the activities at the same level and in the same specialty in the open pit mining plant exploiting the minerals other than lignite without the use of explosives.

3. The confirmation of qualifications to perform the activities of a mining surveyor or mining geologist, is simultaneously the confirmation of qualifications to perform the activities within the management of operations as well as within the higher operations supervision in the open pit mining plants exploiting the minerals other than lignite without the use of explosives and higher operations supervision in other types of the mining plants.

4. The confirmation of qualifications to perform the operations of mining geophysician in the underground mining plant is simultaneously confirmation of qualifications to perform the activities within the higher operations supervision in those mining plants.

Art. 60

1. A person who has established qualifications to perform the activities of operations manager in the certain type of mining plant or establishment referred to in Art. 58 as well as the professional qualifications required for the manager of operations department in the mining plant or establishment referred to in Art. 58 par. 1 may perform the activities of the operations manager of the mining plant or establishment without further confirmation of qualifications to perform such activities.

2. A person who has established qualifications to perform the activities in the management of operations referred to in Art. 58 par 1. within the specialty defined in Art.58 par. 1 point 1 and 3-5 within the higher operations supervision in the mining plant or establishment, or within the specialty referred to in Art. 58 par. 1 point 2 within

middle level or lower operations supervision in the underground mining plant,

36

may perform the activities on the post covering more than one type of those activities without further confirmation of qualifications to perform those tasks.

3. A person who has established qualifications to perform the activities within the operations management or within the higher operations supervision in the mining plants exploiting hydrocarbons with the drilling method or the mining plants exploiting minerals other than hydrocarbons with the drilling method, may perform these activities in the open pit mining plants exploiting the curative minerals without further confirmation of qualifications to perform those tasks in the open pit mining plants exploiting minerals other than lignite without the use of the explosives.

4. A person who has established qualifications to perform the activities within the higher operations supervision in the open pit mining plants exploiting lignite or exploiting the minerals with the use of the explosives or in the open pit mining plants exploiting minerals other than lignite without the use of the explosives, may perform the activities in the operations management in the open pit mining plants exploiting minerals on the basis of the concession granted by the Starost without further confirmation of the qualifications to perform the activities within the operations management in the open pit mining plants exploiting the minerals other than lignite without the use of the explosives.

Chapter 3

Proceedings of the statements of qualifications

Art. 61

1. The confirmation of qualifications referred to in Art. 50 and 58, is done on the application of the person interested in such confirmation, hereinafter referred to as "candidate" after conducting the examination.

2. The application for a confirmation of qualifications determines:

- 1) The candidate's name;
- 2) Social Security number - if it is possessed by a candidate;
- 3) number and a series of identity card or other document confirming the identity of the candidate;
- 4) The candidate's residence address;
- 5) qualifications of which the candidate seeks the confirmation;
- 6) the candidate's education;
- 7) a description of professional experience, with particular emphasis on qualifications of which a candidate seeks the confirmation.

3. The application for the qualification's confirmation shall be attached with:

- 1) a duplicate or certified copy of the proof of education necessary to issue the

confirmation;

37

2) the proofs of experience, particularly with a work certificate, certificate of employment, the opinion concerning the professional career, and in case of qualifications to perform, supervise and manage geological works - also a list of studies prepared with the participation of the candidate certified by the entity for which the studies were prepared or the geological archives, in which these studies are kept.

4.. If the candidate holds other qualifications required by regulations issued under the Art. 69 par. 1 point 2 in the application for a confirmation of qualifications the type and date of acquisition of those shall be declared.

Art. 62

The authority competent to confirm the qualifications:

- 1) allows a candidate to pass the examination after establishing that the candidate meets the requirements to apply for a specific category of qualifications specified by the application to perform, supervise and manage the geological works, or holds the requisite professional qualifications, and notifies in writing the examination committee that the candidate was allowed to pass the examination;
- 2) refuses, by the way of decision, admission to the exam, in case of finding that the candidate does not meet the requirements for the specified in the application category of qualifications to perform, supervise and manage the geological work either does not have the professional qualifications.

Art. 63

1. The authority competent to confirm the qualifications appoints the examination committee.
2. In the case of qualifications to perform, supervise and manage the geological work the deadlines for applications for confirmation of the qualifications and the deadlines and places of examinations shall be defined by the competent authorities responsible therefore. The information on these matters shall be published on the website of the Public Information Bulletin of the authority competent to determine the qualifications, at least 30 days before the scheduled exam.
3. In the case of qualification in the field of mining and mine rescue, the examination committee shall notify the candidate in writing, about the deadlines and the location of the examination, at least 14 days before the scheduled exam.
4. The candidate prior to the examination shall present to examination committee the proof of payment of examination charge..

Art. 64

During the examination the following shall be checked:

- 1) in case of the qualifications to perform, supervise and manage the geological works - the candidate's knowledge of the geological and mining legislation in the categories I-XII, water legislation in the categories IV and V, the construction legislation in categories VI

and VII, and the regulations of the environmental law in category I-X, as well as the candidate's skills in practical

38

application of professional knowledge - to the extent necessary to perform the operations of qualifications;

2) for qualifications in mining and mine rescue - possession of general qualifications by the candidate.

Art. 65

1. The examination shall be conducted by the examination team composed of staff of the examination committee.

2. The examination is carried out separately for each type of qualification.

3. The exam consists of written and oral stage.

4. The examination in proceedings for confirmation of qualifications by the director of the district mining office is carried out orally.

5. The candidates who responded correctly in the written stage for at least 75% of the questions are allowed to the oral stage.

6. Test's result is defined as "positive" or "negative."

7. The result of the exam is decided by the examination team by majority vote. In case of a equal number of voice, the Chairman determines the result of examination.

8. The candidate who received a negative test result may accede to the re-examination not earlier than after 6 months from the date on which the exam was performed.

9. The request for a re-examination shall be submitted not later than one year of the first exam. The request shall include:

1) The candidate's name;

2) The candidate's residence address;

3) the proceedings number for a confirmation of qualification, in which the candidate was allowed to take the exam.

10. The candidate prior to the re-examination shall present to examination committee the proof of payment of the examination charge.

11. In the case of qualifications:

1) to perform, supervise and manage geological works, who did not take the exam, has the right to accede to it in the near term;

2) in mining and mine rescue, the examination committee shall inform in writing the candidate who did not take the exam about the date and place of the exam at least 14 days before the second examination date.

Art. 66

1. The examination charge is 250 pln, and a charge for issuing a certificate confirming

2. The charges referred to in par. 1, shall be paid into a bank account or cash in the cash desk of the authority by which operates the examination committee.

3. The charges referred to in par. 1, are transferred to the account of state budget revenues, in accordance with the provisions on the detailed way of the state budget realization.

4. The charges referred to in par. 1, are subject to annual change according to the annual average price index of consumer goods and services in total, planned in the state budget act for the calendar year.

5. On the basis of the index referred to in par. 4, the minister responsible for the environment announces by public notice in the Official Journal of the Republic of Poland "Polish Monitor" the charges rates referred to in par. 1, applicable for the following calendar year, rounding them up to full grosz.

Art. 67

Who is a part of the examination committee receives a remuneration for the participation in conducting the examination.

Art. 68

The costs related to conducting of the examinations, including remunerations, referred to in Art. 67, coincides with the measures planned in the state budget, in parts of the relevant trustees.

Art. 69

1. The minister responsible for the environment protection shall establish by the way of regulation:

- 1) the requirements for each category of qualifications to perform, supervise and manage the geological works;
- 2) professional qualifications that are required to have the persons performing the activities referred to in Art. 53 par. 1, points 1-9, and the requirements in the range specified in Art. 56 points 2-6, which are required to be met by the persons performing the activities referred to in Art. 53 par. 6;
- 3) the requirements concerning the composition of the examination committee and the examination team;
- 4) the amount of remuneration to persons taking part in the examination committee;
- 5) a pattern of the certificate confirming the qualifications.

2. Determining the requirements referred to in par. 1, the minister responsible for environment will be guided accordingly by the need to ensure the adequacy of composition of the committee within the scope of the examination requirements to be checked during the test, need to determine the remuneration corresponding to the work

done by the members of the examination committee, communicability of the content and presentation of the patterns of certificates confirming qualifications,

40

to ensure proper performance of the professional qualifications, and additionally in case of qualification in the field of mining and mine rescue - the need to ensure a high level of safety in mines, and the adequacy of the qualifications and requirements for placement in the organization chart of the mining plant, establishment or professional entity dealing with mine rescue and the types of hazards relating to the performance of those activities.

Art. 70

1. The list of people whose qualifications set out in Art. 50 and 58 had been confirmed, is published and updated on the website of the Public Information Bulletin of the authorities competent for their determination.

2. The list referred to in par. 1, shall contain the name of the person and the type of the identified qualifications.

Chapter 4

Experts

Art. 71

1. For granting of expert's right in the scope of mining plant operations, a natural person may apply who:
 - 1) holds full public rights;
 - 2) possesses:
 - a) university degree in technical sciences,
 - b) for activities in which the expert's tasks shall be performed – confirmation of qualifications of at least a person of higher operations supervision and after receiving of this, not less than 5 years of experience within the operations management or within the higher operations supervision in the proper type of a mining plant or at least a doctoral degree in a scientific discipline and at least 5 years of scientific experience.
2. For granting of expert's right in the scope of mining plant operations, a legal person may apply who:
 - 1) has a technical background and organization to ensure its impartiality and reliability and access to a research laboratory equipped with the facilities necessary to carry out researches and preparation of opinions on the matters of mining plant operations;
 - 2) employs at least one natural person meeting the requirements set out in par.1, who shall carry out researches and preparing the opinions on the matters of mining plant operations;

Art. 72

The expert's rights in the scope of mining plant operations are granted within the following groups:

- 1) group I –hoists(lifts):
 - a) a mechanical part,
 - b) an electrical part,
- 2) group II – hoists vessels,
- 3) group III - the suspension of hoist vessels and hoisting ropes,
- 4) group IV - hoisting ropes,
- 5) group V - shaft towers,
- 6) group VI - rope pulleys,
- 7) group VII – shaft's reinforcement, including the rigid conduction of hoist's vessels,
- 8) group VIII - devices for use within space with the explosion hazard,
- 9) group IX - machines and electrical equipment:
 - a) cables and wires,
 - b) the electronic tools,
 - c) the electricity grids,
- 10) group X - technical equipment:
 - a) pressure equipment,
 - b) lifting equipment,
 - c) special transport equipment,
- 11) group XI – mechanized housing,
- 12) group XII – blasting robots,
- 13) group XIII - anchor housing,
- 14) group XIV – shaft's housing,
- 15) group XV - the methane and dust hazard,
- 16) group XVI - a fire hazard,
- 17) group XVII - water hazard,
- 18) group XVIII - the hazard of gas and rocks eruption,
- 19) group XIX – the crump hazard,
- 20) group XX - the climate threat
- 21) group XXI - the study of technical solutions prior to the introduction of new

- indicating the ranges of activities within which the expert's tasks on mining plant operations are to be performed, in accordance with regulations issued under Art. 118 par. 4 and Art.120 par. 1 and 2.

Art. 73

1. The application of a person who solicits granting the rights of an expert for the mining plant operations shall include:

- 1) the name of a natural person or a legal person;
- 2) address of a natural person or a seat of a legal person;
- 3) the terms of reference as set out in Art. 72;
- 4) in the case of a natural person:
 - a) a statement on possessing of all public rights,
 - b) a detailed description of work experience or research;
- 5) in the case of a legal person:
 - a) a detailed description of technical facilities and organizations referred to in Art. 71 par. 2, point 1,
 - b) indication of the research laboratory accessible for the applicant, equipped with the equipment necessary to carry out research and prepare opinions on the matters of mining plant operations,
 - c) the name and surname of the employed natural person, who meets the requirements of Art. 71 par. 1, who carries out researches and prepare opinions on the matters concerning the mining plant operations, as well as a detailed description of the professional or scientific experience.

2. The application for granting the expert's rights for mining plant operations, shall be appended by:

- 1) a duplicate or certified copy of diploma of higher education in the field of engineering or doctorate degree in a scientific discipline within the scope of which the expert tasks on the mining plant operations are to be performed;
- 2) a work certificate or a certificate of employment, confirming the professional or scientific experience necessary to obtain the expert's rights of the mining plant operations;
- 3) in case of a legal person:
 - a) an indication of its legal form and proof of its existence, in particular an extract from the relevant register, and an indication of the persons authorized to act on its behalf, by giving their name and a business position,
 - b) an organizational chart of that legal person,
 - c) a statement on possessing of all public rights of the employed natural person, who meets the requirements set down in Art. 71 par. 1, who will carry out the research and prepare the opinions on the matters concerning the mining plant operations

Art. 74

The expert's rights for mining plant operations are granted by the Head of the State Mining Authority, by the way of decision. The decision indicates the range of powers in the manner specified in Art. 72 and the period of its validity, no longer than 5 years, and in the case of legal persons - also the name and surname of the employed physical person, who meets the requirements of Art. 71 par. 1, which will carry out research and prepare the opinions on the matters concerning the mining plant operations. Indication of the period of decision's validity is based on evaluating the potential for proper performance of the tasks by the expert on mining plant operations.

Art. 75

The expert on mining plant operations, shall immediately notify the Head of the State Mining Authority of any changes of data, representing the content of the application for granting the expert's rights.

Art. 76

1. The register of persons who have been granted with the expert's rights on mining plant operations is published and updated on the website of the Public Information Bulletin of the Head of State Mining Authority.
2. The register referred to in par. 1, includes the name of the physical person or a legal person, the scope of the rights granted in the manner specified in Art. 72 and the period of decision's validity, and in the case of legal persons - also the name and surname of the employed physical person who meets the requirements of Art. 71 par. 1, which will carry out research and prepare the opinions on matters concerning the mining plants operations.

Chapter 5**Professional Liability****Art. 77**

1. In relation to a person who performs the activities referred to in Chapters 1 and 2 with gross negligence, violation of the law or flagrant violation of adopted rules based on it, the prohibition of performance of those activities, for up to 2 years can be ordered by the way of decision.
2. The proceedings referred to in par. 1 cannot be started after the period of one year from the date of the occurrence of the situation justifying the initiation of proceedings.
3. The prohibition referred to in par. 1 cannot be pronounced after 5 years from the date of the incident referred to in par. 2.

4. In case of performance of the activities by an expert of mining plant operations within the scope of granted rights with gross negligence, violation of the law or flagrant violation of adopted rules based on it, or the loss of requirements referred to in Art. 71, the permission shall in the way of decision be immediately revoked.

Art. 78

1. The relevant authorities referred to in Art. 77, are:
 - 1) the minister responsible for the environment for the persons with qualifications in the implementation and supervision of geological works and directing those works;
 - 2) The Head of the State Mining Authority, in other respects.
2. Information about the persons to whom decision on prohibition on performance of the activities were issued are published in the Public Information Bulletin of the authority which has ruled the prohibition. Such information shall indicate the name of the person, the range of activities and the period for which the prohibition is valid.
3. After the expiry of the period for which the prohibition on performance of activities was decided, the competent authority *ex officio* removes the information referred to in par. 2.
4. In case when the expert's rights on mining plant operations have been revoked it shall immediately be removed from the list referred to in Art. 76 par. 1.

DIVISION V

GEOLOGICAL WORKS

Chapter 1

Planning and carrying out of geological works

Art. 79

1. Geological works including geological operations works can be performed only on the basis of geological works plan.
2. The plan of geological works shall define in particular:
 - 1) the purpose of the intended works and manner of its achievement;
 - 2) the type of geological documentation to be established as a result of geological works;
 - 3) a schedule of geological works;
 - 4) space, within which the geological works are to be carried out;
 - 5) the activities necessary for the environment protection, including the groundwater, way of the liquidation of the excavation, drilling, land reclamation, and operations to prevent damage arising out from performance of the intended work.

3. Minister responsible for the environment shall determine, by the way of ordinance, the detailed requirements for geological works plans, including the works, performance of which requires a concession, guided by the needs of environmental protection, ensuring proper geological prospecting and security requirements.

Art. 80

1. The plan of geological works, the performance of which does not require a concession, shall be approved by the geological administration authority, by the way of decision.
2. In the application for approval of the geological works plan, the information on the rights to the real estate hold by the applicant shall be included, within the scope necessary for the geological works performance.
3. The parties in the proceedings for approval of the geological works plan are the owners (perpetual usufructuaries) of the land real estate within the boundaries of which geological works will be carried out. The provisions of Art. 41 shall apply *mutatis mutandis*.
4. The plan shall be submitted for approval in two copies.
5. The approval of the plan requires an opinion of the head of municipality (mayor, city president).
6. The plan is approved for the defined period of time, no longer than 5 years, depending on the scope and the schedule of intended geological works.
7. Geological administration authority refuses to approve the geological works plan, if:
 - 1) the proposed geological works would violate the requirements of the environment protection;
 - 2) the geological works plan does not comply with the requirements of the law.
8. The geological administration authority, which approved the project of geological works, delivers immediately a copy of the decision to the competent local geological authorities and to the mining supervision.

Art. 81

1. Who was granted with the concession for prospecting or exploitation of mineral deposit or received the approval of the geological works plan, shall notify the intention to initiate the activities to the competent:

- 1) geological administration authority;
- 2) head of the municipality (mayor, town president), and within the boundaries of the marine areas of the Republic of Poland – to the local maritime administration authority;
- 3) the mining supervision authority – if, to the geological works the requirements on mining plant operations apply

2. The notification shall be submitted in writing, 2 weeks in advance at the latest, before the planned date of initiating the geological works, defining the planned starting and finishing dates of the geological works, their type and basic data on the geological works as well as the names and surnames of the persons performing the supervision and the management and the numbers of certificates confirming the qualifications for those activities.

Art. 82

1. Who was granted with the concession for prospecting for or exploitation of mineral deposit or received the approval of the geological works plan is obliged to:
 - 1) document the current course of geological works and their results;
 - 2) provide the competent geological administration authority with the geological information;
 - 3) provide the competent geological administration authority with the of samples obtained in the result of geological works together with the results of their examinations, in the case of:
 - a) prospecting for or exploitation of mineral deposits, referred to in Art. 10 par.1,
 - b) performing of boreholes to identify the construction of the deep structures.
2. The obligation to transfer the samples may cover the samples obtained in the result of geological works in other cases than specified in par. 1 point 3, if they represent a scientific value.
3. In the cases referred to in par. 2, the obligation to transmit the samples translates in the concession into prospecting for or exploitation of mineral deposit, or the decision approving the geological works plan.
4. The scope and schedule for the transfer of geological information and samples is defined respectively by the concession or a decision approving geological works plan.

Art. 83

1. If required by the needs of public safety, environmental protection or recognition of the geological structure of the country, including the rational management of mineral deposits, the competent geological administration unit, by the way of decision, may oblige the entity granted with the concession for prospecting for or exploitation of mineral deposits, or decision approving the geological works plan, to perform, with a remuneration, additional activities, in particular the works, tests, measurements or additional sampling.
2. The decision referred to in par. 1, replaces the concession or the geological works plan.
3. In case of disputes, the amount of remuneration referred to in par. 1, shall be defined by common court.

Art. 84

Who performs geological works is required to manage the exploited minerals or the extracted spontaneously during its performance. The provisions on the exploitation charge shall apply accordingly.

Art. 85

1. If the geological works include only drilling for the exploitation of the Earth's heat, the geological works plan does not require approval.
2. The geological works plan shall be notified to Starost.
3. The initiation of the geological works is possible, if within the frame of 30 days from the submission of the geological works plan, the Starost, by the way of decision, does not raise the objections to it. The Starost may object if:
 - 1) the manner of performance of the geological works creates the hazard for the environment;
 - 2) geological works plan does not comply with the requirements of the law.

Art. 86

For the geological works aiming on prospecting for and exploitation of mineral deposits as well as geological works carried out for other purposes and performed with the use of explosives or performed at the depths greater than 100 m or performed on the mining area, created in order to perform the underground works or by the holes drilling method, the provisions on mining plants and operations thereof and the mine rescue shall apply *mutatis mutandis*.

Art. 87

The provisions of this chapter shall not apply to geological works performed for the needs of mining plant operations.

Chapter 2

Geological documentation and geological information

Art. 88

1. The results of geological works, along with their interpretation, definition of the degree of achievement of the pursued aims as well as with the justification, shall be presented in the geological documentation.
2. Geological documentation consists of the following types of documentation:
 - 1) geological of the mineral deposit;
 - 2) hydrogeological;

- 3) geological engineering;
- 4) other than specified in par.s 1-3.

Art. 89

1. The geological documentation of a mineral deposit is prepared to determine its boundaries, geological resources, conditions of occurrence and to identify the opportunities of exploitation of the minerals from the deposit.
2. The geological documentation of a mineral deposit shall define in particular:
 - 1) the type, quantity and quality of minerals, including submission of information concerning the accompanying minerals and useful trace elements co-occurring and present in the deposit substances harmful to the environment;
 - 2) the location of the deposit, the geological structure, form and the boundaries;
 - 3) elements of the environment surrounding the deposit;
 - 4) hydro-geological and other mining-geological conditions of occurrence of deposits;
 - 5) the status of land management in the area of documented deposit;
 - 6) the limit values of the parameters that define the deposit and its boundaries.
3. For the preparation of geological documentation of deposits of the curative waters, thermal waters and brines the requirements for hydro geological documentation shall apply.
4. If the geological documentation of a mineral deposit shall be the basis for granting the concession, the exploitation of the deposit occurs in sufficient detail to enable the drafting of the deposit development plan.
5. In the case of making the division of the deposit, for which the geological documentation is prepared, a new documentation for part of the deposit provided for the development, shall be prepared, for the other part the calculation of the deposit shall be made as an addition to the geological documentation, on cost of the entity who funded the preparation of the new documentation.

Art. 90

1. The hydro-geological documentation shall be prepared in order to:
 - 1) determine the resources and characteristics of the groundwater;
 - 2) determine the hydro geological conditions connected with the intended:
 - a) performance of drainage systems for exploiting the minerals,
 - b) injection of water into the formation,
 - c) performance of construction dewatering with boreholes,
 - d) performance of activities likely to have a negative effect on underground water, including its contamination,
 - e) underground non-reservoir storage of substances or underground storage of waste,

- f) disposal of waste on the surface,
- g) the establishment of protected areas for groundwater reservoirs,
- h) the termination or change in the level of drainage in the liquidated mining plants.

2. The hydrogeological documentation , depending on the purpose of its preparation, defines in particular:

- 1) the geological structure and hydrogeological conditions of the investigated area;
- 2) conditions of groundwater occurrence, including the characteristics of the water-loud layers on the specified level;
- 3) information presenting the chemical composition, physical characteristics and other properties of waters;
- 4) intake possibilities;
- 5) the boundaries of the proposed protected zones of water intakes and groundwater protection areas, as well as groundwater reservoirs;
- 6) the activities necessary to protect the environment, including the land real estate, relating to the activities for the needs of which the documentation is prepared.

Art. 91

1. The geological engineering documentation shall be prepared in order to determine the engineering-geological conditions for:

- 1) spatial management;
- 2) the foundation of buildings;
- 3) underground non-reservoir storage of substances or underground storage of waste;
- 4) waste storage on the surface.

2. The geological engineering documentation determines in particular:

- 1) geological structure, geological engineering and hydrogeological conditions of the building grounds or a defined space;
- 2) the usefulness of the investigated area for implementation of the planned activities;
- 3) estimated changes in the environment that may arise as a result of the implementation, functioning and liquidation of the intended activities - if there is no obligation to report on the impact of projects on the environment under separate regulations.

Art. 92

The geological documentation referred to in Art. 88 par. 2 point 4 shall be prepared in the case of:

- 1) carrying out the geological works not resulting in documentation of mineral deposits or groundwater resources;

- 2) performance of the borehole in order to recognize the structure of deep layers, not related to the documentation of mineral deposits;
- 3) carrying out geological works in order to use the Earth's heat;
- 4) liquidation of the borehole.

Art. 93

1. The geological documentation referred to in Art. 88 par. 2, points 1-3, shall be submitted to the competent geological administration authority in 4 copies, and in the electronic version of document.
2. The geological documentation referred to in Art. 88 par. 2, points 1-3, shall be approved by the way of decision, by the competent geological administration authority.
3. If the geological documentation referred to in Art. 88 par. 2, points 1-3, is not compliant to the law or is resulting from the activities violating the law, the competent geological administration authority refuses its approval.
4. The changes to the geological documentation referred to in Art. 88 par. 2, points 1-3, are done by preparation of the Annex. The procedure with the additions to the geological documentation the par.1-3 shall apply.
5. In case of identification of significant differences between the geological documentation referred to in Art. 88 par. 2, points 1-3, and the actual situation, including the conditions of groundwater management, the competent geological administration authority may, by the way of decision, require to change the geological documentation, and if necessary - to perform additional geological works. This decision determines a deadline for the submission of an additional geological documentation.
6. If necessary, the decision ordering the execution of additional geological works shall replace the concession or geological works plan.
7. The geological documentation referred to in Art. 88 par. 2 point 4, does not require the approval by the way of decision.
8. The geological documentation referred to in Art. 88 par. 2 point 4, shall be prepared in 3 copies, within 6 months after completion of works, and shall be submitted, as appropriate, to the geological administration authority which granted the concession for the activities, approved the geological works plan or to which the geological works plan was submitted.

Art. 94

1. The competent geological administration authority shall forward the copies of the geological documentation referred to in Art. 88 par. 2 points 1-3 to:
 - 1) the executive bodies of local government units, for the territories of which the geological documentation applies;
 - 2) the competent authority of the local maritime administration - if the documentation relates to the marine areas of the Republic of Poland;
 - 3) the appropriate regional director of the water management board - in the case of hydrogeological documentation;

- 4) other relevant local geological authorities, appending one copy of the geological documentation.
2. The competent geological administration authority shall send a copy of the geological documentation, referred to in Art. 88 par. 2 point 4, to the other competent local organs of geological administration.

Art. 95

1. The documented mineral deposits and documented groundwater recourses, within the limits of the protection zones drafting and protective areas of the groundwater reservoirs, aiming on its protection, shall be presented in the condition's studies and local spatial development plans of municipalities and the land spatial management plans of the voivodships.
2. Within the period of 2 years from the date of the geological documentation approval by the competent geological administration authority, the area of the documented mineral deposits shall be obligatorily introduced into the study of conditions and directions of spatial management of the municipality.

Art. 96

1. After the deadline specified in Art. 95 par. 2, the Voivod shall introduce the area of the documented mineral deposits into the study of conditions and directions of spatial management of the municipality, and issue on that the replacement ordinance. The study drawn in that manner is resulting in the legal effects such as a study of conditions and directions of spatial management of the municipality.
2. The costs of the study shall be fully covered by the municipality, to the area of which it applies.
3. In the case of a complaint to the replacement ordinance, referred to in par. 1, submitted by the municipal council, the administrative court shall appoint an administrative hearing within 30 days of receipt of the complaint to the court.
4. The provisions of the Act of 8 March 1990 on the local government (O.J. 2001 No. 142/1591, with further amendments⁸⁾) shall apply accordingly.

Art. 97

1. The minister responsible for environment shall determine, by the way of ordinance, the detailed requirements for the:

- 1) geological documentation of the mineral deposit,

⁸⁾ Changes in the consolidated text of the Act were published in O.J. 2002 No. 23/220, No. 62/558, No. 113/984, No. 153/1271 and No. 214/1806, 2003, No. 80/717 and No. 162/1568, 2004, No. 102/1055, No. 116/1203 and No. 167/1759, 2005, No.172/1441 and No. 175/1457, 2006, No. 17/128 and No. 181/1337, of 2007 No. 48/327, No. 138/974 and No. 173/1218, 2008, No. 180/1111 and No. 223/1458, 2009, No. 52/420 and No. 157/1241, 2010, No. 28/142 and 146, No. 40/230 and No.106/675 and 2011 No. 21/113.

- 2) hydrogeological documentation,
- 3) geological-engineering documentation
- 4) other than those specified in par.s 1-3

- including the patterns of the forms, statements and cards attached to the documentation.

2. By issuing the ordinance referred to in par. 1, the minister responsible for environment will be guided by the need to provide the geological documentation in a suitable form, including enabling the collection and processing in the form of an electronic document, the proper presentation of the geological structure by those documents, with the particular emphasis on the protection of mineral deposits, groundwater reservoirs and other elements of the environment, and in the case of ordinance referred to in par. 1 point 1, will diversify the detailed requirements on the mineral's state of concentration, size of the entity, as well as the categories of deposits and limit parameters defining the deposit.

Art. 98

1. The geological administration collects, preserves, protects and presents the geological information.
2. The minister responsible for the environment shall specify, by the way of ordinance, the manner and the procedure of gathering and sharing of the geological information, the organization and the method of its storing, and the scope of its protection.
3. By issuing the ordinance, referred to in par. 2, the minister responsible for the environment will be guided by the needs of protection of mineral deposits, the meaning of the geological information, including samples, for researches and recognition of the geological structure of the country as well as will take into consideration the differences in requirements for storing and sharing of the geological information, depending on the type and form of the geological information and its legal status.

Art. 99

1. The right to the geological information is hold by the State Treasury.
2. Who, incurring the cost of work carried out in result of decisions issued under the Act, did obtain the geological information, is entitled to its use without a charge.
3. In the period of 5 years from the expiry date of the decision on the basis of which the works being the source of the geological information had been performed, an entity referred to in par. 2, is entitled to the exclusive use of the geological information in order to apply for performance of the activities referred to in Art. 100 par. 2.
4. In the case if, before the deadline defined in par. 3, the entity holding the exclusive right to use the geological information obtains the decision creating the basis for the activities referred to in Art. 100 par. 2, retains the exclusive right to use the geological information for the time specified in this decision, and additionally for 2 years from its expiry date.
5. Unless this Act provides otherwise, the right to the geological information is disposes of by the State Treasury.

6. Who holds the rights defined in par. 2-4, may dispose of them within the limits set by these provisions.

7. Within the extent not regulated by this Art., on the rights referred to in par. 6, the provisions of the Civil Code concerning the lease shall apply.

Art. 100

1. Except for the situations defined in par. 2 and 3, the use of the geological information, for which the rights are held by the State Treasury, is free of charge.

2. The use of the geological information for which the rights are held by the State Treasury in order to perform activities within the scope of:

1) exploiting the minerals from the deposits,

2) underground non-reservoir storage of substances and underground storage of waste,

3) in which the water permit is required

- can be performed on the basis of the contract, with the remuneration.

3. Using the geological information related to examination causing damage, destruction or consumption of geological samples, and associated with granting access to geological data, regardless of the purpose of use, can be performed on the basis of the contract, with the remuneration.

4. The basis for determining the remuneration for the use of geological information constitutes the valuation defining the costs of design, execution and documentation of geological works financed by the entity applying for the use of this information. Before the conclusion of the contract, the State Treasury shall verify the valuation.

5. The valuation referred to in par. 4, can be done by a person qualified to perform, supervise and manage geological works confirmed within the category corresponding to the type of valued geological information.

6. In case if the geological information to which the rights belong to the State Treasury, is contained in the geological documentation, the disposal of it can only cover a fixed period of time.

7. The tasks of the State Treasury, referred to in par. 4 and in Art. 99 par. 5, to the extent specified in the par. 2, points 1 and 2 and in par. 3, are performed by the minister responsible for the environment.

8. The tasks of the State Treasury, referred to in par. 4 and in Art. 99 par. 5, to the extent specified in the par. 2, point 3, are performed by the Marshal of the Voivodship.

9. The income from the disposal of the right to geological information held to State Treasury represent the state budget income.

10. The minister responsible for the environment shall specify by the way of ordinance:

1) the conditions and procedures for the use of geological information with the remuneration;

2) a pattern of contract for the use of geological information;

3) methods of valuating of the geological information;

4) detailed requirements for the valuation.

11. By issuing the ordinance, referred to in par. 10, the minister responsible for environment will be guided by the need to provide an easy access to the geological information and completeness of the information covered by the application. In this ordinance the minister responsible for environment will diversify the methods of valuation of the geological information and the extent of its use as well as the specific requirements concerning a valuation, depending on the type and form of geological information, the manner and extent of use, and in case of geological information on mineral deposits - also the differences in the quality of information due to the time of its gaining, the level of recognition of the deposit and the degree of its exploitation.

Chapter 3

Records and the balance of resources of mineral deposits

Art. 101

1. The entrepreneur shall keep the records of resources of a mineral deposit, determining its modifications due to:

- 1) a more accurate prospecting of the deposit;
- 2) exploitation of deposits and losses arising as a result of it;
- 3) changes of the boundaries or division of the deposit;
- 4) the requirements of environmental protection or work safety, including restrictions affecting the admissibility of the deposit exploitation;
- 5) the reclassification of the balance sheet of geological resources into off-balance sheet, off-balance sheet resources into the balance sheet, the industrial into non-industrial, the non-industrial resources into industrial or losses, as well as losses into the industrial resources.

2. If the modifications in the reporting period exceed 50% of annual production from the deposit, the reclassification referred to in par. 1, point 5, shall be done by the entrepreneur after obtaining the consent, by the way of decision, of the competent concession authority.

3. Within the frame of its resource records of a mineral deposit there is current inventory prepared annually, before February 28, for the situation from 31 December of the previous year, hereinafter referred to as an "current inventory"

4. Within the current inventory there are in particular data on those parts of a mineral deposit, where the mining is not technically feasible or economically not justified.

5. The current inventory is drawn up on the basis of:

- 1) survey of the excavations - for the resources of solid mineral deposits,;
- 2) survey of the drills efficiency - for resources of deposits of gas and liquid minerals.

6. In the case of activities carried out under a concession granted by the Starost:

- 1) measurement of the excavations is carried out every 3 years;

2) in the current inventory drawn up annually the condition of the resources of a mineral deposit, the volume of production and losses as the size estimate, leaving putting detailed determination till the survey of the excavations.

7. The current inventory shall be attached to the copy of geological documentation and the deposit development plan.

8. The entrepreneur shall prepare, based on a current inventory the information about the modifications in resources and mineral deposits annually, before March 15, and submit it to the competent concession authority, and state geological service.

9. The information referred to in par. 8, contains data for the inventory of a mineral deposit, gains and losses on these resources.

10. In the justified cases, in particular in the case of:

1) initiating the proceedings to revoke a concession or a statement of its expiry,

2) revocation of a concession or a statement of its expiration or loss of its power for whatever reason,

3) depletion of the deposit,

4) the violation of the environmental legislation

- concession authority may, by the way of decision, order to make the survey of the excavations and submit a current inventory at a later date.

11. The entrepreneur preserves current inventories for 5 years from the end of the calendar year in which the concession was repealed.

12. Minister responsible for environment shall determine, by the way of ordinance, the detailed requirements for the current inventory and information patterns about the changes of mineral deposit resources, the content of which shall depend on the types of minerals, guided by the need to protect mineral resources and ensure the completeness of information gathered in current inventory of a mineral deposit.

Art. 102

1. The current inventory is prepared by a mining geologist.

2. For the deposits mined by open-pit or drilling method, the current inventory may be prepared by a person holding the qualifications to perform the supervision and management of geological works in the field of prospecting for or exploitation of mineral deposits.

3. The supervision on preparation of the current inventory is performed by the competent mining authority.

4. If the entrepreneur did not prepare the current inventory or prepared it in the insufficient way, the competent mining supervision authority may, by the way of decision, order its immediate preparation or improvement, at the expense of entrepreneur.

Art. 103

1. On the basis of geological documentation and records of mineral deposits the state geological service prepares annually a balance of national resources of mineral deposits, on the 30th of June,
2. The balance referred to in par. 1, requires the approval of the minister responsible for environment performing the tasks of the geological administration with the help of Chief National Geologist.

DIVISION VI

MINING PLANT, ITS OPERATIONS AND MINING RESCUE

Chapter 1

Spatial planning on mining areas

Art. 104

1. The mining areas and mining protective areas shall be considered in the study of conditions and directions for spatial management plan of the municipality and in local urban spatial development plan.
2. If as a result of the intended activity specified in the concession, the important effects for the environment, for the mining area or a part thereof are foreseen, the local urban spatial development plan may be prepared, based on the provisions of spatial management .
3. The expected environmental effects of the activities specified in the concession shall be defined in the eco-physiographic study prepared for the needs of the study of conditions and directions of spatial management plan of the municipality and on the basis of the deposit management plan.
4. The plan referred to in par. 2, without prejudice for the requirements of other regulations, should ensure the integration of all activities undertaken within the mining area in order to:
 - 1) implement the activities specified in the concession;
 - 2) ensure public safety;
 - 3) protect the environment, including buildings.
5. The plan referred to in par. 2, may in particular specify:
 - 1) objects or areas for which the protective pillar is determined, within the boundaries of which the operations of the mining plant may be prohibited or may be allowed only in a manner to protect these facilities or areas;
 - 2) the areas excluded from constructions or within which buildings is allowed only after fulfilling the relevant requirements, the cost of meeting these requirements shall be covered by the entrepreneur.

6. The costs of drafting the plan referred to in par. 2, shall be covered by the entrepreneur.

Chapter 2

Operation of the mining plant

Art. 105

1. The operation of the mining plant is conducted in a manner consistent with the law, in particular on the basis of a mining plant operation plan, and according to principles of mining technology.

2. The mining plant operation plan shall not be prepared:

1) if the concession was granted by the Starost - in this case, the operation of the mining plant shall be carried out under the conditions specified in the concession;

2) if the geological works for prospecting for or exploration of the mineral deposits are performed without the use of the explosives, at a depth of up to 100 m, outside the mining protective area - in this case the operation of the mining plant is performed under the conditions of the concession or the decision approving the geological works plan.

Art. 106

For the design, construction, maintenance and demolition of buildings of mining plants, the provisions of construction law, and accordingly the provisions of this chapter and chapter 5 shall apply.

Art. 107

1. If it is not opposed to the conditions specified in the concession, the operator may change the deposit development plan. Changes are made in the form of a supplement to the plan.
2. The entrepreneur shall submit in supplement to the deposit development plan to the concession authority at least 30 days prior to the implementation of the intended changes.
3. When it is required by the needs of rational mineral deposit management or the protection of the environment, within the frame of 30 days from the submission of the supplement to the mineral deposit management plan, the concession authority, by the way of decision, prohibits its implementation.

Art. 108

1. The plan of the mining plant operation shall be prepared by the entrepreneur separately for each of the mining plants.
2. The mining plant operations plan specifies:
 - 1) the organizational structure of the mining plant, in particular by indicating positions of management and operation supervision;

- 2) specific activities necessary to ensure:

- a) performing of activities covered by the concession,
 - b) public safety,
 - c) fire safety
 - d) the safety of persons residing in the mining industry, in particular concerning health and safety,
 - e) rational management of the mineral deposit,
 - f) protection of the environment,
 - g) protection of buildings,
 - h) prevention of damage and repair.
3. The mining plant operation plan shall be subject to the conditions determined in the concession and the deposit development plan, and in the case of :
- 1) geological works, which do not subject to concessions - taking into account the conditions determined in the project of geological works;
 - 2) the activities referred to in Art. 2 par.1 - taking into account the local conditions of its performance.
4. If within the boundaries of the mining area the performance of works connected with the exploration of mineral deposits or prospecting for the mineral deposits or groundwater is planned, or if the mining areas are adjacent to each other, in the mining plant operations plan the interdependencies that occur are taken into account and provides the appropriate organizational and technical measures, necessary to ensure the safety of work and general safety and protection of individual mineral deposits and other environmental elements.
5. If the mining plant is composed of at least 2 independently operating parts, the operation plan of such plant defines the data covered by the plan separately with reference to its individual parts.
6. The mining plant operation plan shall be prepared for the period from 2 to 6 years or for the entire planned duration of the operations, if it is shorter.
7. The request for approval of a mining plant operation plan shall be submitted to the mining supervision authority competent for the place of performance of works covered by the plan, and if the works will be performed on the area under the supervision of at least 2 mining supervisors authorities - mining supervision authority competent for the seat of the mining plant.
8. The request for approval of a plan of a mining plant shall be submitted at least 30 days before the intended commencement of the works.
9. The application for approval of a mining plant operation plan shall be accompanied by:
- 1) 2 copies of the plan, signed by the entrepreneur and the manager of the mining plant operations, which will implement the plan;
 - 2) copies of decisions required for the intended works issued by other authorities, in particular regarding the environmental protection.
10. Along with the application for approval of a mining plant operation plan, a copy of the concession and the deposit management plan shall be delivered for review,

in the case of geological works, which do not require concessions - a project of geological works.

11. The mining plant operation plan is approved by the competent mining supervision authority, by the way of decision, after obtaining the opinion of the competent head of municipality (mayor, town president).
12. The Mining Supervisory Authority shall send to the concession authority a copy of the decision approving the mining plant operation plan.

Art. 109

1. Any modifications of the mining plant operation plan shall be done in the form of an addition to the plan, within the procedure:
 - 1) foreseen for the approval of the mining plant operation plan;
 - 2) simplified - if the changes do not affect the public safety, fire safety, safety of persons residing in the mining plant, mining plant operation safety, the deposit management, environmental protection, construction works, protection of buildings and damage prevention and repair .
2. In the case referred to in par. 1 point 1, the opinion referred to in Art. 108 par.11, is not required if the changes of the mining plant operation plan will not cause negative impact on the environment and building structures.
3. The mining supervisory authority shall send to the concession authority a copy of the decision approving the addition to the mining plant operation plan, concerning the deposit management or having an impact on the environment.
4. In case of introducing changes in the mining plant operation plan within the simplified procedure:
 - 1) in addition to mining plant operation plan shall be signed by the manager of operations of the mining plant, which implements the plan, and shall be approved by an entrepreneur;
 - 2) the additions to the mining plant operation plan, approved by the entrepreneur are recorded in card of modifications;
 - 3) the current card of modifications, including the approved additions to the mining plant operation plan shall be submitted to the competent mining supervision authority not less frequently than quarterly.

Art. 110

Minister responsible for environment shall specify, by the way of ordinance, detailed requirements for the contents of the mining plant operation plan and the plan of liquidated (liquidated marked part thereof) of a mining plant, making division depending on the type and method of performed activities and taking into account the specificity of activities performed within the boundaries of maritime areas of the Republic of Poland, guided by the need to ensure the requirements of Art. 108 par. 2 and Art. 129 par. 1, and determine the elements of the mining plant operation plan, the changes of which were done within the simplified procedure

guided by the need to ensure that the requirements set out in Art. 109 par. 1 point 2.

Art. 111

1. Withdrawal from the approved mining plant operation plan is permitted only in the event of a hazard on safety of operations of the mining plant or part thereof, public safety or the environment.
2. In case of withdrawal from the approved mining plant operation plan the entrepreneur shall immediately take the actions necessary for health protection and human life protection, to secure the buildings of the mining plant, general safety and environmental protection. These actions cannot be non-compatible with the principles of the mining techniques as well as with the health and safety rules.
3. An entrepreneur shall immediately inform the competent mining supervision authority and the authority of agreeing or giving the opinion about the withdrawal. When appropriate, the competent mining supervision authority may, by the way of decision, which is subject to immediate execution, determine the manner, scope and fixed date of performance of duties referred to in par. 2.

Art. 112

1. The operations of the mining plant is carried out under the direction and supervision of persons possessing the required qualifications.
2. The persons performing the activities within the operations of the mining plant are trained in the scope and regulations of occupational health and safety, including safety of carrying out their activities. These persons can not be allowed to work within the mining plant operations, if they do not demonstrate a sufficient knowledge of these laws and rules.
3. The trainings are organized and conducted by the entrepreneur or on his request the organizational unit responsible for trainings.
4. Who performs the trainings of persons responsible for the mining plant operations is obliged to have appropriate staff and the necessary means to provide appropriate training.
5. The training of persons referred to in Art. 53 par. 6, and the staff from the management and supervision on the operations of underground mining plant is based on training programs, approved by the way of decision, by the competent supervisory mining authorities. Refusal of the approval may occur when the training program does not provide trainees the necessary transfer of information on the proper implementation of activities in the mining plant.

Art. 113

1. In the operations of the mining plant the products shall be used which:
 - 1) meet the requirements for conformity assessment, as defined in separate regulations, or

- 2) have been specified in regulations issued under the par. 15, meets the technical specifications set out in these regulations, hereinafter referred to as "technical requirements", have been approved for use in mining plants and marked as specified in these regulations, or
- 3) are defined in regulations issued under Art. 120 par. 1 or 2 and meet the requirements of those provisions.

2. The decision on approval of the product to be used in the mining plants, hereinafter referred to as "approval", shall be issued by the Head of State Mining Authority, if the product meets the technical requirements.

3. Before submitting an application for approval the product is subject to testing, on the basis of technical requirements at an accredited unit certifying the individual products.

4. If the product was:

- 1) produced or put into circulation in another Member State of the European Union or in the Republic of Turkey in accordance with the law,
- 2) manufactured in accordance with the law in Member States of the European Free Trade Association (EFTA) countries party to the Agreement on the European Economic Area

- The Head of the State Mining Authority shall issue an approval on the basis of documents accompanying the application, excluding the provisions of par. 2 and 3. Refusal of approval is possible only if it is determined that the product does not meet the safety requirements to the extent of this, which are provided in technical requirements.

5. The parties authorized to submit an application for the approval are:

- 1) The manufacturer or his authorized representative, within the meaning of Art. 5 point 5 of the Act of 30 August 2002 on the Conformity Assessment System (O.J. 2010, No. 138/935 and 2011, No. 102/586), distributor or importer of the product, hereinafter referred to as "suppliers of the product";
- 2) The supplier of the final product - in the case of products consisting of components made by different manufacturers;
- 3) an entrepreneur who produced or purchased the product and intends to use it within the mining plant operations, or other entity that produced or purchased a product - in the case of products made or purchased individually.

6. The application for granting the approval includes:

- 1) description of the product;
- 2) identification of the entity applying for granting the approval, by indication of its legal form and proof of its existence, in particular an extract from the relevant register, and its headquarters, as well as persons authorized to act on its behalf, by giving their name and official position;
- 3) identification of the producer of the product, its registered office and place of the product origin.

7. The application for granting the approval shall be accompanied by the following documents prepared in Polish language:

- 1) a general description of the product with an indication of the proposed location of the approval sign;
- 2) necessary calculations of the design parameters affecting the safety of use of the product in terms of hazards in the mining plant operation;
- 3) drawings or diagrams of the product, its systems and components, which determine the occupational health and safety and fire safety;
- 4) results of tests of the product;
- 5) a statement of the producer or entity listed in the par. 5, point 3 - in the case of production of the individual product, concerning the compliance of the product with technical requirements, or declaration of compliance of the product with the safety, to the extent ensured by the technical requirements - in the case of devices referred to in par. 4;
- 6) documents proving the conformity assessment, if required by separate regulations, including those issued under the Act of 30 August 2002, on the conformity assessment system;
- 7) quality management system certificate or the information on the manner of proving the repeatability of characteristics of the product - for the production of more than one copy of the Art.;
- 8) a technical documentation of the product containing the following information required for the proper and safe use:
 - a) technical specifications,
 - b) identification of hazard posed by the product during its application,
 - c) instructions for safe use of the product and information on the need of taking special safety measures
 - d) the conditions of use of the product, taking into account the manner of carrying out inspection, maintenance, repair and adjustment.

8. In the case of devices referred to in par. 4, instead of the documents listed in par. 7, point 4, to the application for approval one shall attach documents prepared in Polish language and constituting basis of the production or release of the product on the market, in particular the results of its tests.

9. If it is required by the special occupational health and safety considerations and fire safety in the mining plant operation, the Head of the State Mining Authority may order prior to approval, by the way of regulation, testing of the product in the mining plant operation .

10. The approval is granted for the undefined period of time.

11. The approval determines:

- 1) the product;
- 2) the scope and conditions of use of the product;
- 3) the approval sign and a permanent and legible manner of fixing the approval sign on each unit of product;

- 4) the documents that the supplier of the product is obliged to transfer the user;
 - 5) the archiving time of the documents referred to in par. 7, by the entity referred to in par. 5 and conditions of its presenting;
 - 6) the range of allowed changes to a product, possible to be implemented, within the validity period of approval, by the producer or an entity referred to in the par. 5, point 3 - if the product is produced individually.
12. The changes referred to in par. 11 point 6, may not relate to:
 - 1) reduction of the strength of individual elements of the product;
 - 2) the products characteristics, modification of which can cause a limitation of the scope of its use or requires a change in the conditions of its use;
 - 3) the equipment of the product that is used to combat natural hazards and fire hazards;
 - 4) mechanical and electrical security devices of the product, if it lowers the level of safety;
 - 5) the place of service and its security as well as systems of product's control;
 - 6) covers of the moving parts of the product;
 - 7) the scope of the product's use.
 13. In the case of implementation of modifications in the approved product by the entities referred to in par. 5, the entity implementing the modification shall notify the entity responsible for the product's research, and the Head of the State Mining Authority.
 14. If the product does not meet the technical requirements, which affects the level of its safety, the Head of the State Mining Authority may revoke or modify authorization.
 15. The Council of Ministers, following the need to ensure the public safety, safety of the mining plant operation, including the safety of persons performing operations in the mining plant, shall define in the way of the ordinance :
 - 1) a list of products;
 - 2) technical requirements for the products;
 - 3) approval signs and the manner of determining the product with the approval signs.

Art. 114

1. Delivering into service in the mining plant operations of the machinery, equipment and walls, as well as making their major design changes or major changes in basic conditions in which they operate, requires a permit mining plant operations manager.
2. Delivering into service in the mining plant operations of the basic facilities, machinery and equipment and walls, as defined in regulations issued under Art. 120 par. 1: the basic facilities, machinery and equipment, underground mining plant facilities forming the walls, carried out in special conditions and facilities of underground mining plant forming branches exploiting copper ore deposits in the special conditions

as well as implementation of the significant structural changes or significant changes in operating conditions, requires a permit issued by the way of decision, by a competent mining supervision authority.

3. The provisions of par. 1 and 2 shall not apply if the product, machine or device is an equipment or component of the construction facility of the mining plant for which a use permit shall be issued by the competent mining supervision authority under the provisions of construction law.

4. The competent mining supervision authority may order, by the way of regulation which can be appealed, prior to granting the concession, referred to in par. 2, to perform the tests of operations of the facilities, machinery, equipment or walls, defining the scope and method of the tests and dependence of granting the use permit on the results.

Art. 115

1. The storing or using by the entrepreneur the explosives within the mining plants operation requires a permit issued by the way of decision, by the mining supervision authority competent for the place of works with the use of explosives, and if the works will be performed with the territorial competence of at least two mining supervision authorities - the mining supervisory authority competent for the seat for the mining plant.

2. The storage or use of the explosives in a mining plant operation by the entities engaged in performance in their professional work the activities assigned to them in a mining plant requires a permit issued by the way of decision, by the mining supervision authority competent for the place of works with the use of explosives.

3. The use permit is issued for an undefined period of time.

4. The competent mining supervision authority refuses granting the use permit:

1) due to the threat to the state defence, state security, public order or the environment;

2) due to the important public interest;

3) if the permission was withdrawn from the applicant during the last 5 years, for the reasons determined in par. 5

5. The competent mining supervision authority shall revoke a use permit if the works with the use of the explosives performed by the applicant:

1) is inconsistent with the law or of mining plant operation plan;

2) constitutes a threat to State security, public order or the environment.

6. The entrepreneur shall notify the mining supervision authority referred to in par. 1, not later than 7 days before the intended date of the first blasting, about entrusting the execution of these works to the entity engaged in performance in its professional work the activities assigned to them in a mining plant.

7. The entrepreneur or the entity engaged in performance in their professional work the activities assigned to them in a mining plant, shall:

- 1) comply with the requirements for safe storage of blasting agents and blasting equipment, and performance of works with the use of these substances and equipment;
- 2) provide a supervision of persons to whom the execution of tasks related to access to blasting agents and blasting equipment was entrusted;
- 3) provide a record of the blasting agents present in the mining plant and used there;
- 4) preserve the record referred to in par. 3, for at least 10 years after the end of the calendar year in which the blasting agents were used, and make it available at the request of the competent mining supervisory authority;
- 5) ensure the maintenance of a list of used blasting agents and blasting equipment, setting out the conditions for their use.

8. The manager of the mining plant operations shall determine for each place of works with the use of blasting agents, a written instruction of a safe execution thereof, taking into account the requirements specified in regulations issued under Art. 120 par. 2

Art. 116

1. An entrepreneur who was granted with the concession for the activities referred to in Art. 21 par. 1 point 2, 3 and 4, with the exception of a concession granted by Starost, is obliged to possess geological survey documentation and to update and complete it during the progress of works. The geological survey documentation includes:

- 1) survey documentation;
 - 2) calculations documentation
 - 3) mapping documentation presenting the current geological and mining situation of mining plant, as well as the condition of space within the boundaries of the mining area.
3. It is not required to have the survey and calculation documents being the basis for the preparation and completion of maps derived from the state geodetic and cartographic recourses.
3. The geological survey documentation prepare:
- 1) mining surveyor, and in case of open-pit exploitation of the minerals - the person with professional qualifications in the field of geodetic situational-height measurements
 - 2) in the part which presents the geological situation of the mining plant - mining geologist, and in the case of exploitation of minerals with the open pit method – also a person with professional qualifications in preparation for geological documentation for those mineral deposits in connection with the exploitation of which the geological survey documentation is to be prepared.

4. In order to prepare, update and supplement the geological survey documentation the surveying and geological works are undertaken covering the measurements, calculations and mapping.
5. The entrepreneur is obliged to provide the geological administration and geological and mining supervision authorities with the geological survey documentation free of charge on the request of these bodies, to the extent necessary to carry out their tasks.
6. The competent mining supervision authority may, by the way of decision, require the preparation of relevant documents included in the survey geological documentation, other than those listed in the regulations issued under par. 7, where it is necessary to:
 - 1) ensure the safety of mining plant operations;
 - 2) the eradication of natural hazards;
 - 3) perform the tasks of mining rescue;
 - 4) control of the rational management of mineral deposits resources in the process of its exploitation;
 - 5) to prevent damage to the environment and buildings;
 - 6) construction and closure of the mining plant;
 - 7) land reclamation and land use after stopping the mining activities.
7. The minister responsible for environment, shall determine, by the way of ordinance, guided by the need to produce geological survey documentation in a way that describes the current geological and mining situation in the mining plant, as well as conditions of the space within the mining area:
 - 1) types of documents included in the geological survey documentation
 - 2) detailed requirements for preparing, updating and supplementing the geological survey documentation
 - 3) detailed requirements for the performance of surveying and geological works to draw up, update and supplement the geological survey documentation;
 - 4) the manner and procedure of geological survey documentation after the liquidation of the mining plant, in terms of its transmission and archiving, including patterns of documents related to its transmission.

Art. 117

The entrepreneur is obliged to:

- 1) identify hazards associated with mining plant operations and try to implement the measures to prevent and remove these hazards;
- 2) have adequate financial and technical resources, and operation services to ensure the safety of workers and mining plant;

- 3) to keep records of people present in the mining plant, by indicating the name and official position;
- 4) evaluate and document the occupational risk and apply the necessary solutions that mitigate this risk, including the drafting of the document of the occupational health and safety;
- 5) to preserve and properly archive the records on the mining plant operations;
- 6) to possess the evidence of technical solutions verification for the mining plant by an expert on the mining plant operation - in the cases specified in the regulations issued under Art. 120 par. 1 and 2

Art. 118

1 . The deposits, layers, excavations, parts thereof, and other spaces in the mining plants, in which there are the following natural hazards: rock burst, methane, gas and rock outbursts, coal dust explosion, climate, water, landslide, eruptions, sulphide hydrogen, radioactive substances are subject to evaluation of the connected hazards and credited to individual degrees, categories or classes of risks, according to the criteria set out in regulations issued under par. 4

2. The evaluation referred to in par. 1, is done by the manager of the mining plant operations on the basis of the documentation referred to in regulations issued under par. 4, immediately after identifying the circumstances specified in those provisions, justifying a credit to the extent, grade or class of risks.

3. In the cases specified in regulations issued under par. 4 the evaluation referred to in par. 1, shall also be based on the results of research carried by an expert of the mining plant operation and the opinion of the expert.

4. The minister responsible for the environment shall establish by the way of ordinance:

1) the criteria for the assessment of natural hazards, as referred to in par. 1, depending on the types of minerals, the intensity of threats, risks over the occurrence and the type of mining plant,

2) the documentation, other than these listed in par. 3, on the basis of which the evaluation referred to in par. 1, is performed

3) cases in which the evaluation referred to in par. 1, is also performed on the basis of the documentation referred to in par. 3

- Guided by the need to ensure occupational safety and health, general safety and the safety of the mining plant.

Art. 119

1. Who notices a threat to humans, the mining plant or its operations, a damage or malfunction of equipment of the plant, is required immediately to warn persons at risk, take measures available to remove the risk and notify immediately about the danger, the closest person from the management or the mining operations supervision.

2. In the event of a health or life threatening condition of persons residing in the mining plant, for the mining plant or for its operations, at the request of the manager of the operations of the plant, each entrepreneur is obliged to grant the necessary support.
3. In the event of a health or life threatening condition of persons residing in the mining plant, all the operations within the danger zone shall be stopped immediately, the people shall be evacuated to a safe place and take the necessary action, including the means available to remove the emergency.
4. The manager of the mining plant operations shall immediately notify the competent mining supervision authority, in the manner determined in regulations issued under Art. 120 par. 1, for every fatal accident, serious or collective, natural death, as well as the dangerous occurrences related to the mining plant operations, posing a threat to life, health or general safety.
5. The manager of the mining plant operations, till the 3rd working day of each month, is obliged to notify the competent mining supervision authority, in the manner determined in regulations issued under Art. 120 par. 1, about each accident appearing in the mining plant, other than specified in the par. 4, which has occurred within the previous month.

Art. 120

1. The minister responsible for economic affairs in consultation with the ministers responsible for labor affairs, home affairs and environment protection shall determine, by the way of ordinance, the specific requirements for particular types of mining plants operations, in terms of:

- 1) occupational health and safety, including assessment and documentation of occupational risk and the application of the necessary solutions to reduce the risk,
- 2) fire safety
- 3) management of mineral deposits in the process of extraction,
- 4) preparation of extracted materials for sale,
- 5) environmental protection,
- 6) basic facilities, machinery and equipment of the mining plant,
- 7) the underground mining plant objects forming the walls carried out in special conditions and facilities of underground mining plant operators forming batches of troops copper ores deposits in the special conditions,
- 8) cases in which the entrepreneur is obliged to possess evidence of verification by an expert, of the technical solutions for the mining plant operations

- Guided by the need to ensure a high level of general safety, fire safety, occupational health and safety, the proper managing of the mining plant, to avoid the risks present in the mining plant, and taking into account the need for the use of current scientific and

technological achievements by entrepreneurs, particularly in the mining plants, to simplify the requirements for the entrepreneurs performing the activities on the basis of a concession granted by the Starost and the rational utilization of a mineral deposit.

2. The minister responsible for economic affairs in consultation with the ministers responsible for labor, and environmental affairs shall specify, by the way of ordinance, the detailed requirements for the storage and use of blasting agents and blasting equipment in the mining plant, including the types, manner and patterns for the records of the blasting agents and the cases in which the entrepreneur is required to have a proof of checking the technical solutions by an expert of the mining plant, guided by the need of ensuring a high level of public safety, fire safety, occupational health and safety, proper performance of the mining plant operations, the prevention of threats occurring in the mining plant, as well as the need to ensure the safety of persons engaged in activities associated with the storage or use of blasting agents and blasting equipment in various types of mining plants.

3. The Head of the State Mining Authority may, at the request of the entrepreneur, in specific cases justified by the reasonable safety conditions or in cases when it is necessary to introduce the technical progress, to carry out the scientific – research or experimental works, to agree that the entrepreneur resigns from the specific requirements determined in regulations issued under par. 1 and 2, by specifying the mining plant, the scope of resignation and the conditions of its implementation. The consent, by the way of decision, is expressed for the defined period of time, not more than 5 years.

Art. 121

1. The provisions of this chapter shall apply *mutatis mutandis* to the entities performing within their professional work the activities entrusted to them in the mining plant.

2. The entities referred to in par. 1, are required to meet the following requirements depending on the type of mining plant:

1) provide the adequate operations services, including the persons from the operations management and supervision and the persons qualified to manage and perform certain types of works;

2) provide the necessary financial and technical resources for safe execution of works;

3) train the workers in the principles and rules of occupational safety and health, including safe carrying out their activities;

4) assess and document the occupational risks in the workplace and inform the employees about the risk and apply the necessary measures to mitigate this risk.

3. The way of work organization and the organization chart as well as additional

agreements on the safe execution of works are specified in an agreement concluded between the entrepreneur and the entity referred to in par. 1

Chapter 3

Mining Rescue

Art. 122

1. The mining rescue consists of:
 - 1) mine rescue service of the entrepreneur;
 - 2) other entities engaged in the professional works with mining rescue.
2. The tasks of the services and entities referred to in par. 1, include:
 - 1) to help immediately in case of danger to life or health of persons residing in mining plant, mining plant safety or the general security;
 - 2) performing preventive works - the works are intended to prevent the direct threats to the safety of persons or the mining plant in the cases specified in the regulations issued under Art. 124
- 3.. The mining plant operations manager is responsible for the state of the mine rescue in the mining plant and the entity manager which professionally is engaged in the mine rescue – for the state of mining rescue.
4. In the mining plant and in the entity professionally engaged in the mine rescue the documentation on mining rescue is carried out .
5. Within the mine rescue services there are medical examinations, psychological testing and specialized professional training carried out. The research and training are organized by the entity professionally engaged in the mine rescue or an entrepreneur meeting the requirements for entities professionally engaged in the mine rescue. In the cases specified in the regulations issued under Art. 124 point 2 the training may be organized and conducted by an entrepreneur.
6. The entrepreneur is obliged to:
 - 1) have own mine rescue services or delegate the implementation of this obligation in whole or in part, to the entity professionally engaged in the mine rescue;
 - 2) have a plan of mine rescue;
 - 3) provide a constant opportunity to participate in rescue specialist professional services of the entity professionally engaged in the mine rescue and, in the manner specified in the agreement referred to in par. 15
7. The entity professionally engaged in the mine rescue is obliged in the manner specified in the agreement referred to in par. 15 on the request of the entrepreneurs or mining plant operation manager to ensure continued participation in the rescue of specialized professional services.
8. An entrepreneur having only their own mine rescue service is required to meet the

requirements for the entities professionally engaged in the mine rescue

9. The entity professionally engaged in the mine rescue shall meet the requirements for these entities.

10. Mine rescue plan shall be prepared for each mining plant.

11. The mine rescue plan specifies how to perform the duties of mine rescue, in particular:

- 1) the organization of mining rescue services and ambulance services in the mining plant;
- 2) the possibility of continuous participation in professional rescue activities performed by the entity professionally engaged in the mine rescue - in case of concluding the agreement referred to in par. 15;
- 3) the necessary rescue equipment;
- 4) the way of performance of the rescue operation.

12. The mine rescue plan and the changes in that plan shall be approved by the operation manager of the mining plant. This plan is updated on an ongoing basis to the extent determined by the operation manager of the mining plant.

13. In the mining plant the rescue team shall be organized and the mine rescue station shall be adequately equipped. In the mining plants exploiting the minerals through drilling method the obligation to have the mine rescue stations may be satisfied by maintaining the plant mine rescue station.

14. The specialist professional services of the entity professionally engaged in the mine rescue shall include:

- 1) professional rescue teams on duty;
- 2) specialized emergency training;
- 3) the hosts on duty for groups of mining plants.

15. The entrusting of realization in whole of the obligation of having the own mining rescue or part thereof, by the entrepreneur to the entity professionally engaged in the mine rescue is done on the basis of an agreement with the prior consent of the competent mining supervision authority, expressed by the way of decision in the case of fulfilment of the requirements provided in regulations issued under Art. 124

16. If the entrepreneur or an entity do not meet the requirements determined in the scope of mine rescue, the competent mining supervision authority may order in the way of decision to the entrepreneur and the entity professionally engaged in the mine rescue to:

- 1) make the necessary changes in mine rescue organization;
- 2) to supplement or amend the mining rescue equipment.

17. If in the mining plant the natural hazards are occurring and their intensity does not require fulfilment of the obligation by the entrepreneur referred to in par. 6 point 1

and if this does not cause deterioration of the security situation in the mining plant, the competent mining supervision authority may, by the way of decision, relief the

entrepreneur from the obligation, in whole or in part thereof. An entrepreneur who has obtained an exemption, is required to secure the opportunity to undertake the rescue operation by the entity professionally engaged in the mine rescue in the manner specified in the plan and the mine rescue agreement with this entity.

18. In the case of a substantial change in circumstances, which constitute the basis for the decision referred to in par. 16, the competent mining supervision authority shall immediately revoke the decision.

19. The provisions of par. 1-18 shall not apply to the entrepreneurs exploiting the minerals by the open-pit method. They are required to secure the opportunity to undertake the rescue action by other rescue units.

Art. 123

1. The preventive works are performed on the principles for mining plants operations, according to the documentation of preventive works, approved by the manager of the mining plant operations.
2. The decision to undertake the preventive works and to end them is taken by the manager of the mining plant operations.
3. In the event of a threat to life and health of employees of the mining plant of which, mining plant operations safety or general safety, in connection with the mining plant operations, the rescue action shall be taken and conducted immediately.
4. The rescue action is conducted by the manager of the rescue action, according to mining rescue plan and the requirements specified in the regulations issued on the basis of Art. 124
5. The manager of the rescue operations, taking the decisions individually regarding their conduction, is the manager of the mining plant operations.
6. During the rescue operations, in special cases, due to the safety of the team or the mining plant, the manager of the operations may waive the requirements determined by law, provided that the proceedings are in accordance with the principles of mining technology.
7. The supervision on conduction of the rescue is performed by the competent mining supervision authority. If the authority believes that it is conducted improperly, it may require changing its manager or to take over the management of the action.
8. If required by the weight or complexity of the case, particularly in the case of collective accident, disaster or hazardous event, the Head of the State Mining Authority can undertake the actions referred to in par. 7.
9. The activities specified in par. 7 are performed by employees of the authorities supervising the mining plant operations on the basis of professional identity card authorizing to perform of such activities.

The minister responsible for economic affairs in consultation with the ministers responsible for home affairs, environment and health shall specify, by the way of ordinance:

- 1) the organization, specific tasks and requirements for emergency services which mining entrepreneur and the entity professionally engaged in the mine rescue,
- 2) specific requirements for special medical examinations, special psychological research and specialist training in mine rescue, including cases in which these trainings are carried out by the entrepreneur,
- 3) detailed requirements for documentation in the scope of mine rescue and the mining rescue plan,
- 4) ways of cooperation between the entrepreneur and the entity professionally engaged in the mine rescue, in case of concluding the contract referred to in Art. 122, par. 15,
- 5) the cases in which the technical preventive works are undertaken,
- 6) the manner to conduct rescue operations depending on the type and intensity of hazards in mining plants

- guided by the need to ensure a high level of general safety, fire safety, occupational health and safety, the safety of mining plant, the prevention of threats occurring in the mining plant, as well as ensure the proper assistance in case of the threat to life or health of persons residing in the mining plant, the mining plant safety or general safety.

Chapter 4

Underground storage of waste

Art. 125

1. There are following types of underground waste disposal sites:
 - 1) underground storage of dangerous waste;
 - 2) underground landfill for inert waste;
 - 3) underground storage of waste other than dangerous and inert.
2. The underground landfill is located in a geological formation, creating the natural geological barrier for a possible migration of dangerous substances beyond the limits of space covered by the predicted harmful effects of waste disposed.
3. The exploitation and closure of underground storage should take place in a manner to ensure general safety and in a way that prevents

groundwater.

4. Monitoring of underground waste disposal is carried out to compare the state of the environment in all phases of activity with its original condition.
 5. The waste in landfills is stored underground in a selective manner. Landfill of waste in a non-selective manner is permitted only if this does not cause environmental hazards or does not violate safety requirements.
 6. An entrepreneur, involved in underground storage of wastes is obliged to employ a mining plant person holding a certificate of qualification in the field of waste management, issued under the provisions of the Act of 27 April 2001 on waste (Journal of Laws of 2010 , No. 185, pos. 1243, as amended ⁹⁾).
 7. The minister responsible for the environment shall specify by the way of ordinance:
 - 1) detailed requirements for the various types of underground waste disposal sites concerning the location, exploitation and closure, as well as the scope, manner and conditions for the monitoring of these landfills,
 - 2) types of waste that can be stored underground in a non-selective criteria and procedures for release of waste at landfills under-ground
- guided by the needs of environmental protection, general safety and proper waste disposal, and taking into account natural phenomena and geological conditions.

Art. 126

1. The underground storage of the following waste is forbidden:
 - 1) occurring in liquid form, including waste containing water in an percentage exceeding 95% by weight, excluding sludge;
 - 2) of an explosive, corrosive, oxidizing, highly flammable or flammable nature;
 - 3) infectious medical and veterinary infectious diseases;
 - 4) arising from scientific research, development or teaching activity that are not identified or are not classified and whose environmental impact is not known;
 - 5) tires, with the exception of bicycle tires and tires with an outside diameter greater than the 1 400 mm;
 - 6) other, which in the conditions of underground storage may undergo undesired physical, chemical or biological changes.
2. Waste referred to in par. 1 item 6, include the following wastes:
 - 1) in terms of storage that can react with water or base rock, leading to changes in their volume, the emergence of pyrophoric, toxic or explosive substances or gases

⁹⁾ Changes in the consolidated text of the Act were published in the O.J of 2010, No. 203/1351 and 2011, No. 106/ 622 and No. 117/678

or other reactions endangering the safety or operation of underground storage inviolability to the geological barrier, and the containers in which they are stored;

- 2) biodegradable;
- 3) with a pungent smell;
- 4) that can produce the gas-air mixture having the characteristics of toxic or explosive;
- 5) not conforming to the geomechanical conditions due to insufficient stability;
- 6) spontaneously or liable to spontaneous combustion in terms of data storage;
- 7) which are gas products;
- 8) the volatile and derived from the collection in the form of undefined mixtures.

3. It is forbidden to dilute or prepare the mixtures of wastes or to mix them with other substances (objects) in order to meet the admission criteria for underground storage.

Art. 127

1. For underground storage of waste, the provisions of Art. 56 -58, Art. 59 par. 1, points 1-5 and Art. 61 of the Act of 27 April 2001 on waste shall apply.
2. The provisions of this chapter shall not apply to inert waste and other than dangerous and inert, if an extractive waste within the meaning of the Act of 10 July 2008 on waste (Journal of Laws No. 138, item.865 and of 2010 No. 28, item. 145).
3. Before operating the underground storage of waste the competent mining supervision authority performs its inspection for compliance with the concession and the mining plant operation plan.

Chapter 5

Liquidation of the mining plant

Art. 128

1. An entrepreneur who obtained a concession for the activity referred to in Art.21 par.1 item 2, 3 and 4, creates a fund of mining plant closure, hereinafter referred to as "the fund", and collects on it the financial means. The entrepreneur can create one fund for more than one mining plant.
2. The means of the fund are accumulated on a separate bank account in the form of cash. The Fund may also be collected in the form of treasury bills or bonds issued or guaranteed by the State Treasury.

3. The means of the fund are increased by the influence of interest rate cash income from treasury bills and income from bonds issued or guaranteed by the State Treasury.
4. In the case of exploiting the minerals from deposits by the method of:
 - 1) underground works or drilling - to the fund the equivalent of not less than 3% of depreciation and amortization of fixed assets of a small mining plant shall be allocated, calculated in accordance with the provisions on the income tax,
 - 2) open-pit mining - to the fund the equivalent of not less than 10% of the required exploitation charge shall be allocated

- within one month after the end of the year.
5. Provisions of par. 4, point 1 shall apply to underground non-reservoir storage of substances and underground storage of waste.
6. The obligation to allocate the financial means on the fund:
 - 1) arises in the case of:
 - a) extracting minerals from deposits - from the date of the exploitation charge requirement ,
 - b) underground non-reservoir storage of substances or underground storage of waste - from the date of approval of the mining plant plan;
 - 2) stops on the date of commencement of mining plant closure.
7. The liquidation of the part of mining plant shall not exempt from making payments for the rest of the plant.
8. The means of the fund are deductible costs under the provisions of the income tax and can be used only to cover the costs of closure of the mining plant or the designated part thereof, as well as the equipment unnecessary due to technical and technological reasons, installations, facilities or excavations of the mining plant.
9. The payments from the fund may occur not before the presentation by the entrepreneur owning the account of the final decision of the competent mining supervision authority approving the plan for mining plant closure or closure of a designated part thereof or approving the plan of mining plant operations in part, in which it provides for elimination of the equipment unnecessary due to technical and technological reasons, installations, facilities or excavations of the mining plant.
10. At the request of the competent concession authority or the competent supervisory authority of the mining plant, the entrepreneur shall present the current bank statements, for the accounts on which the resources are collected and information on how to use them.
11. Liquidation of the fund occurs after the mining plant closure, with the consent of the competent mining supervision authority, implemented by the way of decision after getting the opinion of the competent head of the municipality (mayor, town president).
12. The requirements determined in par. 1-11 shall apply mutatis mutandis to the legal successor of the entrepreneur who created the fund.

13. The application of the provisions of par. 1-12 is not mandatory for the entrepreneur who was granted with the concession by the Starost.

Art. 129

1. In the case of mining plant closure, in whole or in part, the entrepreneur is obliged to:

1) secure or eliminate the excavation and mining equipment, installations and facilities of a mining plant;

2) secure the unused part of a mineral deposit;

3) secure the adjacent mineral deposits;

4) take the necessary measures to protect the excavation of adjacent mining plants;

5) take necessary measures for environmental protection and land reclamation after mining activities.

2. For the reclamation of land referred to in par. 1, point 5 of the provisions of the Act of 3 February 1995 on the protection of agricultural land and forest (O.J. of 2004 No. 121/1266, as amended.¹⁰⁾) shall apply *mutatis mutandis*.

3. To mining plant closure, the provisions of the mining plant operations shall apply *mutatis mutandis*.

4. The operation plan of the liquidated mining plant or designated part thereof defines also the manner of implementation of the obligations referred to in par.1.

5. Approval of the liquidated mining plant operation plan requires the arrangements with the competent head of the municipality (mayor, town president). The criterion of the agreement is the compliance of the intended method of liquidation with the destination of the real estate referred to in Art. 7.

6. In the appropriate cases the competent mining supervision authority may, in the way of a decision, order the entrepreneur to respect the obligation of the liquidation of the mining plant or a designated part thereof.

7. The decision referred to in par. 6, specifies the date and manner of the obligation of liquidation of the mining plant or a designated part thereof. This decision may also authorize to use someone else's property to the extent necessary to conduct the mining plant closure obligation or designated part thereof.

8. In the case of ineffective expiry of the period referred to in par. 7, the competent mining supervision authority shall initiate the enforcement proceedings.

¹⁰⁾ Changes in the consolidated text of the Act were published in the O.J. 2004, No. 49/464, 2005, No. 175/1462, 2006, No. 12/63, of 2007 No. 75/493, No. 80./541 and No. 191/1374, of 2008 No. 237/1657 and of 2009 No. 1/3, No. 115/967 and No. 157/1241

Art. 130

1. The means of fund is are not subject to execution, unless the writ of execution under which the execution authority conducts the enforcement was issued:

1) at the request of the entrepreneur's creditor,

2) on the basis of Art. 129 par. 8

- due to the execution on behalf of the entrepreneur of the activities referred to in Art. 128, par. 8, Art. 129 par 1 or 6

2. The means of fund are not included in the bankruptcy of entities referred to in Art. 128, par. 1 and 12

Art. 131

Immediately after the liquidation of the mining plant the entrepreneur shall provide the Head of the State Mining Authority with the survey-geological documentation, in a manner and within the procedure specified in the regulations issued under Art. 116 par. 7 For that documentation the Art. 5 par.1 of the Act of 14 July 1983, on the national archive resources and archives (O. J. 2006 No.97/673, as amended.¹¹⁾) shall not apply.

Art. 132

The provisions of this chapter shall apply mutatis mutandis to the liquidation of the mining plant or the designated part thereof, elimination of the equipment unnecessary due to technical and technological reasons, installations, facilities or excavations of the mining plant, run by a non-entrepreneur, including the liquidation of the former mining plant.

DIVISION VII CHARGES**Art. 133**

1. An entrepreneur who gained the concession for prospecting for or exploration of mineral deposits, shall pay a charge to be established in the concession as a product charge rate, and expressed in square kilometers of land area covered by the concession.

2. The rate of the charge for the activities of exploration for mineral deposits per square kilometer is for:

1) hard coal and uranium ore - 529.05 pln;

2) lignite - 211.62 pln;

¹¹⁾ Changes in the consolidated text of the Act were published in the O.J. 2006, No. 104/708, No. 170/1217 and No. 220/1600, of 2007 No. 64/426, of 2008 No. 227/1505, 2009, No. 39/307 and No. 166/317 and of 2010 No. 40/230, No. 47/278 and No.1821228th

3) other minerals, deposits of which are covered by a mining property - 105.81 pln.

3. The rate of charges for activities in scope of exploration of mineral deposits, or including for the activities of prospecting for and exploration of mineral deposits is twice the rate specified in par. 2

4. A charge is calculated once and is payable within 14 days from the day wherein the concession becomes final. Proof of payment of the charge entrepreneur shall immediately submit to the concession authority and the entities referred to in Art. 141 par. 1-3.

5. The concession authority, extending the duration of the concession validity, re-establishes the charge for activities. To establish this charge, the provisions of par. 1-4 shall apply.

Art. 134

1. An entrepreneur who obtained a concession for mineral exploitation of the deposit, pays a charge to be established as the product of its rate and quantity for the mineral extraction, with the balance sheet and off-balance sheet deposits in the trading period.
2. The rates of charges for particular types of minerals are determined by the annex to the Act.
3. The exploitation charge rate is 50% for:
 - 1) the accompanying mineral;
 - 2) concomitant minerals extracted from deposits of hydrocarbons.

Art. 135

1. An entrepreneur who has obtained a concession to:

- 1) underground or non-reservoir storage of substances
- 2) underground waste storage

- pays a charge as determined by multiplying the charge rate and quantity of substances or waste, which in the accounting period was introduced into the ground, including underground mining excavations.

2. The rates of charges for storage are:

- 1) gas substances - 1,61 zł/thousand. m³;
- 2) liquid substances - 3.19 zł/t;
- 3) other substances - 1,60 zł/t

3. The rates of charges for waste disposal are:

- 1) Dangerous - 65.79 zł/t excluding insulation materials which are waste and asbestos-containing construction for which the rate is 0.0 zł/t;
- 2) neutral - 3.79 zł/t;
- 3) non-dangerous and inert - 5.06 zł/t

Art. 136

1. The rates of charges referred to in Art. 133 par. 2, Art. 134 par. 2 and Art. 135 par. 2 and 3, are subject to annual change according to the annual average general price index of goods and consumer services, planned in the budget for the calendar year.
2. On the basis of the index referred to in par. 1, the minister responsible for the environment announces by public notice in the Official Journal of the Republic of Poland "Polish Monitor" charge rates applicable for the next calendar year, rounding them up to the nearest grosz.

Art. 137

1. The calculation period for the exploitation charge is calculated for half a year from 1 January to 30 June and 1 July to 31 December.
2. An entrepreneur who obtained a concession for mineral exploitation of the deposit, determines the charge payable for the operational period and before the end of the month following that period makes the payment into the bank accounts of the municipality in which activity is conducted, and the National Fund for Environment and Water Management, without notice.
3. Within the period referred to in par. 2 the entrepreneur who obtained a concession on exploitation of minerals from a deposit, presents the concession authority, municipality, within boundaries of which the activities are performed, and the National Fund for Protection of Environment and Water Management, copies of payments made, as well as information containing the identity of the entrepreneur, the name of the deposit, the number of concessions to exploit minerals from the deposits, the type and quantity of minerals extracted in the accounting period, adopted the rate and amount of fixed charges, dividing between the concession authority, the municipality within boundaries of which the activities are performed, and the National Fund for Environmental Protection and Water Management. If the mining activities are performed in more than one municipality - the information will also specify the amount of minerals extracted from the areas of individual municipalities, as well as the height of the exploiting charge for each one of the municipalities.
4. If the charge payable for a period does not exceed 300 zł, the payment obligation does not arise. This fact does not exempt the entrepreneur from the obligation to submit the information, referred to in par. 3
5. If the last day of the period referred to in par. 2 is on a Saturday or a day free from work, the next day after day or days off work is considered for the last day of that period.
6. The requirements determined in par. 1-5 shall apply *mutatis mutandis* to the entrepreneurs, which obtained a concession for the underground non-reservoir storage of substances and underground storage of waste.
7. Minister responsible for environment shall specify, by the way of ordinance, the patterns of forms necessary for the submission of information on charges for the exploit deposit, underground non-reservoir storage of substances and underground storage of waste guided by the need to ensure transparency and credibility of information submitted.

Art. 138

In the event that the entrepreneur did not make a deposit charge on time, or made a payment of wrong high, the concession authority determines, by way of decision, the amount of the charge due by applying the rate applicable in the period the charge applies.

Art. 139

1. The activity performed in flagrant violation of the conditions determined in the concession or the approved geological works plan shall be subject to additional charge. An additional charge is independent of other charges regulated by this chapter.
2. An additional charge shall be determined by the way of decision, as appropriate by the concession authority or the geological administration authority, which approved the geological works plan.
3. An additional charge for:
 - 1) prospecting for or exploration of mineral deposits determined in Art. 10 par. 1, shall be fixed at the level of five times the charge for a given type of exploration for every square kilometer of land area covered by this activity, when each started square kilometer of land counts as a whole;
 - 2) performance of geological works shall be determined on the fixed level of 10 000 zł for each square kilometer of land area covered by these activities, when each started square kilometer of land counts as a whole;
 - 3) extraction of minerals shall be fixed at the level of five times the exploitation charge rate for a given type of mineral, multiplied by the amount of minerals extracted in this way;
 - 4) non-reservoir underground storage of substances shall be fixed at the level of five times the charge for the type of substances stored, multiplied by the quantity of the substance stored in this way;
 - 5) underground storage of waste shall be fixed at the level of five times the charge rate for a given type of waste stored, multiplied by the quantity of waste stored in this way.
4. Additional charges referred to in par. 3, points 1 and 3-5, are determined using the valid rates on the day of starting the proceedings .
5. The charge shall be payable within 14 days from the date on which the decision becomes final. The proof of charge payment shall be submit without delay to the competent authority and the entities referred to in Art. 141 par. 1-3.

1. Activity performed without the required concession or without an approved geological works plan is subject to higher charge.
2. The relevant authorities referred to in par. 1, are:
 - 1) The minister responsible for environment for the activities:
 - a) performed within the boundaries of maritime areas of the Republic of Poland,
 - b) in respect of the underground non-reservoir storage of substances,
 - c) for the underground storage of waste;
 - 2) The Starost within the activities not mentioned in point 1.
3. The increased charge for:
 - 1) prospecting for or exploration of mineral deposits determined in Art. 10 par. 1, shall be fixed at the amount of 50 000 zł for each square kilometer of land area covered by these activities, when each started square kilometer of land counts as a whole;
 - 2) performing geological works shall be fixed at the amount of 40 000 zł for each square kilometer of land area covered by these activities, when each started square kilometer of land counts as a whole;
 - 3) extraction of minerals shall be fixed at the level of forty times a exploitation charge rate for a given type of mineral, multiplied by the number of minerals extracted without the concession;
 - 4) underground non-reservoir storage of substances shall be fixed at the level of two hundred times the charge rate for the type of substances stored, multiplied by the amount of congested substance without a concession;
 - 5) underground storage of waste shall be fixed at the level of two hundred times the charge rate for the type of waste stored, multiplied by the amount of waste stored without a concession.
4. To determine the increased charge for mineral exploitation, for which the rate of exploitation charge is 0 zł per unit of measurement shall be 1.32 PLN/m³ in the case of thermal waters and 5.89 zł/1000m³ for methane of hard coal.
5. Increased charges referred to in par. 3, points 3-5, shall be determined by applying the valid rates on starting date of the proceedings.
6. The charge shall be payable within 14 days from the date on which the decision becomes final. The proof of payment of charge shall be submit without delay to the competent authority and the entities referred to in Art. 141

Art. 141

1. The income from the charges referred to in this section, in 60% is the income of the municipality within the boundaries of which the activities are performed and 40% is the income of National Fund for Environmental Protection and Water Management.

2. If the activity is performed in more than one municipality, the charge income is the

income of the municipalities in proportion to the size of the surface area covered by the activity, amount of extracted minerals, amount of substance injected to the formation or waste.

3. The income from charges for activities performed within maritime areas of the Polish Republic as a whole constitute the revenue of the National Fund for Protection of Environment and Water Management.

4. If the charges referred to in Art. 140, establishes the Starost, the income from this title shall continue the revenue of the district. Provision of par. 2 shall apply accordingly.

Art. 142

1. To the charges referred to in this section, the provisions of the Act of 29 August 1997 – the tax code (O.J. 2005 No. 8/60, as amended ¹²⁾) concerning the tax obligations. The competences of the authorities defined by these regulations are applicable to the creditors.

2. The creditors are respectively the municipality, district and the National Fund for Environmental Protection and Water Management.

3. Being responsible for decisions made under the provisions mentioned in the par. 1 in part concerning the National Fund for the Environmental Protection and Water Management is the CEO of the Fund. In matters regulated by this Law higher level of authority within the meaning of the Code of Administrative Procedure, in relation to the President of National Found of Environmental Protection and Water Management is a competent minister for the environment.

Art. 143.

1. The decision on matters referred to in this chapter may not be issued after 5 years from the end of the year in which the event justifying its issuing took place.

2. In matters determined by this division the ~~party~~ in proceedings is respectively:

1) the entrepreneur or

2) an entity that operates without the required license, or

3) entity which performs geological works in violation of the approved project of geological works plan or

12) Changes in the consolidated text of the Act were published in the Journal. Laws of 2005 No. 85, item.727, No. 86, item. 732 and No. 143, item. 1199, 2006, No. 66, pos. 470, No. 104, item. 708, No. 143, item.1031, No. 217, item. 1590, No. 225, pos. 1635, 2007, No. 112, pos. 769, No. 120, item. 818, No. 192, item. 1378, No. 225, pos. 1671, of 2008 No. 118, item. 745, No. 141, item. 888, No. 180, item. 1109 and No.209, pos. 1316, 1318 and 1320, of 2009 No. 18, item. 97, No. 44, item. 362, No. 57, item. 466, No. 131, item. 1075, No. 157, item. 1241, No. 166, item. 1317, No. 168, item. 1323, No. 213, item. 1652 and No. 216, item. 1676, of 2010 No 40, pos. 230, No. 57, item. 355, No. 127, item. 858, No. 167, item. 1131, No. 182, item. 1228 and No. 197, item. 1306 and 2011, No. 34, item. 173, No. 75, item. 398 and No. 106, item. 622

4) the entity which performs geological works without an approved geological works plan.

DIVISION VIII RESPONSIBILITY FOR DAMAGES

Art. 144.

1. The owner cannot oppose the threats caused by the activity of a mining plant which is run in accordance with the Act. However, under the terms of the Act, he may demand compensation for the damage caused by this activity.

2. The provision of par. 1 shall apply accordingly to other entities, whose property rights are threatened by the mining plant activity.

3. If the circumstances provided in par. 1 and 2 do not occur, the entrepreneur is responsible for the damage, in accordance with the Civil Code.

Art. 145.

Unless this act provides otherwise, the repair of the damage referred to in the Art. 144 par. 1 and 2, shall be governed by the provisions of the Civil Code.

Art. 146.

1. Liable for the damage is the entrepreneur who performs the mining plant activity, which caused the damage occurrence.

2. The provision of par. 1 shall apply also to other entities that are involved in an activity regulated by the Act, even if the provisions referring to the mining plant activities do not apply.

3. If it is not possible to determine the person responsible for the damage caused, liability rests with the entrepreneur, who on the day of appearance of the damage has the right to perform the regulated with the Act activity in the mining area, within which the damage occurred.

4. Under the term determined by this chapter, if there exists no responsible for the damage entrepreneur or his deputy liability, liability for the damage rests with the State Treasury represented by a competent mining supervisory authority.

5. If the damage occurred for other reasons than the mining plant activity, the liability of the entities determined in par. 1–4, as well as other entities, is joint.

6. The liability of the entrepreneur and the entities engaged professionally in the activities with which they were entrusted by the entrepreneur is joint.

Art. 147.

1. The restoration to the previous condition may, especially, occur through delivering land, buildings, equipment, premises, water or other goods of the same sort.

2. Redressing damage to an agricultural land or a forest or a land damaged as a result of a mining plant activity, occurs in a manner determined by the provisions

on the protection of these lands.

3. The obligation of restoration to the previous condition rests on the entity responsible for the damage. An aggrieved, with the consent of the entity responsible for the damage, may perform the obligation in return for a suitable amount of money.

Art. 148.

If the aggrieved incurred expenses for redressing the damage, compensation shall be determined with the inclusion of the value of the legitimate expenses.

Art. 149.

Claims determined by this chapter shall expire after 5 years from the date of discovering the damage.

Art. 150.

The regulations regarding damages determined by this chapter shall apply accordingly for preventing such damage.

Art. 151.

1. Judicial enforcement of claims is possible after exhaustion of the amicable settlement proceedings.

2. The condition of exhaustion of the amicable settlement proceedings is fulfilled when the entrepreneur refuses to conclude a settlement or when 30 days have passed since submitting the claim by the aggrieved, unless the aggrieved, reporting the amicable settlement request, had determined a longer period.

3. A notarised settlement constitutes an enforceable title within the meaning of provisions of the Civil Code procedures.

4. If the entrepreneur avoids complying to the settlement or the judgement ordering to redress the damage caused by the activity of the mining plant, the cost of a substitutive performance may be covered with the indemnity referred to in Art. 28.

Art. 152.

1. In order to prevent the damage or its further consequences immediately, the court may order to take up the necessary actions. If this obligation encumbers the aggrieved, the court may order the entity, to whom the claim is directed, to pay the appropriate amount of money immediately.

2. In the case of occurrence of a damage in the form of loss of water or loss of its usefulness, the entity, to whom the claim is directed, is obliged to provide the aggrieved with the necessary amount of water free of charge until the damage is repaired.

3. In matters governed by the par. 1 and 2, the provisions of the Code of Civil Procedure regarding the protective procedures, shall apply accordingly.

DIVISION IX

ADMINISTRATION, STATE GEOLOGICAL SERVICE AND SUPERVISION

Chapter 1

General principles

Art. 153.

In executing supervision and control, the authorised geological administration personnel and the mining supervisory authority, within their competence and local jurisdiction, have, after presenting the service identity card, the right to:

- 1) twenty-four-hour access, along with assistant workers, experts and the necessary equipment to:
 - a) sites of geological works,
 - b) minerals extraction sites,
 - c) mining plants,
 - d) the premises, facilities and equipment of entities professionally engaged in mining rescue service,
 - e) the premises, facilities and equipment of manufacturing companies, importing or marketing the products intended for use in the mining plant activity;
- 2) access to the requisite information, equipment and documents;
- 3) demand for information in written or oral form and to interrogate persons;
- 4) demand for explanations in an extent requisite to execute supervision and control;
- 5) check credentials in order to determine person's identity, if that is requisite for the purposes of the control;
- 6) demand for the production of documents and making the requisite data accessible;
- 7) collect samples, conduct necessary tests or perform other control activities, in order to determine the state of environment on the premises of the controlled real estate, in the building or its part, and to evaluate this state in the light of provisions regarding the environmental protection as well as the individually determined in decisions conditions of the activity having effect on the environment.

1. For the control of the activities conducted under provisions of the Act shall apply the provisions of Chapter 5 of the Act of July 2, 2004 regarding the freedom of economic activity.

2. In the case of activity referred to in Art. 21 par. 1:

1) the control book is conducted and stored in the mining plant or a plant performing geological works;

2) limiting the duration of all inspections carried out by the competent geological administration authority or the competent mining supervisory authority, in one calendar year applies to individual mining plants or plants performing geological works.

3. Inspection activities can be performed by the staff of the competent geological administration authority or the staff of the competent mining supervisory authority, after presenting the entrepreneur, or a person authorised by him, a service identity card authorising performance of such activities and after delivering the authorisation to carry out such inspection not later than on the third day from instituting the inspection, if:

1) the activities are requisite to prevent the commitment of a crime or a transgression, or to secure the evidence of its commitment;

2) an inspection is justified by an immediate threat to life, health or environment.

Art. 155.

1. In the case of justified necessity, especially in order to ensure security of persons referred to in Art. 153, geological administration authorities and mining supervisory authorities may require an appropriate assistance by the Police.

2. Persons performing activities referred to in Art. 153, have no need of obtaining any pass or other authorisation. They are not subjects to search stipulated in the internal regulations of the controlled organizational unit. However, compulsory in the controlled organizational unit industrial safety regulations apply to them as well.

3. The manager of the controlled organizational unit and the person under control, are obliged to enable the inspection activities.

Chapter 2

Geological administration authorities

Art. 156.

1. Geological administration authorities include:

1) minister responsible for environment;

2) Voivodship Marshals;

3) Starosts.

2. The tasks of the geological administration authorities are performed by:

1) the minister responsible for environment - with the assistance of the Chief National Geologist, who is the secretary or undersecretary of the state in the office performing services to the minister;

2) the Voivodship Marshal - with the assistance of a provincial geologist;

3) the starost – with the assistance of the county geologist.

3. Determined by the act tasks of Voivodship Marshals and starosts are the tasks of government administration.

Art. 157.

In cases specified by the Act, the minister responsible for environment is a higher-instance authority within the meaning of the Code of Administration Procedure in relation to the Voivodship Marshals.

Art. 158.

Unless the act provides otherwise, the scope of operation of the geological administration authorities includes performing certain tasks, in particular:

1) making decisions and performing other tasks necessary to respecting and applying the law, including the granting of concessions;

2) control and supervision over the activities regulated by law, including the design of geological works and the compilation of geological documentation.

Art. 159.

1. If it is found that the activity specified by law is done:

1) in violation of the conditions specified in the concession,

2) without an approved plan of geological works, or in violation of the conditions specified therein,

3) without submitting a project of geological works, not requiring approval, or in violation of the conditions specified therein
– appropriate geological administration, by decision, respectively suspends operations, requires the immediate removal of identified deficiencies and, if necessary, orders to take steps to bring the site to a satisfactory condition.

2. The decisions referred to in par. 1, are subject to immediate feasibility.

89

Art. 160.

Tasks related to geological documentations are performed by those geological administration authorities who granted the concession for prospecting or

exploration of deposits of minerals, approved the project of geological works, or to whom the project of geological works, which is not subject to approval was submitted.

Art. 161.

1. Geological administration authority of first instance is the marshal of the Province, with the exception of the matters referred to in par. 2 i 3.

2. The starost, as the geological administration authority of first instance, is responsible for matters related to the approval of projects of geological works and geological documents concerning:

1) mineral deposits identified outside the mining property, sought or analysed, in the area up to 2 hectares for opencast mining at up to 20 000 m³ per calendar year and without the use of blasting agents;

2) intakes of groundwater, the predicted or fixed resources of which do not exceed 50 m³/h;

3) engineering and geological research carried out for the needs of the commune spatial development and the conditions of constructing of foundation systems;

4) building drains of capacity not exceeding 50 m³/h;

5) geological works performed in order to use the heat of the earth;

6) the hydrogeological conditions in connection with the intended implementation of projects that may adversely affect the underground water, including their contamination; regarding the projects classified as projects which may affect the environment significantly, for which the obligation to report on the impact of the project on the environment may be required; with the exception of the projects that may adversely affect the medicinal waters.

3. The minister responsible for environment, as the geological administration authority of the first instance, is responsible for issues connected with approving projects of geological works and geological documentation, concerning:

1) mineral deposits referred to in Art. 10 par. 1, and the hydrogeological conditions in connection with designing the drainage of those deposits as well as forcing water coming from such drainage into rock masses;

2) the Republic of Poland sea territory;

3) regional hydrogeological research;

4) determining the hydrogeological conditions in connection with establishing underground water reservoirs protection areas;

90

5) determining the hydrogeological, geological and engineering conditions for the underground non-tank storage of substances or the underground waste disposal;

6) the regional study of the geological structure of the country;

- 7) regional geological cartography works;
- 8) line-investments of above voivodship level;
- 9) drill holes for examining the structure of the deep ground, unrelated to the mineral deposits documentation;
- 10) water engineering buildings of damming height exceeding 5 m.

Chapter 3

The State Geological Service

Art. 162.

1. The State Geological Service performs the following tasks of the State in geology:

- 1) initiates, coordinates and performs tasks aimed at identifying the geological structure of the country, including works of primary importance for the national economy, in particular the renewal of the source of raw materials of the country, determining the resources of mineral deposits, as well as environmental protection;
- 2) runs the Central Geological Archive;
- 3) collects, makes available, converts and archives geological data;
- 4) runs geological data bases;
- 5) prepares the national balance of mineral resources;
- 6) prepares materials in order to carry out tenders for granting concession, for prospecting for or exploration of hydrocarbon deposits and extracting hydrocarbons from deposits;
- 7) coordinates and performs works in the field of geologic cartography and performs pilot works in this field;
- 8) conducts mining areas register;
- 9) coordinates the tasks of geodiversity protection and environmental geology;
- 10) recognizes and monitors geological hazards.

2. The State Geological Service performs other than determined in par. 1 tasks of the State in the field of geology, entrusted by the minister competent in the environmental issues.

91

Art. 163.

1. The state geological service is performed by the National Geological Institute - the National Research Institute.

2. The National Geological Institute - the National Research Institute may

entrust the execution of certain tasks determined in Art. 162 to an individual organization created under separate regulations, as well as to entrepreneurs within the meaning of Art. 4 of the Act of 2 July 2004 regarding the freedom of economic activity - if the object of their activity includes conducting geological works.

3. The execution of the tasks of the state geological service is supervised by the minister competent in the environmental issues, acting with the assistance of the Chief National Geologist.

4. The agenda of the state geological service regarding the realisation of tasks, referred to in Art. 162 par. 1, for the following year, is submitted to the minister competent in the environmental issues by the National Geological Institute - National Research Institute annually, on or before May 31.

5. The National Geological Institute - National Research Institute annually, on or before February 15, submits to the minister competent in the environmental issues a report on completed tasks, referred to in par. 4, as at December 31.

Chapter 4

Mining supervisory authorities

1. Mining supervisory authorities include:

Art. 164.

- 1) President of the State Mining Authority;
- 2) The directors of the regional mining authorities;
- 3) Director of Specialized Mining Authority, hereafter referred to as "SUG".

2. The mining supervisory authorities of first instance include directors of the regional mining offices and the director of SUG, unless the act provides otherwise.

Art. 165.

1. The President of the State Mining Authority constitutes the central government administration authority, acting under the supervision of the minister competent in the environmental issues, competent in the mining supervision matters.

2. The President of the State Mining Authority is appointed by the Prime Minister from among the persons selected through an open and competitive recruitment, on a request from the minister competent in the environmental issues. The Prime Minister dismisses the President of the State Mining Authority.

3. The position of President of the State Mining Authority may be taken by a person that:

- 1) holds a master's degree or its equivalent;
- 2) is a Polish citizen;
- 3) enjoys full civil rights;

- 4) has not been convicted of an intentional crime or a deliberate revenue offence;
- 5) has the managerial skills;
- 6) has at least 6 years of professional experience, including at least 3 years of work experience in a managerial position;
- 7) is educated and possesses knowledge of the matters within the jurisdiction of the President of the State Mining Authority.

4. Information regarding the recruitment for the position of the President of the State Mining Authority is announced by placing the announcement in a publicly accessible place in the office building and in the Public Information Bulletin of the office, as well as in the Information Bulletin of the Prime Minister Public Office. The announcement should include:

- 1) name and address of the office;
- 2) the position;
- 3) requirements associated with the position arising from the provisions of law;
- 4) the scope of tasks performed in the job;
- 5) indication of the required documents;
- 6) date and place for submission of documents;
- 7) information regarding recruitment methods and techniques.

5. The term referred to in par. 4 point 6, cannot be shorter than 10 days from the date of publishing of the advertisement in the Information Bulletin of the Prime Minister Public Office.

6. Recruitment for the post of the President of the State Mining Authority shall be carried out by a team, appointed by the minister competent in the environmental issues, comprising of at least 3 people, whose knowledge and experience guarantee selection of the best candidates. In the course of recruitment shall be assessed: professional experience of the candidate, knowledge necessary to perform tasks of the position for which the recruitment is carried out, as well as managerial skills.

7. Assessment of knowledge and managerial skills, referred to in par. 6, may be performed on behalf of the team by the person not being a member of that team, who possesses appropriate qualifications to perform this assessment.

8. The team member and the person referred to in par. 7, are obliged to keep secret the information obtained during the recruitment regarding persons applying for the position.

9. In the course of recruitment, the team selects not more than 3 candidates, who shall be presented to the minister competent in the environmental issues.

10. The team prepares a protocol on the carried out recruitment, containing:

- 1) name and address of the office;

- 2) the position for which the recruitment was conducted and the number of candidates;
- 3) names, last names and addresses of not more than 3 best candidates,

- arranged in accordance with the level of compliance with the requirements determined by the announcement of recruitment;
- 4) information on the applied methods and techniques of recruitment;
- 5) justification of the choice or reasons for not selecting a candidate;
- 6) members of the team.

11. Result of recruitment is announced immediately by placing the information in the Public Information Bulletin of the office and the information Bulletin of the Prime Minister Public Office. Information regarding the outcome of the recruitment contains:

- 1) name and address of the office;
- 2) the position for which the recruitment was conducted;
- 3) names and last names of the selected candidates, as well as their place of residence, within the meaning of the Civil Code provisions or the information regarding the lack of selection of the candidate.

12. Placing the announcement regarding recruitment and its result in the Information Bulletin of the Prime Minister Public Office is free of charge.

13. Vice presidents of the State Mining Authority are appointed by the minister competent in the environmental issues from among the persons selected through an open and competitive recruitment, on a request of the President of the State Mining Authority. The Minister competent in the environmental issues dismisses Vice Presidents of the State Mining Authority.

14. The team conducting the recruitment for the position referred to in par. 13 is appointed by the President of the State Mining Authority.

15. To the manner of conducting the recruitment for the position referred to in par. 13 apply par. 3–12, accordingly.

16. Appointment referred to in par. 2 and 13, constitutes a working relationship based on appointment within the meaning of the Labour Code.

17. Persons recalled from the position of President or Vice President of the State Mining Authority, who, prior to appointment to the position, were civil servants appointed in accordance with the provisions of the Act of 16 September 1982 regarding the employees of state offices (Journal of Laws 2001 No. 86, item 953, as amended ¹³) or civil servants, become civil servants and in relation to them shall be applied accordingly Art. 45 par. 2 of the Act of 16 September 1982 on employees of State Offices.

13) Amendments to the consolidated text of the Act were published in the Journal of Laws 2001 No. 98, item 1071, No. 123, item 1353 and No. 128, item 1403, of 2002 No. 1, item 18, No. 153, item 1271 and No. 240, item 2052, of 2003 No. 228, item 2256, of 2005 No. 10, item 71 and No. 169, item 1417, of 2006 No. 45, item 319, No. 170, item 1218, No. 218, item 1592 and No. 220, item 1600, of 2007 No. 89, item 589, of 2008 No. 157, item 976 and No. 227, item 1505, of 2010 No. 165, item 1118, No. 182, item 1228 and No. 229, item 1494 and of 2011 No. 82, item 451.

1. The President of the State Mining Authority, in particular:

1) is an authority of higher level, within the meaning of the Administrative Procedure Code, in relation to the directors of the regional mining offices and the SUG director, and supervises their activities;

2) establishes, by regulation, the committees for reviewing the general state of safety associated with the activity of the mining plant, the state of safety in mining industry, and the state of diagnosis and control of hazards in the mining plants, moreover, is able to appoint other permanent or temporary joint advisory and consultative authorities, determine their name, team members, range of tasks, the mode and method of operation;

3) collects and archives surveying and geological documentation of the closed mining plants, and makes it available on the terms and in a manner specified by the separate regulations;

4) constitutes a specialized control authority of marketed products within the meaning of provisions of the act of 30 August 2002 regarding the conformity assessment system in respect of products intended for use in the mining plant activity;

5) conducts promotional and informational activities in relation with the tasks of the mining supervisory authorities;

6) initiates research works and initiates and undertakes projects to improve health and safety in the mining industry, the implementation of technological progress in the field of mining, the rational management of mineral deposits, as well as reduction of the nuisance of the impact of mining on people and the environment;

7) determines directions and instructions for the mining offices activity, and is able to issue orders to the regional mining offices and the SUG director related to specific activities, moreover, may require from them information they possess;

8) performs comprehensive inspections and assessment of the general safety connected with the mining plant activity, the state of diagnosis and control of hazards in the mining plants, state of emergency rescue teams and other issues relating to the mining plant activities, as well as submits to the proper authorities information, opinions and conclusions in this area;

9) prepares annual reports on the mining authorities activities.

2. The President of the State Mining Authority performs his tasks with the assistance of the State Mining Authority, which acts under his direct management.

3. The seat of the State Mining Authority is the city of Katowice.

4. The minister competent in the environmental issues establishes, by regulation, statute of the State Mining Authority, which specifies its internal organisation.

Art. 167.

1. Directors of the regional mining offices and the director of SUG constitute the

territorial authorities of the government administration, subordinate to the President of the State Mining Authority.

2. Directors referred to in par. 1, and their deputies, are appointed and dismissed by the President of the State Mining Authority.

3. Appointment referred to in par. 2, constitutes a working relationship based on appointment within the meaning of the Labour Code.

4. Persons recalled from the position of Director or Deputy Director of the regional mining office or SUG, who, prior to appointment to the position, were civil servants appointed in accordance with the provisions of the Act of 16 September 1982 regarding the employees of state offices or civil servants, become civil servants and in relation to them shall be applied accordingly Art. 45 par. 2 of the Act of 16 September 1982 on employees of State Offices.

5. Directors, referred to in par. 1, carry out their tasks with the assistance of the regional mining offices and SUG, which act under their direct management.

6. The tasks stipulated by the Act of 21 November 2008 regarding civil service (Journal of Laws, No. 227, item 1505, as amended ¹⁴) are performed in regional mining offices and SUG by the President of the State Mining Authority for the Director of General office.

7. The minister competent in the environmental issues, guided by the needs connected with rationalization of the mining supervision activities, by regulation, creates and abolishes the regional mining offices, determining their name, location and territorial competence.

8. The territorial competence of the SUG director includes the area of the Republic of Poland.

9. The seat of SUG is the city of Katowice.

10. The internal organization and the mode of operation of the regional mining offices and SUG are determined, by regulation, by the President of the State Mining Authority.

Art. 168.

1. The mining supervisory authority exercises supervision and control over the mining plants activities, in particular:

- 1) industrial safety;
- 2) fire safety;
- 3) emergency rescue teams;
- 4) management of mineral deposits in the process of their extraction;

14) Amendments to the Act were published in the Journal of Laws of 2009 No. 157, item 1241 and No. 219, item 1706 and of 2011 No. 82, item 451.

- 5) environmental protection and deposits management, including exercising by the entrepreneurs the obligations determined by separate provisions according to the criterion;

6) damage prevention;

7) construction and closure of a mining plant, including the land reclamation after the mining activity.

2. In regard to designing and performing the construction works, as well as maintaining the mining plant buildings, the mining supervisory authorities perform tasks related to the architectural and building administration and building control.

Art. 169.

1. The Director of SUG is the supervisory authority of first instance in reference to the underground mining plants, competent in matters:

- 1) mining shaft hoists;
- 2) transport equipment whose means of transport move along the track of inclination angle over 45°, in excavations;
- 3) shafts and small shafts with equipment;
- 4) head office and dispatcher's office with the communication, security and alarming systems as well as telecommunication network buses;
- 5) main ventilator station;
- 6) equipment installations and electricity networks of high and medium voltage, powering facilities, machinery and equipment, referred to in par.s 1-5.

2. Director of SUG is the mining supervisory authority of first instance, performing tasks related to architectural and building administration and building control, competent in matters referring to the following buildings of the underground mining plants:

- 1) hoists structure;
- 2) shaft hoist towers;
- 3) shaft top buildings;
- 4) building structures of the equipment referred to in par. 1 point 2;
- 5) detached buildings of head office, dispatcher's office, systems and networks, referred to in par. 1 point 4;
- 6) the buildings of the main ventilator station;
- 7) buildings designated for equipment, installations and electricity networks of high and medium voltage, powering facilities, machinery and equipment referred to in par. 1 point 1–5.

Art. 170.

1. The mining supervisory authorities exercise supervision and control over:

- 1) the entities professionally engaged in the emergency rescue activities in the mining environment, within the range of their compliance with the provisions regarding the mining rescue services;

2) the entities performing, in the range of their professional activity, duties entrusted to them in the activity of the mining plant.

2. The mining supervisory authorities exercise supervision and control over the carried out geological works referred to in par. 86.

3. The mining supervisory authorities exercise supervision and control over the training of people performing works in the mining plant activity or carrying out the geological works referred to in par. 86.

Art. 171.

1. When exercising the supervision and control, the competent mining supervisory authority:

1) requires the removal of the irregularities arising from violation of the provisions used in the mining plant activity or the conditions specified in the plan of the mining plant activity, and in the case of activity conducted under the concession granted by the Starost - conditions regarding the mining plant activity, determined in the concession;

2) in the case of imminent danger to the mine, its employees, public safety or to the environment, may wholly or partially suspend the mining plant or its equipment activity, determining conditions of renewal of the activity of the plant or its equipment;

3) may order to take the necessary preventive measures, including directing the specific issue for consideration to the committee referred to in Art. 166 par. 1 point 2;

4) may order to carry out specific actions, necessary for ensuring an orderly mining plant activity, other than the preventive measures.

2. The decisions referred to in par.. 1 point 1 and 2, may also be issued by the President of the State Mining Authority.

3. Decisions issued pursuant to the par. 1 item 1 or 2 are subject to immediate feasibility.

Art. 172.

1. When exercising the supervision and control, the competent mining supervisory authority:

1) may examine the correctness of the solutions used or intended for use by an entrepreneur, and by directing the specific issue for consideration to the committee referred to in Art. 166 par. 1 point 2;

2) may carry out measurements to assess the state of security in the mining plant and the public security or the environmental security in reference to the mining plant activity, using:

a) mobile devices, or

98

b) in the cases justified by the high level of natural hazard

– fixed installations, constructed in the mining plant at the expense of the entrepreneur, in a manner specified in the decision

issued by this authority.

2. The competent mining supervisory authority may, by decision, require the entrepreneur to verify the correctness of the solutions referred to in par. 1 point 1, or to carry out measurements referred to in par. 1 point 2, in the manner specified by this authority; this decision may be issued by the President of the State Mining Authority as well.

3. Costs of activities referred to in par. 2, encumber the entrepreneur, unless the requirement for the payment was groundless.

Art. 173.

1. In the event of finding business without the required license the appropriate authority, by a decision, orders the cessation of activity. A copy of this decision is immediately transferred to the authority defined in Art. 140 par. 2.

2. Mining supervision authority shall immediately inform the competent geological administration authority if it finds that the activities governed by this law is being performed without an approved plan of geological works or without submitting the plan, which is not subject to the approval or in breach of the conditions specified in the concession or the project.

Art. 174.

1. In the case of a dangerous event, incident or occurrence of natural death in a mining plant, the competent mining supervision authority may determine the facts and causes of incident, accident or death.

2. If required by the scale or complexity of the case, especially in case of a collective accident, a disaster, or a dangerous event the actions referred to in par. 1, in whole or in part, may be undertaken by the President of the State Mining Office. If necessary, the President of the State Mining Authority assemble, by regulation, a special commission to investigate the causes and circumstances of this event, stating the composition of the committee and its tasks.

3. Activities specified in par. 1 are performed by employees of the bodies overseeing mining on the basis of professional identity card authorizing the exercise of such activities.

DIVISION X FINES

Art. 175.

1. President of the State Mining Authority imposes, by way of decision, a penalty on an undertaking that:

99

1) fails to fulfil the obligation imposed on entrepreneurs in terms of:

- a) identifying the risks associated with mining plant operations and taking measures to prevent and remove these threats,
- b) having adequate means and facilities, and operations services to ensure the safety of plant workers and the mining plant,

- c) evaluation and documentation of occupational risk and the use of necessary solutions to reduce this risk, including the preparation of the document of safety and health protection,
- d) having own rescue services or entrusting part or all of this obligation to other entities;

2) does not exercise the decisions of the mining supervisory authority:

a) ordering the removal of anomalies arising from violations of regulations applicable to mining plant operations or the conditions laid down in the plan of the mining plant operations or conditions concerning the mining plant operations, defined in the concession granted by the starost,

b) suspending all or part of the operations of the mining plant or its equipment, due to a direct threat to the mine, its employees, public safety or the environment, and under what conditions to resume the operations of the plant or its equipment

c) ordering to take the necessary preventive measures, including directing specific issues for consideration by the committee referred to in Art. 166 par. 1 section 2,

d) ordering the performance of specific steps necessary to ensure the proper executions of the mining plant's operations, other than preventive measures,,

e) ordering the verification of correctness of solutions applied or planned by the entrepreneur, including in the manner defined by that body,

f) ordering the making of measurements to assess the security situation in the mining plant and assessment of public safety or the environment in connection with the mining plant, including in the manner specified by the authority.

2. President of the State Mining Authority imposes, by way of decision, a penalty on a mining plant manager who:

1) fails to fulfil the obligation imposed on entrepreneurs in terms of:

a) keeping records of people in the mining plant and-
– in case of mining plants extracting coal - time spent in underground mine workings,

b) having and proper keeping of the documentation concerning the mining plant's operations,

100

c) having proof of checking the technical solutions by an expert in the field of mining plant's operations – n the cases specified in the regulations issued under Art. 120 par. 1 and 2,

d) keeping the documentation concerning the mining rescue,

- e) conducting special medical examinations, psychological testing and specialized professional training in mining rescue;
 - 2) allows to perform the operations in the mining plant in a manner that may cause danger to life or human health or the plant's operations;
 - 3) failing to train people performing actions in the mining plant's operations concerning the knowledge of rules and principles of occupational health and safety, including safe carrying out of their activities, or allowing people without sufficient knowledge of these rules to work in the mining plant;
 - 4) allowing performing tasks in the mining plant's operations by people without required the qualifications.
3. Fine shall be imposed:
- 1) on the entrepreneur up to 3% of the revenue of the sanctioned entity, achieved in the previous calendar year;
 - 2) on the head of the mining plant of up to 300% of his monthly salary, to be charged as the equivalent of leave.
4. While determining the amount of the fine, the President of the State Mining Authority incorporates the nature of the violation, the previous activity of the entity and its financial capability.
5. The entity is obliged to provide the President of the State Mining Authority at each request, within 30 days of the receipt of the request, with the data necessary to determine the base fine. In the case of failing to provide the data or the data provided make it impossible to determine the base fine, the President of the State Mining Authority may provide the basis for penalty by an estimate, however, not less than:
- 1) PLN 500 000 — in the case referred to in par. 3 section 1;
 - 2) the amount of PLN 5 000 - in the case referred to in par. 3 section 2.
6. If the period of the entrepreneur's activity is less than a calendar year the basis of the fine shall be PLN 500 000
7. Fines are subject to execution under the rules of executions procedure in administration in the area of the enforcement of pecuniary obligations.
8. Money gained from penalties constitute the state budget income.

1. An individual, who without the required license or without an approved plan of geological works, or in violation of the conditions set out therein, while performing activities of:

1) prospecting for or exploration of mineral deposits,

2) extracting minerals from deposits,

3) underground non-reservoir storage of substances or underground storage of waste, causes substantial damage to property or serious damage to the environment, is punishable by imprisonment up to 3 years

2. If the perpetrator of the act specified in par. 1 causes immediate danger of material injury to property or serious damage to the environment, he is subject to fine, restriction of liberty, or imprisonment up to 2 years.

3. If the perpetrator unintentionally commits the act specified in par.s 1 or 2, he is subject to fine, restriction of liberty, or imprisonment up to 1 year.

Art. 177.

An individual, who without the required license or without an approved plan of geological works, or in violation of the conditions set out there in performs the following activities:

1) prospecting for or exploration of mineral deposits,

2) extracting minerals from deposits,

3) underground non-reservoir storage of substances or underground storage of waste, is punishable by jail or fine

Art. 178.

Whoever performs, monitors or directs the geological works, without the necessary qualifications, is subject to fine.

An individual, who:

Art. 179.

1) for purposes other than prospecting or exploration of mineral deposits performs geological works without an approved plan of geological works in violation of the conditions specified therein, or without submitting a plan, which is not subject to approval, or in breach of the conditions specified therein,

2) fails to notify the appropriate authorities of his intention to commence the geological works, is subject to fine.

Art. 180.

An individual, who fails to comply with geological administration authority's decision concerning:

1) the prohibition of performing certain acts by persons who perform these acts with gross negligence, violation of law or flagrant breach of provisions issued on the basis of the Act,

2) suspending the operations or an order to immediately remove the identified deficiencies or an order to take steps to restore the environment to a satisfactory condition, in case of determining that the subject is operating without an approved plan of geological works, or without submitting a plan, which is not subject to approval, or in breach of the conditions specified in the concession or the project, is subject to fine.

An individual, who assumes responsibilities of:

Art. 181.

1) the management or supervision of the mining plant operations or other activities connected with it,

2) management or specialists in units professionally engaged in mining rescue, without the required qualifications for these posts, is subject to fine.

Art. 182.

1. An individual, who leads a mining plant's operations without an approved plan or in violation of the conditions specified therein, is punishable by jail or fine

2. If the offender unintentionally commits the offense referred to in par. 1, he is subject to fine.

Art. 183.

Who does not fulfil his obligations in respect of keeping records of the mineral deposit's resources, concerning the submission of information on changes in resources of the mineral deposit, and the possession, production, updating and complementing the required geological-survey documentation, is subject to fine.

Art. 184.

1. An individual, who in the mining plant's operations performs or allows to perform activities under the conditions of increased fire, rock burst, gas, dust, climatic, and water risks in connection with people riding in a shaft or storing and using of blasting agents and equipment in a way which may cause danger to life or health or endanger the mining plant's operations, is punishable by jail or fine

2. If the offender unintentionally commits the offense referred to in par. 1, he is subject to fine.

3. An individual, who:

1) In the process of the mining plant's operations performs or allows to perform actions under conditions other than those referred to in par. 1, in a way which may cause danger to life or health of a person or the mining plant,

2) fails to fulfil his obligation in respect of:

a) identifying the risks associated with mining plant operations and taking measures to prevent and remove these threats,

b) having adequate means and facilities, and operations services to ensure the safety of plant workers and the mining plant,

c) keeping records of people in the mining plant, by indicating the name and official position,

d) evaluation and documentation of occupational risk and the use of necessary solutions to reduce this risk, including the preparation of the document of safety and health protection

e) having and proper keeping of the documentation concerning the mining plant's operations,

f) having proof of checking the technical solutions by an expert in the field of mining plant's operations,

g) keeping the documentation concerning the mining rescue,

h) conducting special medical examinations, psychological testing and specialized professional training,

i) having own rescue services or entrusting part or all of this obligation to other entities,

j) preparing, holding, validating and updating an appropriate mine rescue plan,

k) organising a rescue team and a properly equipped mine rescue unit or maintaining a company mining rescue unit,

l) approving the documentation of preventive works,

m) making decisions concerning, taking and executing decisions of the completion of the preventive works,

n) undertaking and performing rescue operations,

o) liquidation of a mining plant or its part, involving:

– securing and liquidating the mine workings and equipment, installations, and objects of the mining plants,

– securing the unused part of the mineral deposit,

– securing the neighbouring mineral deposits,

– undertaking the necessary measures to protect the excavations of the neighbouring mining plants,

– undertaking the necessary measures to protect the environment and reclaim the land after mining activities,

3) failing to train people performing actions in the mining plant's operations concerning the knowledge of rules and principles of occupational health and safety, including safe carrying out of their activities, or allowing people without sufficient knowledge of these rules to work in the mining plant,

4) allowing performing tasks in the mining plant's operations by people without required the qualifications, is subject to fine.

1. A person, who in case of:

Art. 185.

1) Noticing a hazard for people, the mining plant, or its operations damaged or malfunctioning equipment, fails to fulfil the obligation to promptly warn those at risk, take measures available to remove the danger, and the notify the nearest member of managerial staff or operations supervisor of the danger,

2) situation threatening the life and health of people located in the mining plant fails to immediately halt operations in the danger zone and evacuate the people to a safe

place take the necessary actions including those available to eradicate the state of emergency, is punishable by jail or fine.

2. If the perpetrator commits the offense referred to in par. 1 inadvertently, he is subject to a fine.

Art. 186.

Mining plant manager who fails to notify the competent mining supervision authority of an accident or natural death and the related mining plant hazardous events that pose a threat to life, health or universal safety, taking place on the premises of a mining plant, is punishable by jail or fine

Art. 187.

Those, who do not fulfil the obligation to create a fund, collect resources on the fund, and to submit on demand valid bank extracts of the account holding the fund's resources, and information on how they are used to the competent authorities is subject to fine.

Art. 188.

Who does not exercise the decisions of the mining supervisory authority, concerning:

- 1) the prohibition of performing certain acts by persons who perform these acts with gross negligence, violation of law or flagrant breach of provisions issued on the basis of the Act,
- 2) order immediate preparation or improvement of the registration survey,
- 3) an order suspending the activities being carried out without the required license, subject to a fine.

Art. 189.

Ruling in cases specified in Art. 177–188 is on the principles and procedures set forth in the Code of Conduct in misdemeanour cases.

Art. 190.

In the Act of February 3, 1995 the protection of agricultural and forestry lands (Journal of Laws of 2004 No 121, item 1266, as amended ¹⁵)) Art. 8 is replaced by the following:

„Art. 8. 1. The provisions of Art. 7 do not apply to interim, for a period no longer than 10 years, exclusion of land from production to the extent necessary to:

- 1) immediate intervention necessary to combat natural disasters and their consequences, as well as the removal of random accidents;
- 2) prospecting for or exploration of hydrocarbons, coal, lignite, metal ores, except bog iron ores, metals in their natural state, ores of radioactive elements, native sulphur, rock salt, potassium salt, gypsum and anhydrite, precious stones.

2. The exemption referred to in par. 1, does not exempt from the requirements specified in Chapter 5, and made for the objectives described in par. 1 section 2 – he obligations set out in chapter 3.”.

Art. 191.

In the Act of August 21, 1997 concerning the Real Estate Management (Journal of Laws of 2010 No 102, item 651, as amended ¹⁶)) is amended as follows:

1) Art. 6 section 8 is replaced by the following:

„8) prospecting, exploration, mining of mineral deposits under mining property;”;

2) Art. 125 is replaced by the following:

„Art. 125. 1. Governor , performing the task of government administration, may, by decision, limit the use of real estate necessary to search for, identify, and extracting the minerals under the mining property. The provisions of Art. 124 par. 2–4 shall apply accordingly.

2. The restriction referred to in par. 1, may occur only for the company that has obtained a license to perform such

15) Changes in the consolidated text of the Act were published in the Journal of Laws of 2004 No 49, item 464, of 2005 No 175, item 1462, of 2006 No 12, item 63, of 2007 No 75, item 493, No 80, item 541, and No 191, item 1374, of 2008 No 237, item 1657 , and of 2009 No 1, item 3, No 115, item 967, and No157, item 1241.

16) changes in the consolidated text of the Act were published in the Journal of Laws of 2010 No 106, item 675, No 143, item 963, No 155, item 1043, No 197, item 1307 , and No 200, item 1323, and of 2011 No 64, item 341, No 106, item 622, and No 115, item 673.

activity for a period no longer than the term of concession. The entrepreneur pays the compensation due to the limitations.

3. If the restriction referred to in par.. 1, is established for more than a year, or prevents the owner or perpetual user further correct use of the property in an existing manner or in a manner consistent with its intended purpose, he owner or

perpetual usufructuary of immovable property may require the entrepreneur to buy the property. The disputes are settled by the courts.”;

3) Art. 132 par. 6 is replaced by the following:

„6. The obligation to pay compensation for damages caused by events mentioned in Art. 124, Art. 124b, Art. 125, and Art. 126, and charged for the reduction of property values is the person or entity which has been duly authorized to establish or carry out drainage strings, cables and equipment referred to in Art. 124 par.

1, or permission to perform maintenance, renovation, emergency repairs and the removal of land referred to in Art. 124b par. 1, or permission for the temporary seizure of property in cases of force majeure or other emergency in order to prevent the occurrence of significant damage, or entrepreneur, who carries on business under a concession in the range of prospecting, exploration or exploitation of mineral under mining property.”.

Art. 192.

In the Act of June 21 2002 on explosives for civil uses (Journal of Laws No 117, item 1007, as amended 17) is amended as follows:

1) Art. 7a par. 2 is replaced by the following:

„2. For storage of explosives for civil use in connection with the performance of business referred to in Art. 10 par. 2, are applied the provisions of Art. 115 and regulations issued under Art. 120 par. 2 of the Act of June 9 2011 – Geological and Mining Law Journal of Laws No ..., item ...).”;

2) Art. 9 item 7 is replaced by the following:

„7. An entrepreneur who has a permit, considering the possessed explosives intended for civilian use as, may sell them to an entrepreneur having a permit or license to manufacture or sell explosive materials after acquiring a permission for the transaction of a respective voivod or director of the district mining office referred to in Art. 164 par. 1 section 2 of the Act of June 9 2011 – Geological and Mining Law, owing to the location of a mining plant or facility performing geological work, and

17) Amendments to the Act were published in the Journal of Laws of 2002 No 238, item 2019, of 2004 No 222, item 2249, of 2006 No 104, item 708, and 711, of 2007 No 176, item 1238, of 2008 No 214, item 1347, of 2010 No 155, item 1039, and of 2011 No 106, item 622.

entrepreneurs engaged in the assigned blasting in the operations of a mining plant or facility performing geological work – appropriate owing to the entrepreneur's location, henceforth called „director of the district mining office”, expressed by issuing a decision."

3) Art. 10:

a) par. 2 is replaced by the following:

„2. Permission for:

1) entrepreneurs engaged in economic activities in the field of:

a) geological works,

b) extracting minerals from deposits,

c) underground non-reservoir storage of substances and underground storage of waste,

2) entrepreneurs engaged in the assigned blasting in mining plant operations

– the director of the district mining office issues, refuses to issue or revokes them.”,

b) par. 2a shall be repealed;

4) Art. 16a is replaced by the following:

„Art. 16a. The director of the district mining office notifies the appropriate minister responsible for economy, and appropriate due to the location of the applicant and the location of the mining plant or institution performing geological works, the voivod, regional police commander, district commander of the State Fire Service, the district health inspector, the regional environmental protection inspector, and the regional labour inspector about the issued decision. About the refusal to issue a permit the director of the district mining office notifies the regional police commander.”;

5) Art. 18 par. 1c is replaced by the following:

„1c. Explosives for civil uses acquired, moved, stored ,or used in connection with the exercise of economic activity, referred to in Art. 10 par. 2, s recorded in accordance with the provisions of Art. 115 and the regulations issued under Art. 120 par.

2 of the Act of June 9 2011 – Geological and Mining Law.”;

6) Art. 18a is replaced by the following:

„Art. 18a. For the usage of explosives intended for civil use in connection with the performance of business referred to in Art. 10 par. 2, are applied the provisions of Art. 115 and regulations issued under Art. 120 par. 2 of the Act of June 9 2011 – Geological and Mining Law.”.

109

Art. 193.

In the Act of July 2, 2004 concerning the freedom of economic activity (Journal of Laws of 2010 No 220, item 1447, as amended ¹⁸)) Art. 46 par. 1 section 1 is replaced by the following:

„1) prospecting, exploration of hydrocarbons and solid minerals within the mining property, underground, non-reservoir storage of substances and underground storage of waste;”.

Art. 194.

In the Act of July 28 2005 concerning court costs in civil cases (Journal of Laws of 2010 No 90, item 594, as amended ¹⁹). Art. 96 par. 1 section 12 is replaced by the following:

„12) the party seeking compensation for damage, caused by mining plant operations, referred to in Chapter VIII of the Act of June 9 2011 - Geological and Mining Law (Journal of laws No ..., item).”

Art. 195.

In the Act of 17 February 2006 grant designated for certain entities (Journal of Laws No 64, item 446, and of 2009 No 42, item 339)the Art. 2 section 1 is replaced by the following:

„1) mining plant – a mining plant within the meaning of the Art. 6 item 1 section 18 of the Act of June 9 2011 - Geological and Mining Law (Journal of laws No ..., item);”.

Art. 196.

In the Act of November 16 2006 concerning the Stamp Duty Journal of Laws No 225, item 1635, as amended ²⁰) the Annex to the Act is amended as follows:

1) in Part I:

- a) section 40 is deleted,
- b) section 41 reads as follows:

„41. Approval of the training program of persons performing specific actions in the mining plant operations – of every program”,

18) changes in the consolidated text of the Act were published in the Journal of Laws of 2010 No 239, item

1593 and of 2011 No 85, item 459, No 106, item 662, and No 112, item 654.

19) Changes in the consolidated text of the Act were published in the Journal of Laws of 2010 No 152, item

1016, and No 197, item 1307, and of 2011 No 92, item 531, and No 106, item 622.

20) Amendments to the Act were published in the Journal of Laws of 2007 No 64, item 427, No 124, item

859, No127, item 880, and No 128, item 883, of 2008 No 44, item 262, No 63, item 394, No 123, item

803, No 182, item 1121, No 195, item 1198, No 216, item 1367, and No 220, item 1414, of 2009 No 6, item 33, No 22, item 120, No 57, item 466, and No 72, item 619, of 2010 No 8, item 51, No 81, item

531, No 107, item 679, and No 167, item 1131 , and of 2011 No 75, item 398, No 106, item 622, and No

112, item 654.

110

c) point 43 is replaced by the following:

„43. Granting powers to a mining operations expert

1) a legal person,

2) natural legal person”;

2) Part III, par. 43 reads as follows:

„43. Authorisation to acquire, store or use explosive materials intended for civil use, for the needs of activity regulated by the provisions of the geological and mining law.”

Art. 197.

In the Act of September 7 2007 on the Functioning of coal mining in 2008-2015 Journal of Laws No 192, item 1379) Art. 2 is amended as follows:

1) section 3 is replaced by the following:

„3) mining plant – mining plant used for mining coal in the understanding of the Art. 6 item 1 section 18 of the Act of June 9 2011 - Geological and Mining Law (Journal of laws Journal of Laws No ..., item ...);”

2) section 4 clause a is replaced by the following:

„a) performed or was being performed after January 14 1999 economic activity covered by the concession for exploitation of coal and for which the mining company is required or has been required after this date to pay an exploitation fee according to the provisions of geological and mining law, ”.

Art. 198.

In the Act of July 10 2008 concerning the mining waste Journal of Laws No 138, item 865, and of 2010 No 28, item 145) is amended as follows:

1) Art. 3 par. 1 section 3 is replaced with the following:

„3) mineral – mineral within the meaning of the Act of June 9 2011 – Geological and Mining Law Journal of Laws No ..., item ...), with the exception of the medicinal water, thermal waters and brines; ”

2) Art. 39 par. 4 and 5 are replaced by the following:

„4. Specific conditions referred to in par. 1, concerning filling of mining excavations in the course of the mining plant's operations of management of extractive waste are regulated by the Art. 120 par. 1 of the Act of June 9 2011
2011 r. – Geological and Mining Law.

5. The realization of the conditions referred to in par. 1, concerning filling of mining excavations with extractive waste is defined in the plan of operations of the mining plant, referred to in Art. 110 of the Act of June 9 2011 – Geological and Mining Law.”.

Art. 199.

In the Act of October 3 2008 about sharing information about the environment and its protection, public participation in environmental protection and environmental impact assessment (Journal of Laws No 199, item 1227, as amended 21)) is amended as follows:

1) Art. 21 par. 2 section 34 is replaced by the following:

„34) of the scope of the Act of June 9 2011 – Geological and Mining Law (Journal of Laws No ..., item ...) concerning:

a) concessions for prospecting and exploration of mineral deposits, extracting minerals from deposits, underground non-reservoir storage of substances, and underground storage of waste,

b) the data contained in the registry book of the register of mining areas,

c) the sheets of the mineral deposits, referred to in regulations issued on the basis of Art. 97 par. 1 section 1 of this act,

d) measurement-geological documentation of liquidated mining plants;”;

2) Art. 72 par. 1 section 4 is replaced by the following:

„4) concessions for prospecting or exploration of mineral deposits, mining minerals from deposits, underground non-reservoir storage of substances, and underground storage of waste - issued under the Act of June 9 2011 – Geological and Mining Law;”;

3) Art. 96 par. 2 section 2 is replaced by the following:

„2) concession, different than those listed in Art. 72 par. 1 section 4 – issued under the Act of June 9 2011 – Geological and Mining Law;”.

Art. 200.

In the Act of January 23 2009 concerning the voivod and government administration in the voivodeship (Journal of laws No 31, item 206, as amended²²⁾) in Art. 56 in par. 1 section 4 is replaced by the following:

„4) directors of regional mining office and the director of the specialised Specialized Mining Office;”.

21) Amendments to the Act were published in the Journal of Laws of 2008 No 227, item 1505, of 2009 No

42, item 340, No 84, item 700, and No 157, item 1241, of 2010 No 28, item 145, No 106, item 675, No

119, item 804, No 143, item 963, and No 182, item 1228, and of 2011 No 32, item 159.

22) Amendments to the Act were published in the Journal of 2010 No 40, item 230 and of 2011 No

22, item 114, and 92, item 529.

DIVISION XIII

TRANSITIONAL AND FINAL PROVISIONS

Art. 201.

Non-reservoir storage of substances and disposal of waste in the subsurface,

including underground mining excavations, as defined in the existing provisions becomes underground, non-reservoir storage of substances and underground disposal of waste within the meaning of the Act.

Art. 202.

1. The entrepreneur, who, before January 1 2002 obtained a concession for the exploration or identification of mineral deposits, including their mining, and for whom the licensing authority has not issued a separate decision establishing the specific conditions of exploitation of minerals, before extracting minerals from deposits he shall submit the geological documentation, the project of deposit management and a decision concerning environmental conditions to the concession authority, if required by separate provisions.

2. Licensing authority, on the basis of the documents referred to in par. 1, determines, y separate decision, the specific conditions of exploitation of a mineral. The provision of Art.

32 shall be applied accordingly.

3. Issuing the decision, referred to in par. 2, requires the consent of the competent commune head, mayor, or city president. The provision of Art. 23 par. 2 section 2 shall be applied accordingly.

Art. 203.

1. Deposits of medicinal water, thermal springs and brines, which under current regulations were considered minerals, become minerals in the understanding of the Act.

2. Entities conducting activities with the use of groundwater, considered as a mineral under the Act, may perform these activities on the basis of existing decisions till the end of their period of validity.

Art. 204.

Entrepreneurs who have obtained the concessions before the entry of the law into force are not entitled to claims mentioned in Art. 19.

Art. 205.

1. Concessions granted on the basis of existing regulations become the concessions within the meaning of the Act.

2. If a license issued under current regulations did not specify a specific launch date for its business and until the entry into force of the law, this activity has not been started, the entrepreneur has to start it

within one year from the date of entry of the law into force. If this activity has not occurred, the concession authority by its power announces the expiry of the concession.

3. To change and transfer of licenses acquired before the entry into force of this Act the regulations concerning the right to geological information do not apply, unless the change is intended to increase the concession area covered by the activities or the extension of its validity.

4. The concessions granted before the entry into force of this Act, concerning the activities of searching and identifying mineral deposits, different than those referred to in Art. 10 par. 1 of the Act, current regulations shall apply.

Art. 206.

1. Are in agreement on the establishment of mining usufruct included under current regulations.
2. To mining use referred to in par. 1, the provisions of the Act are applied.
3. The entrepreneur, who at the date of entry into force of this Act carries on business without the mining use required by its legislation, is obliged to conclude an agreement establishing a right, within one year from the date of entry into force of the law. In the absence of an agreement the licensing authority calls for its conclusion in the no less than 14 days, under pain of revocation of concessions without compensation.
4. The entity, which on entry into force of this Act carries on business as set out in Art. 2 par. 1 without the mining use required by its regulations, within 2 years from the date of entry into force of this Act is obliged to conclude an agreement establishing a right. Failure to conclude an agreement means using of mining property without required entitlement.

Art. 207.

1. The right to geological information obtained before 1 January 2002 falls under the Art. 47 of the Act of February 4, 1994 - Geological and Mining Law (Journal of laws No 27, item 96, as amended ²³)).
2. The right to geological information obtained from 1 January 2002 until the entry into force of this Act shall falls under the existing regulations.

Art. 208.

1. Areas of mineral deposits, for which the competent geological authority accepted geological documentation without objection before the entry into force of this Act and which have not been introduced to the study of conditions and directions of spatial management of the municipality, not later than 2 years from the date of entry into force of this Act introduced into the study of conditions and direction of the spatial management of the municipality.

23) Amendments to the Act were published in the Journal of Laws of 1996 No 106, item 496, of 1997 No 88, item 554, No 111, item 726 and No 133, item 885, of 1998 No 106, item 668 and of 2000 No 109, item 1157 and No 120, item 1268.

2. After the deadline referred to in par. 1 governor introduces a documented area of materials for the study of conditions and directions of spatial development and issues a replacement order concerning this issue. Study conducted in this mode produces legal effects such as the study of conditions and directions of spatial development of the community.
3. The costs of the study shall be borne by the municipality, the area of which is concerned by the replacement order.
4. In the case of a complaint by the municipal council to the replacement order,

referred to in par. 2, the administrative court shall schedule hearing within 30 days of receipt of the complaint by the court.

5. Provisions of the Act of March 8 1990 concerning the Local Government shall be applied respectively.

Art. 209.

Deposit development projects approved or adopted on the basis of prior regulations become deposit development projects within the meaning of the Act.

Art. 210.

1. Decisions, certificates, attestations and other documents concerning people's skills and limitations on their exercise, issued on the basis of existing regulations remain in force and permissions obtained before the implementation of this Act shall be deemed as the permissions in the same category obtained after Act comes into force.

2. Certificates and authorizations , giving powers to the expert for mining plant operations, issued under current regulations remain in force in and by the time specified therein..

3. Those who under current regulations obtained a statement of qualifications as:

1) mining surveyor in underground mines - may perform mining surveyor activities referred to in Art. 53 par. 1 section 5 clause a, and the activities of managerial staff and may supervise the operations of these mining plants;

2) mining surveyor in open-pit mines or in plants extracting minerals through drilling- may perform mining surveyor activities referred to in Art. 53 par. 1 section 5 clause b, and the activities of managerial staff and may supervise the operations of these mining plants;

3) mining geologist in underground mines - can perform actions of a mining geologist, referred to in Art. 53 par. 1 section 6 clause a, and the activities of managerial staff and may supervise the operations of these mining plants;

mining geologist in opencast mines or in plants extracting minerals through drilling- may perform

115

mining geologist activities referred to in Art. 53 par. 1 section 6 clause b, and the activities of managerial staff and may supervise the operations of these mining plants;

5) chief of professional rescue teams performing emergency rescue activities in underground mines – may act as head of on duty professional rescue teams performing emergency rescue activities in underground mines;

6) chief of the professional specialized emergency unit performing

emergency rescue activities in underground mines

– may perform the activities of chief of the professional specialized emergency unit performing emergency rescue activities in underground mines.

4. Professional experience gained after the Act's entry into force:

1) the design of geological works, it is considered equivalent to professional practice acquired before the entry into force of this Act in the design of geological works;

2) in determining the conditions and designing the investments associated with underground non-reservoir waste storage, it is considered equivalent to professional practice acquired before the entry into force of the law in determining the conditions and designing the investments associated with subsurface non-reservoir substance and waste storage including underground mining excavations;

3) in the drafting of geological works and geological documentation related to exploration and identification of mineral deposits included in mining property, except oil, natural gas, mineral waters, thermal waters and brines, it is considered equivalent to professional practice acquired before the entry into force of the Law in the drafting of geological works and geological documentation related to exploration and identification of basic mineral deposits, which at the date of entry into force of this Act became mining property, except oil, gas, mineral waters, thermal waters, and brine;

4) the drafting of geological works and documentation associated with the exploration and identification of mineral deposits under the law of land ownership, is deemed to be equivalent to professional practice acquired before the entry into force of the Law by the drafting of geological works and documentation associated with the exploration and identification of common and core mineral deposits, which at the date of entry into force of the law became minerals under the land ownership law.

Art. 211.

Decisions on approval of geological documentation, notices concerning the adoption of geological documentation and decisions on approval of geological work issued on the basis of existing regulations remain in force.

116

Art. 212.

With the entry into force of this Act, the proceedings initiated under Art. 11 Of the Act of July 27 2001 concerning the change of the Act – Geological and Mining Law (Journal of Laws No 110, item 1190) shall be discontinued.

Art. 213.

Until the adoption of the plan referred to in Art. 104 par. 2, remain in force the decisions establishing the pillars of protection and authorization to operate within

those pillars, issued on the basis of existing regulations.

Art. 214.

1. Decisions concerning the mining plant, issued on the basis of existing regulations remain in force.
2. The decisions for the admission of products to be used in mining plants, issued pursuant to the existing regulations remain in force, in and by the time specified therein.
3. Decisions placing natural hazards occurring in mines to individual degrees, categories or classes of risks, made or issued on the basis of existing regulations, remain in force until the day of – on the basis of the provisions of the Act – assessment concerning the common space in a mining plant; decisions classifying workspaces in mine workings of underground mines to different categories of danger of being subjected to harmful dusts re repealed upon the entry into force of the law.

Art. 215.

1. The resources of the mine closure funds, collected under the temporary regulations become the fund resources within the meaning of the Act.
2. Entrepreneurs, who at the date of entry into force of the law run more than one mining company, may create a common fund, while liquidating the funds created for the individual mines. In such a case entrepreneurs transfer funds from the liquidated funds to the account of a joint fund.
3. With the entry into force of the law a fund created under temporary regulations by the entrepreneur conducting business on the basis of governor's concession may be liquidated.

Art. 216.

For the annulment or the resumption of proceedings in the cases concluded with the final decisions of the commission for mining damages, existing regulations apply.

Art. 217.

To the charges referred to in Chapter VII, due for the period before the entry into force of this Act shall apply the existing regulations.

Art. 218.

1. Reimbursement of administrative fees or penalties, wrongly charged for the period up to the December 31 2001, shall be paid respectively by the National

Fund for Environmental Protection and Water Management or the municipality.

2. Reimbursement referred to in par. 1, is based on a decision of the competent authority of the concession and, for the extraction of minerals without the required license - a decision of the authority which determined the dimension of the administrative fee or penalty.

Art. 219.

After the entry into force of this Act the authorities, referred to as appropriate on the basis of temporary regulations shall transfer the case files to the authorities, referred to as appropriate on the basis of this Act.

1) completed - within 3 months from the date of entry into force of this Act,

2) in progress - immediately after the completion of the procedure.

Art. 220.

In 2012 subsidies for the tasks related to granting concessions for prospecting, identifying and mining brines, curative and thermal waters, as well as approving the geological documentation concerning those deposits, shall be transferred from the state budget from the part, which is administered by the minister responsible for environment.

Art. 221.

1. The Mining Office for the control of Energo-mechanical Equipment, formed by Regulation of the Prime Minister dated 26 August 1994 concerning the formation of the Mining Office for the Control of Energo-mechanical Equipment (Journal of Laws No 92, item 436 and of 1997 No 100, item 625), becomes the Specialised Mining Office within the meaning of this Act.

2. The employment relationship, established under existing regulations, on the basis of appointment of the person occupying the position of the Director or Vice Director of the Mining Office for the control of Energo-mechanical Equipment, on the date of entry into force of the Act, becomes a working relationship based on appointment of the director or vice director of the Specialised Mining Office within the meaning of the Labour Code.

118

Art. 222.

For proceedings initiated prior to the entry into force of this Act current regulations shall apply.

Art. 223.

The employment relationship, established under existing regulations, on the basis of appointment of the person occupying the position of the President of the State Mining Authority, Vice President of the State Mining Authority, director or deputy director of the district mining office, on the date of entry into force of the Act, becomes a working relationship based on appointment within the meaning of the Labour Code.

Art. 224.

Existing regulations issued under Art. 11 par. 4, Art. 31 par. 2, Art. 47 par. 12, Art. 50 par. 1 section 1, section 2, clause a and b, section 3–7, Art. 52 par. 3, Art. 54 par. 2, Art. 64 par. 6, Art. 68 par. 2, Art. 69 par. 3, Art. 70 par. 3, Art. 73a par. 3, Art. 75a par. 2, Art. 78 par. 1–3, Art. 82b par. 2, Art. 82c par. 5 i 6, Art. 84 par. 11, Art. 85 par. 14, Art. 107 par. 10, Art. 108 par. 4, Art. 111 par. 8 of the Act referred to in Art. 226, remain in force until the entry into force of the implementing regulations issued under Art. 14 par. 4, Art. 26 par. 5, Art. 35 par. 4, Art. 69 par. 1, Art. 79 par. 3, Art. 97 par. 1 section 1–4, Art. 98 par. 2, Art. 100 par. 10, Art. 101 par. 12, Art. 110, Art. 113 par. 15, Art. 116 par. 7, Art. 118 par. 4, Art. 120 par. 1 i 2, Art. 124, Art. 125 par. 7, Art. 137 par. 7, Art. 166 par. 4, Art. 167 par. 7 of this Act.

Art. 225.

Whenever in the current legislation is mentioned the Act, referred to in Art. 226, it is to be understood as this law.

Art. 226.

The Act of February 4, 1994 - Geological and Mining Law (Journal of laws of 2005 No 228, item 1947, as amended²⁴⁾) is hereby repealed.

Art. 227.

This Act shall enter into force on 1 January 2012

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24) changes in the consolidated text of the Act were published in the Journal of laws of 2006 No 133, item 934, No 170, item 1217, No 190, item 1399, and No 249, item 1834 of 2007. No 21, item 125, and No 82,

item 556 of 2008. No 138, item 865, and No 154, item 958, No 199, item 1227, and No 227, item 1505 of 2009. No 18, item 97 of 2010 . No 47, item 278 and No 76, item 489 of 2011 No 106, item 622.

Annex to the Act of 9 June 2011
(item ...)

OPERATING FEES RATES

No	Type of mineral	Unit of measurement (IU)	Royalty rate (PLN/IU)
1.	2	3	4
1	Alabasters	t	2,98
2	Amphibolites	t	0,99
3	Anhydrites	t	3,54
4	Barytes	t	5,36

5	Basalts	t	1,04
6	Bentonites	t	1,82
7	Chalcedonite	t	0,64
8	Diabases	t	0,74
9	Dolomites	t	0,84
10	Gabbros	t	0,99
11	Methane rich natural gas	tys.m ³	5,89
12	Natural gas	tys.m ³	4,90
13	Gypsums	t	1,66
14	Refractory and ceramic clays t	t	3,32
15	Gneisses	t	1,05
16	Granites	t	1,05
17	Granodiorites	t	1,05
18	Hornfelses	t	0,86
19	Precious, semiprecious and decorative stones	kg	9,47
20	Kaolinites	t	2,98
21	Other clay minerals	m ³	2,19
22	Lake chalk	t	0,21
23	Chalk	t	0,69
24	Quartz	t	1,82
25	Quartzites	t	0,92
26	Shales	t	1,24
27	Magnesite	t	4,73
28	Marls	t	0,68
29	Marbles	t	3,57
30	Melaphyres	t	1,06
31	Methane from coal	1000m3	0,00
32	Bedrocks	t	0,64
33	Sands and gravels	t	0,51
34	Sandstones	t	0,74
35	Porphyries	t	0,74
36	Oil	t	34,89
37	Zinc and lead ores	t	1,12
38	Copper ores	t	3,10
39	Gold ores	g Au (in ore)	0,39
40	Uranium ores	kg U (in ore)	8,35
41	Serpentinite	t	0,74
42	Native sulphur	t	1,43
43	syenites	t	0,86
44	Feldspars	t	2,42
45	Diatomite rocks	t	5,94
46	Brine	m ³	1,97

47	Salts	t	1,48
48	Greywackes	t	0,86
49	Peat	m ³	1,13
50	Medicinal peat (peloid)	m ³	1,13
51	Trawertines	t	0,68
52	Tuffs	t	0,74
53	Limestones	t	0,68
54	Lignite	t	1,66
55	Coal	t	2,13
56	Medicinal waters	m ³	1,32
57	Thermal waters	m ³	0,00
58	Greenstones	t	0,86
59	Siliceous earth	t	5,94
60	Conglomerates	t	3,57
61	Other minerals	t	3,57



**Investigative Report of
Ethical Violations and Misconduct
by
Bureau of Land Management Officials**

Date Posted to Web: January 30, 2017

This is a version of the report prepared for public release.

SYNOPSIS

We initiated an investigation in October 2015, after receiving two anonymous complaints concerning a Supervisory Agent, Bureau of Land Management (BLM) Office of Law Enforcement and Security (OLES), Salt Lake City, UT.

The first complaint, received in September 2015, concerned the 2015 Burning Man event held annually in northwestern Nevada. The complaint alleged that—

- the Supervisory Agent used his official position to provide preferential treatment to his family members while attending the event;
- the Supervisory Agent directed five on-duty BLM law enforcement officers to escort his family and provide security for them at the event;
- the Supervisory Agent's family received unauthorized access to the Incident Command Post (ICP); and
- the Supervisory Agent's family received overnight lodging in BLM-leased facilities.

The second complaint, also received in September 2015, alleged that the Supervisory Agent improperly intervened in the April 2015 hiring process for a BLM special agent position after he learned that a friend did not make the initial list of candidates to be interviewed.

During our investigation, we received an additional complaint in September 2016, alleging that the Supervisory Agent drove around with his girlfriend in his BLM vehicle while working at the 2015 Burning Man event. The employees who provided details of the misuse stated that they had not fully disclosed this in prior interviews because they feared reprisal from the Supervisory Agent.

We substantiated all but one of the allegations associated with the 2015 Burning Man event.

We found that the Supervisory Agent violated Federal ethics rules when he used his influence with Burning Man officials to obtain three sold-out tickets and special passes for his father, girlfriend, and a family friend. In addition, we confirmed that he directed on-duty BLM law enforcement employees to drive and escort his family during the event with BLM-procured, all-terrain and utility type vehicles (ATVs/UTVs). Regarding the allegation of improper access to ICP by the Supervisory Agent's family, we found that was not against BLM policy. We confirmed that the Supervisory Agent's girlfriend stayed overnight with him in his BLM assigned trailer, contrary to restrictions in the operations plan for the event. The Supervisory Agent also violated Federal ethics regulations by having a subordinate employee make a hotel reservation for his guests. On at least one occasion, he misused his BLM official vehicle when he transported his girlfriend while at the event.

We interviewed BLM OLES Director Salvatore Lauro who stated that he took no action when he saw the Supervisory Agent use ATVs and BLM personnel to transport his (the Supervisory Agent's) family. In addition, Lauro knew the Supervisory Agent allowed his girlfriend to share his BLM overnight lodging accommodations during the event.

We also confirmed that the Supervisory Agent intervened in the hiring process by increasing the number of candidates that would be interviewed. As a result, the Supervisory Agent's friend, who had worked with the Supervisory Agent as a Federal air marshal received an interview and was ultimately hired as a BLM special agent.

During our investigation, the Supervisory Agent displayed a lack of candor when interviewed and tried to influence an employee's comments prior to an interview.

BACKGROUND

Burning Man, an annual gathering attended by thousands of people on BLM-managed Black Rock Desert, is organized by the Burning Man Project, a nonprofit organization, and its for-profit subsidiary, Black Rock City LLC (BRC). The permit issued by BLM to BRC showed the event was held from August 30 to September 7, 2015, and was limited to 70,000 paid participants. Interviewees stated that event attendees actually totaled about 80,000 individuals when vendors and support personnel were also counted.

OLES Director Salvatore Lauro identified OLES' major concern at Burning Man as potential mass casualty from fire-related artwork. He also referred to past BLM enforcement actions that resulted in crowd behavior and the need for tasers. The BLM OLES Official said that Burning Man had a history of illegal drugs, assaults, violence, and other criminal activity, in spite of its largely peaceful reputation. As a result, approximately 70 BLM law enforcement officers were assigned to the event. The BLM OLES Official also said that the Supervisory Agent prepared the operational plan, then briefed the BLM OLES Official and Lauro. He also said that the Supervisory Agent remained in command of operations, although Lauro attended the event.

DETAILS OF INVESTIGATION

On October 7, 2015, we initiated this investigation after receiving two anonymous complaints.

The first complaint, sent by email to BLM Director Neil Kornze on September 9, 2015, and copying the Office of Inspector General (OIG), came from the private email address of an unidentified BLM employee. The complaint stated that a Supervisory Agent had engaged in misconduct and ethical violations at the 2015 Burning Man event. Specifically, the Supervisory Agent used his influence to obtain tickets to the event for family members; he also permitted his family members to visit the ICP and receive overnight lodging at BLM-leased facilities. The complaint also alleged that he directed five BLM law enforcement personnel to provide his family members with an escort and tour through BRC, using BLM-procured all-terrain and utility type vehicles while the officers were on official duty at the event.

The second complaint, also submitted on September 9, 2015, alleged that the Supervisory Agent committed an unfair hiring practice in April 2015 when he intervened on behalf of a friend applying for a BLM special agent position.

A third complaint, received in September 2016 near the end of our investigation, alleged that the Supervisory Agent misused his Government vehicle when he used it to drive around with his girlfriend during the 2015 Burning Man event.

Supervisory Agent's Misconduct at Burning Man

Supervisory Agent Seeks Favor from Prohibited Source

During our investigation, we found that the Supervisory Agent obtained three full-event Burning Man tickets for "family" members identified as his father, a family friend, and the Supervisory Agent's girlfriend. At the time he bought the tickets, those available to the public had been sold out. The Supervisory Agent used his contacts and relationships with Burning Man officials to obtain the tickets. Federal ethics regulations prohibit soliciting gifts from a prohibited source. See 5 C.F.R. § 2635.202(a). Ethics regulations also prohibit Federal employees from using any authority associated with their public position for the private gain of friends and relatives. See 5 C.F.R. § 2635.702.

As part of our email review, we found that, as early as February 27, 2015, the Supervisory Agent told a BRC Attorney that he was considering bringing his parents to the 2015 event to honor a relative's passing at the Burning Man temple ceremony. He wrote that he might bring his parents with the BRC Attorney's help and approval.

We also found that the Supervisory Agent had discussed obtaining tickets with a former BLM Special Agent serving as a current reemployed annuitant hired as a special project manager for the event. The former BLM Special Agent reported three conversations with the Supervisory Agent:

- The Supervisory Agent asked if he could purchase tickets for \$50 each through a program offered to locals, but the former BLM Special Agent informed him that his family members did not qualify.
- The Supervisory Agent then informed him that he intended to purchase the tickets from BRC officials at a discount; the former BLM Special Agent urged him not to do this because of the Supervisory Agent's bad publicity concerning demands for expensive items purchased by BRC for BLM's use at the event.

Agent's Note: In 2015, a newspaper published an article stating that a letter [went] to Secretary Jewell, expressing concerns with "providing outlandishly unnecessary facilities for BLM and its guests" at the 2015 event. The article also stated that the Supervisory Agent had been cited multiple times as the person behind many of the BLM requests, and further stated that BLM wanted Burning Man to provide a \$1 million luxury compound.

- During his third conversation with the Supervisory Agent, the Supervisory Agent informed the former BLM Special Agent that he had purchased full price tickets from the BRC Attorney, with whom the Supervisory Agent had a good relationship.

A September 3, 2015 email from the BRC Attorney to the Supervisory Agent at the time of the event cited the BRC Attorney's willingness to offer four regularly priced tickets as a courtesy to the Supervisory Agent's family. The BRC Attorney further stated that BRC held tickets at the Box Office for unique situations that arose after tickets were sold out and that he was happy to offer the tickets to the Supervisory Agent.

During his interview, the BRC Attorney said that the Supervisory Agent had either telephoned or sent him a text message asking for three tickets for his family members just before he sent the Supervisory Agent the September 3, 2015 email. The Supervisory Agent knew that regular tickets for the event were sold out but that BRC also held back about 100 tickets for special requests and needs. The Supervisory Agent approached the BRC Attorney to purchase tickets for his family, but wanted the tickets at the regular price because of scrutiny surrounding his role in BLM's request for the luxury compound. The BRC Attorney forwarded OIG investigators an email dated September 5, 2015, showing three tickets charged to the Supervisory Agent's personal credit card at \$390 each, with a processing fee of \$19 each, for a total of \$1,227.

Lauro also reported that the Supervisory Agent showed him a receipt for approximately \$1,200 paid on his personal credit card so that his family could attend the event. Lauro told the Supervisory Agent it was "probably the best \$1,200 you've ever spent because it's going to turn, we know it's going to turn into a complaint." He said the Supervisory Agent was upfront with him regarding his family's attendance, having tried to make sure he did not violate any policies. Lauro knew that the Supervisory Agent had purchased tickets at full price with personal funds, and said that the Supervisory Agent "knows people are looking." We also found that the Supervisory Agent had discussed the ticket purchase with several BLM law enforcement personnel, who each felt that the Supervisory Agent wanted to make them aware that he had paid full price for the tickets.

Lauro and a BLM OLES Official both indicated that no policy prohibited OLES personnel from having family members attend the event. Lauro said that he attended the event and knew that the Supervisory Agent's family also attended. The family specifically visited the temple, which the Supervisory Agent helped to construct. He said that the Supervisory Agent was allowed to cut a piece of wood and place it in the temple in memory of a family member. The BLM OLES Official confirmed that two of the Supervisory Agent's family members, as well as his girlfriend, had attended a portion of the event for which the Supervisory Agent had placed a board in the temple in his family member's memory.

The Supervisory Agent also sent an earlier email to the BRC Attorney on August 26, 2015, in which he attached photographs depicting his significant temple construction efforts. In the photo, the Supervisory Agent wears his law enforcement equipment and firearm, and a shirt identifying him as a Federal agent.

The Supervisory Agent's account of his conversations with the former BLM Special Agent and the BRC Attorney differed from their accounts, however. He said the former Special Agent told him he was an "idiot" to pay full price. The Supervisory Agent said that when he went to the BRC Attorney to find a ticket option that would bring less scrutiny, he generally knew that tickets available for public attendance had been sold out, but he did not know that the BRC Attorney had extra tickets. He said that he told the BRC Attorney he did not want special treatment because of his position.

Supervisory Agent Seeks Favor from BRC for Special Passes to Man Burn

During our investigation, we learned that the Supervisory Agent had asked a BRC Official for three special passes so that his family could watch the Man Burn, the high point of the Burning

Man event when an effigy is burned at the temple. The passes, which have no face value but which are not available to the public, gave access to the inner perimeter on the night of September 5, 2015. Our interviews of BRC officials revealed that the inner perimeter was considered a privileged location, reserved primarily for BRC, pyrotechnics, and emergency services staff. The BRC Attorney told us that a BRC Official controlled the special passes and that they had never before been provided to a BLM employee's family members.

When interviewed, the BRC Official said that the Supervisory Agent had asked on Saturday afternoon, September 5, for three passes so that his family could attend the 10:00 p.m. Man Burn that night. The BRC Official confirmed that access to the inner perimeter was a special privilege and never previously requested by or given to a BLM official or law enforcement official. When asked if the Supervisory Agent's position had influenced the availability of the passes, the BRC Official said that there had been apprehension at first because it seemed "a little strange." The BRC Official still gave the Supervisory Agent the passes because being gracious was part of the Burning Man culture. Federal ethics regulations prohibit soliciting gifts from a prohibited source. See 5 C.F.R. § 2635.202(a). Ethics regulations also prohibit Federal employees from using any authority associated with their public position for the private gain of friends and relatives. See 5 C.F.R. § 2635.702.

The Supervisory Agent said that the BRC Official had given him special laminated passes so that his family could watch from the inner perimeter, but he did not necessarily consider it a special privilege.

During the interview, the BRC Official indicated that the Supervisory Agent was on official duty while in the inner perimeter with his family, as were all law enforcement officers who were on official business while present at the event. A review of the Supervisory Agent's time and attendance records showed that he was on official duty while at the Man Burn during the night of September 5, 2015. The review showed that he claimed 24 hours of official work time for Saturday, September 5, the day of the Man Burn. He also claimed 24 hours of official work time for Sunday, September 6, and again on Monday, September 7.

Supervisory Agent's Misuse of OLES Personnel and BLM-Procured, All-Terrain and Utility Type Vehicles

OLES personnel confirmed that the Supervisory Agent directed five on duty BLM law enforcement officials to drive, escort, and provide security for his family at the 2015 Burning Man event. A BLM Subordinate Supervisory Agent said the Supervisory Agent asked him to take the Supervisory Agent's family with him on his daily route around the event's playa. He transported the Supervisory Agent's father, family friend, and girlfriend on a BLM-procured Kubota utility vehicle while also performing his official duties. BLM Special Agents confirmed that they saw a BLM Subordinate Supervisory Agent transporting the Supervisory Agent's family in a utility vehicle at the event.

A BLM OLES Contracting Officer confirmed seeing the Supervisory Agent's father, girlfriend, and another man getting out of a Kubota utility vehicle, which she had procured for OLES to use during the event. A BLM OLES Contracting Officer provided a copy of a

“Solicitation/Contract/Order for Commercial Items,” dated August 8, 2015, confirming the Federal procurement. Federal law prohibits the use of Government owned or leased passenger vehicles for unofficial purposes. See 31 U.S.C. §§ 1344(a) and 1349(b).

A BLM Special Agent further stated that the Supervisory Agent had directed him and another BLM Special Agent, as well as two BLM law enforcement officers to accompany his family around the event. They drove in separate all-terrain vehicles known as Razors. At one point, they all met up with the Supervisory Agent, BLM OLES Director Lauro, and former Department of the Interior OLES Director Harry Humbert.

A BLM Supervisory Law Enforcement Ranger also stated that at about 2:00 p.m. on September 5, 2015, the Supervisory Agent asked him to accompany Lauro, Humbert, and himself on a tour of the event. The four of them met up with another BLM Subordinate Supervisory Agent, who drove a Kubota utility vehicle with the Supervisory Agent’s father, family friend, and girlfriend as passengers. A BLM Supervisory Law Enforcement Ranger said that the vehicles stopped at the temple, then drove around the playa looking at the art. They also went to an area known as the District, where several thousand people gathered to listen to and provide music. He said that the tour lasted 3 to 4 hours.

The BLM Supervisory Law Enforcement Ranger noted that the utility vehicles had been used to transport Government officials (e.g., a U.S. attorney, a BLM Official, and a DOI Solicitor Official), but that the vehicles had never been used to transport BLM OLES family members on a tour with a law enforcement escort. He said a tie to the Government always occurred when the utility vehicles were used for transportation. A BLM Subordinate Supervisory Agent informed us, however, that the former BLM Special Agent’s wife had routinely attended the event and received a tour on a utility vehicle.

A BLM OLES Budget Analyst said the Supervisory Agent’s father, family friend, and girlfriend toured the Burning Man event with Lauro and Humbert. She also said that other law enforcement personnel had their family members visit the event and that it was a common practice; however, the Supervisory Agent’s family were the only non-law enforcement personnel provided a tour that day.

During his interview, the Supervisory Agent confirmed that he oversaw all BLM law enforcement personnel assigned to the event, while also confirming that another BLM Supervisory Agent, a BLM Supervisory Law Enforcement Ranger, a BLM Law Enforcement Officer and BLM Special Agents had been his subordinates during that time. The Supervisory Agent confirmed that he had asked a BLM Subordinate Supervisory Agent and other BLM law enforcement personnel to accompany his family on a tour of the event and that all OLES law enforcement officers were on official duty and in uniform when this occurred. The Supervisory Agent also said that the Kubota utility vehicle had been used routinely to transport the public because it had been rented, rather than owned by BLM.

Contrary to the Supervisory Agent, a BLM Subordinate Supervisory Agent did say that law enforcement officers typically did not escort or transport the public in the utility vehicles. He said that the Supervisory Agent’s family received transportation, as well as preferential

treatment, because of the Supervisory Agent.

Lauro's Knowledge of the Supervisory Agent's Actions

We questioned Lauro about the Supervisory Agent's use of BLM's law enforcement officials and Government procured vehicles to transport the Supervisory Agent's family and give them a tour of the Burning Man event. Lauro acknowledged that he saw a BLM Subordinate Supervisory Agent driving the Supervisory Agent's family members during the event and stated that the Supervisory Agent told him his family was coming and that his girlfriend was staying in the trailer. He denied knowing that the BLM law enforcement officers riding nearby were a security escort, as well as whether the vehicle that a BLM Subordinate Supervisory Agent drove was a leased BLM ATV or belonged to the Sheriff's department. He said the use of ATVs and BLM personnel to transport the Supervisory Agent's family, in addition to the use of BLM lodging might be considered "technical" violations, especially since, as the Supervisory Agent's second level supervisor, he did not see anything that led him to tell the Supervisory Agent to stop. He explained the "reality" is we "regularly" drive non-government people. He stated he did not feel that the Supervisory Agent's family received preferential treatment. He also said he would not have let a BLM law enforcement officer's family who had lost a loved one travel around the event on their own. Lauro added, however, that he and the Supervisory Agent had discussed the potential for an IG complaint, saying "in fact we probably could have written it before it happened because he's had like eight anonymous complaints in the last two years."

When interviewed, Humbert said he did not know that the utility vehicles used to transport the Supervisory Agent's family belonged to the Government. He added that, if they did, then Government vehicle use policies applied. When asked if he felt the Supervisory Agent's family members had received preferential treatment because of the Supervisory Agent's position, Humbert said, "I don't think there is any other way you can look at it."

Supervisory Agent's Disregard for the Accommodations Directive and Allegations of Meals at BLM's Expense

The "Law Enforcement Operations Plan - Duties, Procedures, Protocols, and Rules Specific to the 2015 Burning Man Event, dated August 11, 2015," signed and approved by the Supervisory Agent, stated: "Since many law enforcement officers will be sharing a room with another officer during the Burning Man event, rooms are only for those persons assigned to the event."

Agent's Note: The operations plan is not provided as an attachment due to its sensitivity.

A BLM Subordinate Supervisory Agent had been assigned to a BLM lodging trailer with the Supervisory Agent. He confirmed that the Supervisory Agent's girlfriend stayed 1 or 2 nights with the Supervisory Agent in the trailer. She also shared meals prepared with food he and the Supervisory Agent had purchased for the trailer. The BLM Subordinate Supervisory Agent did not know if the Supervisory Agent's girlfriend received meals from the dining facility provided for BLM employees.

When interviewed, the Supervisory Agent stated that his girlfriend stayed overnight with him in

his assigned lodging trailer, and that his father stayed the first night at a Marriott in Reno. He said that on the second night his father stayed with his family's friend. Regarding the lodging rules cited in the Law Enforcement Operations Plan, the Supervisory Agent said ". . . it's to keep people from jumping rooms or moving rooms or trading rooms."

During Lauro's interview, he stated that the Supervisory Agent informed him his (the Supervisory Agent's) girlfriend would stay the night with him in the trailer. The Supervisory Agent told him that he had checked with contracting and travel personnel and that there was no violation since it was the same as staying in a hotel room together.

The Supervisory Agent's Misuse of a Government-owned Vehicle

A BLM OLES Budget Analyst and a BLM OLES Contracting Officer contacted OIG near the completion of our investigation to request additional interviews regarding information they had not provided due to fear of retaliation.

Both provided details regarding the Supervisory Agent's misuse of his assigned Government vehicle, a silver Chevrolet Tahoe, while at the 2015 Burning Man event. According to an OLES Budget Analyst, she and a Contracting Officer learned from the Supervisory Agent that his girlfriend needed directions to the event. The Supervisory Agent told them that he might meet her in his Government vehicle at a nearby community, then transport her to the event. The OLES Budget Analyst and the OLES Contracting Officer warned the Supervisory Agent against his plan, but the Supervisory Agent only appeared frustrated when he left.

Later that night, according to the OLES Budget Analyst and the OLES Contracting Officer, the Supervisory Agent drove up to them in the Government Tahoe when they were near a mobile substation. They observed the Supervisory Agent's girlfriend in the Tahoe's front passenger seat, when the Supervisory Agent told them to get into his vehicle. They refused. The Supervisory Agent drove away when he saw someone approaching and became concerned that he would be seen.

The next day, the Contracting Officer asked the Supervisory Agent why he had driven his girlfriend in his Government vehicle. He responded to her, "You will forget that you saw that."

During our investigation, we learned that a retired police officer and paramedic assigned to the event had transported the Supervisory Agent's family from the nearby community, although we could not confirm the date or time. The retired police officer told us that, based upon a request from the Supervisory Agent, he had met the Supervisory Agent's family, then transported them in his personal vehicle. He took them through the main entrance where he thought their tickets were scanned, then dropped them off at the ICP where the Supervisory Agent waited for them.

During his interview on May 24, 2016, we asked the Supervisory Agent if he had transported his girlfriend or other family members in his Government vehicle while at the event. He said he had not, and that he had given orders not to transport his family in a Government vehicle.

Additional Statements by OLES Employees Regarding Lodging for the Supervisory Agent's Family

The BLM OLES Budget Analyst and the BLM OLES Contracting Officer provided additional details about the Supervisory Agent's intent to secure BLM lodging for his family. The BLM OLES Budget Analyst stated that she had observed a phone conversation in which the Supervisory Agent asked the former BLM Special Agent to reserve a travel trailer for overnight use by his father and family friend. The conversation occurred while she, the Supervisory Agent, and the BLM OLES Contracting Officer were outside the BLM State Office before they left for Burning Man. The BLM OLES Budget Analyst did not know if the Supervisory Agent's father and family friend stayed overnight in the trailer, but the BLM OLES Contracting Officer said that she used the Supervisory Agent's Marriott rewards number to reserve a hotel room for his father and family friend. The BLM OLES Contracting Officer did not know if they stayed overnight in one of the lodging trailers. Federal ethics regulations prohibit supervisors from encouraging or requesting subordinates to use their official time to perform unofficial duties such as personal errands. See 5 C.F.R. § 2635.705(b).

Supervisory Agent's Improper Influence in a Hiring Process

According to the second complaint, the Supervisory Agent increased the number of candidates interviewed for a hiring action, which enabled a friend to be interviewed and later selected for the job instead of other more qualified candidates. The complaint further stated that the interviews were short, that the Supervisory Agent's friend who had applied for the position apparently received the questions in advance, and that he was hired immediately after the interviews concluded.

We found that the BLM OLES vacancy announcement resulted in two applicants being hired: a BLM Special Agent, formerly employed as a special agent for the U.S. Secret Service, and the Supervisory Agent's friend, formerly employed as an air marshal for the Supervisory Agent's previous employer, the Federal Air Marshals Service (FAMS).

Hiring for a BLM Special Agent Position

The BLM OLES Official said he had little involvement in the hiring process for the BLM special agent position. He said the Supervisory Agent would have handled the hiring locally from a single announcement that filled two positions in the Supervisory Agent's office. He subsequently discussed the hiring with the Supervisory Agent, who identified a "natural break" of 5 percent in the resume scores at the 32nd candidate, which meant that a gap greater than one or two percentage points between the scores occurred at this point. He said he was not concerned if a friend of the Supervisory Agent applied for the position, as long as the Supervisory Agent followed the human resources process.

The BLM OLES Official further stated that, while gathering documents for OIG's investigation, he learned from the Supervisory Agent that the Supervisory Agent's friend had worked previously with him as a Federal air marshal. The Supervisory Agent told him that their working relationship had occurred years earlier, that he had not had contact with his friend (and special agent job applicant) since they worked together, and that the two of them were not friends.

Our review of documents gathered by the BLM OLES Official revealed a schedule titled “Resume Summary,” signed by the Supervisory Agent and dated April 16, 2015, showing the combined scores of 121 unnamed applicants. This schedule also contained a handwritten notation, citing a 5-percent break at the 32nd applicant. A separate schedule, also titled “Resume Summary” but containing the names of the 121 applicants and their combined scores and ranking, showed that the Supervisory Agent’s friend ranked 23rd out of 121 applicants.

Lauro stated that he did not know if the Supervisory Agent and the individual hired as a BLM Special Agent were friends when the man was hired, but he assumed that the Supervisory Agent probably knew the applicant since both worked for FAMS. He also did not know if the Supervisory Agent halted the hiring process so that the individual would receive an interview. When shown the Resume Summary and the various other hiring documents that the BLM OLES Official provided, Lauro said that he would never interview 30 people for a position and hoped that the Supervisory Agent had a good reason for his decision.

The Supervisory Agent’s Influence On the Hiring Process

A BLM Subordinate Supervisory Agent said that he was designated as the selecting official for the two BLM special agent positions, for which more than 200 applicants applied. The Supervisory Agent had told him that an identified applicant’s skills, as well as his personality, would fit well with the team and that he would like to give him a chance at the job. The BLM Subordinate Supervisory Agent said that the applicant should not have been hired because he was not as qualified as the top candidates.

A BLM Special Agent who was on both the resume review and interview panels said the Supervisory Agent tasked him to oversee the hiring process for the BLM special agent positions. He also said that the identified applicant had been discussed long before the applicant resumes had been ranked. The Supervisory Agent previously asked him to speak with the identified applicant on the telephone to discuss the hiring process, and the Supervisory Agent brought him into the office to meet with the BLM Special Agent to discuss the job.

The BLM Special Agent said that when he and a BLM State Ranger scored the applicant resumes, the identified applicant had ranked low, somewhere “in the forties” or lower. He further stated that, although the BLM Subordinate Supervisory Agent had intended to include only the top 10 to 15 candidates in the interview cut-off, the Supervisory Agent intervened, moving the cut-off to about the 30th applicant, which gave his friend, the identified applicant, an interview and made it clear to the BLM Special Agent that the Supervisory Agent had moved the cut-off for that purpose. He had concerns about the identified applicant’s law enforcement qualifications, which did not match those of most criminal investigators.

The BLM State Ranger said that, while on assignment with other OLES employees, he and the BLM Special Agent scored and ranked the applicant resumes, finding a natural break at a 3- to 5-percent difference in the scoring after about the 13th applicant. He said that the identified applicant ranked at about 30 among approximately 120 resumes. Since he and other OLES employees had discussed the identified applicant, he knew the Supervisory Agent would not be happy if the identified applicant did not receive an interview. He said the BLM Subordinate

Supervisory Agent later told him that the Supervisory Agent had interfered with and suspended the process to ensure interviews for the top 30 candidates.

We also found that a BLM OLES Budget Analyst was assigned to handle certain administrative tasks pertaining to the hiring process. These included preparing spreadsheets to reflect applicant scores and rankings, and contacting applicants to arrange interviews. The BLM OLES Budget Analyst confirmed that the Supervisory Agent had discussed his friend, the identified applicant, with her and the other OLES employees many times to sell his qualifications. The Supervisory Agent's friend had visited the OLES office on several occasions, and the Supervisory Agent required her and other OLES employees to accompany them to lunch. The Supervisory Agent also told employees that everyone would like his friend, mentioning common interests his friend shared with OLES employees. The BLM OLES Contracting Officer reported that, in March 2015, the Supervisory Agent sent a text saying that his friend would be visiting the office that day. The Supervisory Agent wanted them all to go to lunch together. The BLM OLES Contracting Officer complied because the Supervisory Agent was her immediate supervisor and she feared he might retaliate if she refused.

The BLM Subordinate Supervisory Agent felt that a definitive interview cut-off occurred about the 12th or 13th applicant. He had several conversations with the Supervisory Agent about his friend, the identified applicant; he said the Supervisory Agent knew that his friend did not rank among the top 13. The BLM Subordinate Supervisory Agent told the Supervisory Agent that his friend was not the best candidate, but the Supervisory Agent disagreed. Eventually, the Supervisory Agent suspended the hiring process because, the BLM Subordinate Supervisory Agent believed, the Supervisory Agent wanted his friend hired. The BLM Subordinate Supervisory Agent provided a series of emails, dated April 13, 2015, in which the Supervisory Agent said he was going to suspend the hiring process until he could conduct a review. BLM's Subordinate Supervisory Agent said the Supervisory Agent suspended the process because he wanted to hire his friend.

During our second interview with the BLM OLES Budget Analyst, she denied she told the Supervisory Agent his friend's rank in the resume scoring. She told us during her final interview, however, that she met with the Supervisory Agent after returning from the Las Vegas assignment, and he looked at the rankings list without any names attached. The Supervisory Agent marked and signed the list, establishing the interview cut-off. He then told the BLM OLES Budget Analyst to let him know before proceeding with the interviews if the cut-off was not low enough. The BLM OLES Budget Analyst said she understood that he wanted to know if his friend did not make the cut-off because the Supervisory Agent had previously told her that he wanted his friend to be interviewed.

The Supervisory Agent acknowledged his role as the approving official for the hiring process. He said he stopped the process so that he could evaluate the rationale for selecting interview candidates. He expressed concern because only 12 applicants had been selected out of a pool of 130, using only their scored resumes as justification.

The Supervisory Agent further stated that he increased the number of candidates because the 32nd candidate marked the first 5-percent difference in scores and was the first natural break in the

list. He denied knowing where his friend ranked and that increasing the number of candidates meant his friend received an interview.

Interviews of Applicants

The documents that the BLM OLES Official provided included one titled “First Round Interview Schedule – Monday, April 20.” It showed that 28 applicants had been scheduled for interviews at 20-minute intervals. The document also included each applicant’s scores in response to four questions asked during interviews with the BLM Special Agent and the Special Agent Panel Member for Interviews. An interview rating summary showed that the Supervisory Agent’s friend ranked fourth.

The BLM Subordinate Supervisory Agent said that the Supervisory Agent had wanted short applicant interviews with a definitive number of questions asked of all the candidates so that they could demonstrate their verbal skills.

The BLM Special Agent and the Special Agent Panel Member for Interviews conducted the interviews by telephone. Both indicated that the Supervisory Agent’s friend appeared to know the questions in advance. When interviewed, the BLM Special Agent said that he, the Supervisory Agent, and the Special Agent Panel Member for Interviews had developed the questions, but that he no longer had them. The Special Agent Panel Member for Interviews said the same.

The Special Agent Panel Member for Interviews further stated that the Supervisory Agent’s friend interviewed well and correctly answered the “zinger” question, which asked what percentage of the state was public land. She sensed that the Supervisory Agent’s friend had been given the questions ahead of time, based on the way he responded. She also said that everyone knew the Supervisory Agent and the applicant he had identified for the position previously had worked together.

The Supervisory Agent said that 10 questions had always been asked during previous interviews. He did not know why only 4 questions were asked or if they were sufficient to consider hiring an applicant. He denied that he provided the questions to his friend for his interview. When interviewed, the Supervisory Agent’s friend said he had not received interview questions beforehand.

Reference Checks for the Supervisory Agent’s Friend

The BLM Subordinate Supervisory Agent said that he had contacted two individuals not listed as references on the resume of the Supervisory Agent’s friend, both of whom had worked with the friend on a Joint Terrorism Task Force (JTTF) assignment. After speaking with them, the BLM Subordinate Supervisory Agent reported to the Supervisory Agent that he had received unfavorable feedback. The Supervisory Agent then contacted a FAM supervisor, who gave his friend a favorable recommendation.

An intelligence analyst who had worked with the Supervisory Agent's friend at JTTF told the BLM Subordinate Supervisory Agent that the Supervisory Agent's friend did not respond to requests for assistance or carry through with assigned tasks. A Federal Bureau of Investigation special agent also assigned to JTTF did not recall being contacted by the BLM Subordinate Supervisory Agent, but had talked with the Supervisory Agent's friend about the Supervisory Agent, whom she had known at JTTF. She also had seen both of them together. She said that they appeared to be good friends.

A FAMS Special Agent reported that the Supervisory Agent had contacted him during his friend's reference check. He gave the Supervisory Agent's friend a favorable recommendation. He also said that the Supervisory Agent's friend was a good employee with great character. He said being a good employee had been required for the Supervisory Agent's friend to be considered for the JTTF assignment.

When interviewed, the Supervisory Agent's friend said that he had known the Supervisory Agent since April or May 2002 and that they had worked together at FAMS. At that time, he and the Supervisory Agent also socialized periodically after business hours and on weekends with a group of friends. This continued until the Supervisory Agent transferred to JTTF. He said that the Supervisory Agent eventually transferred to BLM OLES in 2005 or 2006 and that they had no further contact until the Supervisory Agent's friend transferred to JTTF in 2012.

While with JTTF, the Supervisory Agent's friend reached out to the Supervisory Agent to discuss schools and homes in the area. He later pursued the BLM special agent position as his JTTF assignment neared an end and as his wife chose to remain in the area with their son. The Supervisory Agent contacted him 3 ½ weeks after his BLM interview to inform him that he had been selected for the position.

In a May 5, 2015, email, the BLM Subordinate Supervisory Agent notified the BLM OLES Official that he and the Supervisory Agent had selected the Supervisory Agent's friend for the position. The email reflected that the BLM OLES Official subsequently notified OLES Director Lauro of the selection.

The Supervisory Agent said that the BLM Subordinate Supervisory Agent never told him that his friend should not be hired or that he had concerns about his friend. The BLM Subordinate Supervisory Agent also never told him why his friend was not the best person for the job. He said the BLM Subordinate Supervisory Agent also had every opportunity to tell the BLM OLES Official if he thought hiring his friend was inappropriate.

The BLM Subordinate Supervisory Agent said that although he disagreed with the Supervisory Agent over hiring his friend, he ultimately selected the Supervisory Agent's friend for the position because "that's how life is and... it's his program."

The Supervisory Agent's Attempts to Influence Employee Testimony and Employee Concerns of Retaliation

Several employees informed us that the Supervisory Agent had contacted them prior to and after their interviews with OIG to influence them and to learn interview details. These employees feared the Supervisory Agent would retaliate because of information they had provided.

A BLM State Ranger and a BLM Subordinate Supervisory Agent both stated that the Supervisory Agent contacted them before their interviews with OIG. The BLM State Ranger said that the Supervisory Agent told him that saying "I don't recall" was a valid answer when responding to OIG's questions. The BLM State Ranger said that the Supervisory Agent contacted him after his interview. The Supervisory Agent asked him, "So do I still have a job or did you get me fired?" He said the Supervisory Agent's comments made him uncomfortable and were an attempt to influence his testimony.

The BLM Subordinate Supervisory Agent said that the Supervisory Agent gave him "stuff" to say. For instance, he said that the Supervisory Agent told him to tell OIG investigators that wives of sheriff's department officers had also attended the Burning Man event and eaten at the commissary, and that they had entered the event without paying. He further said that the Supervisory Agent told him to tell OIG about ticket types that could be purchased and that the former BLM Special Agent's wife attended the event.

Following his interview, the Supervisory Agent sent the BLM Subordinate Supervisory Agent a text message concerning a news article about a local sheriff transporting his wife and son by helicopter to the Burning Man event. In his text, the Supervisory Agent wrote, "Email that [article] to [OIG]! . . . Jesus! I look like a choir boy!"

When interviewed, the Supervisory Agent acknowledged that he had conversations with the BLM State Ranger, the former BLM Special Agent, the BLM Subordinate Supervisory Agent, and another BLM State Ranger about OIG's interview, but he denied that he attempted to influence anyone's testimony.

During her final interview, the BLM OLES Contracting Officer said that when she returned from the Burning Man event, the Supervisory Agent informed her that two complaints had been filed with OIG against him. She said the Supervisory Agent blamed her for the complaints and told her that she needed to do damage control. She said he threatened to ruin her career if she did anything against him.

The BLM OLES Contracting Officer also stated that during the return trip from Burning Man, the Supervisory Agent had a copy of a complaint sent to OIG. She said that he accused another BLM State Ranger of filing the complaint, and threatened to retaliate against the BLM Supervisory Law Enforcement Ranger, as well as an additional BLM State Ranger for providing OIG with information. She also stated that the Supervisory Agent later told her, "If you're not on my ship, you're going to sink . . . So I suggest you get on my ship." As a result, she feared the Supervisory Agent and kept her office door locked.

The BLM OLES Budget Analyst said the Supervisory Agent told her that he was going to ruin the BLM Law Enforcement Ranger's career. He bragged about ruining a BLM State Ranger's reputation with BLM State Directors and other managers. She said that shortly after the Supervisory Agent changed positions, he had bragged to her that "he owned" Lauro and the BLM OLES Official and that, as a result, no action could be taken against him.

The BLM OLES Budget Analyst further stated that a few weeks after the Supervisory Agent's removal from his position in the office, he sensed that she no longer wanted to interact with him. She said he had called her into his office. The Supervisory Agent said, "You know, if you don't side with me, grenades are going to go off and you'll get hit."

SUBJECT(S)

1. Supervisory Agent, BLM OLES
2. Salvatore Lauro, Director, BLM OLES

DISPOSITION

We are forwarding our report of investigation to the Assistant Secretary for Land and Minerals Management for any action deemed appropriate.

David Duane Everist Secretary of Mining FOR TWIN CEDAR MINING DISTRICT LOCAL GOVERNMENT WITH HOME RULE AND MINING DISTRICT MAKE THE RULES I AM MEMBER OF THE GALICE MINING DISTRICT PO BOX 1831 JACKSON VILLE OREGON 97530 PHONE #541-531-7273 email twincedarminingdistrict@gmail.com and other email twincedarminingdistrict.llc@gmail.com

This is Invite to come to Miners and Mining DISTRICTS SUMMIT INVATED PRESIDENT Trump AND SECRETARY of USDI ,Secretary OF USDA, Secretary OF DOD,SECRETARY OF USDOJ IS INVITED TO COME TO MINING DISTRICTS SUMMIT UNDER NDAA AS MINERS AND THE DOD NEEDING RARE EARTH,Strategic MINERALS we as mining districts have mining issues to coordinate building reserve INVITE County Commissioners IN SOUTHWEST OREGON AND COUNTY SUPPERVISORS FROM NORTHERN CALF AND ALL COUNTY ATTORNEYS TO BE HELD BY MINING DISTRICTS at JOSEPHINE COUNTY FAIRS GROUNDS FOR GOVERNMENTS TO GOVERNMENTS COORDINATION AND COORDINATE MINERS AND MINING ISSUES LOTS OF ISSUES I KNOW THE SECRET SERVICE TO VET EARYONE SO I NEED BRING TOGETHER EVERY ONE SO LIST OF EVERY ONE CAN TOBE VETED TO BY SECRET SERVICE SIGN BY David Duane Everist Secretary of Mining for TWIN CEDAR MINING DISTRICT LOCAL GOVERNMENT WITH HOME RULE MINING DISTRICTS MAKE THE RULES NOT OPEN TO PUBLIC CLOSE FOR THIS GOVERNMENTS TO GOVERNMENTS COORDINATION ALL SO INVITED IS CONGRESSMAN GREG WALDEN PACIFIC LEGAL FOUNDATION INVITE MMAC AND CONGRESS COMMITTY ON REGULORY REILF, REVIEW ACT AND CONGRESS TO REVIEW MY CASES US VS DAVID DUANE EVERIST SIGN BY David Duane Everist SECRETARY OF MINING FOR TWIN CEDAR MINING DISTRICT LOCAL GOVERNMENT WITH HOME RULE, MINING DISTRICTS MAKE RULES

From: scott@roguemechanical.net
Sent: Thursday, October 27, 2016 3:15 PM
To: BOC-CAO_ADMIN
Subject: National Monument Expansion

I am not able to attend tonight's meeting, but would like to be heard concerning this issue.

I am speaking for the Wolfe Family Cabin, LLC which has owned land and also a cabin in the proposed expansion since 1966. During the past 50 years we have raised 2 generations utilizing the land for hunting, fishing, motor cycle riding, snow mobile riding and hiking. We are very concerned that the government is once again over stepping the public's desire. The BLM has already come in and closed old logging roads in this area by piling up debris and trenching the entire road. This not only creates a hazard for riding motor cycles (which I'm sure is their intent), but makes it difficult to walk in these areas. The environmentalist indicate that this must to be done to save our environment, but what they're really doing is blocking the majority from using our land for a minority that they think they know best. In the pamphlets the question is asked: **Who decides if we get more national monuments and where?** The answer to that question they say is: Simply put - you and me.

National monument designations, like any land protection, are locally-driven from the ground up. **If this is the case then let's put it to a vote by the locals that use the land and not the environmentalist and of government back in DC and the big cities that will never step foot on the land that they want to lock up.**

Thank you.

Scott Wolfe
Rogue Mechanical Insulation, Inc.
541-826-1717
Cell 541-261-3621
www.roguemechanical.net



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Jackson County Board of Commissioners

BoC PH Submission # 67

Offered by: Email: S. Wolfe

Date: 10-27-16 Received by: [Signature]

From: jaygander@aol.com
Sent: Thursday, October 27, 2016 3:11 PM
To: BOC-CAO_ADMIN
Subject: Monument expansion

I live on a rural residential zoned parcel on the west side of Hyatt Lake that I have owned since 1989. I have serious concerns about my land's inclusion within boundaries of the proposed expansion.

Fear that fire suppression may be hampered by Monument rules is number one of my concerns. At age 70 with respiratory problems, I also fear that my back road access which is limited to a 4-wheel drive jeep type vehicle will be adversely affected. Already, there are numerous roads within the existing Monument that have been made access impassable to other than hearty hikers. Interesting that ADA rules don't apply to outdoor recreation on multiple use lands.

As a taxpayer, I am also concerned that 50,000 acres of O&C sustainable lands will be rendered off limits.

Thank you for your concern in looking into this proposal.

Janet K. Dunlap

7477 Hyatt Prairie Rd
Ashland, OR 97520



OREGON HUNTERS ASSOCIATION
Protecting Oregon's Wildlife, Habitat and Hunting Heritage

P.O. Box 1706, Medford, OR 97501 • (541) 772-7313
oha@ccountry.net • oregonhunters.org

October 25, 2016

The Honorable Ron Wyden
United States Senate
221 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable Jeff Merkley
United States Senate
313 Hart Senate Office Building
Washington, D.C. 20510

Dear Senators Wyden and Merkley:

Recently, you have proposed to roughly double the size of the existing Cascade-Siskiyou National Monument with a boundary extended into California. While we greatly value the southern Oregon area, which includes the current Cascade-Siskiyou National Monument, we do not support monument expansion without full and open public participation in a process that allows due time for consideration of all users. The monument is a special place with outstanding natural beauty, opportunities for multiple types of recreation, solitude, research and hunting opportunities. The Oregon Hunters Association represents 10,000 conservation minded sportsmen in 26 chapters statewide supporting multiple uses of public land in this region and all of Oregon. We recognize that good stewardship means protecting and enhancing wildlife habitat, public access and meaningful resource conservation.

OHA remains concerned about large-scale land use change proposals that have been proposed by various groups based within and outside Oregon, such as the Owyhee Canyonlands and Douglas Fir National Monument proposals, as well as the Crater Lake Wilderness designation proposal. OHA has sent comments to both of you as our Oregon Senators, expressing concerns about the scale, lack of pre-planning opportunities in a collaborative and open public process, and requesting you share our interests with federal land management agency leaders regarding similar proposals. After recently expressing our concerns on the above mentioned land use proposals, we are disappointed to see our Senators following suit by directly making this proposal under the 1906 Antiquities Act.

OHA is very concerned about your monument expansion proposal to add about 50,000 acres of federal lands to the monument surrounding the Soda Mountain Wilderness area. There is a great need to actively manage our federal lands in southwest Oregon to prevent catastrophic wildfires, provide for resource management and wildlife habitat. The monument expansion area you have proposed is heavily used by hunters and other recreationists with well developed current recreation uses. The existing monument is conducting a major travel management planning process that may result in a drastic reduction in motorized public and management access; an expansion of the area will result in a similar process for the additional proposed areas. While OHA is not opposed to reducing road densities in general, we believe there should be more consideration to multiple use management. Furthermore, we fail to understand what imminent "threats" require such a "fast track" approach to expansion.

Given the late nature of this proposal, we believe it is premature to consider designating 50,000 additional acres to the monument at this time. OHA believes that it is important to take the time for a public process that keeps the area available for the traditions of hunting, fishing and other outdoor adventures. We look forward to developing a productive dialogue with you and local stakeholders on meaningful ways we can work together to ensure that our outdoor traditions and hunting heritage are fully conserved for future generations of hunters, anglers, and other outdoor enthusiasts.

We request that you withdraw this proposed expansion until a thorough review and open transparent public process can be completed on the merits of this expansion.

Please reach out to OHA and other outdoor sports organizations in the development of any further landscape level proposals that affect Oregon's public land uses as we have previously requested. OHA was very late in responding to your proposal and had minimal representation in the October 14, 2016, Ashland public meeting as the proposal came late in the year and in our opinion, was not well publicized with a reasonable timeline prior to the meeting.

Sincerely,



Mike Ayers, President
Oregon Hunters Association

CC:

Sally Jewell, Secretary of the Interior
Neil Kornze, Director, Bureau of Land Management
Congressman Greg Walden

GARY J. PETERSEN

POB 949 Phoenix, OR 97535 · Tel: 541-772-3025 · Email: arbolman9@gmail.com

26 October 2016

Dear Jackson County Commissioners,

I am responding to your request for input on the proposed National Monument expansion that you and Senator Wyden have set forth.

As a retired Federal employee who designed and/or implemented more than 200 natural vegetation management projects, I am troubled by the proposed expansion of the Cascade-Siskiyou National Monument and the limitations that expansion imposes on the resource, the landscape, and future management activities within it.

Monument designation severely restricts management options to address existing conditions. The following biological realities and problems already exist in the Monument— insect and pathogen impact on stands that are currently overstocked and stressed, fuel loading that will only increase with time, and proliferation of “exotic” plant species.

The current conifer component of the vegetation base is seriously affected by root pathogen diseases that will only intensify over time as climate change stresses this vegetation. Root diseases not only kill the above-ground vegetation, but also add to the already high fuel loading that occurs in the affected stands when dead trees fall to the ground. Existing insect and other disease issues also have the same effect on the site.

As to “protecting Oregon’s pristine natural resources”, the current vegetation has been heavily impacted by past management practices. As an example, there are at least 5 non-native introduced grass species currently thriving in the proposed Monument expansion area. Other introduced species—like the noxious yellow star thistle—are present as well.

Do supporters really believe that expanding the Monument can somehow lock up and preserve existing conditions and vegetation? If so, they are not basing this proposal on science. Either they delude themselves with “magical thinking” or they are using this tactic to convince policy makers and the public with such tactics.

While the original Cascade-Siskiyou National Monument designation may have had merit, I find the current push to expand the boundaries of the Monument to be misguided. If implemented, serious negative environmental consequences are inevitable because Nature neither recognizes nor respects man-made boundaries. Nature will remove increasingly stressed vegetation via her own version of a clearcut—massive forest fires followed by erosion and degradation of wildlife habitat—situations that can take a century to recover in this part of the country.

If the National Monument expansion is approved, resource professionals, politicians and the public will all have failed in our stewardship role for these lands.

Sincerely,

Gary J. Petersen, MSF
Ret. Silviculturist USFS

Jackson County Board of Commissioners

BoC PH Submission # 70

Offered by: G. Petersen

Date: 10/27/16 Received by: JA



October 14, 2016

The Honorable Jeff Merkley
United States Senate
313 Hart Senate Office Building
Washington, D.C. 20510

RE: Cascade-Siskiyou National Monument Expansion

Dear Senator Merkley,

We are truly blessed to live in an area with an abundance of natural beauty all around us. This includes the numerous natural resources available everywhere you look. We are not only fortunate to enjoy this but our economic survival is dependent on the ability to wisely use these natural resources.

The "normal" now seems to be big government over-regulating rural communities whether it is timber, wolves, mining, spotted owl, sage grouse, control of our abundant water resource and the list just keeps getting longer and longer. There already exist many layers of Government regulations to "protect" Public Land that is "managed" by government.

As a citizen and as a Klamath County Commissioner, I have consistently opposed this ever increasing over-reach from our State and Federal Government. I understand this is still a "proposal" but very recently the Federal Government has been very active in their attempts to create new and enlarge areas already designated as a Monument. The 2.1 million acre Owyhee Canyonlands, the 500,000-acre Crater Lake Wilderness Area and now the Cascade-Siskiyou National Monument expansion, are just some of the recent attempts to advance this gigantic over-reach in our area.

If this proposal moves forward, the economic impact will be devastating for Klamath County and our neighbors, Jackson and Siskiyou County. The negative end result could be reducing local staff and physical footprint or more likely completely shutting down the entire Klamath Falls office. The annual budget for the local BLM office exceeds \$3 million. The loss of nearly 60 well-paying jobs, and their families, along with the negative effects to all the associated local providers such as leased facilities, suppliers of goods and services and all the services required to

305 Main Street, Klamath Falls, Oregon 97601
Phone: (541) 883-5100 | Fax: (541) 883-5163 | Email: bocc@klamath

Jackson County Board of Commissioners

BoC PH Submission # 71

Offered by: T. Mallams

Date: 10/27/16 Received by:

sustain the current workforce, would be devastating. The total direct and indirect negative financial impact to Klamath County would easily exceed \$5 million annually.

There are approximately 53,100 acres in this specific proposal. O&C Lands make up approximately 50,900 acres. Of the 53,100 acres, approximately 19,000 acres are within Klamath County. Even looking at this as a proposal, goes against the very spirit of the O&C Act.

There would also be a major loss of grazing permits, which support our local agriculture base. The loss of timber sales, approximately 6 million board feet per year, along with the loss of timber revenues to all the O&C Counties and all the associated family wage jobs adds yet another layer of economic devastation for all affected Counties.

Reasonable access to “public land”, is becoming a thing of the past, especially for those with a physical handicap. And in some areas of public land, who among us can actually decipher the bag full of maps required to even attempt to know you if you are violating the law, by being on a “closed” road.

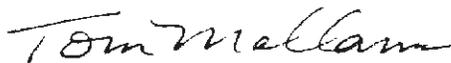
A simple equation may vividly show the environmental devastation as follows: less accessible, usable timber land=fewer staff=less if any timber sales=little if any forest management=many catastrophic wild fires=death of residents, death of fire fighters, death of wildlife and an ever increasing “scorched” landscape left behind.

This entire process of continually locking up more and more land each and every year, is making an excellent argument to seriously consider turning over management of these “**public lands**” to the local jurisdictions.

It may sound nice to have millions upon millions of acres set aside for visitors to come and view from a distance, but **WE** live here. This is often times our backyard. This is where many of our citizens make their living, go hunting and fishing, cut firewood and just plain enjoy the pure beauty of our local surroundings.

These “proposals” needs to die, and the quicker the better.

Sincerely,



Tom Mallams
Commissioner

DOUG WHITSETT

State Senator

DISTRICT 28

KLAMATH, LAKE, CROOK & PORTIONS
OF JACKSON & DESCHUTES COUNTIES

900 Court St NE S-311
Salem, OR 97301
503.986.1728



GAIL WHITSETT

State Representative

DISTRICT 56

KLAMATH & LAKE COUNTIES

900 Court St NE H-474
Salem, OR 97301
503.986.1956

Monday, October 24, 2016

U.S. Senator Ron Wyden
221 Dirksen Senate Office Building
Washington, D.C. 20510

U.S. Senator Jeff Merkley
313 Hart Senate Office Building
Washington D.C. 20510

Senators Wyden and Merkley,

We are writing this letter in opposition to the proposed expansion of the Cascade-Siskiyou National Monument into Klamath County.

As you know, Oregon's rural counties continue to struggle funding basic services. This is due, in part, to the large amounts of federal land within their boundaries that are exempt from the kind of taxation that funds local government functions.

The proposed expansion would also serve to remove private lands that are currently used for grazing cattle and ranching. Those are two large industries that are critical to this region and the state.

These areas are also prone to extreme risk from catastrophic wildfire due to the non-management of adjacent federal lands. Although Oregon's rural lands were fortunate enough to have had a relatively mild fire season last summer, that was not the case in our two previous years. We feel that given those circumstances, it would be extremely unadvisable to take more private lands off of the tax rolls to put them under additional "protections" that will complicate adequate fire prevention measures.

Feel free to contact either of our offices if you need any additional information.

Sincerely,

Senator Doug Whitsett
Senate District 28

A handwritten signature in cursive script that reads "Gail Whitsett".

Representative Gail Whitsett
House District 56

Untitled

To Jackson county Comisioners,

I am writing in in opposition of the expansion of CSNM.

Congress has set aside thie land for special purposes, and it is is without authoridy that the President can reserve this land of 53,100 acres for any other purpose. which makes this an ILLIGAL act.

this land is classified as Timber Lands for permanant Forrest production the president lacks authority under the Antiquities act to include the O and C lands in a national monument.

further by closing up this land ,this restsricts the ability for handicap people access as well leave the roads and let the people use them as it now.

Please remember this land is for sustained yield timber production. again this is a illigal act what is trying to be done here.

thank you for the opportunity of comments.

sincerely

11/2/2016
registered voter.

NAOMI POWELL
JAMES POWELL

Untitled

To Jackson county Comisioners,

I am writing in in opposition of the expansion of CSNM.

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Please remember this land is for sustained yield timber production. again this is a illigal act what is trying to be done here.

thank you for the opportunity of comments.

sincerely

JM + Fran
registered voters

11/27/16

Twin Cedar Mining District Local Government with Home Rule and Mining District make the rules
David D Everist Secretary of Mining
PO BOX 1831 JACKSON VILLE
OREGON 97530 PHONE 541-531-7273 email Twincedarminingdistrict@gmail.com

Address to all the parties NOTICE from Twin Cedar Mining District
recognize as local government with home rule and mining districts make rules and government to
government coordination so I demand coordination and or coordinate appointing primary trustee to the
grant of 1872 1870 and 1866 trust wick these acts our by matter of law our covenants of grant USC 30
SEC 22 ETSEQ ETAL ATAL and the trust.subject matter is grant flows to grantee.Trustee one of
many duties is to defend the grant. AND DEMAND AUDIT OF ACCOUNTABLITY NOTICE TO
CES and DISIST ON SISQ MONUMENT THIS ORDER TO SECRETARY OF USDI BLM ,
DEPUTY SECRETARY OF USDI BLM ,SENITOR MERCKLEY AND SENITOR WYDEN TO
REMINDE YOU SECRETARY OF USDI BLM ,YOU DEPUTY USDI BLM OF YOU DUTIES TO
THE GRANTEE BY ALL YOU THE TRUSTEE AND PARTIES IN SECOND TRUST AND
SUBJECT MATTER IS SECOND TRUST RESTATED ON ALL OF THE PARTIES TO IMPOSE ON
THE TRUSTESHIP OF FAURD

ORDERS sign by David D Everist Secretary of Mining for Twin Cedar Mining District with HOME
RULE Mining Districts make the RULES

David D Everist
10-14-2016

Jackson County Board of Commissioners

BoC PH Submission # 74

Offered by: David Everist

Date: 10/27/16 Received by: LD

Twin Cedar Mining District Local Government With Home Rule and Mining District Make Rules
Secretary of Mining David D Everist
PO BOX 1831 JACKSON VILLE OREGON
97530 PHONE @# 541-531-7273
email Twincedarminingdistrict@gmail.com

Date 10-14-2016

NOTICE TO USDI BLM, USDA USFS, SENATOR MERCKLEY AND SENATOR WYDEN AND ALL OF THE PARTIES THIS NOTICE FOR GOVERNMENT TO GOVERNMENT COORDINATION AND OR COORDATE TO STOP THE MONUMENT OR LIMIT TO 160 ACRES NO MORE SEC OR 640 ACRES AS LAW PROCRIBT IN MONUMENT ACT SO I DEMAND COORDINATION ON MINING ISSUE LIKE APPOINTING THE PRIMARY TRUST TO GRANT OF 1872 1870 AND 1866 THESE ACTS OUR COVENANTS OF THE GRANT AND TRUST USC 30 SEC 22 ETSEQ ATAL ETAL {UNDER [FLMPA] FEDERAL LAND MANGEMENT POLICY ACT AND TO COORDINATE SIZE AND SCOPE OF RESTRICTION PLACE ON THE MONUMENT TOBE RESTRICTED BY MINING GRANT AND ALL MINERALS LANDS TO BE EXSEMPT FROM MONUMENT THIS TO COORDINATION MAKE MONUMENT AS SMALL AS POSSEBLE AND TO LIMIT MONUMENT SIZE AND SCOPE LIMIT TO REAL HISTORGLE PLACE }

SIGN BY Secretary of Mining David D Everist

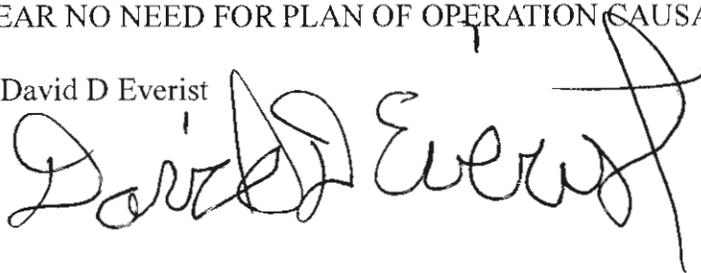
A handwritten signature in black ink, appearing to read "David D Everist". The signature is written in a cursive, somewhat stylized script.

ATT CC to INSPECTOR
General US ATTORNEY

David D Everist 9-12-2016
PO BOX 1831
JACKSON VILLE
OREGON 97530
PHONE 541-531-7273
email Twincedarminingdistrict@gmail.com

NOTICE TOWIT AUSA MR FONG I NEED YOU PASS LONG MY NOTICES TRUST
RESTRISTRY PDF ON TO YOUR BOSS US ATTORNEY AND AUSA MR EVANS I LIKE TO
THANK YOU AUSA MR FONG AND AUSA MR EVANS FOR VALIDATING MY CLAIM USDI
BLM INSPECTOR GENERAL OFFICE AND USDI BLM INSPECTOR GENERAL SUMMER
CRAWLEY INVITED ME TO FILE TAKING CASE AS THERE IS LACK OF PRIMARY
TRUSTEE TO THE GRANT YOU AUSA MR FONG AND AUSA MR EVANS ACTING FOR US
GOVERNMENT YOU WHERE ACTING AS PRIMARY TRUSTEE AND VALIDATED MY CLAIM
WHEN I GET PRIMARY TRUSTEE APPOINTED TO THE GRANT AND AUDIT OF
ACCOUNTABLEY THIS IS WHY I BEEN INVITED TOWIT FILE TAKING CASE BASE ON YOU
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Minerals ADMISTRATOR ROBERT SHOEMAKER TO PUT IN WRITING FOR 11 MOUTH HES
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TO COORDINATE OVER MY CLAIM SO COULD MINE MY CLAIM AND NOTHING IN
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CFR 3809.10 (a) less 1000 ton remove for testing is causal use no need to notify USDI BLM USDA
USFS AND THAT PER CLAIM PER YEAR NO NEED FOR PLAN OF OPERATION CAUSAL USE

SIGN BY LOCATOR AND GRANTEE David D Everist



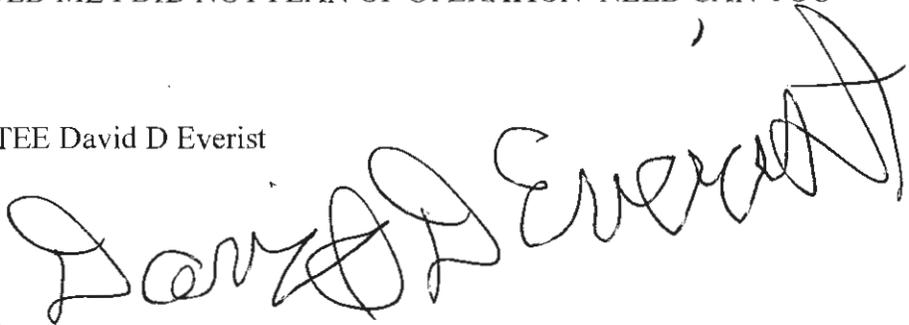
David D Everist 9-12-2016 USDI BLM STATE LANDS TRUST RESTRISTER #160574
PO BOX 1831 JACKSON VILLE 97530 PHONE #541-531-7273email
Twincedarminingdistrict@gmail.com NOTICE OF PRIMARY TRUSTEE DUTIES OF TRUST TO
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APPOINT PRIMARY TRUSTEE ME AND MY PARTNERS AND CO OWNERS OF Twin Cedar
Mining Claim TRUST RESTRISTERY #160574 PRIMARY TRUSTEE IS TO DEFEND THE
GRANT. TOWIT THE GRANT FLOWS TO THE GRANTEE. David D Everist Warren Marcus Davis
Larry and Jeanie Myers we as partners and co owners our ALSO known as Grantee. DUTIES FOR
GENERALS TRUSTEE CHEF OF MINERALS AND MINING CHISTPHER B DEWITT USDI
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OF GRANT OF 1872 1870 AND 1866 ALSO KNOWN AS GENERAL MINING ACTS THE ACTS
PAST BY CONGRESS IN TO LAW TOWIT AS COVENANTS OF THE GRANT AND CONGRESS
CREATED TRUST AND TRUST RESTRISTERY # LOCATOR TO FILE WITH USDI BLM STATE
LANDS OFFICE AND FILE WITH YOUR LOCAL COUNTY CC CONGRESSMAN GREG
WALDWN USDI BLM DIANE PERRY USDA USFS RANGER DONNA MICKLEY USDA USFS
MINERALS ADMINSTRATOR ROBERT SHOEMAKER AUSA MR FONG ASUS MR EVANS US
ATTORNEY PERSON IN CHARGE DUTIES OF INSPECTOR GENERAL OFFICE IS OVER STIE
OVER CHEF OF MINERALS AND MINING CHISTPHER B DEWITT TO INSURE DUTIES OF
THE TRUST TO FOLLOW COVERNANTS OF GRANT TO PRIMARY TRUSTEE, GENERAL
TRUSTEE IS TO PREFORM HIS OR HERS DUTIES OF TRUST AS TRUSTEE REQUIRE TO DO
SO. AS I AM David D Everist AND MY PARTNERS demand primary trustee BE APPOINT to the
GRANT PARTIE HAVE 60 DAYS 9-12-2016 TO APPOINT PRIMARY TRUSTEE TO THE GRANT
AND CONDUCT AUDIT OF ACCOUNTABLY Twin Cedar Mining Claim USDI BLM STATE
LANDS TRUST RESTRISTERY#160574 SIGN BY LOCATOR AND GRANTEE David D Everist



Claim name Twin Cedar USDI BLM STATE LAND RESTRICTION # 160574 CLAIM 9-15 -2016
David D Everist
PO BOX 1831 JACKSONVILLE
OREGON 97530 PHONE # 541-531-7273
email Twincedarminingdistrict@gmail.com

NOTICE to MINERALS ADMINISTRATOR ROBERT SHOEMAKER AND RANGER DONNA MICKLEY NOTICE THAT 36 CFR SEC 261 (b) IS EXCLUDED FOR PLAN OPERATION DO TO THE FACT INCESADENTLE TO MINING MINERALS THE GRANT IS EXCLUDED FROM US FOREST SERVICE IN 1905 TRANSFER ACT EXCLUDED FROM MANGING THE GRANT 1872 1870 AND 1866 ACTS IN TO LAW AS GRANT 1946 AND 1947 CONGRESS CREATED BLM STATE LANDS OFFICE AND MINERALS RESTRICTION TRUST # TO MANGE THE MINERALS ACTS KNOWN AS GENERAL MINING ACTS 30 USC SEC 22 ETSEQ AS THE COVENANTS OF TRUST CC USDI BLM STATE LANDS CHEF OF MINERLAS AND MINING CHRISTOPHER B DEWITT IS GENERAL TRUST CC USDI BLM INSPECT GENERAL PERSON IN CHARGE CC USDI BLM INSPECTOR GENERAL SUMMER CRAWLEY CC USDI BLM DIANA PERRY CC AUSA MR FONG CC AUSA MR EVANS CC US ATTORNEY AND INSPECTOR GENERAL US ATTORNEY NOTICE PARTIES OUR ACTING FOR US GOVERNMENT AS PRIMARY TRUSTEE THE PRIMARY TRUSTEE TO DUTIES OF GRANT COVENANTS OF GRANT THE TRUSTEE IS REQUIRE OBLIGATED OBLIGATORY ON TRUSTEE TO PREFORM TRUSTEE DUTIES TO THE TRUST AND FOLLOW THE TRUST AND GRANT THE GRANT FLOWS TO THE GRANT I DAVID D EVERIST ASK MINERALS AMINSTRATOR ROBERT SHOEMAKER THIM IF COUND GET IN WRITE IF I NEED PLAN OF OPERATION OR NOT AS YOU TOLD ME I DID NOT PLAN OF OPERATION NEED CAN YOU PUT THAT IN WRITING

SIGN BY LOCATOR AND GRANTEE David D Everist



US CFR 36 SEC 261.1(b) must follow USC 30 SEC 22 ETSEQ IETA @AL US CFR 43 SEC 3809.10 no need to have five no need for PLAN OF OPERATION LESS 1000 TONS CASUAL USE

Twin Cedar Mining Claim USDI BLM STATE LANDS TRUST REGISTRY #160574
David D Everist Date 9-19-2016
PO BOX 1831
JACKSON VILLE
OREGON 97530
PHONE #541-531-7273
email address is Twincedarminingdistrict@gmail.com

NOTICE TO CONGRESSMAN GREG WALDEN AND TO USDI BLM STATE LANDS OFFICE AND CHEF OF MINERALS AND MINING CHRISTOPHER B DEWITT GENERAL TRUSTEE DUTIES IS TO PUT IN TO BUDGET TO FULLY FUND THIS OFFICE TRUSTEE SO PRIMARY TRUSTEE NEEDS FUNDING TO PERFORM TRUSTEE DUTIES AS REQUIRED BY THE GRANT OF 1872 1870 AND 1866 ACTS IN TO LAW AS THE COVENANTS OF TRUST AS REQUIRED BY GRANT THIS MUST BE FUNDED SO THE PRIMARY TRUSTEE CAN BE APPOINTED TO THIS OFFICE OF TRUST THERE OUR MANY DUTIES TO PERFORM AS PRIMARY TRUSTEE THIS TRUST NEEDS ACTIVE PRIMARY TRUSTEE TO MANAGE THE GRANTS REQUIREMENTS CC USDI BLM INSPECTOR GENERAL PERSON IN CHARGE AND USDI BLM INSPECTOR GENERAL SUMNER CRAWLEY USDI BLM DIANA PERRY USDA USFS RANGER DONNA MICKLEY USDA USFS MINERALS ADMINISTRATOR ROBERT SHOEMAKER INSPECTOR GENERAL PERSON IN CHARGE US ATTORNEY AND US ATTORNEY PERSON IN CHARGE AUSA MR FONG AUSA MR EVANS MAKE NOTE GRANT FLOWS TO THE GRANTEE THE PRIMARY TRUSTEE IS REQUIRED TO DEFEND THE GRANT AS DUTIES THEREOF AND OR TO THE TRUST TO FOLLOW THE COVENANTS OF GRANT USC 30 SEC 22 ET SEQ ETAL

SIGN BY LOCATOR AND GRANTEE David D Everist



US CFR 36 sec 261.1 (b) must follow
ETAL USC 30 sec 22 ET SEQ
AL US CFR 43 sec 3809.10
LESS 1000 TONS need to note file
no need for PLAN OF OPERATION
L9SUAL USE

Twin Cedar Mining Claim 9-20-2016 (USDI BLM STATE LANDS TRUST SECERAL #160574)
David D Everist
PO BOX 1831
JACKSON VILLE
OREGON 97530
PHONE #541-531-7273
email address is Twincedarminingdistrict@gmail.com

NOTICE TO DOD PERSON IN CHARGE DOD INSPECTOR GENERAL PERSON IN CHARGE
US DARPA PERSON IN CHARGE USDI BLM STATE LANDS GENERAL TRUSTEE CHEF OF
MINERALS AND MINING CHIRSTOPHER B DEWITT UNDER THE COVENANTS OF THE
GRANT USC 30 SEC 1801 THOUGH 1811 CONGRESS PASS GRANT IN 1-2-2006 TO THE
MINING CLAIMANT AND MINER NATIONAL DEFENSE AND NATIONAL SECURITY
PRIORITY OF THE HIGHEST PRIORITY AS PROTECTION AND CLEARANTS FOR NATIONAL
SECURITY AND NATIONAL DEFENSE THIS ACT BY CONGRESS IS DUTIES OF THE
PRIMARY TRUSTEE DUTIE BY DOD PERSON IN CHARGE DOD INSPECTOR GENERALS
TRUSTEE PERSON IN CHARGE ND USDI BLM GENERAL TRUSTEE CHIRSTOPHER B
DEWITT CHEF OF MINERALS AND MINING CC USDI BLM INSPECTOR GENERAL CC USDI
BLM INSECTOR GENERAL SUMMER CRAWLEY INSPECTOR GENERALS PERSON IN
CHARGE CC US ATTOENEY PERSON IN CHARGE CC US INSPECTOR GENERAL US
ATTORNEY CC AUSA MR FONG CC AUSA MR EVANS CC USDI BLM DIANE PERRY CC
USDA USFS RANGER DONNA MICKLEY CC USDA USFS MINERALS ADDMINSTRATOR
ROBERT SHOEMAKER THE GRANT FLOWS TO GRANTEE

CC Congressman Geeg Walden

REFER BLACK'S LAW 5th ED CONSTRUCTIVE TRUST SECOND TRUST RESTATED IMPOSE
ON PRIMARY TRUSTEE AND OR GENERAL TRUSTEE REFER TO CONSTRUCTIVE
TRUSTEE REFER TO FAILURE TO PREFORM DUTIES OF TRUST,AND OR BREACH OF
DUTIES OF GRANT,AND OR BREACH OF DUTIES OF TRUST BY THE PRIMARY TRUSTEE
AND OR GENERAL TRUSTEE

SIGN BY LOCATOR, GRATEE ,MINING CLAIMANT AND MINER David D. Everist

David D Everist

Twin Cedar Mining District Local Government
Secretary of Mining
David Everist
PO BOX 1831
JACKSON VILLE
97530 OREGON
541-531-7273

NOTICE OF MEMORANDUM OF UNDERSTANDING BY JOSEPHINE COUNTY COMMISSIONERS STATE AGENT AND JOSEPHINE COUNTY ATTORNEY MR HICKS USDI BLM STATE LANDS GENERAL TRUSTEE CHRISTOPHER B DEWITT USDI BLM INSPECTOR GENERAL PERSON IN CHARGE USDI BLM INSPECTOR GENERAL SUMMER CRAWLEY USDA USFS RANGER DONNA MICKLEY USDA USFS MINERALS ADMINISTRATOR ROBERT SHOEMAKER US ATTORNEY PERSON IN CHARGE US INSPECTOR GENERAL US ATTORNEY PERSON IN CHARGE AUSA MR FONG AUSA MR EVANS JOSEPHINE COUNTY ATTORNEY AND JOSEPHINE COUNTY RULING RECKNISE BY JOSEPHINE ATTORNEY MR HICKS AND COUNTY COMMISSIONERS AS COUNTY IN APPROVE CONSENT CALENDAR TWIN CEDAR MINING DISTRICT IS LOCAL GOVERNMENT AS EQUAL GOOGLE TWIN CEDAR MINING DISTRICT APPROVE BY JOSEPHINE CONSENT CALENDAR IN 2011 OR 2012 OR 2013 in recorders of JOSEPHINE COUNTY COMMISSIONERS WHERE RECORDERS OUR IN CONSENT CALENDAR SO COUNTY ATTORNEY PULL UP RECORDERS AD WRITE MEMORANDUM OF UNDERSTANDING STATING Twin Cedar Mining District is local government as county commissioners our state agents Mining Districts STAND AS EQUALS TO ALL GOVERNMENTS WITH HOME RULE AND MINING DISTRICTS MAKE THE RULES

SIGN BY SECRETARY OF MINING David D Everist for Twin Cedar Mining District local government

David D Everist
7-28-2010

Twin Cedar Mining Claim USDI BLM STATE LANDS TRUST SECERAL #160574
Twin Cedar Mining District Local Government
Twin Cedar Mining District LLC
David D Everist
PO BOX 1831
JACKSON VILLE
OREGON 97530
PHONE #541-531-7273
email Twincedarminingdistrict@gmail.com

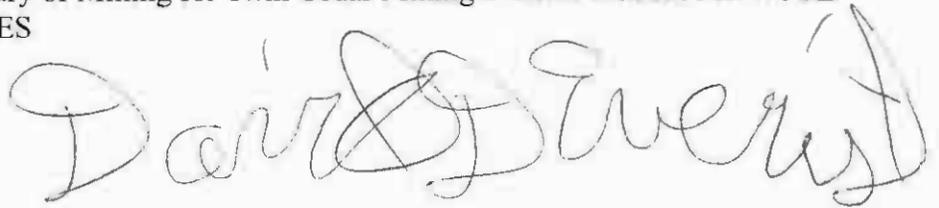
I HAVE PREPOSEAL TO DARPA, DOD TO CREAT DATA DASE FOR RARE EARTH MINERALS DEPOSITS AND 1872 1870 1866 ACTS PASS BY CONGRESS IN TO LAW AS THE COVENANTS OF THE GRANT THIS APPLY TO RARE EARTH AND ALL KINDS OF VALUABLE MINERALS USE IN NATIONAL DEFENSE AND NATIONAL SECURITY THIS DATA BASE WOULD BE KEPT BY GALICE MINING DISTRICT AND TWIN CEDAR MINING DISTRICT LOCAL GOVERNMENT AS WHERE MINERS CAN DEVELOPE MINERALS DEPOSITS I HAVE ANOTHER PREPOSEAL THAT GRANT TWIN CEDAR MINING DISTRICT LLC MINING MINERALS METALS MEDIA INVESTMENT EXCHANE CHARTER FOR MINERALS RESERVE EXCHANE TO SELL THE MINERALS FOR THE USE NATIONAL DEFENSE AND NATION SECURITY CC TO USDI BLM STATE LANDS GENERAL TRUSTEE CHIRSTOPHER B DEWITT USDI BLM USDI BLM DIANE PERRY USDA BLM RANGER DONNA MICKLEY CC USDA USFS MINERAL S ADMINSTRATOR ROBERT SHOEMAKER CC CC CONGRESSMAN GREG WALDEN

Sign by locator Grantee mining
Claimant miner David D Everist
David D Everist

Twin Cedar Mining District Local Government with Home Rule and Mining District make the rules
David D Everist Secretary of Mining
PO BOX 1831 JACKSON VILLE
OREGON 97530 PHONE 541-531-7273 email Twincedarminingdistrict@gmail.com

Address to all the parties NOTICE OF EXHIBITS OF EVIDENCE OF Twin Cedar Mining District recognize as local government with home rule and mining districts make rules and government to government coordination so I demand coordination and or coordinate appointing primary trustee to the grant of 1872 1870 and 1866 trust wick these acts our by matter of law our covenants of grant and the trust.subject matter is grant flows to grantee.Trustee one of many duties is to defend the grant.

sign by David D Everist Secretary of Mining for Twin Cedar Mining District with HOME RULE
Mining Districts make the RULES

A handwritten signature in cursive script that reads "David D Everist". The signature is written in dark ink and is positioned above the date.

10-4-2015

WEEKLY BUSINESS SESSION June 19, 2013, 9:00 a.m.

Anne G. Basker Auditorium
604 N.W. Sixth Street, Grants Pass, OR 97526

Present: Simon G. Hare, Chair; Cheryl Walker, Vice-Chair; and Keith Heck, Commissioner; Kim Kashuba, Recorder

These are meeting minutes only. Only text enclosed in quotation marks reports a speaker's exact words. For complete contents of the proceeding, please refer to the audio recording.

Pursuant to notice through the media and in conformance with the Public Meeting Law, Simon Hare, Chair called the meeting to order at 9:00 a.m. Items discussed were as follows:

RECESS AS THE BOARD OF COUNTY COMMISSIONERS AND CONVENING AS THE GOVERNING BODY OF THE REDWOOD SANITARY SEWER SERVICE DISTRICT

Assistant City Manager David Reeves explained the history of this Service District, stating that for the last 15 years the City has been providing the services the District was formed to provide; therefore the District did nothing but add a burdensome layer of bureaucracy. Mr. Reeves advised that recent law provided for the dissolution of districts which no longer served their purpose, and that customers would notice no change. Commissioner Walker confirmed that dissolving the District would save approximately \$20,000 per year in administrative costs. Commissioner Hare advised that the Board has worked with County Legal Counsel for some time getting this process in order. Commissioner Heck confirmed that current customers could expect no increase in costs associated with this action.

Commissioner Hare opened Public Comment at 9:06 a.m.

Dale Matthews, Grants Pass, discussed his perception of what future customers of the service would pay.

Hearing no further public comment Commissioner Hare closed Public Comment at 9:13 a.m.

1. ADMINISTRATIVE ACTIONS IN CONSIDERATION OF:

a. Approval of Resolution 2013-035: In the Matter of Dissolution of the Redwood Sanitary Sewer Service District; Findings of Fact; Adoption of a Plan of Dissolution and Liquidation of Assets

Commissioner Hare contended that the number assigned to this Resolution was not appropriate, as it represented the 35th resolution passed by the Josephine County Board of Commissioners, and this was a resolution being passed by the Governing Body of the Redwood Sanitary Sewer Service District. He therefore suggested the number be changed to 2013-001. The Board agreed.

Commissioner Heck made a motion to approve Resolution 2013-001 (RSSSD): In the Matter of Dissolution of the Redwood Sanitary Sewer Service District; Findings of Fact; Adoption of a Plan of Dissolution and Liquidation of Assets, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes. One original Resolution (as modified) signed and retained for recording.

RECESS AS THE GOVERNING BODY OF THE REDWOOD SANITARY SEWER SERVICE DISTRICT AND RECONVENING AS THE BOARD OF COUNTY COMMISSIONERS

2. PROCLAMATIONS:

a. In the Matter of Proclaiming the Week of June 23,-29,2013 as Serve GP Week

Commissioner Heck read the Proclamation and expressed pleasure at the community gestures performed by this organization. Pastor Duane Stark accepted the Proclamation on behalf of Serve GP, a large scale community service week initiated by Church of the Valley and the faith community four years ago. Mr. Stark claimed that by the end of the June 29, volunteers will have saved the City and County over \$1 Million in resources and manpower, with the primary goal of demonstrating the love of Christ in tangible ways with no strings attached. He thanked the Board for the opportunity to serve and listed contact and event information for Serve GP.

3. PRESENTATIONS: Government Finance Officers Association: Distinguished Budget Presentation Award

Rosemary Padgett, CFO, explained that Chris Carlson, Budget Analyst, took the initiative to apply for this award, and the receipt of it is a significant achievement for an entity. She described the observed guidelines necessary to qualify for the award and presented the Award to Ms. Carlson. Arthur O'Hare, Controller, commended Chris for her initiative in pursuing this award and her ability to pull documentation together well enough that the County received the award the first year they applied for it.

4. PUBLIC HEARING: Fiscal Year 2013-2014: Josephine County Budget

Rosemary Padgett, CFO, advised that Oregon Budget Law allowed adjustments to the budget after Budget Committee approval by no more than 10 percent by Fund, and that the deadline to adopt the Budget was June 30 in order for County

Departments to open for business on July 1. She briefly went over the budget and stated that unless the Board had further questions, the matter was ready to be open for Public Hearing. Commissioner Hare clarified figures in Resolution 2013-037 and described the Budget adoption process.

Commissioner Hare opened the Public Hearing at 9:28 AM

Dale Matthews, Grants Pass, alleged, based on his interpretation of staff reactions at a prior meeting that the Sheriff's Office had turned down offers of additional funding.

Sheriff Gil Gilbertson responded by stating that his office has followed protocol regarding obtaining any additional funding and urged the Board to grant his request for two more deputies, as they were down to just one and he is greatly concerned with officer safety. His other primary concern was fulfilling the state mandate of providing court security and he claimed that with the granting of his request his office would be able to remain functional for this fiscal year, albeit barely. He further advised that the resources allocated to the County by the Oregon State Police (OSP) had a good chance of being pulled and reallocated to neighboring counties.

Commissioner Walker asked if it had been confirmed that the four OSP members allocated to Josephine County were going to be reassigned somewhere else. Sheriff Gilbertson responded that nothing was concrete yet. Commissioner Heck asked for confirmation that deputies were actually serving as crisis response rather than traditional patrol, which Sheriff Gilbertson confirmed, stating that currently there was no pro-active law enforcement being performed by the County due to lack of resources. Further discussion ensued regarding state mandated court security and how the Sheriff intended to meet that obligation.

Commissioner Hare interjected by suggesting further discussions on ironing out details of the Sheriff's Office budget could happen at a later date. Commissioner Walker asked for clarification of the Sheriff's request for additional personnel. Jonathan Brock, Administrative Budget Analysis for the Sheriff's Office, advised that their original request asked for one (1) FTE and they were now requesting an additional two (2) half-time FTE's.

Commissioner Heck asked for confirmation that the Board intended to take the recommendations of LPSCC as how to allocate the \$241,910. After further discussion of the County's Public Safety issues, Commissioner Hare returned to taking public comments.

Mark Seligman, Selma, suggested court security was the state's responsibility and asked about the disposition of the funds supposedly refused by the Sheriff.

Sandi Cassanelli, Merlin, had questions about the figures listed in the budget pertaining to PERS.

Charles Sampson, Grants Pass, asked about the defeated Public Safety levy and Commissioner salaries.

Kirk Brust, State Trial Court Administrator, clarified that court security services were a County Sheriff responsibility by statute and claimed that the state did not have funds available to cover this critical need.

Larry Ford, Grants Pass, asked what the County would do with any additional funding received from the Federal Government.

Hearing no further public comment, Commissioner Hare closed the Public Hearing at 9:50 a.m.

The Board spent some time clarifying facts in response to public comments and requests. Rosemary Padgett, CFO, stated for the record that elected officials' salaries were set by the Budget Committee according to Oregon Statute.

- a. **Resolution 2013-036: In the Matter of Adoption of the Budget for the Fiscal Year 2013-14 and Making Appropriations.**
- b. **Resolution 2013-037: In the Matter of Levying Ad Valorem Property Tax Rates and Bond Levies for Josephine County for Fiscal Year 2013-14**

Board Discussion & Action on Agenda Item 4(a):

Commissioner Heck made a motion to approve Resolution 2013-036: In the Matter of Adoption of the Budget for the Fiscal Year 2013-14 and Making Appropriations, seconded by Commissioner Hare. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes; Commissioner Walker – yes and Commissioner Hare – yes. One original Resolution signed and retained for recording.

Board Discussion & Action on Agenda Item 4(b):

Commissioner Walker made a motion to approve Resolution 2013-037: In the Matter of Levying Ad Valorem Property Tax Rates and Bond Levies for Josephine County for Fiscal Year 2013-14, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes; Commissioner Walker – yes and Commissioner Hare – yes. One original Resolution signed and retained for recording.

BOARD DECISIONS UNDER ADMINISTRATIVE ACTIONS WERE MADE AFTER PUBLIC COMMENT WAS RECEIVED

5. ADMINISTRATIVE ACTIONS IN CONSIDERATION OF:

- a. **Provision of Sewer Service to Properties Previously Served by the Redwood Sanitary Sewer Service District**
- b. **Approval of Order 2013-032: In the Matter of Final Dissolution and Liquidation of Assets for Redwood Sanitary Sewer Service District; A County Service District Organized Under Oregon Revised Statute Chapter 451**
- c. **Approval of General Grant and Assignment of Real Property Interests re: Redwood Sanitary Sewer Service District**
- d. **Approval of Temporary Employment Agency Usage Requisition – Transitional Director for Commission for Children & Families**

Commissioner Hare advised that those items listed regarding the sewer district were to facilitate the transition from Josephine County to the City of Grants Pass. Regarding Item 5(d), he stated that the Commission for Children & Families (CC&F) is an important, state-funded program in Josephine County that is sun setting under legislation passed last year. There is a glitch in how the new system is being instituted so the programs need to continue through this calendar year, despite the fact that funding for them has already stopped. A small amount of carryover monies (\$15,000) in the CC&F fund will be used to facilitate the six-month transition.

6. REQUESTS/COMMENTS FROM CITIZENS

David Everist, Josephine County, submitted Exhibit A, "Notice of Coordination" and various other papers created by him, and accused the County Clerk of being derelict in his duties by refusing to record these documents.

Dale Matthews, Grants Pass, discussed the cooperation of city and county emergency dispatch services.

Mark Seligman, Selma, praised Grants Pass Councilwoman Lily Morgan for her efforts at procuring City for renting jail beds.

Judy Ahrens, Grants Pass, encouraged people to contact their representatives to encourage support of the Tea Party's audit of the Internal Revenue Service.

Sandi Cassanelli, Merlin, discussed her right to speak at public meetings.

Larry Ford, Grants Pass, discussed the suggestion of city residents contributing more to help pay for the Jail, stating he didn't believe it fair.

Board Discussion & Action on Agenda Item 5(a):

Commissioner Heck made a motion to approve an Intergovernmental Agreement between Josephine County and the City of Grants Pass re: Provision of Sewer Service to Properties Previously Served by the Redwood Sanitary Sewer Service District, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes; Commissioner Walker – yes and Commissioner Hare – yes. Two original IGA's signed, one returned to Legal Counsel, one retained for recording.

Board Discussion & Action on Agenda Item 5(b):

Commissioner Heck made a motion to approve Order 2013-032: In the Matter of Final Dissolution and Liquidation of Assets for Redwood Sanitary Sewer Service District; A County Service District Organized Under Oregon Revised Statute Chapter 451, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes. One original Order signed and retained for recording.

Board Discussion & Action on Agenda Item 5(c):

Commissioner Heck made a motion to approve a General Grant and Assignment of Real Property Interests re: Redwood Sanitary Sewer Service District, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Walker – yes and Commissioner Hare – yes.

Board Discussion & Action on Agenda Item 5(d):

Commissioner Heck made a motion to approve a Temporary Employment Agency Usage Requisition – Transitional Director for Commission for Children & Families, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes; Commissioner Walker – yes and Commissioner Hare – yes.

7. APPROVAL OF CONSENT CALENDAR:

- a. **Approval of Minutes (Draft minutes are available for viewing in the Board's Office)**
Weekly Business Session – May 15, 2013
General Discussion - May 21, 2013
Weekly Business Session – May 22, 2013

County Administration Workshop – May 23, 2013
Staff Meeting – May 23, 2013
General Discussion – May 23, 2013
Legislative Phone Conference – May 28, 2013
General Discussion – May 28, 2013
Weekly Business Session – May 29, 2013
County Administration Workshop – May 30, 2013
General Discussion – June 4, 2013
General Discussion – June 6, 2013

b. Violation Surcharge Waiver - Dudley

Commissioner Hare explained that the property owner requesting this waiver has assured the County that the land use violations on his property would be rectified over the next sixty (60) days. Commissioner Hare advised that the Board typically granted waiver requests in these circumstances, since the County's goal was compliance with the Code.

c. Authorization for Risk Manager and Human Resource Director to sign respective proposals binding General Liability/Property/Auto Insurance and Workers' Compensation Coverage with Citycounty Insurance Services for Fiscal Year 2013-2014

d. Property Reserve Request (NTE \$45,000): Replacement of Cave Junction County Building HVAC System

Commissioner Hare stated the repair of this HVAC System had been on the list for some time but had been postponed solution for the best and highest use of the building was determined. However in the last week the HVAC System had suffered another break which rendered it not repairable. Funds to pay for this will come from the Property Reserve Fund.

Commissioner Walker wanted the record to reflect that the County is still working toward a resolution to make the Cave Junction building available to the community.

Commissioner Walker made a motion to approve Consent Calendar Items 7(a) through (d) as listed, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes.

8. OTHER: (ORS.192.640(1) ". . .notice shall include a list of the principal subjects anticipated to be considered at the meeting, but this requirement shall not limit the ability of a governing body to consider additional subjects.")

Commissioner Hare stated that before the signatures for a referendum were certified, he wanted to make a formal motion that the Board "remove" Ordinances 2013-002, 2013-003, 2013-004 and 2013-005 in order to avoid an expensive referendum. Commissioner Heck asked Commissioner Hare why he wanted to do that; Commissioner Hare responded he did not feel it was the right time to move these Ordinances forward, based on the reactions of the representative public that attended the Public Hearings. He also felt this subject was not a priority for the Board. Commissioner Hare moved to withdraw Ordinances 2013-002, 2013-003, 2013-004 and 2013-005, seconded by Commissioner Heck for purposes of discussion. Commissioner Walker advised that the response she has experienced out and about has been overwhelmingly positive. She corrected inaccuracies that have been circulated by the opposition regarding when and how these Ordinances would be enforced and stressed that the motivation behind enacting them was to give citizens of this Home Rule County local control, as currently complaints were processed and governed by state law. Commissioner Heck concurred with Commissioner Walker and stated he would like to see the matter to go to a vote as true representation of the will of the citizens of Josephine County. Commissioner Hare thanked his fellow Board members for providing their positions, suggested that the Ordinances could use refinement before being enacted, and that it will cost the County in excess of \$20,000 to participate in the November election. Upon roll call vote, motion failed 2-1; Commissioner Heck – no, Commissioner Walker – no and Commissioner Hare – yes.

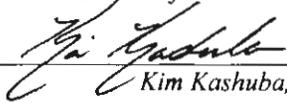
9. MATTERS FROM COMMISSIONERS:

Commissioner Heck read a letter to Forestry Program Director Vic Harris praising his department for their work at fire risk reduction on a client's property as part of a Title III Fuels Reduction Program. He also lamented the resignation of Deputy District Attorney Rafael Caso and called it a great blow to the community.

Commissioner Walker let the public know of an "Animal Shelter Make-Over," a spring cleaning and landscape party being hosted by volunteers of the Animal Shelter this weekend to raise money for paint and flooring. She encouraged the public to volunteer and/or contribute. She also announced that six cases of pertussis (whooping cough) had been reported this week and encouraged the public to obtain vaccinations.

Commissioner Hare announced an amendment to S738 had been introduced by Senator Wyden, proposing an extension of Secure Rural School Funding at a 5 percent reduction of last year's appropriation, and that he would be attending an O&C Board meeting in Salem tomorrow morning to discuss that amendment and other matters.

Weekly Business Session was adjourned at 11:10 a.m.



Kim Kashuba, Recorder

Entered into record:

Exhibit A, "Notice of Coordination," etc. by David Everist

Weekly Business Session
6-19-13 Exhibit A

David D Everist
7447 Thompson Cr Rd
Applegate Or 97530
Secretary of Mining
For Twin Cedar Mining District

BLM#160574

Case# 1,12-PO-00001 B

REC'D 13 JUN 18 9 53 USDC-ORM

Notice of Coordination to BOARD OF JOEPHINE COUNTY COMMISSIONERS USDI BLM USDA
USFS ETAL *John and Jane DOES Governments*

TO Coordinate Home Rule of Mining District as Twin Cedar Placer is a Mining District. As Mining Districts created cities of the West, and Mining District are Local Government I David D Everist Demand to coordinate Home Rule for Twin Cedar Placer Mining District, and other issues

Notice of a son de tort come soon sooner rather than later for Coordination and cost of the time in billable hours for preparing The son de tort as time cost money.

You have UNTIL 6-11-2013 to have coordination meetings ETAL ATAL

Federal Land Policy Management Act law by US codes are 43 USC sec 1711 ETSEQ and the Nation Land Forest Management Act by US codes 16 USC sec 1602 etseq. Federal Rule 43 55990 Nov 29 1978, and 44 Federal Rule 873 Jan 3 1979 Case Law Print z VS U.S. and SECRETARIAL ORDER 3310

Footnote 43, 44 CFR code Federal Regulations and Rules,

5-10-2013

David D Everist

Secretary of Mining David D Everist is the agent
In charge For Twin Cedar Placer Mining District,
The Controlling legal authority for the District

Ward, Colorado

Coordinates: 40°4'20"N 105°30'36"W

From Wikipedia, the free encyclopedia

Ward (elevation 9,450 feet (2,880 m)) is a ~~Home Rule Municipality in~~ **Home Rule Municipality in** Boulder County, Colorado, United States. The population was 150 at the 2010 census. The town is a former mining settlement founded in 1860 in the wake of the discovery of gold at nearby Gold Hill. Once one of the richest towns in the state during the Colorado Gold Rush, it is located on a mountainside at the top of Left Hand Canyon, near the Peak-to-Peak Highway (State Highway 72) northwest of Boulder.

Contents

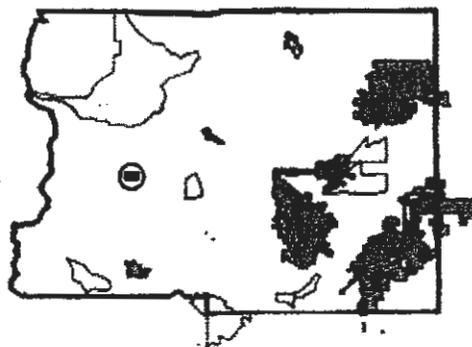
- 1 History
- 2 Geography
- 3 Demographics
- 4 See also
- 5 References
- 6 External links

History

The town was named for Calvin Ward, who prospected a claim in 1860 on the site known as Miser's Dream.^[4] The town boomed the following year with the discovery by Cyrus W. Deardorff of the Columbia vein. Over the next several decades the population fluctuated, growing from several hundred to several thousand before declining once again. The mines in the area remained profitable for many decades, with one mine eventually producing over 2 million ounces (62 metric tons) of silver. A post office with the name Ward District was established January 13,

Town of Ward, Colorado

— Town —



Location in Boulder County and the state of Colorado

Coordinates: 40°4'20"N 105°30'36"W

Country	 United States
State	 Colorado
County ^[1]	Boulder County
Founded	1860
Incorporated	June 9, 1896 ^[2]
Government	
 • Type	Home Rule Municipality ^[1]
Area	
 • Total	0.6 sq mi (1.5 km ²)
 • Land	0.6 sq mi (1.5 km ²)
 • Water	0 sq mi (0 km ²)

1863; the name was changed to Ward, September 11, 1894.^[5] The city was incorporated in June 1896. The railroad reached the area in 1898, arriving over the Whiplash and Switzerland Trail, which climbed over 4,000 feet (1,220 m) from Boulder over the course of 26 miles (42 km). In 1901 over 50 buildings were destroyed by a devastating fire, although the profitability of the mines led to the immediate rebuilding of the town. The town was largely deserted by the 1920s, but the construction of the Peak-to-Peak Highway in the 1930s led

Elevation	9,450 ft (2,880 m)
Population (2010)	
• Total	150
• Density	281.7/sq mi (112.7/km ²)
Time zone	Mountain (MST) (UTC-7)
• Summer (DST)	MDT (UTC-6)
ZIP code ^[3]	80481
Area code(s)	303
FIPS code	08-82735
GNIS feature ID	0178487 (http://geonames.usgs.gov/pls/gnispublic/f?p=gnispq:3:::NO::P3_FID:0178487)



View of Ward from below along Lefthand Canyon Road

to a revival of the town. During WWII the town's year-round population dropped to four people. Then, in the 1960s, the town's population jumped from between 10-20 year-round residents to well over 100 due to the town's interest to hippies.^[citation needed]

The town has several businesses along its main street, including a restaurant, a coffee shop and general store.

Geography

Ward is located at

40°4′20″N 105°30′36″W﻿ (40.072347, -105.510131)^[6]

According to the United States Census Bureau, the town has a total area of 0.6 square miles (1.6 km²), all of it land.

Demographics

As of the census^[7] of 2010, there were 150 people, 75 households, and 36 families residing in the town. The population density was 296.9 people per square mile (114.5/km²). There were 82 housing units at an average density of 144.1 per square mile (55.5/km²). The racial makeup of the town was 98.82% White, and 1.18% from two or more races.

There were 75 households out of which 26.7% had children under the age of 18 living with them, 34.7% were married couples living together, 5.3% had a female householder with no husband present, and 52% were non-families. 37.3% of all households were made up of individuals and 8% had someone living alone who was 65 years of age or older. The average household size was 2 and the average family size was 2.67.



Businesses in Ward

In the town the population was spread out with 19.3% under the age of 18, 5.3% from 18 to 24, 32% from 25 to 44, 35.3% from 45 to 64, and 8% who were 65 years of age or older. The median age was 43.5 years. For every 100 females there were 154.2 males. For every 100 females age 18 and over, there were 132.7 males.

In 2000, the median income for a household in the town was \$33,750, and the median income for a family was \$50,313. Males had a median income of \$26,250 versus \$28,750 for females. The per capita income for the town was \$14,900. None of the population or families were below the poverty line.

See also

- Outline of Colorado
 - Index of Colorado-related articles
- State of Colorado
 - Colorado cities and towns
 - Colorado municipalities
 - Colorado counties
 - Boulder County, Colorado
 - Colorado metropolitan areas
 - Front Range Urban Corridor
 - North Central Colorado Urban Area
 - Denver-Aurora-Boulder, CO Combined Statistical Area
 - Boulder, CO Metropolitan Statistical Area
- Roosevelt National Forest

References

1. ^a ^b "Active Colorado Municipalities" (http://www.dola.state.co.us/dlg/local_governments/municipalities.html). State of Colorado, Department of Local Affairs. Retrieved 2007-09-01.
2. [^] "Colorado Municipal Incorporations" (<http://www.colorado.gov/dpa/doit/archives/muninc.html>). State of Colorado, Department of Personnel & Administration, Colorado State Archives. 2004-12-01. Retrieved 2007-09-02.
3. [^] "ZIP Code Lookup" (<http://zip4.usps.com/zip4/citytown.jsp>) (JavaScript/HTML). United States Postal Service. Retrieved 2008-01-08.
4. [^] Eberhart, Perry (1959). *Guide to the Colorado Ghost Towns and Mining Camps*, p. 100. Denver: Sage Books.
5. [^] Bauer, William H., Ozment, James L., Willard, John H. (1990) *Colorado Post Offices, 1869–1989*, p. 148. Golden, Colorado: The Colorado Railroad Museum. ISBN 0-918654-42-4.
6. [^] "US Gazetteer files: 2010, 2000, and 1990" (<http://www.census.gov/geo/www/gazetteer/gazette.html>). United States Census Bureau. 2011-02-12. Retrieved 2011-04-23.
7. [^] "American FactFinder" (<http://factfinder.census.gov>). United States Census Bureau. Retrieved 2008-01-31.

External links

- Town contacts (<http://www.cmca.gen.co.us/Municipality.cfm?MunicipalityID=226>)
- CDOT map of Ward (http://www.dot.state.co.us/App_DTD_DataAccess/Downloads/CityMaps/Ward.pdf)
- Ward, Colorado: a slice of Appalachia in the Rockies (<http://ward-colorado.20megsfree.com/>)
- Ghosttowns.com: Ward, Colorado (<http://www.ghosttowns.com/states/co/ward.html>)
- Ward, Colorado, a revitalized gold-mining ghost town (<http://wardcolorado.googlepages.com>)

Retrieved from "http://en.wikipedia.org/w/index.php?title=Ward,_Colorado&oldid=543001530"

Categories: Towns in Colorado | Populated places in Boulder County, Colorado

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Referenced Cases, Codes & Statutes

Printz v. US:

<http://caselaw.lp.findlaw.com/scripts/getcase.pl?court=us&vol=000&invol=95-1478>

Secretarial Order 3310:

http://www.blm.gov/pgdata/etc/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.26564.File.dat/sec_order_3310.pdf

Improving Regulation and Regulatory Review - Executive Order

<http://www.whitehouse.gov/the-press-office/2011/01/18/improving-regulation-and-regulatory-review-executive-order>

Questions?

If you have any questions that were not answered during the conference, please visit our website [www.trademarkamerica.org/ What is Coordination?/ Coordination Q & A](http://www.trademarkamerica.org/What_is_Coordination?/Coordination_Q_A), and submit your questions there. We will answer them as soon as possible and possibly post them to our website if we feel they can be beneficial to others.

WEEKLY BUSINESS SESSION April 24, 2013, 9:00 a.m.

Anne G. Basker Auditorium
604 N.W. Sixth Street, Grants Pass, OR 97526

Present: Simon G. Hare, Chair; Cheryl Walker, Vice-Chair; and Keith Heck, Commissioner; Kim Kashuba, Recorder

These are meeting minutes only. Only text enclosed in quotation marks reports a speaker's exact words. For complete contents of the proceeding, please refer to the audio recording.

Pursuant to notice through the media and in conformance with the Public Meeting Law, Simon G. Hare, Chair called the meeting to order at 9:00 a.m. Items discussed were as follows:

BOARD DECISIONS UNDER ADMINISTRATIVE ACTIONS WERE MADE AFTER PUBLIC COMMENT WAS RECEIVED

1. ADMINISTRATIVE ACTIONS IN CONSIDERATION OF:

a. Approval of County Assessment Function Funding Assistance (CAFFA) Budget

Connie Roach, Assessor, advised that this grant, which is derived from recording fees and delinquent property taxes, typically represents twenty-five percent of the Assessor's operating budget and enables them to remain compliant with state law regarding assessment and taxation of a community. Eve Arce, Tax Collector/Treasurer, stated funds from this grant represented 52 percent of that Department's operating revenue. Commissioner Hare explained how the County's assessment and taxation systems worked, confirming that of the \$62 Million per year collected by the County, all but around \$3.6 Million was disbursed to 16 other taxing districts. Commissioner Heck confirmed that the County received no compensation to perform assessment, taxation and collection services for those other districts.

b. Approval of Resolution 2013-029: In the Matter of Participation in the Assessment and Taxation Grant

Connie Roach, Assessor, explained that the Board's approval of this Resolution formalized the County's participation in this grant program.

2. REQUESTS/COMMENTS FROM CITIZENS:

David Everist, Josephine County, announced a discovery on his mining claims he considered significant and valuable, and submitted Exhibit A, courtesy copies of an Order and a Demand to federal agencies regarding his claims.

Jim Rafferty, Selma, expressed concern with the information on the levy mailed by the County because it did not emphasize the fact that levy monies would be received into the General Fund, where he believed they would be used elsewhere besides the intended Public Safety Departments.

Mark Seligman, Selma, expressed frustration with the closure of Rough and Ready Lumber Mill and vehemently opposed the property tax increase proposed by Measure 17-49.

Commissioner Hare advised Mr. Seligman that due to his failure to adhere to meeting decorum and refusal to relinquish the floor after his time was up, he would possibly not be recognized next week to speak at the Weekly Business Session.

Dale Matthews, Grants Pass, discussed the recent posting of political signs at the Airport, questioning the adequacy of security services there and asking the whereabouts of a surveillance tape.

Jeff Wolf, Colonial Valley, shared a recent occurrence of a serious crime committed in town where the suspect was cited and released due to inadequate law enforcement.

Pat Sitze, Grants Pass, suggested the problem with the County's crime rate and state of County Law enforcement was more of a moral problem than a revenue problem.

Larry Ford, Grants Pass, responded to comments made by Mr. Seligman regarding the recent closure of Rough and Ready Lumber Mill, alleging that the real reason for the decline in timber products companies was environmental groups who sued perfectly legitimate timber sales.

Board Action on Agenda Item 1(a):

Commissioner Walker made a motion to approve the County Assessment Function Funding Assistance (CAFFA) Budget, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare -yes

Board Action on Agenda Item 1(b):

Commissioner Walker made a motion to approve Resolution 2013-029: In the Matter of Participation in the Assessment and Taxation Grant, seconded by Commissioner Heck . Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes One original Resolution signed and retained for recording.

3. CONSENT CALENDAR:

Commissioner Hare briefly described the Consent Calendar items, stating they had been vetted at last week's Administrative Workshop Meeting.

- a. **Approval of Equal Employment Opportunity Plan and Affirmative Action Program**
Two original Plans signed; one retained for recording; one returned to Human Resources.
- b. **Approval of Resolution 2013-027: In the Matter of an Appointment to the Josephine County Library Board of Trustees.** One original Resolution signed and retained for recording.
- c. **Approval of Resolution 2013-028: In the Matter of an Appointment to the Emergency Medical Services Board**
One original Resolution signed and retained for recording.

Board Discussion & Action:

Commissioner Walker made a motion to approve Consent Calendar Items 3(a) through 3(c) as listed, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes

4. OTHER:

Commissioner Walker advised the Board recently became aware of a grant opportunity for the Public Health Department that had a very tight timeline and asked the Department's Director, Diane Hoover, to explain it. Diane stated the funding was available through the Mid-Rogue Foundation to help offset the cost of implementing a certified electronic health record system that was compatible with Medicare requirements. The grant amount she requested approval to apply for was \$14,280, which would cover the installation, maintenance for one year, and one "lab interface." Diane further advised the foundation committed to waive training, license and set-up fees.

Board Discussion & Action:

Commissioner Walker made a motion to approve a Grant Application for Mid-Rogue Foundation for the benefit of the Josephine County Public Health Department in the amount of \$14,280, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes and Commissioner Hare – yes

5. MATTERS FROM COMMISSIONERS:

Commissioner Hare announced that today was Administrative Professionals Day and the Board very kindly thanked and praised their staff.

Commissioner Walker, responding to a citizen comment, stated that it was not government's role to police morality; however it was government's role to attempt to provide a criminal justice system for its community, which was why the Board was submitting the proposed levy to the voters.

Weekly Business Session was adjourned at 10:11 a.m.



Kim Kashuba, Recorder

Entered into record:

Exhibit A: Copies of Federal Court pleadings from David Everist

Weekly Business Assoc
4-24-13 Exhibit A

David D Everist
7447 Thompson Cr Rd
Applegate OR
97530

REC'D 13 APR 22 10:14 USDC-ORN

BLM#160574
case#1; 12 PO 00001 PA
case# Cr 09-479 MO

DEMAND FOR EXCLUSIVE RIGHTS POSSESSION AGAINST USDA USFS, PUBLIC PRIVATE PARTNERSHIPS, AND THE USDI BLM FOR NOT DEFENDING THE GRANTOR, GRANT AND THE GRANTEES

I David D Everist and my Partners are in a position to exercise Dominion or Control over a thing. By the GRANT is a CONSTRUCTIVE POSSESSION.

I and my partners are claiming right of exclusive possession is exclusive Dominion over valuable minerals Deposit lands. By me, my partners claim location notice filings with JOEPHINE COUNTY, Names of the claims are Twin Cedar Placer Cat's Eye Peak's Placer, I and my Partners are claiming exclusive right is which only the grantees can exercise and from which all others prohibited or shut out

I and my Partners claim the right to TITLE for breach of the grant, of constructive contract under Constructive purchase and payment Congress constructed valuable minerals Grant as the valuable minerals GRANTOR. Second trusts Comment d grant by matter of Law are the Covenants for the GRANT and TITLE [see title deeds and title trusts, trust estates] [see constructive trusts Davis vs. Howard 19 Or. App. 310, 527 P 2d 422,424, and see the constructive trustees second trust.]

Case Law thereof for the UNITED STATES Vernon's Ann Civ. St, Carter. &Bro. VS Holmes, 131 TEX, 365, 113 S.W. 2D. 1225, 1226. Young VS CITY of LUBOCK, TEX Civ. APP 130 S.W. 2d 418,420
COM. VS STEPHENS,231 Pa. Supper,481,331 A.2d 719,723.US VS DINOVO ,C.A. Ind .,523 F 2d 197,201.

4-22-2013
David D Everist

David D Everist
7447 Thompson CR RD
Applegate OR
97530

REC'D 13 APR 19 15:02 USDC-ORN

BLM#160574
Case# 1; 12 PO 00001 PA
Case# CR-09-479

**ORDERS TO USDI BLM USDA USFS PUBLIC PRIVATE PARTNERSHIPS
AS AGENTS FOR EACH OTHER AS IN AGENCY ETAL ATAL.**

I am, my partners are seeking an order for a possessor y warrant for mining claims Twin Cedar Placer Cat's eye Peak's Placer As takings of my property, my personal property is to be replaced by the USDA USFS, PUBLIC PRIVATE PARTNERSHIPS AS AGENTS FOR EACH OTHER as in AGENCY S. ETAL ATAL. I am, my partners are seeking an order for that USDI BLM to come and defend grantor, grant, and grantee. I am, my partners are seeking an order for breach of the grant by USDA USFS, PUBLIC PRIVATE PARTNERS ETAL ATAL. I am, my partners are seeking an order for possessor y action against USDA USFS, Public Private Partnerships for the Attack on UNITED STATES Congress the grantor, grant, and grantee. Case Law of the UNITED STATES HAPPY CONYON INS CO VS TITLE INS CO OF MINNESOTA COLO APP 560P 2D 839,842. Mott VS Smith La APP, 273 So 2d 675,677 UDER LAW 30 USC SEC 26, 28, 53.E.O.12630 TAKINGS

4-19-2013

David D Everist

David D Everist Twin Cedar Placer
7447 Thompson Cr Rd
Applegate Or 97530

REC'D 13 JUN 18 9:57 USDC-ORM

Date 6-10-2013
BLM # 160-574
Case # 112-PO-00001PA

BLM #160-574 is an in holding as to exclusive possession and possessor by me and my partners
Congressional action under USC TITLE 30 SEC 26 THROUGH 54 SEC 26, 28, 53 AND LOOK AT
REAL CLOSE AND PAY ATTENTION TO THESE SEC

Affidavit of Assessment work for year 9-1-2013 through 9-1-2014

IN A CONSTRUCTIVE PURCHASE AND PAYMENT WORK PERFORM ON Twin Cedar Placer
For patent proposes I David D Everist hours in the defense possessor rights to defend in case#1:12-PO-
00001-PA from the appealing to Judge Panter on Magistrate Clark dissension and the unlawful
confinement in jail Legal work 2287.5 hours and 712.5 hours in defense of my possessor rights time in
jail and the total hours 3000 Under TITLE USC 30 SEC 53 LAW OF POSSESSION Mining
development and future mining operation and prospecting testing and law of the trust TRUSTEE
USDI, BLM FOR NOT DEFENDING THE Trust and Grant Grantor Grantee under trust law and
contract law as trustee USDA USFS US ATTORNEY S. AMANDA MARSHALL AND US ASSISTANT
ATTORNEY DUONG LAS FONG MAGISTRATE CLARK and John and Jane Does FOR
ATTACKING THE TRUST AND Grant Grantor Grantee under highest law of land trust, contract law
article 6th of constitution for UNITED STATE Estimated value of time 250 dollars an hour times
3,000 = 750,000 as I value my time as to time is to money in a constructive purchase and payment and a
contract in many deferent ways from 8-28-2012 to and ongoing with the appeal to judge Panter the
USDA USFS US ATTORNEY S. AMANDA MARSHALL US ASSISTANT ATTORNEY DUONG LAS
MAGISTRATE CLARK enter fearing with the patenting processes by extortion and abduction and
holding me for ransom And other groups, and agendas 'and JOHN AND JANE DOES work that I
perform for patent proposes for breach trust, and contract by the trustee USDI BLM To defend contract
, trust, Grant, Grantor Grantee Date of research and development planning for prospecting and testing,
mining developments operation is 7-5-2012 Date court case 8-20-2012 through 8-28-2012 trial work
perform writing legal notice sentient on 10-15-2012 and turn in to jail by marshals 10-30-2012 work
perform writing legal notices time in jail got out of jail 11-28-2012 and more work goes on writing
Legal notice 12-3-2012, and writing up the assessment work perform on this Day's research as to the
Date is ongoing through to this legal work, and coordination to all of parties Date 4-29-2013 6-10-2013
And all of the other days' work was perform as a Duty of trust as Grantee For patent proposes In a
constructive purchase and payment more time spending in trust law. Under the law of trust and
enforcement of the trust, the trustee Starting point Date 3-1-2012 through this Date on going with of
My notices NOT BEING ANSWER, OR RESPONDED TO by the trusted parties. As to me the grantee
in holding of twin cedar placer has constructive purchase and payment and a contract as to the trust as
to the trustee I David D Everist Demand That the Trustee USDI BLM enforce the law of the trust and do
their duty to the trust and write a writ of constructive trust and writ of trust against the parties. I David
D Everist and partners demand for title to Twin Cedar Placer for breach of constructive purchase and
payment, contract and a breach of grant, grantor, grantee and trust by the trustee the USDI BLM ETAL
ATAL

EXHIBIT

David D Everist

David D Everist and partners
Twin Cedar Placer BLM# 160-574
7447 Thompson Cr Rd
APPLEGATE OR 97530

In a constructive purchase and payment for twin cedar placer prospecting mining development planning testing improvements. In holding on twin cedar placer exclusive possession and possessor Fire reduction 1200 sq. feet road clear prospecting testing operation and development, Estimates value For the Improvements is 250 dollars a sq. foot. estimate of sq. 1200 feet = 300,000 dollars roads and mining ,prospecting ,testing developments improvements 9-10-2012 are ongoing operation and development testing of valuable uncommon, noble, strategic Minerals deposit for patent proposes Dates are ongoing work September and or to ongoing dates through 2012 and 2013

From page 1 minerals estate total 750,000 + 300,000=1,050,000 estimates of work preform in constructive purchase and payment for patent proposes as to the trust and to the contract as to work preform in a constructive purchase and payment in many different ways a contract and trust as to USDI BLM AS THE TRUSTEE TO UNCOMMON NOBLE STRAGIC MINERAL TRUST GRANT TO THE GRANTEE I David D Everist demand my right to exclusive possession as to me my partners we demand twin cedar placer right to mine back as possessors as to third parties harm I Warren Marcus Davis did preform in prospecting mining planning testing and development For twin cedar placer assessment work as listed on page 1 and page 2 what listed above and date perform on 2-28-2012 ongoing operation though this date work performed *To this Date 6-10-2013*

Warren Marcus Davis
David D Everist

I David D Everist am spending time trying to coordinate as to coordination with the USDA, USFS AND USDI, BLM, *Josephine county and Sheriff Crbertson* and IRS

DATE *6-10-2013*

David D Everist Warren Marcus Davis
David D Everist *Warren Marcus Davis*

Date witness 6-18-2013

by J T Gilliland and C M Gilliland

Address 7447 Thompson Cr Rd Applegate Or 97530 David D Everist is known to both of us
And Warren Marcus Davis is also known to both us.

John T. Gilliland as witness by me

Cathleen Gilliland as witness by me

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MAINTENANCE FEE WAIVER CERTIFICATION

FORM APPROVED
OMB No. 4344-0114
Expires: August 31, 2013

SEE INSTRUCTIONS ON PAGE 2

- This small miner waiver is filed for the assessment year beginning on September 1, 2013 and ending on September 1, 2014
- The undersigned and all related parties owned ten or fewer mining claims, mill, or tunnel sites located and maintained on Federal lands in the United States of America on September 1, 2013
- The undersigned have performed the assessment work required by law for each mining claim listed prior to filing this waiver and understand that by filing this form, the undersigned must file an affidavit of assessment work with the Bureau of Land Management (BLM) by the December 30th following the filing of this waiver.
- The undersigned understand that if the assessment work obligation has not yet come due under 30 U.S.C. 28 (for those claims in their first assessment year only), a notice of intent to hold reciting this condition must be recorded by the December 30th following the filing of this waiver.
- The undersigned understand that mill and tunnel sites may also be listed on this waiver and be waived from payment of the maintenance fee, and that a notice of intent to hold for these sites is required to be filed with the BLM by the December 30th following the filing of this waiver.
- The undersigned understand and acknowledge that pursuant to 43 U.S.C. 1212 and 18 U.S.C. 1001, the filing or recording of a false, fictitious, or fraudulent document with the BLM may result in a fine of up to \$250,000, a prison term not to exceed five years, or both.
- The mining claims, mill or tunnel sites for which this waiver from payment of the maintenance fees is requested are

CLAIM OR SITE NAME	BLM RECORDATION SERIAL NUMBER
TWIN CEDAR PLACER	160-574

The owner(s) (claimants) of the above mining claims and sites are:

<p>David DEVERIST (Owner's Name - Please Print)</p> <p>744 F THOMPSON CR RD (Owner's Mailing Address)</p>	<p>David D Everist (Owner's Signature)</p> <p>APPLegate OR 97530 (City) (State) (Zip Code)</p>
<p>LARRY G. MYERS (Owner's Name - Please Print)</p> <p>P.O. BOX 8809 (Owner's Mailing Address)</p>	<p>Larry G Myers (Owner's Signature)</p> <p>BEND OR 97708 (City) (State) (Zip Code)</p>
<p>Jean Myers (Owner's Name - Please Print)</p> <p>Po Box 8809 (Owner's Mailing Address)</p>	<p>J Myers (Owner's Signature)</p> <p>Bend OR 97708 (City) (State) (Zip Code)</p>
<p>(Owner's Name - Please Print)</p>	<p>(Owner's Signature)</p>
<p>(Owner's Mailing Address)</p>	<p>(City) (State) (Zip Code)</p>

David D Everist
7447 Thompson Cr Rd
Applegate Oregon
97530
541-531-7273

6-11-2015

BLM#160-574
Case#1; 12-PO-00001 PA

NOTICE TO COUNTY CLERK OF JOSEPHINE AND TO BOARD OF JOSEPHINE
COUNTY COMMISSIONERS

NOTICE TO COORDINATION AND TO COORDINATE FOR RECORDING
NOTICE OF INSTRUMENT OF ASSESSMENT AFFIDAVIT OF WORK PERFORM

Witness to genuineness of a document by attestation to the document by signing there name
To the document Case law In re Gorrells ESTATES, 19, NJ, MISC 168, 19 A 2d 334, 335.

Records FED RULES of EVIDENCE 803 SEE RULES 901,902 authentication and rule 1005

Recording a notice of assessment when INSTRUMENT of affidavit assessment and it shall be
Record so the whole world knows about the control over a thing and valuable minerals claims

Document of instrument of assessment of official legal authority of which take the form
Something evidentially under FED rules, documents. Case law STEICO VS COTTO 67 MISC 2d
636,324 N.Y.S. 483,486

[LOOK AT INSTRUMENTS UCC SEC 3-104 AND UCC SEC 9-105] Instruments of affidavit of
assessment of the valuable granted minerals claim is written documents in legal authority and contract
In a constructive purchase and payment as to the grantee duty to the grant by the grantee which
Is evidence of my work perform for patent possess and breach of the grantor, grantee, grant BY USDI
BLM, FOR DEFENDING THE GRANTOR, GRANTEE, GRANT AND USDA USFS AND
PUBLIC PRIVATE PARTNERSHIPS FOR ATTACKING THE TRUST.

Breach contract, and treaty and breach of nation security in my other coordination notice

David D Everist

David D Everist
7447 Thompson Cr Rd
Applegate Oregon 97530
541-531-7273

Date 6-12-2013

BLM#160-574
Case#1; 12-PO-00001-PA

NOTICE TO JOSEPHINE COUNTY CLERK AND TO THE BOARD OF JOSEPHINE COUNTY COMMISSIONERS

NOTICE TO COORDINATION, COORDINATE THE OPERATION OF LAW WORK

Possessor title and affidavit of assessment is documents and instruments of authority

Evid. R.803 (16) UNDER UCC ANY PAPER INCLUDING DOCUMENTS POSSESSOR TITLE AND SECURITY, INSTRUMENTS OF AFDAVIT OF ASSESSMENT OR OF LIKE UNDER UCC SEC 5-103 SEES SECOND CONFLICKS SEC 249

NOTICE GIVE HAS DUTY TO RECORD BY MATTER OF LAW AND TRUST AS TO YOUR DUTY CASE LAW SHIMMEL V. PEOPLE,108COLO 592,121 P. 2d 491,493 and making Record for the public record

LOOK AT CONSTRUCTIVE TRUST RESTATEMENT SECOND TRUST SEC 17

TO THE BOARD OF JOSEPHINE COUNTY COMMISSIONERS I am seeking an ORDER FROM THE COMMISSIONERS FOR AUDIT ON COUNTY CLERK OFFICE AND THE PUBLIC PRIVATE PARTNERSHIPS AND JOHN AND JANE DOES AGENTS IN AGENCY ALL OF THE PARTIES AND INVITE IN THE IRS TO CONDUCT THE AUDITS ETAL ATAL

A handwritten signature in black ink, appearing to read "David D Everist". The signature is written in a cursive, flowing style with some loops and flourishes.

WEEKLY BUSINESS SESSION October 16, 2013 9:00 a.m.

Anne G. Basker Auditorium

604 N.W. Sixth Street, Grants Pass, OR 97526

Present: Simon G. Hare, Chair; Cheryl Walker, Vice-Chair; and Keith Heck, Commissioner; Terri Wharton, Recorder

*These are meeting minutes only. Only text enclosed in quotation marks reports a speaker's exact words.
For complete contents of the proceeding, please refer to the audio recording.*

Pursuant to notice through the media and in conformance with the Public Meeting Law, Simon Hare, Chair called the meeting to order at 9:00 a.m.

Items discussed were as follows:

1. PRESENTATION: Zonta Club Million Square Mile Project

Leslee O'Brien, Zonta Chapter President, and Beth Williams, Service/Advocacy Chair, discussed the services Zonta provides to women staying in shelters due to domestic violence, sexual assault, homelessness, and/or addiction. They described several different programs including International Zonta's program in support of "Say no to any form of abuse."

2. ADMINISTRATIVE ACTIONS IN CONSIDERATION OF:

BOARD DECISIONS UNDER ADMINISTRATIVE ACTIONS WERE MADE AFTER PUBLIC COMMENT WAS RECEIVED

a. **Approval of Order 2013-045 In the Matter of Uniform Procedure for Setting Fees Charged by County and Setting a Public Hearing: Public Health; Surveyor, Public Land Corner Preservation Fund**

b. **Approval of Order 2013-046 In the Matter of Uniform Procedure for Setting Fees Charged by County and Setting a Public Hearing: Planning**

Commissioner Hare explained the need for a separate Order for Planning fees since they can be appealed to the Land Use Board of Appeals (LUBA).

Rosemary Padgett, CFO, advised as part of the procedures a Public Hearing would need to be set for November 13, 2013 at 5:30 p.m. She explained the proposed fees would be published twice in The Daily Courier and would be available in the Finance Department, the Board's Office, and on the County website.

c. **Approval of FOPPO 2013-2015 Collective Bargaining Agreement**

Sara Moye, Human Resources Director, advised the County had been in negotiations with the Federation of Oregon Parole and Probation Officers (FOPPO) and that the Agreement had expired June 30, 2013. She explained this was a two-year Agreement, which included an adjusted pay table to make making the positions more comparable to market conditions and added no Cost of Living Adjustments.

d. **Approval of Position Requisition: Community Corrections – Alcohol/Drug Counselor**

e. **Approval of Position Requisition: Community Corrections – Senior Department Specialist**

Abe Huntley, Community Corrections Director, said the two positions had been cut last year from the Alcohol/Drug Program within Community Corrections due to funding challenges and a system change. He explained how Community Corrections could focus on high-risk offenders due to the ability of having an intervention on the spot. Abe advised these two positions were state funded and with the anticipation of addition several Prosecutors in the District Attorney's office, Community Corrections would see an increase in offenders coming through the Department. Abe gave a brief description of other services and programs provided by his Department.

3. REQUESTS/COMMENTS FROM CITIZENS:

David Everist, Josephine County, read and submitted **Exhibit A – Twin Cedar Mining District**.

Dale Matthews, Grants Pass, discussed Public Health's request for lowering fees and suggested the County provide refunds for those services provided in previous years.

Judy Ahrens, Grants Pass, discussed the need for the community to come together with Churches to develop solutions for troubled youth.

Board Action on Administrative Actions - Agenda Item 2(a):

Commissioner Walker made a motion to approve Order 2013-045 In the Matter of Uniform Procedure for Setting Fees Charged by County and Setting a Public Hearing: Public Health; Surveyor, Public Land Corner Preservation Fund, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes, and Commissioner Hare – yes. (One original Order filed with the County Clerk)

Board Action on Administrative Actions - Agenda Item 2(b):

Commissioner Heck made a motion to approve Order 2013-046 In the Matter of Uniform Procedure for Setting Fees Charged by County and Setting a Public Hearing: Planning, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes, and Commissioner Hare – yes. (One original Order filed with the County Clerk)

Board Action on Administrative Actions - Agenda Item 2(c):

Commissioner Walker made a motion to approve FOPPO 2013-2015 Collective Bargaining Agreement, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes, and Commissioner Hare – yes. (One original Agreement filed with the Clerk and one original Agreement returned to Human Resources)

Board Action on Administrative Actions - Agenda Item 2(d):

Board Action on Administrative Actions - Agenda Item 2(e):

Commissioner Heck made a motion to approve Agenda Items 2(d) and 2(e) as listed, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes, and Commissioner Hare – yes. (One original of each Position Requisition returned to Human Resources)

4. CONSENT CALENDAR:

a. Approval of Minutes (Draft minutes are available for viewing in the Board's Office)

- Weekly Business Session – September 25, 2013
- Weekly Business Session – October 2, 2013
- Executive Session (Open Session) – October 2, 2013
- County Administration Workshop – October 3, 2013
- General Discussion – October 3, 2013

b. Approval of Sheriff's Association – MOU to extend current Collective Bargaining Agreement (One original filed with the County Clerk and one original returned to Human Resources)

c. Contract for Personal Services with Welcome Home Oregon for Housing Coordination Services (Cost \$54,400) (One original Contract filed with the County Clerk and one original Contract returned to Community Corrections)

d. Agreement for Work Crew Services with the City of Grants Pass Public Works Department (Revenue \$27,000) (One original Contract filed with the County Clerk and one original Contract returned to Community Corrections)

e. Intergovernmental Agreement #4867 with Oregon Department of Corrections (Revenue \$144,420) (One electronic Agreement returned to Community Corrections for full execution)

f. Grant Agreement #142086 with the Oregon Health Authority (Revenue \$57,120) (On electronic Agreement returned to Community Corrections for full execution)

g. Provider Contract between Josephine County Public Health and Siskiyou Community Health Center for School Based Health Services (Pass Through \$110,700) (One original Contract filed with the County Clerk and one original Contract returned to Public Health)

h. Resolution 2013-055 In the Matter of an Appointment to the Josephine County Rural Planning Commission (One original Resolution filed with the County Clerk)

Board Discussion and Action:

Commissioner Heck made a motion to approve Consent Calendar Items 4(a) through 4(h) as listed, seconded by Commissioner Walker. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes, and Commissioner Hare – yes.

5. **OTHER: (ORS.192.640(1))** “. . .notice shall include a list of the principal subjects anticipated to be considered at the meeting, but this requirement shall not limit the ability of a governing body to consider additional subjects.”)
1. **Tom Stratton Salvage Contract 2013-14T-1**
 2. **Pump Chance Salvage Contract 2013-14T-4**

Commissioner Hare explained Boise Cascade had purchased two timber sales that were damaged in last summer’s fires and due to the weather conditions, they were ready to start work. He said the Tom Stratton Salvage Contract netted \$296,335 and the Pump Chance Salvage Contract netted \$395,020, and that the County was expecting to spend between \$750,000 to \$1,000,000 in reforesting the affected area.

Commissioner Walker made a motion to approve Tom Stratton Salvage Contract 2013-14T-1 and Pump Chance Salvage Contract 2013-14T-4 Sales to Boise Cascade for Salvage Logging, seconded by Commissioner Heck. Upon roll call vote, motion passed 3-0; Commissioner Heck – yes, Commissioner Walker – yes, and Commissioner Hare – yes. (One original of each Contract filed with the County Clerk and two originals of each Contract returned to Forestry Department)

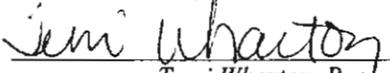
6. **MATTERS FROM COMMISSIONERS:**

Commissioner Heck announced the kickoff celebration of Red Ribbon Week on October 23, 2013 and his attendance at the Siskiyou Health Center Groundbreaking in Cave Junction. He praised the 911 Dispatch Center for their third quarter audit results and discussed several grants the Josephine County Food Bank received. Commissioner Heck read an e-mail the Board received from Rick Hake, Editor of the Apple Rogue Times clarifying his previous e-mail regarding Dale Matthews.

Commissioner Walker reminded citizens the Josephine Community Libraries, Inc. (JCLI) does not receive General Fund monies, works entirely with volunteers and grants, and relies on community support. She announced the Readapalooza taking place on October 18 – 20, 2013 at the Grants Pass Library.

Commissioner Hare said the Libraries receive 300 new cardholders per month and encouraged citizens to participate in their Libraries.

Weekly Business Session was adjourned at 10:13 a.m.


Terri Wharton, Recorder

Entered into record:
Exhibit A – Twin Cedar Mining District

David D Everist
7447 Thompson Cr Rd
Applegate Or 97530
Secretary of Mining
for Twin Cedar Mining District

Date 10-14-2013

BLM#160574
case# 1;12-PO-00001-CL-PA
US COURT APPEALS 9th CIRCUIT case# 13-30260

EXHIBIT 1 A
WBS
10/16/13

David D Everist

UNITED STATES

VS

I David D Everist am seeking ORDERS from THE BOARD OF JOEPHINE COUNTY COMMISSIONERS AND THE 9th circuit court appeals

A HEAR IS REQUESTED

I am seeking an Order for JOEPHINE COUNTY SHERIFF GILBERTSON TO HIS DUTY ,Take Action on my possessor action on mining claim Twin Cedar mining claim

I am seeking an Order on SHERIFF GILBERTSON TO RESTORE David D Everist as Secretary of Mining to Local Government to seat of Government Twin Cedar Mining District Township And Unincorporated City

I am seeking an Order the DEPT to issue my address for Twin Cedar Mining District Township and Unincorporated City

David D Everist
Secretary of Mining for Twin Cedar Mining District



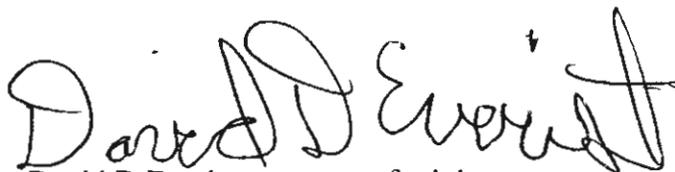
David D Everist
7447 Thompson Cr Rd
Applegate Or 97530
Secretary of Mining
For Twin Cedar Mining District

Date 9-30-2013

Docket#R130017736

NOTICE TO THE COURT AND JUDGE that THE BOARD OF JOEPHINE COUNTY COMMISSIONERS and As STATE AGENTS has approve me as Mining District Township And Unincorporated City with Home Rule and with shield of immunity as conducting governmental business

MOTION TO DISMISS BECUASE AS secretary of mining has immunity as conducting government Business as to my government is conducting business in Medford at federal court and other federal offices and advising and getting information as to the date 9-10-2013 at time was going home to the Applegate and dinner

A handwritten signature in black ink that reads "David D Everist". The signature is written in a cursive, flowing style with a prominent loop at the end.

David D Everist secretary of mining
For Twin Cedar Mining District

David D Everist
7447 Thompson Cr Rd
Applegate OR 97530
Secretary of Mining
for Twin Cedar Mining District

BLM#160574 case#1;12-PO-00001-PA

Date 9-20-2013

RECVD 13 SEP 19 15:29 USDC-ORH

To USDI BLM DIANA PERRY USDA USFS DONNA MICKLEY BOARD OF JOEPHINE
COUNTY COMMISSIONERS

NOTICE FOR COORDINATING A NOTICE OF INTENT TO Mine My mining claim
Mining District, Township and unincorporated City Twin Cedar City

As the USDI BLM Diana Perry has a duty of trust as trustee to defend the valuable mineral
deposit, to grantee and grantor this NOTICE is so I can get back to mining my valuable mineral deposit
As I need to make a liven as to my valuable minerals deposit



David D Everist
Secretary of Mining for
Twin Cedar Mining District
Township unincorporated City

David D Everist
7447 Thompson Cr Rd
Applegate OR 97530
Secretary of Mining
for Twin Cedar Mining District

BLM#160574 case#1;12-PO-00001-PA

Date 9-20-2013

REC'D 13 SEP 19 15:29 USDIC-ORN

To USDI BLM DIANA PERRY USDA USFS DONNA MICKLEY BOARD OF JOEPHINE
COUNTY COMMISSIONERS

NOTICE FOR COORDINATING A NOTICE OF INTENT TO Mine My mining claim
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As the USDI BLM Diana Perry has a duty of trust as trustee to defend the valuable mineral
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As I need to make a liven as to my valuable minerals deposit



David D Everist
Secretary of Mining for
Twin Cedar Mining District
Township unincorporated City

Twin Cedar Mining District Local Government With Home Rule And Mining District Make The Rules
Secretary of Mining David D Everist PO BOX 1831 JACKSON VILLE OREGON 97530
PHONE #541-531-7273 email Twincedarminingdistrict@gmail.com

DATE 10-5-2016

Address To ALL THE PARTIES NOTICE TO THE PARTIES HAVE APPROXMENT 37 DAYS TO ANSWERING NOTICE IN DEMAND TO APPOINT PRIMARY TRUSTEE TO THE GRANT OF 1872 1870 AND 1866 TRUST AS THESES ACTS BY MATTER OF LAW OUR THE COVENANTS OF GRANT THE PRIMARY TRUSTEE HAS MANY DUTIES TO PREFORM LIKE DEFEND THE GRANT.THE TRUST WAS PASS BY CONGRESS THE GRANTOR SUBJECT MATTER IS GRANT FLOWS TO THE GRANTEE AND LOCATEOR OF MINING CLAIMTANT. NOTICE I David D Everist Secretary of Mining for Twin Cedar Mining District Demand COORDINATE WITH MY MINING DISTRICT AND OTHER MINING DISTRICTS ON APPOINTING PRIMARY TRUSTEE AND AUDIT OF ACCOUNTABLTY AND OTHER ISSUES ON COORDINATION AND OR COORDINATING WITH ALL THE PARTIES requiremenmt of the GRANT REQUIRE PRIMARY TRUSTEE TO BE ACTIVE PRIMARY TRUSTEE TO MANGE THE THE GRANT. PRIMARY TRUSTEE HAS DUTIES OF TRUST REQUIREMENTS TO PREFORM AS PRIMARY TRUSTEE SHALL AND OR MUST FALLOW THE COVENANTS OF THE GRANT USC 30 SEC 22 ETSEQ CHECK OUT SEC 28.1801 THOUGH 1811BUT REAL ALL USC 30 SEC 22 ETSEQ AS MANTORY APPOND ALL THE PARTIES ETAL ATAL THIS NOTICE TO LET THE WHOLE WORLD KNOWN ABOUT DUTIES OF TRUST BY PRIMARY TRUSTEE REQUIRE TO PREFORM OR BREACH THEREOF DUTIES AS CONSTRUCTIVE TRUST AND CONSTRUCTIVE TRUSTEE SECOND TRUST RESTATED TRUST IMPOSE ON ACTING AS TRUSTEE BUT USING DECEPTION TO SUPPRESS RIGHTS, AND ~~Deprivation~~ of Rights OF GRANTEE TO TAKE PROPERTY RIGHTS AT TRIAL BY US ATTORNEY AND AUSA MR FONG AND AUSA MR EVANS

TYPE B Deprivation of Property Rights

SIGN David D Everist Secretary of Mining for Twin Cedar Mining District Local Government with Home Rule Mining District Make The Rules



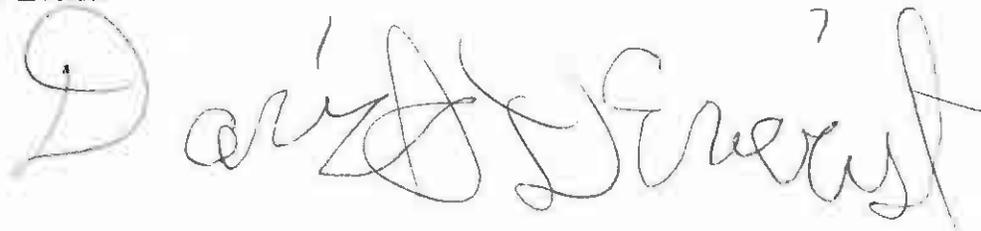
Twin Cedar Mining District Local Government with Home Rule Mining Districts make the Rules
10-12-2016

Secretary of Mining David D Everist
PO BOX 1831 JACKSON VILLE
OREGON 97530 Phone #541-531-7273

email Twincedarminingdistrict@gmail.com

NOTICE TO ALL THE PARTIES JOSEPHINE COUNTY Commissioner Hare Nominated COUNTY ATTORNEY Wally Hicks as liaison to my mining district and BOARD OF JOSEPHINE COUNTY COMMISSIONERS AND I AGGREGATED AND COMMISSIONER Hare IS ON SISQ RESOURCE COMMITTEE BLM USFS WHERE MY MINING DISTRICT IS IN JOSEPHINE COUNTY USFS SISQ MTS RANGE. MR HICKS COUNTY ATTORNEY IS ADVISING THE COMMISSIONER HARE AND THE BOARD OF COMMISSIONERS AS LIAISON TO MY MINING DISTRICT ABOUT GOVERNMENT TO GOVERNMENT COORDINATION OVER MINING ISSUE LIKE APPOINTING PRIMARY TRUSTEE TO GRANT OF 1872 1870 AND 1866 THESE ACTS OUR THE COVENANTS OF THE TRUST REQUIRE ACTIVE PRIMARY TRUSTEE TO MANAGE THE GRANT SUBJECT MATTER IS GRANT FLOWS TO THE GRANTEE AND TRUSTEE CONDUCT AUDIT OF ACCOUNTABILITY OVER MY TAKINGS CASE TO ASSESSMENT OF DAMAGES AS USDI BLM INSPECTOR GENERAL OFFICE AND USDI BLM INSPECTOR SUMNER CRAWLEY INVITE ME TO FILE TAKING CASE. I AS Secretary of Mining for Twin Cedar Mining District local government with Home Rule and Mining Districts make the Rules DEMAND COORDINATION GOVERNMENT TO GOVERNMENT GENERAL TRUSTEE CHIEF OF MINERALS AND MINING CHISPHER B DEWITT COME FORTH TO COORDINATE WITH MINING DISTRICTS AND APPOINT PRIMARY TRUSTEE TO GRANT AND CONDUCT AUDIT OF ACCOUNTABILITY

Sign by Secretary of Mining David D Everist

A handwritten signature in cursive script that reads "David D Everist". The signature is written in dark ink and is positioned to the right of the typed name.

**Testimony of Deb Evans and Ron Schaaf in STRONG support of the
Cascade-Siskiyou National Monument Expansion
Public Hearing – Oct. 27, 2016, North Medford High School**

October 27, 2016

Commissioners Dyer, Roberts and Breidenthal,

I have come tonight from the Greensprings where I am fortunate enough to live adjacent to the Cascade-Siskiyou National Monument. My home and an additional 550 acres of timber and high meadow we co-own with friends and family are all in the proposed monument expansion and we are STRONGLY in support. The public lands surrounding us and that would be encompassed in the monument expansion will continue to be made available for public use such as hunting, fishing, hiking and recreating but in addition to that it will provide critical integral habitat that is needed to preserve the astounding biological diversity that is both unique and a treasure here in Southern Oregon--not just for those of us lucky enough to live on the Greensprings and in the Rogue Valley, but as a draw for people from up state and out of state to come and share both the wonders and their dollars to experience what we call home. Since the monuments designation, we have seen a marked increase in birders, fishers, bikers, educators, students, researchers and outdoor enthusiasts exploring the region.

Additionally, science is now crystal clear that climate change caused by excessive amounts of human generated greenhouse gas emissions will be significant here in Southern Oregon. Already it is taking a toll as evidenced by my immediate neighbor, who has lived up on the Greensprings for over 60 years, and last summer her spring went dry forcing her to have to haul truckloads of water to her home. Drier, hotter summers and less snow pack are already causing increased fires. One way to help reverse the trends of climate change, which we see as the greatest threat human kind has ever faced, is to preserve areas of critical habitat and manage forests for climate resilience, especially old growth timber, for increased sequestering of carbon. World-wide we are losing species at an alarming rate. Creating a complete, integrated habitat area where biologically diverse species can thrive is of tremendous value.

On the economic front, there is increased use of our area and area businesses, due to the Cascade-Siskiyou National Monument. Many of our neighbors who were fearful of the original monument designation in 2000 have recently expressed that it has turned out to be a good thing. We agree! From elk to Mardon skippers, Pacific Fishers and the high elevation corridor that connects the Siskiyou with the Cascades, the Cascade-Siskiyou National Monument and expansion is a one-of-a-kind bioregion. We encourage you to see the remarkable jewel this expansion will create for our region and we urge President Obama to approve the Cascade-Siskiyou National Monument expansion for current and future generations to enjoy and to create new collaborative economies through recreation, education, hunting, fishing and small sustainable private enterprises that benefit from interacting with, and keeping intact, this biologically diverse natural wonder.

Thank you,

Deb Evans and Ron Schaaf
541-601-4748

Jackson County Board of Commissioners

BoC PH Submission # 75

Offered by: Evans + Schaaf

Date: 10/27/16 Received by: [Signature]



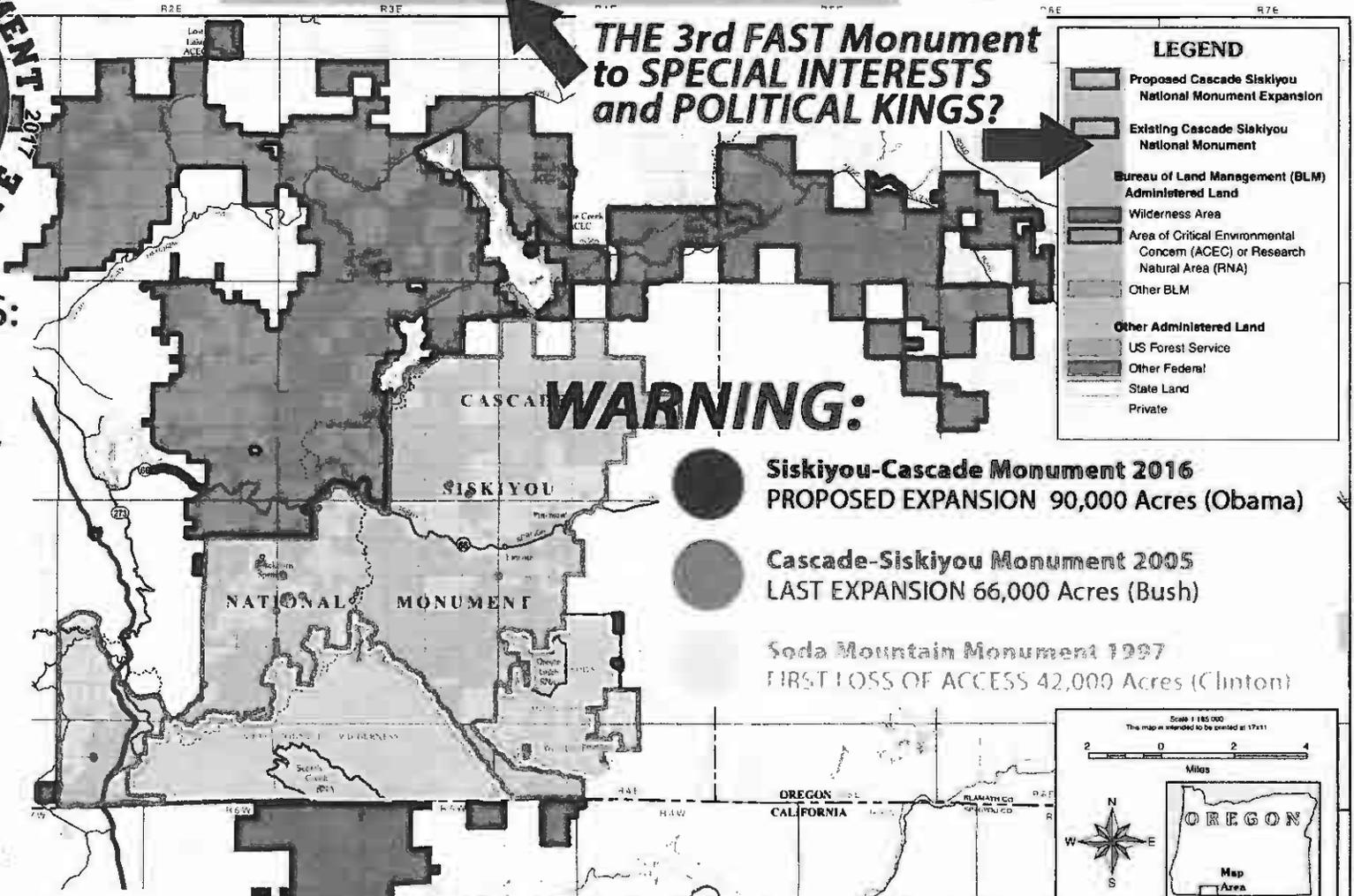
PROPOSED CASCADE-SISKIYOU NATIONAL MONUMENT EXPANSION

October 7, 2016

This map prepared at the request of Senator Jeff Merkley and Senator Ron Wyden



NoMonument.com



LEGEND

- Proposed Cascade Siskiyou National Monument Expansion
- Existing Cascade Siskiyou National Monument
- Bureau of Land Management (BLM) Administered Land
- Wilderness Area
- Area of Critical Environmental Concern (ACEC) or Research Natural Area (RNA)
- Other BLM
- Other Administered Land
- US Forest Service
- Other Federal
- State Land
- Private

THE 3rd FAST Monument to SPECIAL INTERESTS and POLITICAL KINGS?

WARNING:

- Siskiyou-Cascade Monument 2016 PROPOSED EXPANSION 90,000 Acres (Obama)
- Cascade-Siskiyou Monument 2005 LAST EXPANSION 66,000 Acres (Bush)
- Soda Mountain Monument 1997 FIRST LOSS OF ACCESS 42,000 Acres (Clinton)

Scale 1:180,000
This map is intended to be created at 17x11

OREGON
Map Area

No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other maps. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

CONSIDER THIS:

The land on this map proposed or already reserved in a monument, land privately owned, and the land currently federally managed by US Forest Service and BLM. Consider the private land positioned inside the existing and proposed monuments.

TELL CONGRESS TO VOTE OUT THE NEW EXPANSION & OLD MONUMENT NOW!

GIVE BACK ACCESS TO OUR LAND NOW!

LEARN MORE TODAY: NoMonument.com

Jackson County Board of Commissioners
BoC PH Submission # 76
Offered by: Unknown Puckett
Date: 10/27/16 Received by: [Signature]



MURPHY

October 27, 2016

Jackson County Board of Commissioners
10 South Oakdale Room 214
Medford, OR 97501

RE: Cascade-Siskiyou National Monument Expansion

Dear Commissioners:

Good evening, my name is Randy Zustiak and I am the procurement manager of Murphy Company based in White City, OR. I am here on behalf of Murphy Company to provide comments in regards to the proposed expansion of the Cascade-Siskiyou National Monument.

Murphy Company is a third generation family run forest products business established in 1909 that currently employs approximately 700+ people with operations in four locations in Oregon including White City Veneer and Rogue River Plywood here in the Rogue Valley. The company has continued to invest significant capital to stay competitive with the global influences in the forest products business. Murphy Company is committed to the people we employ and the communities we support where we operate.

Our facilities in White City and Rogue River directly employs 300 plus people with family grade wages and supports an additional 320 jobs within the integrated operations of the Murphy Company. Indirectly the volume harvested from federal lands to supply our mill supports an additional 245 jobs, including, loggers, truckers, road builders, and consultants. All of the above mentioned jobs support our rural communities who have continued to feel the unfair brunt of a shrinking timber industry. The quality of the lives of the people who live in these communities is dependent upon the lands under federal management being available for forest restoration activities.

Over the last few decades there has been a steady decline in the timber sale volumes produced from Federal Lands in Southern Oregon, particularly from the Medford BLM district. This decline has not only created a nearly catastrophic loss to the timber industry in Jackson and Josephine counties, but has put the lands under the Federal management in dire forest health.

Jackson County Board of Commissioners

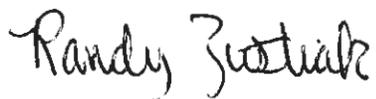
BoC PH Submission # 77

Offered by: R. Zustiak

Date: 10/27/16 Received by: A

The continuation of putting public lands off limits to management will only make matters worse, and ultimately lead to more catastrophic forest health and loss in the form of large, stand replacing wildfire and insect and disease infestations. Please convey our concerns to the federal officials when they consider expanding the monument. This monument expansion will place more lands off limits to management that are critical for supporting our rural communities and will jeopardize the resources we all value.

Thank you for your consideration,

A handwritten signature in black ink that reads "Randy Zustiak". The signature is written in a cursive, slightly slanted style.

Randy Zustiak
Procurement Manager
Murphy Company
7975 11th Street
White City, OR 97503

Gordon Challstrom
426 S. Stoneham Circle
Medford, Oregon 97504

October 27, 2016

Board of Commissioners
Jackson County Courthouse
10 S. Oakdale Suite #214
Medford, Oregon 97501

Senator Jeffery Merkley
313 Hart Senate Office Building
Washington, DC 20240

Re: Proposed Expansion of Cascade-Siskiyou Monument

Dear Commissioners and Senator Merkley

The O&C Act of 1937, 43 USC 1181a-f, Congress dedicated the O&C lands for sustained yield timber production to generate revenue for the O&C counties which is to provide an economic base for local industries and communities. Jackson County depends on the shared timber receipts to fund necessary services such as public safety, jails, public health, and libraries. If the 53,100 acres are withdrawn from the O&C lands, Jackson County will be negatively impacted financially with the loss of sustained yield timber receipts needed to fund those services.

Congress set aside these Oregon and California Railroad Company revested lands for the financial benefit of the counties through the sustained yield timber receipts and only Congress can change or modify the Act. Including these lands in the expanded CSNM would reduce future timber receipts permanently at a time when government is asked to provide more and more services locally.

Jackson County Board of Commissioners
BoC PH Submission #78
Offered by: G. Challstrom
Date: 10/27/16 Received by: AA

Gordon Challstrom

October 27, 2016

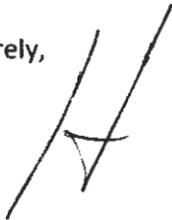
Page 2

Based on the Department of Interior Solicitors Opinion M. 30506, March 9, 1940, the President has NO authority to change the land use purpose from what Congress specified in the O&C Act. Currently, the BLM Management Plan adopted in August for the O&C Lands is being litigated due to large proportion being dedicated to forest reserves which further reduces sustained yield timber receipts that the County needs.

Based on the above arguments, I hope and pray the expansion plans will be terminated.

Thanks in advance for your consideration!

Sincerely,

A handwritten signature in black ink, consisting of a stylized 'G' and 'C' that are connected and slanted upwards to the right.

Gordon Challstrom

To: Jackson County Commissioners: Roberts, Dyer, Breidenthal

Public Hearing October 27, 2016

For years, this County has been suffering at the hands of the Federal Govt. and the participating environmental groups who sue in an effort to get us used to the idea that we don't control what goes on in these O & C lands. No matter how morally superior their efforts sound, the end result has been a collateral attack on the County and we have all paid the price, not only because of the loss of revenue but because of the loss of our forests to fire. While I understand there have been attempts to deal with this overreach for some time, at the end of the day they have been woefully inadequate. Now they are coming in for the kill. These Federal Agencies are attempting to pry these lands out of your fingers so that the Counties will no longer think of them as for the benefit to the County and its constituents.

The fact is that they are ignoring the law:

1. They have made no attempt to coordinate with the County defying the law that requires it.
2. They are completely ignored the O&C Act (I don't even know why we are here tonight, the O&C lands are predisposed property, period.)
3. They are perverting the intent of the Antiquities Act,
4. While they may be following laws such as the FLPMA, they are ignoring the Organic Act of 1897, which is the foundation of our national forest system. FLPMA has a saving clause, which means that it does not amend or replace previous laws. So these laws must be taken into account in aggregate. Instead, they simple pick and choose the laws and regulations that wish to acknowledge.

In the Organic Act it outlines two primary purposes for the Act.

- 1) To ensure a continuous supply of timber
- 2) Uninterrupted water flows

Both for the benefit of the citizens of the United States.

In addition, the case of US vs New Mexico, the Organic Act was upheld in 1978.

This tyrannical takeover is unlawful from beginning to end. And that does not enough broach the subject of the President's lack of authority to create this monument as outlined by the Solicitor General, as well as the fact that no such authority exists in the Constitution. This is a clear violation of their Public Trust Duty. So the question tonight is whether the County is going to continue to allow this lawlessness or not. The answer has been sitting there all this time. FOLLOW THE LAW.

Jackson County Board of Commissioners

BoC PH Submission # 79

Offered by: J. Karcey

Date: 10/27/16 Received by: AS

There are better tools at your disposal, which have never been exercised, that would re-establish proper management of the forest and block this land grab in short order. So I pose the question to you tonight, are you committed to doing what it takes to protect this county? And if not, it will be very important that you answer to the people as to why you would not take rightful action when it has been available to you. Because if you won't take meaningful action after such a direct hit, when will you? What do they have to do before you stand up? Time is running out.

The way I see this is that the County has been dancing around this issue for a very long time. You, as County representatives are running out of options. Either you exercise your rights, protecting our rights as constituents, or you lay down and sell us out. Filing a lawsuit is just more dancing around the problem. The decision to do that should have been done years ago if the County thought that was a viable option, it's too late now. And I would submit that the fact that the Association of O&C Lands already has a lawsuit going and the fact that the Federal Govt. proposed this Monument expansion anyway, is prima fascia evidence that they are not too concerned about that legal action. Suing them is a drain of time and money without assurance of a positive outcome.

There is not only a better way, but a way that puts you back within the confines and comfort of following the law and the Constitution thus fulfilling your oath of office and fiduciary obligations. These options have always been available to you, whether legal counsel has provided them to you or not, I don't know, but the time is now to utilize them.

In conclusion, I am happy to provide supporting documents to assist you.



Jeri Karcey

5076 Lane Creek Rd.

Central Point, OR 97502



COUNTY OF SISKIYOU

Board of Supervisors

P.O. Box 750 - 1312 Fairlane Rd
Yreka, California 96097
www.co.siskiyou.ca.us

(530) 842-8005
FAX (530) 842-8013
Toll Free: 1-888-854-2000, ext. 8005

November 02, 2016

The Honorable Sally Jewell, Secretary
Department of the Interior
1849 C St. NW
Washington, DC 20240

Subject: Proposed Expansion of the Cascade-Siskiyou National Monument

Dear Secretary Jewell:

The Siskiyou County Board of Supervisors is writing to express our concerns and objection to the proposed 64,000 acre expansion of the Cascade-Siskiyou National Monument (Monument), which would result in total coverage of the Monument being 130,000 acres, 10,000 of which would be in Siskiyou County. First, we were made aware of this proposal one week prior to the October 14, 2016, public meeting in Ashland, Oregon. As part of the community who will be impacted by expansion of the Monument, we are owed appropriate and timely notification of any such actions. In addition, as a result of the large crowd that the public meeting drew, it is crucial that future public outreach occur if this improper Monument expansion were to move forward.

The Monument expansion would occur under the Antiquities Act, which would allow the President of the United States to designate the Monument by signature, without coordination with Congress or the impacted states. The original intent of the Antiquities Act was to protect archeological and Native American areas by giving the President of the United States power to declare as Monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest" while at the same time limiting that designation to the "smallest area compatible with proper care and management of the *objects* to be protected." Based on this direction, it is the Siskiyou County Board of Supervisors position that the broad designation of a Monument under the Antiquities Act, such as the Cascade-Siskiyou National Monument expansion, is misuse of the act itself and should be prohibited. Designation of a Monument, that would have significant impacts on local citizens and the economy, needs to be vetted through a more deliberate and thoughtful process prior to any possible implementation.

Brandon Criss
District 1

Ed Valenzuela
District 2

Michael N. Kobseff
District 3

Grace Bennett
District 4

Ray Haupt

Jackson County Board of Commissioners

BoC PH Submission # 80

Offered by: Bennett

Date: 10-27-16 Received by: [Signature]

According to a February 02, 2016, article in the Mail Tribune, the Bureau of Land Management (BLM), who manages land within the boundaries of the current and proposed Monument, was considering closing 164 miles of logging roads within the Monument, which is nearly forty percent of its total road system. BLM stated that along with pressure from environmental groups to close the roads, which include threat of lawsuit, they could not afford to maintain these roads due to their limited road maintenance funds. In addition, these roads were chosen to be decommissioned as the road network was originally created for commercial logging, which is no longer allowed within the boundaries of the Monument, and BLM anticipates that the roads would no longer be needed. Conversely, it is our position that without proper maintenance of these roads, firefighting activities, fire-line and fire-break maintenance, search and rescue efforts, access to recreation, and access to range allotments would be severely hampered. In areas that experience wildfire, there would be no way to access them after the fires to address water quality and future fire protection issues, which is essential for restoration efforts. If the BLM does not have the funds to maintain the road structures and land within the existing Monument, additional funding should not be spent to expand this Monument and risk the closure of other critical road systems.

Siskiyou County is extremely concerned about the future of logging and rangeland grazing in the areas where Monument expansion is proposed. Although Senator Merkley outlined during the October 14, 2016, public meeting that grazing practices would need to be taken under serious consideration if the Monument expansion were to be established, we know that grazing activities could suffer greatly. If roads are to be closed, as is proposed for the current Monument, this could extremely inhibit access to grazing allotments, making it impossible and infeasible for livestock owners to continue grazing on these public lands. As for forested areas, Siskiyou County is concerned that timber lands covered by the proposed Monument would be prohibited from timber harvest activities as was outlined for the original Monument under Proclamation 7318 by President Bill Clinton. Active forest management and restoration of these lands would continue to be further complicated and prohibited by possible expansion, and have not been properly addressed throughout this rushed effort to approve the Monument. Allowing for the continuation of responsible livestock grazing and timber harvesting activities is essential to the health of these lands and ecosystems. Discontinuation of these activities will promote overgrowth of plants and trees, which will result in future catastrophic wildfires with no way to access them.

Senator Merkley also stated during the public meeting that private lands within the footprint of the proposed expansion would not be affected by management of the Monument. However, under Proclamation 7318, lands within the original Monument not owned by the United States were reserved as a part of the Monument upon acquisition of title by the United States. This signifies to us that there is future intent to take these lands out of private ownership, resulting

in impacts to private landowners and local economics by removing this property from the tax basis. This assumption has been made evident by the private land within the footprint of the existing Monument that has previously been turned over to the Federal government.

We urge you to reconsider the proposal to expand the Cascade-Siskiyou National Monument and instead manage this land for the benefit of all United States citizens, including the local public, who depend on it for economic, recreational, grazing, and forest management purposes. Siskiyou County remains opposed to Monument expansion, and any other Monument designation due to its impacts on the public, local economy and overall health and management of the land.

If you have any questions please contact Elizabeth Nielsen, Siskiyou County Natural Resource Policy Specialist at 530-842-8012, or by email at enielsen@co.siskiyou.ca.us

Sincerely,

A handwritten signature in black ink that reads "Grace Bennett". The signature is written in a cursive, flowing style.

Grace Bennett, Chair
Board of Supervisors

cc: Congressman Rob Bishop
cc: Congressman Doug LaMalfa
cc: Rural County Representatives of California
cc: California State Association of Counties
cc: Senator Jeff Merkley

Congress of the United States
House of Representatives
Washington, DC 20515-0301

March 22, 2016

The Honorable Ken Calvert
Chairman
Committee on Appropriations
Subcommittee on Interior,
Environment, and Related Agencies
U.S. House of Representatives
B-308 Rayburn HOB
Washington, DC 20515

The Honorable Betty McCollum
Ranking Member
Committee on Appropriations
Subcommittee on Interior,
Environment, and Related Agencies
U.S. House of Representatives
1016 Longworth HOB
Washington, DC 20515

Dear Chairman Calvert and Ranking Member McCollum:

As you begin work on the fiscal year (FY) 2017 Interior, Environment and Related Agencies Appropriations bill, we urge you to include language that would prevent presidential abuse of the Antiquities Act.

National monuments can be powerful symbols of our nation's historical and natural heritage. Unfortunately, there is a long and shameful list of abuses of the Antiquities Act whereby Presidents of both parties far exceeded the intent and letter of the 1906 law. The law was enacted over concerns about protecting mostly prehistoric Indian ruins and artifacts—collectively termed "antiquities"—on federal lands in the West.

By definition, the sites were to be very small—"the smallest area compatible"—with preserving the antiquity, not millions of acres. According to the nonpartisan Congressional Research Service and the actual statute, "In establishing a national monument, the President is required by the Antiquities Act to reserve 'the smallest area compatible with the proper care and management of the objects to be protected.'"

Presidents on either side of the aisle shouldn't have unilateral authority to create massive new national monuments by executive fiat without local public input. It is, after all, the people living near these national monuments who are most affected by their creation. These citizens deserve to have a strong voice regarding the use of public land near their communities.

Unilateral designations that circumvent Congress typically result in devastating consequences for local communities that negatively affect their future economic prosperity. Designations under the Antiquities Act don't have to follow the environmental process required under NEPA and also aren't required to solicit public input prior to declaration. These declarations often result in some of the most restrictive land-use regulations possible and also greatly impact hunting,

fishing, OHV, and other recreational activities. Grazing rights, water rights, wildfire prevention, and other land management activities can also be negatively impacted.

In the fiscal year 2016 appropriations process, the House passed an amendment with bipartisan support to prohibit the use of funds to make a Presidential declaration by public proclamation under the Antiquities Act in counties where there is significant local opposition. In the 113th Congress, the House passed legislation with bipartisan support to reform the Antiquities Act and ensure public involvement in the creation of national monuments.

President Obama has exceeded the intent of this law and abused the Antiquities Act more than any other American president. To date, he has designated or expanded 22 national monuments, and these designations have locked up more than 3 million acres of land. In February 2016, the president unilaterally designated three new national monuments in the California desert encompassing nearly 1.8 million acres. To make matters worse, President Obama states on the White House website promoting his latest declarations that he has protected (locked up) “more than 265 million acres of land and water – more than any other president in American history.” Unfortunately, he isn’t done yet, and we can expect several more overreaching designations within the next several months.

Accordingly, we ask that you include language similar to the following:

NATIONAL MONUMENTS

“(a) Consultation Requirement- The President may not designate lands to be a new or expanded national monument unless, not more than 1 year before such designation, the Secretary of the Interior--

“(1) consulted with each community, county, municipality, city, town, or township created pursuant to State law with boundaries within or adjacent to lands affected by the designation; and

“(2) obtained the concurrence for the designation from--

“(A) the governing body of each community, county, municipality, city, town, or township described in paragraph (1); and

“(B) the wildlife management and land management authorities and governor of each State in which all or part of the new or expanded national monument would be located.

“(b) Limitations on Declarations- A declaration shall not--

“(1) include private property without the informed written consent of the owner of that private property;

“(2) be construed to increase the amount of funds that are authorized to be appropriated for any fiscal year;

“(3) apply to more than 5,000 acres;

“(4) include any area of the exclusive economic zone as established by Proclamation Numbered 5030, dated March 10, 1983;

“(5) be construed to prohibit or constrain any activities on or above the land conducted by the Department of Defense or other Federal agencies for national security purposes, including training and readiness activities; or

`(6) be used to create or expand a national monument located, in part or in whole, in the following:

`(A) The counties of Coconino, Maricopa, Mohave, and Yavapai in the State of Arizona.

`(B) The counties of Modoc and Siskiyou in the State of California.

`(C) The counties of Chaffee, Conejos, Dolores, Moffat, Montezuma, Montrose and Park in the State of Colorado.

`(D) The counties of Clark, Lincoln, and Nye in the State of Nevada.

`(E) The county of Otero in the State of New Mexico.

`(F) The counties of Jackson, Josephine, and Malheur in the State of Oregon.

`(G) The counties of Carbon, Duchesne, Emery, Garfield, Kane, San Juan, Uintah, and Wayne in the State of Utah.

`(H) The county of Penobscot in the State of Maine.

`(c) Additional Requirements for Declarations- A declaration shall

`(1) expire 3 years after proclaimed or reserved unless specifically approved by--

`(A) a Federal law enacted after the date of the proclamation or reservation; and

`(B) a State law, for each State where the land covered by the proclamation or reservation is located, enacted after the date of the proclamation or reservation; and

`(C) a Governor, for each State where the land covered by the proclamation or reservation is located, enacted after the date of the proclamation or reservation; and

`(2) comply with the National Environmental Policy Act of 1969

`(d) Water Rights- Water rights associated with a national monument created or expanded by a declaration --

`(1) may not be reserved expressly or by implication by a declaration; and

`(2) may be acquired for a national monument created or expanded by declaration under this subsection only in accordance with the laws of the States in which the water rights are based . '

We thank you for your consideration of this request, and for your leadership on the committee.

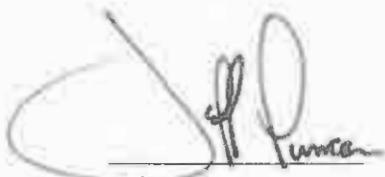
Sincerely,



Paul A. Gosar, D.D.S
Member of Congress



Ken Buck
Member of Congress



Jeff Duncan
Member of Congress



Ryan Zinke
Member of Congress



Rob Bishop
Member of Congress



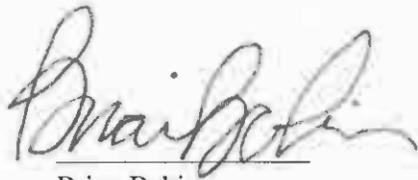
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Member of Congress



Joe Heck
Member of Congress



Scott Tipton
Member of Congress



Brian Babin
Member of Congress



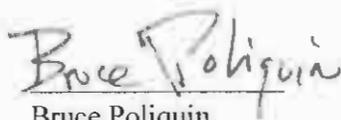
Doug LaMalfa
Member of Congress



Dave Brat
Member of Congress



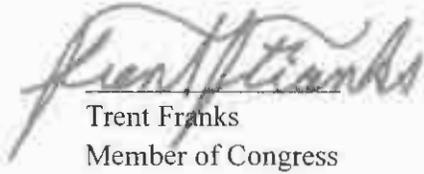
David Schweikert
Member of Congress



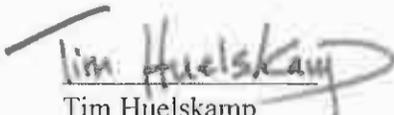
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Trent Franks
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Kevin Cramer
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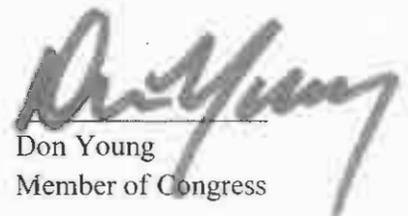

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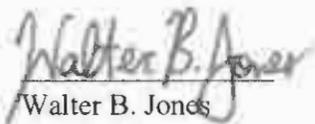

Paul Cook
Member of Congress

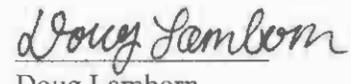

Raul Labrador
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Greg Walden
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Jason Chaffetz
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Don Young
Member of Congress


Walter B. Jones
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Doug Lamborn
Member of Congress


Stevan Pearce
Member of Congress


Cynthia Lummis
Member of Congress



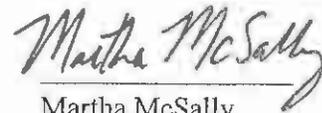
Dan Benishek
Member of Congress



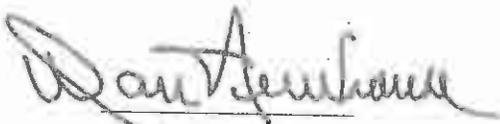
Steve King
Member of Congress



Mark Meadows
Member of Congress



Martha McSally
Member of Congress



Dan Newhouse
Member of Congress

October 27, 2016

Jackson County Commissioners
10 S. Oakdale Ave.
Medford, OR 97501

Re: October 27, 2016 public hearing on the proposed Cascade-Siskiyou National Monument expansion

My name is John Stromberg and I'm the Mayor of the City of Ashland. The City of Ashland is the closest Jackson County town to the Monument. We have a long history of supporting protection of public lands near our town. Protecting public lands promotes regional quality of life and long-term benefits for local economies. The City of Ashland has formally supported protection of what is now called the Cascade-Siskiyou National Monument area since 1985.

Our support includes endorsing the original Monument the year after it was established. More recently, our City Council passed a June 15 (2015) unanimous resolution supporting Monument expansion that urges "national elected officials to use the best ecological criteria in considering the Monument's present and future needs – as well as considering recreational opportunities and scenic resources – as they determine appropriate expanded boundaries for the...Monument." No one spoke in opposition at our publicly noticed June 15 (2015) regular meeting. Our resolution was reported in the June 18 (2015) edition of the *Ashland Daily Tidings*.

The board of the Ashland Chamber of Commerce formally and unanimously asked us to pass such a resolution in the best interests of our citizens and visitors.

Our June 2015 resolution notes that credible scientists – many of them respected professionals well known to us – find "current Monument boundaries to be inadequate because of: fragmented habitats (including incomplete watersheds); the need for more complete environmental gradients to increase resilience in the face of significant climate change; and increasing development and land use pressures on adjoining lands that, if unabated, could undermine long-term persistence of the Monument's biological resources."

I have been troubled to hear misinformation from some Monument expansion opponents. Please allow me to correct some of that unfortunate misinformation...

- Though proposed outer boundaries encompass multiple ownerships, only already federal public land would become Monument land. As with the current Monument, private land stays private.
- But Howard Prairie Reservoir and its surrounding Bureau of Reclamation Lands are NOT part of the Monument expansion proposal. Howard Prairie would NOT be in an expanded Monument.

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Jackson County Board of Commissioners

BoC PH Submission # 81

Offered by: J. Stromberg

Date: 10-27-16 Received by: [Signature]



CITY OF ASHLAND

- Hunting and fishing continue to be permitted in the existing Monument and would continue to be allowed in an expanded Monument, managed as it is now throughout the state, by the Oregon Department of Fish and Wildlife.
- Despite likely eventual closure for habitat and hydrological recovery of some former and no-longer-needed logging roads, continued motor vehicle access would remain more than adequate for all ages and physical abilities.
- And Oregon Department of Forestry wildfire suppression efforts would continue to be immediate. Many studies show that protected areas are less prone to high-severity fire than logged areas.

As our former long-time city administrator, Brian Almquist, wrote us in his own support for Monument expansion, *“We are indeed blessed to have such a national amenity in our municipal backyard – even if it is still a work in progress...”* Jackson County is also blessed to have a Cascade-Siskiyou National Monument. Jackson County’s citizens – and the land itself – will be increasingly better off over time with an expanded Monument.

The City of Ashland supports Cascade-Siskiyou National Monument expansion and urges the Jackson County Commissioners to do the same.



Good evening, my name is George Sexton, I serve as the Conservation Director for the Klamath Siskiyou Wildlands Center in Jackson County.

Thank you for considering my testimony.

It seems odd to me that the County Commissioners would hold a public hearing AFTER they have already taken a position opposing science-based expansion of the Cascade Siskiyou National Monument. My thinking would have been that perhaps it would be more meaningful to ask for public input PRIOR to developing a formal position. So I am unsure as to what purpose my testimony will contribute.

My understanding is that in addition to the desire to maximize logging receipts to our county from BLM public lands that belong to all Americans, that the Commissioners have some concerns about how BLM Monument management would impact forest fire hazard. I would like to address the forest fire hazard question.

Rather than express my opinions or preferences, I will quote directly from the findings of local fire managers and fire scientists in the Forest Service and BLM about the INCREASED fire hazard presented by regeneration logging as advocated in the County's O&C litigation compared to the FIRE RESILIENCY of late-successional, closed canopy forests that are present in many older forest stands in the vicinity of the Cascade-Siskiyou.

Again and again and again post-fire analysis of wildfires in the region has found that larger old-growth trees with high crowns are more resilient to fire events than are dense tree plantations that tend to carry fire and burn in stand-replacing intensity. This is important because traditional BLM O&C timber management includes "regeneration harvest" of fire resilient late-successional forests and conversion of those stands into second-growth tree plantations that often burn at high severity. Monument protection COULD allow the BLM to manage for fire resiliency and biodiversity as opposed solely for timber production as the Association of O&C Counties advocates in the lawsuit regarding SW Oregon public forest management that it's Portland lawyers filed in the Washington DC Circuit Court.

Here are the applicable, scientific, repeatable, actual findings regarding these two options for public lands management:

"Plantations are extremely flammable because of high crown to trunk ratio and because crowns are very close to the ground."

-Upper South Fork Trinity River Happy Camp Creek Watershed Analysis, Shasta-Trinity National Forest at page 21.

"While the severity varied throughout the fire area, young timber plantations carried the fire while older stands tended to be more resistant. This is mostly due to young timber plantations having a high density of ground fuels."

-BLM Douglas Complex Fire 9/5/13 Burned Area Emergency Rehabilitation Plan

Jackson County Board of Commissioners

BoC PH Submission # 82

Offered by: G. Sexton

Date: 10-27-16 Received by: JD

“[Regenerated] stands could exhibit higher flame lengths, rates of spread and fire intensity. Fires started within these stands could be difficult to initially attack and control. For 5 to 20 years following planting, the overall fire hazard would increase in these stands.”

-Lost Creek Environmental Assessment. Medford BLM, Butte Falls Resource Area. Page A-8.

Here are the local Medford BLM findings concerning tree plantation vs native forest fire hazard contained in the 2008 Butte Falls Blowdown Salvage Environmental Assessment:

PLANTATION FIRE BEHAVIOR:

Page 56:

“Stands 10 to 60 years old which have been modified by past harvest include the mixed-conifer plantations found throughout the Fire and Fuels analysis area. These stands show potential for very high intensity fires with the likelihood of higher mortality of the existing stand following a wildfire event; this is likely due to the large amount of fine fuels, such as grasses and needle cast, as well as a high shrub component...”

“The current expected fire behavior of these stands would make suppression of a fire by initial attack resources very difficult. Hand attack would not be feasible. Containment of a fire at a smaller size would be unlikely; the ladder fuel component found in these stands would carry fire into the canopies very quickly, creating the high flame lengths and intensities...”

LATE SUCCESSIONAL OLD GROWTH FIRE BEHAVIOR:

Page 57:

“The multi-layered, mixed-conifer stands in age classes greater than 120 years with more open stand structure have lower surface fuels and higher canopy heights. These stands would likely have single or group tree torching with low rates of spread and short flame lengths...A fire started within these stands would likely be easily suppressed.”

UMPQUA NATIONAL FOREST FINDINGS:

Two fires in 2002 on the Umpqua National Forest were evaluated for their effect on the forest. Excerpts from the April 2003 Wildfire Effects Evaluation Project by the Umpqua N.F. are make clear the impact of creating more tree plantations:

"Plantations had a tendency to increase the rate of fire spread and increased the overall area of stand-replacement fire effects by spreading to neighboring stands." Page 4

"Fire burned most plantations with high intensity and spread rapidly through the canopy of these young stands." Page 13

"Plantation mortality is disproportionately high compared to the total area that plantations occupied within the fire perimeter." Page 26-27.

"Crown fire spreads readily through these young stands: rates of fire spread can be high, and significant areas of mortality can occur in and adjacent to these stands." Page 25.

Finally, the report concludes that the fire behavior in forest that had not been converted to tree farms was normal. "The pattern of mortality in the unmanaged forest resembles historic stand-replacement patch size and shape." Page 56.¹

MEDFORD BLM

Also, please see the finding at page 98 of the Medford BLM Trail Creek Timber Sale EA indicating that:

A forest's resiliency to fire can be increased by managing surface fuels to limit the flame length, removing ladder fuels to keep flames from burning into tree crowns...and retaining larger diameter trees that are more fire resistant.

BISCUIT FIRE

A peer reviewed June 2007 publication in the Proceedings of the National Academy of Science Journal by Thompson, Spies and Ganio further detailing the impacts of plantation forestry on fire behavior in the Biscuit Fire of 2002. The authors found that:

- Fire severity was 16 to 61 percent higher in logged and planted areas, compared to those that had burned severely and were left alone in a fire 15 years earlier;
- Young forests in this region are susceptible to recurring severe fires. Compared to an older forest with branches high above the forest floor, young trees are very vulnerable, whether they are planted or naturally regenerated;
- Dead woody fuel . . . is only part of the fire risk story, and it may not be the most important after a few years;

¹ United States Department of Agriculture, Forest Service. Umpqua National Forest. Wildfire Effects Evaluation Project. 4, 13, 25, 26, 27, 56. April 2003.

- Natural regeneration of forests, he said, appears to result in at least slightly – and sometimes significantly – less risk of severe future fires. This could be because the regenerating trees are patchier, have open gaps, more species diversity, or other factors. But the study showed that total consumption of tree crowns in a recurring fire situation is more severe in the managed stands than the natural ones, at least when there are one to two decades between fires.

TIMBERED ROCK FIRE

Please note that the Oregon Department of Forestry's Damage Appraisal Report for the 2003 27,000 acre Timbered Rock fire found that of the forests 200 years and older that burned only 10% burned high intensity, while 100% of the tree farms less than 35 years old burned so intensely that all the trees died.

CONCLUSION

Flying in or out of the Medford airport makes it abundantly clear that the type of widespread regeneration logging advocated by the Association of O&C Counties is occurring and has occurred on tens of thousands of acres of public and private forestlands surrounding the Rogue Valley. While such logging may meet some County and timber industry economic goals, it INCREASES rather than DECREASES fire hazard. Should the County view fire resiliency as something more than a talking point in advocating increased logging, Cascade Siskiyou Monument Expansion offers the opportunity for the BLM to manage forest-lands for fire resiliency and biodiversity rather than for additional tree-farm establishment.

Thank you for considering my testimony.

George Sexton
Conservation Director
Klamath Siskiyou Wildlands Center

WILDFIRE EFFECTS EVALUATION PROJECT



UMPQUA NATIONAL FOREST



APRIL 2003

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Purpose of the Analysis

An interdisciplinary team analyzed the effects of the record-setting 2002 fires on the Umpqua National Forest for three important reasons. First, it answers many commonly asked questions about the effect of fire on various natural and cultural resources found within the fire area. Second, this analysis addresses the effects of the Umpqua fires on a watershed scale and across the administrative boundaries of two affected Ranger Districts in order to provide consistent documentation and avoid redundancy. Finally, the analysis provides needed information for forthcoming projects aimed at salvaging forest products and repairing/restoring fire-affected landscapes, watersheds, roads and recreation facilities. Ranger Districts are charged with planning fire recovery projects via site-specific environmental analysis under Federal laws and policies. The National Environmental Policy Act, or NEPA, requires thorough disclosure of existing environmental conditions and cumulative effects analysis for affected resources. This analysis will provide a common framework to assist Ranger District teams in NEPA analyses.

This analysis is documented in two parts - the main body of the document is a summary of the findings; the Appendix is comprised of additional background information on methods, data used, and maps generated in the analysis but not displayed in the main document.

This analysis complements the 2003 Watershed Restoration Business Plan Update recently developed by staff on the Umpqua National Forest as a companion document to address land and resource management needs in the context of the 2002 fires and the dynamic nature of forested ecosystems.

Table of Contents

Purpose of the Analysis	i
Executive Summary	iii
Introduction	1
Fire Progression	1
Forest Landscapes: Past, Present and Future.....	5
Desired Vegetation	8
Key Resource Questions	10
Resource Assessment.....	11
Vegetation	11
Fire Severity	13
Soil Productivity	16
Current and Historic Vegetation	17
Estimate of Timber Volumes	20
Noxious Weeds.....	22
Edible Mushrooms.....	23
Fire and Fuels.....	23
Watershed.....	30
Streamflow.....	30
Riparian Reserves	34
Water Quality Limited Streams.....	35
Cumulative Watershed Effects to Aquatic Resources	35
Fish, Wildlife and Rare Plants	37
Fish Populations	37
Impacts to Northern Spotted Owls	38
Impact to Late-Successional Habitat and Reserves	42
Impacts on Land Birds	43
Impacts to Dead-Wood Wildlife Habitat	44
Impact to Big-Game Habitat	50
Impacts to Unique Habitat.....	51
Impacts to Survey and Management Species.....	51
Impacts to Rare Plants.....	51
Roads, Trails, Historic, and Pre-Historic Sites.....	53
Responses to Key Questions	56
References	58

Executive Summary

The 2002 fire season set a record on the Umpqua National Forest for the most acres burned in recorded history. The fires encompassed about 88,000 acres in the southern portion of the Forest. They burned in several of the Forest's most important watersheds for salmon.

Driven by extreme weather conditions and an initial lack of fire fighting crews (due to Regional staffing decisions for other large fires), the 2002 fires on the Umpqua escaped control and burned over a large landscape leaving a natural pattern in the native forest. With one exception, all the fires started during July 12th and 13th lightning storms (Figure I: Lightning Storms on the Umpqua National Forest). The Apple Fire began in August and was human-caused (Figure II: Human-Caused Ignition).

Forest mortality was concentrated in steep, dry locations below 4,000 feet in elevation where steep, south-facing slopes predominated. The young vegetation, including plantations, experienced a disproportionately high amount of stand-replacement mortality caused by crown fires as compared to older, unmanaged forests. Seventy-four percent of the plantations that were less than 20 years old were lost. Plantations had a tendency to increase the rate of fire spread and increased the overall area of stand-replacement fire effects by spreading fire to neighboring stands. Included in the forest mortality is an estimated dead, merchantable tree volume of approximately 550 million board feet in all the land allocations.

North of the topographic divide between the North and South Umpqua rivers, fires tended to burn with higher intensity resulting in larger patches of fire-killed trees. Fires south of the divide resulted in generally smaller patches of stand-replacement fire. This is consistent with historic fire regimes on the Umpqua where the Forest's northern areas historically experienced fires less frequently, but with higher levels of mortality when they occurred. The longer time interval between such fires allowed more fuel buildup, hence larger areas of mortality. Historically fires occurred more frequently in the South Umpqua area, so fuel build-ups were not as prevalent and the mortality patches were generally smaller.

Fire suppression has effectively excluded fire as a natural disturbance process. Consequently, fire suppression has led to the lapse of one to two fire cycles on the Umpqua landscapes, with the inevitable result of increased fuel loads and increased fire risk. The 2002 fires reset many stands with unnatural fuel accumulations. Where fire burned lightly with limited fuel consumption, fuel conditions are expected to return to pre-fire conditions in less than 10 years.

The 2002 fires burned over or adjacent to five developed recreation sites and about 22.7 miles of trails. Most of these developments are still functional but will require some repair work. The North Umpqua Trail between the Apple Creek Bridge and Calf Creek is closed until the trail is reconstructed and burnt bridges replaced.

The effects of the 2002 fires on the aquatic ecosystem will generally result in increased erosion, winter peak streamflows, and summer water temperatures in the watersheds that experienced the most fire. These fires will also recruit much needed large wood into streams. Large wood has been missing in most of the Forest's fish-bearing streams since the 1960's and 1970's when it was removed. The watersheds with the highest concerns for water quality impacts and effects to sensitive fisheries are Boulder, Dumont, and Quartz creeks in the South Umpqua. These basins also represent areas of opportunity for restoration. Strategic placement of large wood will lessen the effects of winter peak flows on fish and their habitat. Planting of riparian areas and uplands will restore lost shade and soil productivity to steep, erosion-prone soils.

The effects of the 2002 fires on the terrestrial ecosystem are losses of soil productivity, particularly on steep/dry sites, the loss of old-growth forest, and the fragmentation of previously large, contiguous blocks of older forest. All of these are important to wildlife associated with older forest conditions. Within the large South Cascades Late-Successional Reserve (LSR), which spans several Ranger Districts on three National Forests, the Umpqua fires resulted in the stand replacement of 10,056 acres of old growth habitat - a 4.6 percent decrease within this large LSR. About 6,100 acres of this LSR are in 210 patches greater than 10 acres in size with less than 40 percent crown closure remaining, which is one threshold for the salvage of timber in the LSR land allocation. The fires also created snag patches, attractive habitat for several bird species, and improved foraging conditions for big game over the next 10 years. Several sensitive plant locations were burned over. Monitoring will determine what, if any, impact has occurred, but most sites are expected to recover.

Morel mushrooms may be abundant in recently burned areas depending upon the spring weather. These edible mushrooms are popular with both commercial and amateur collectors. There is the potential for large numbers of mushroom collectors and buyers on the Forest if the mushroom crop and market are good.

Noxious weeds have an explosive potential within burned areas. Meadow knapweed, in particular, is an invasive perennial weed that is already well established along roadsides within the fire perimeter and could significantly disrupt recovery of native vegetation. Plantings of native species began in the fall of 2002 in areas identified at high risk of invasion, and additional weed treatments and inventory are planned for the next several years.

Fifteen archaeological sites were impacted by the fire or fire suppression activities. Consultation with the affected Tribes occurred during the emergency measures associated with the fire and will continue for any proposed mitigation activities.

The 2002 fires burned an area containing 420 miles of forest roads. About 96 miles, or 23 percent of these roads, exist within areas of moderate-to-high-burn intensity. Immediate impacts to the road system, as a result of the fires, included the failing of road fills, destruction of road signs, and debris falling in roads, ditches and culvert inlets. The road system will probably require more than normal maintenance for several years. In addition, the risk of failure at stream crossings and culverts is elevated because of expected increases in plugging, peak streamflows and landslides.

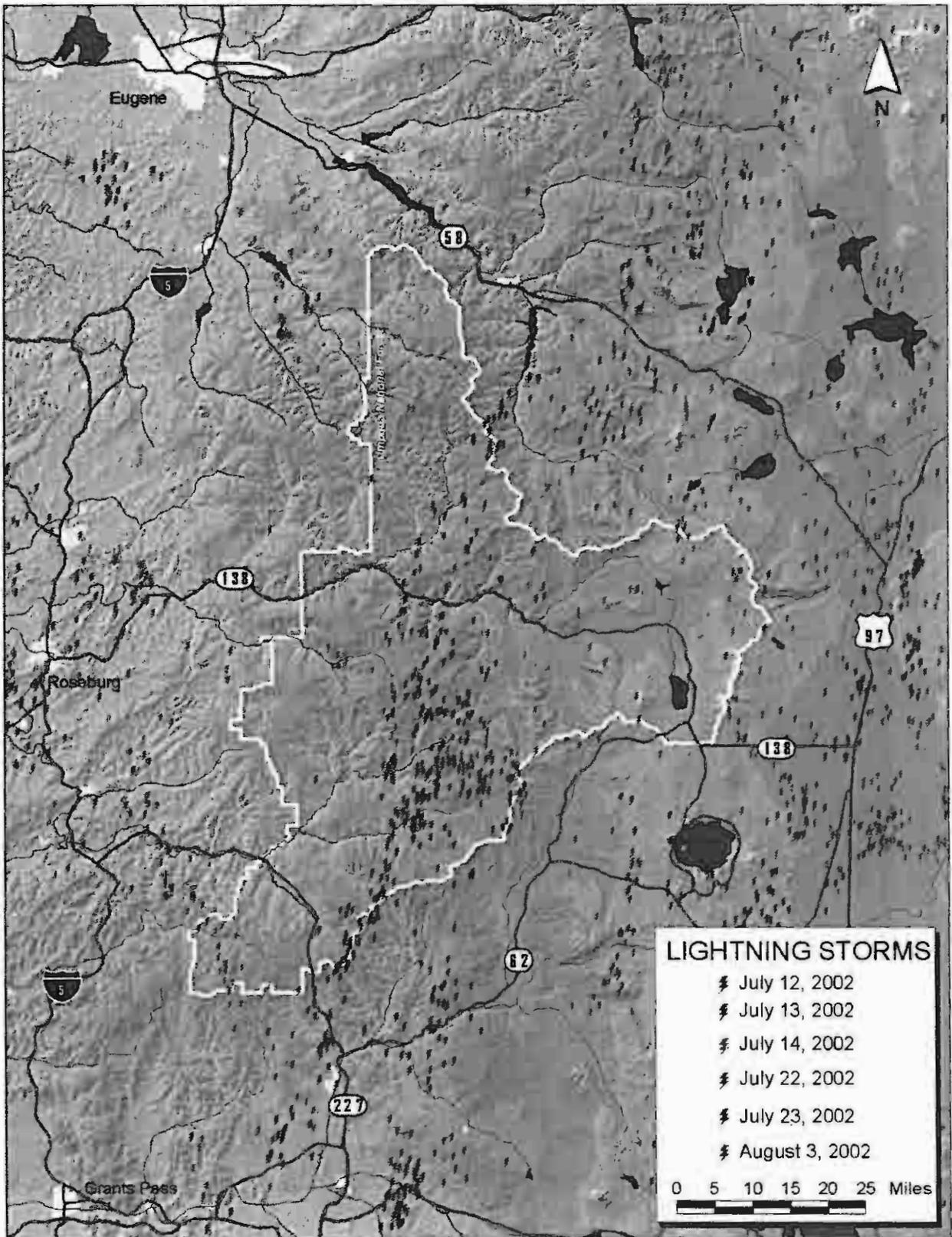


Figure I: Lighting Storms on the Umpqua National Forest

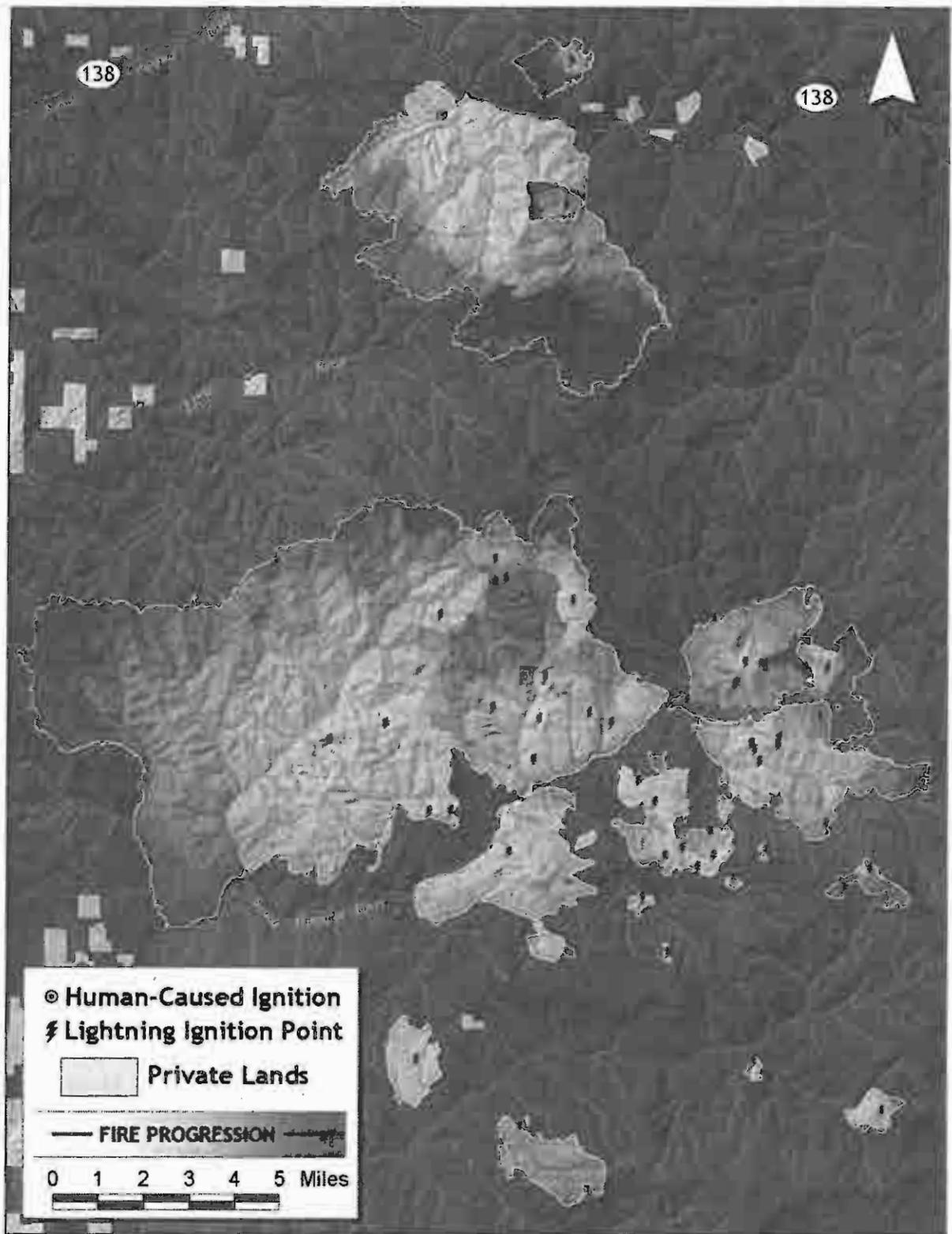


Figure II: Fire Ignition Points and Fire Progression

Introduction

The 2002 fire season brought more fire and firefighters to Umpqua National Forest than any year in recorded history. Nationally, large fires began as early as January in states such as Florida and California. By July, large fires had also occurred in Colorado, Wyoming, South Dakota, Utah and Arizona.

In 2002, a lack of spring rains led to drought conditions on the Umpqua. As a result, fire season began with extremely low fuel moistures in both live fuels and in the largest of the dead fuels component (known as 1,000-hour fuels). Live and dead fuel moisture values are important measures of fire intensity and the rate of fire spread in the fuel types found on the Umpqua. By July 12, the live fuel moisture was 19 percent lower than average. The 1,000-hour fuel moisture was four percent lower than average.

By the end of June, fire hazard was high and fuel moistures were at a record low. In mid-July, two lightning storms produced the majority of the Umpqua fire starts for the season. Light rain events brought some relief to fire hazard in mid-September and early October.

A characterization of the fire landscape and an analysis of fire effects on forest vegetation and human resources follows for sub-watersheds that had more than five percent of their area burned (Figure 1: Umpqua Sub-Watersheds). This assessment focuses on aquatic processes that operate at the sub-watershed scale (6th field Hydrologic Unit Code) and larger. Key questions are raised and answered with the results in the Resource Assessments; they are also summarized on pages 56 thru 58.

Fire Progression

In early July, weather was unusually hot and dry. Temperatures were around 100 degrees Fahrenheit and relative humidity was in the single digits. The lightning storms of July 12th and 13th started more than 130 fires (Figure 2: Fire Starts in 2002). Oregon had 12 large fires, including the Tiller and North Umpqua Complexes. The Biscuit Complex to the southwest of the Umpqua re-burned the 1987 Silver Fire and grew into the largest fire Oregon has experienced in over a century.

The dryness of the 2002 fire season on the Umpqua is illustrated by using a fire hazard index, called the Energy Release Component (ERC), to compare the relative severity of different fire seasons (Figure 3: Comparison of the 1987, 1996 and 2002 Fire Seasons). ERC estimates the energy or heat that will be released in a passing fire front. This index is commonly used to rate fire potential over a wide area. Figure 3 shows the following differences between these three fire seasons:

- 1987 had the most fire starts with two fires exceeded 1,000 acres
- 1996 had an average amount of fire starts (approximately 100 fires per year on the Umpqua)
- Several 1996 fires grew to 200 to 400 acres, and one exceeded 10,000 acres
- 2002 fire starts were above average, with seven fires exceeding 1,000 acres and three exceeding 10,000 acres
- The combined acreage of the 2002 fires was the largest in recorded history on the Umpqua

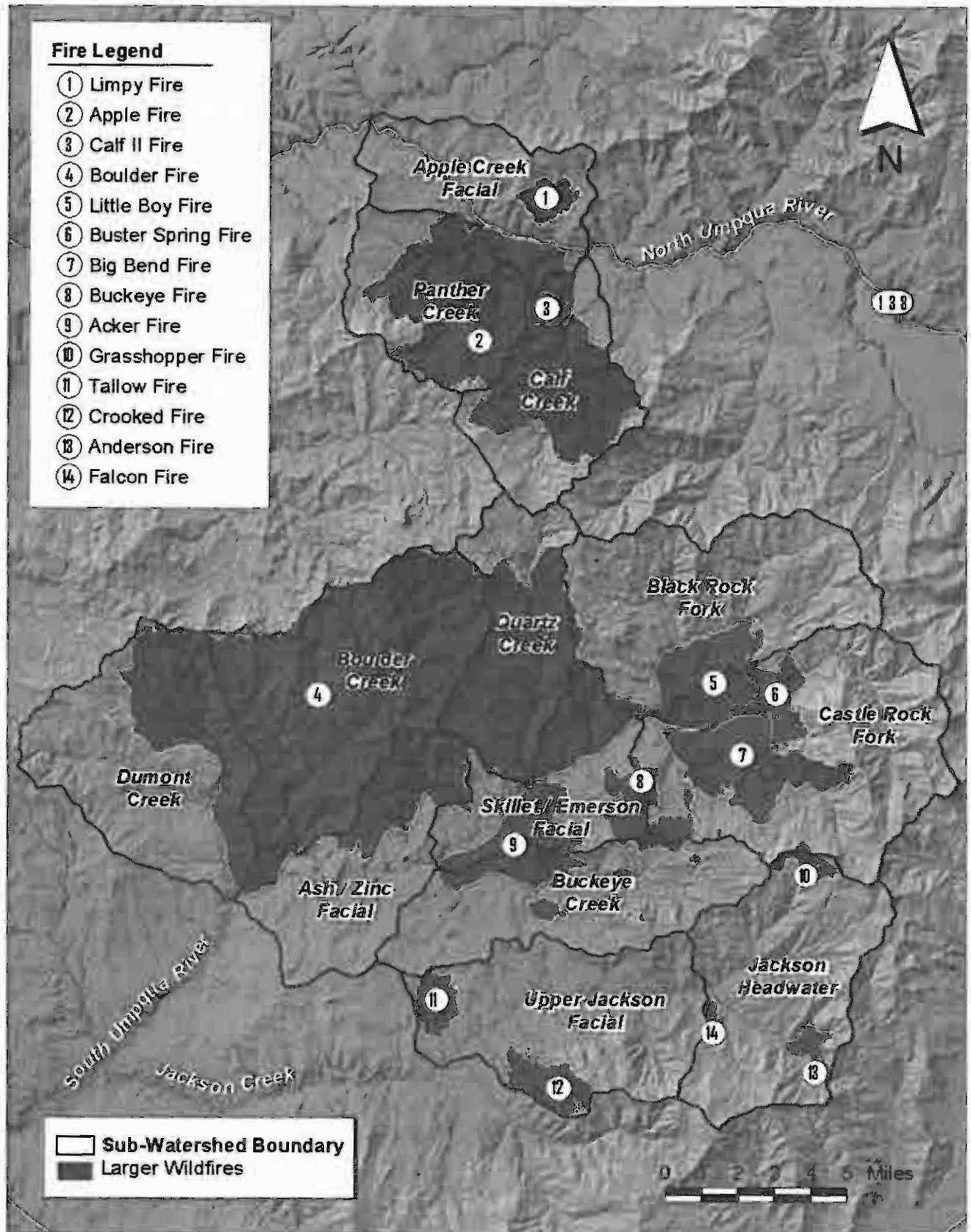


Figure 1: Umpqua Sub-Watersheds with Greater than Five Percent Area Burned

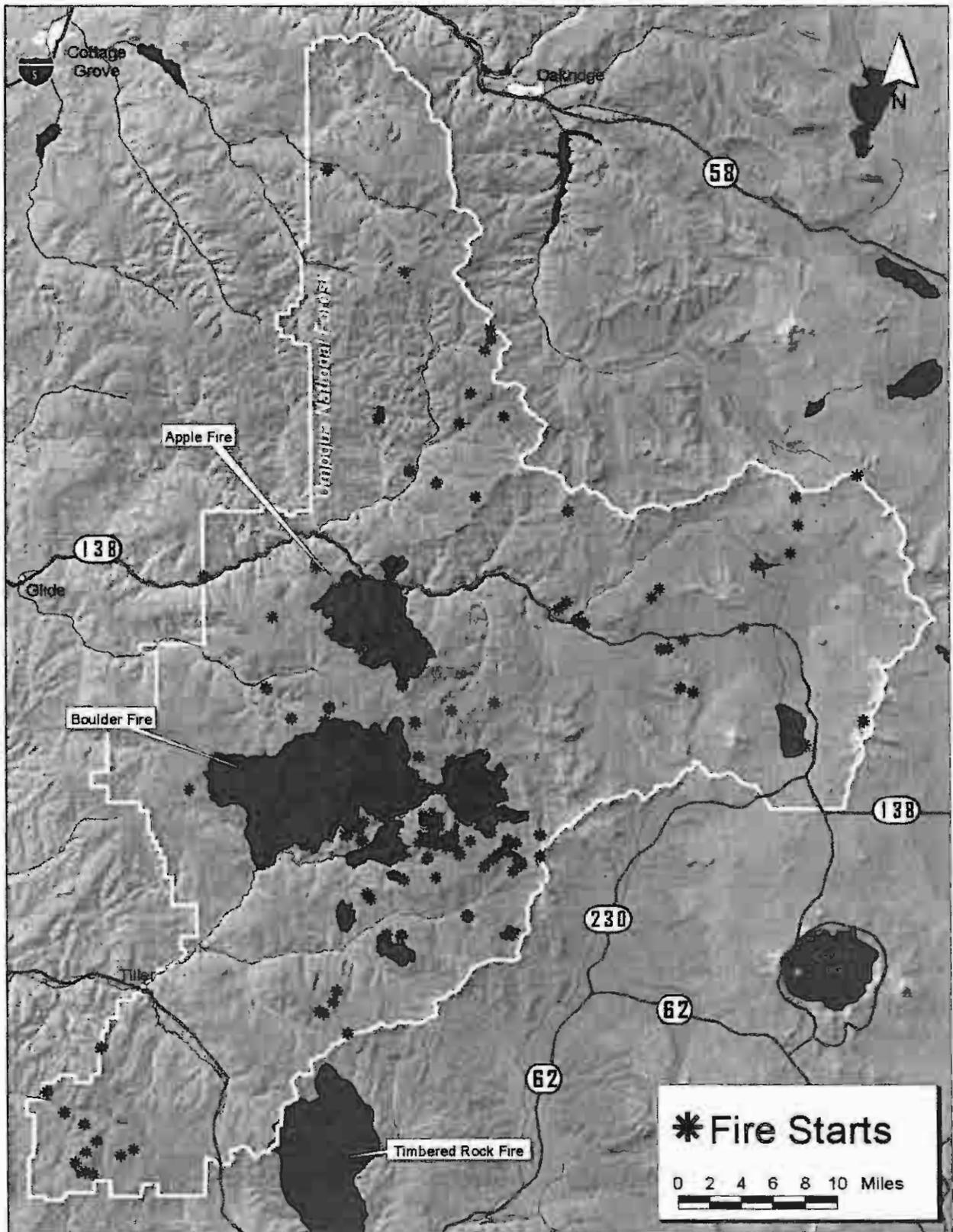


Figure 2: Fire Starts in 2022, Showing the Extent of the Larger Fires and the Nearby Timbered Rock Fire

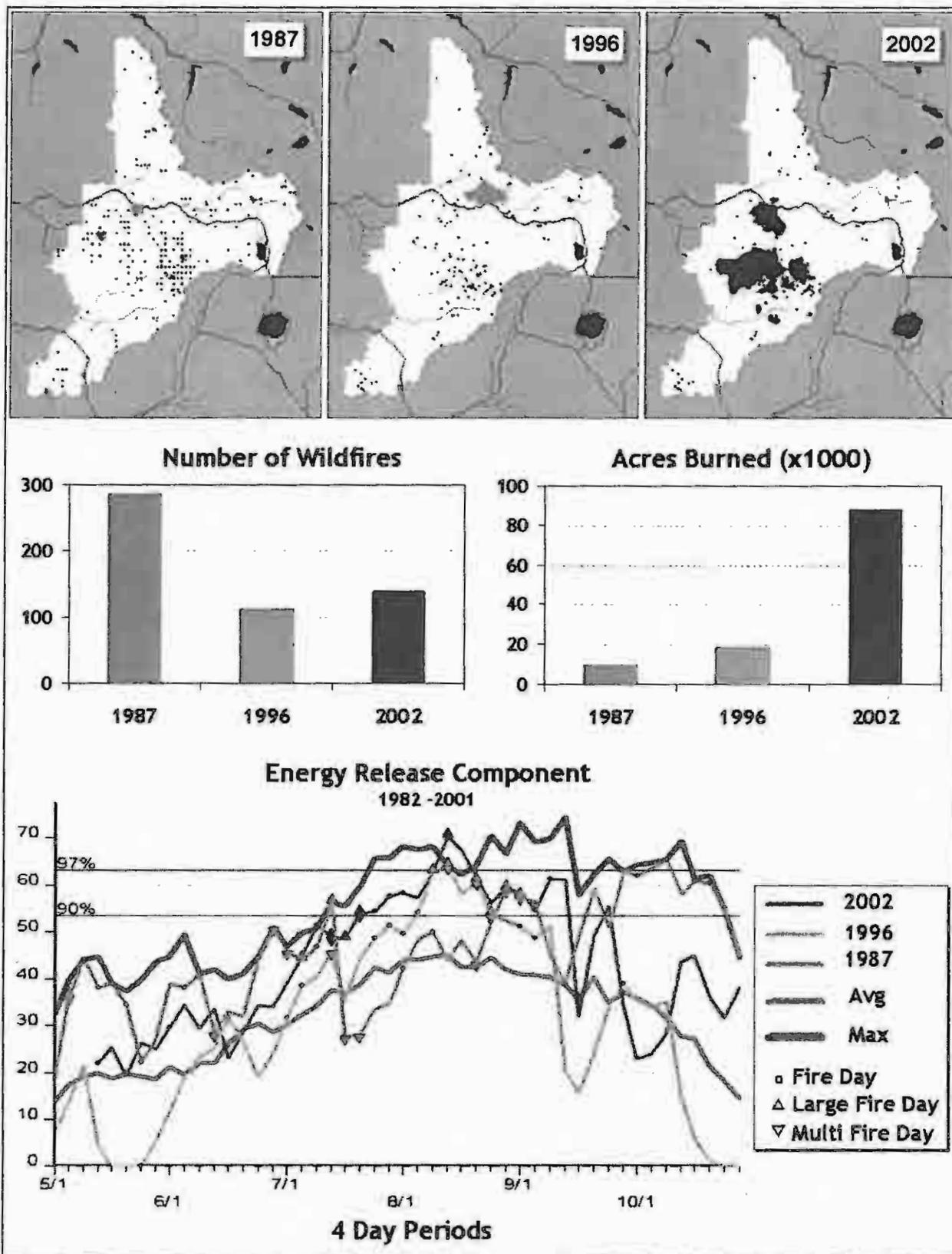


Figure 3: Comparison of the 1987, 1996 and 2002 Fire Seasons on the Umpqua National Forest

As the 2002 fire season progressed, priorities for fighting fires were established. The Umpqua fires were lower priority. Firefighters and equipment were sent to other big fires near larger communities and, for several weeks, adequate numbers of firefighters and equipment were not available. In the meantime, many of the Umpqua fires burned freely across the landscape, often in steep and inaccessible terrain.

Fires burned primarily in mixed-conifer forests between elevations of 1,000 and 4,500 feet. Topography and fuels drove fire growth, with quick upslope runs observed on steep, dry slopes. Fire behavior characteristics were moderated somewhat by an atmospheric inversion that occurred over the fires. This condition helped prevent an extreme blowup of the Umpqua fires, like the one observed at the Biscuit Complex on the Siskiyou National Forest.

On August 1, 2002, the North Umpqua Complex was contained at 1,663 acres; the Tiller Complex had grown to 26,935 acres and was 25 percent contained. As August became hotter and drier, the Tiller Complex gained an additional 10,000 acres. Record high fire indices were observed on the Umpqua. It was during this peak of extreme fire weather on August 16, 2002, that someone started



Figure 4: The Apple Fire smoke column, shortly after the fire started on August 16th

the Apple Fire on the North Umpqua Ranger District. Fuels, an unstable atmosphere, and hot weather conditions, combined to create a plume-driven fire event, in which a convection column drives the fire with its own wind drafts (Figure 4: The Apple Fire). By the end of the first day, the Apple Fire was more than 2,000 acres. It grew rapidly for the next few days as it burned in steep, rugged terrain.

On September 4th, the Tiller Complex was contained at 68,862 acres. The Apple Fire was contained on September 8th at 17,600 acres. The Umpqua fires were host to 11 fire overhead teams, as well as firefighters from the military, Australia, New Zealand, Canada, and firefighters from across the United States.

The Forest spent approximately \$80 million on fires that burned an area of approximately 88,000 acres.

Forest Landscapes: Past, Present and Future

Forest maps dating back to 1914, as well as panoramic photographs from fire lookouts, provide views of forests shaped by wildfire long before management activities began on the Umpqua National Forest.

On the following pages, comparison of the 1946 vegetation map and current vegetation mapping shows the differences between past and present *patterns* of vegetation (Compare Figure 5: The 2002 Fire Perimeter Overlaid on a 1946 Vegetation Map and Figure 6: The 2002 Fire Perimeter Overlaid on a Current Vegetation Map.)

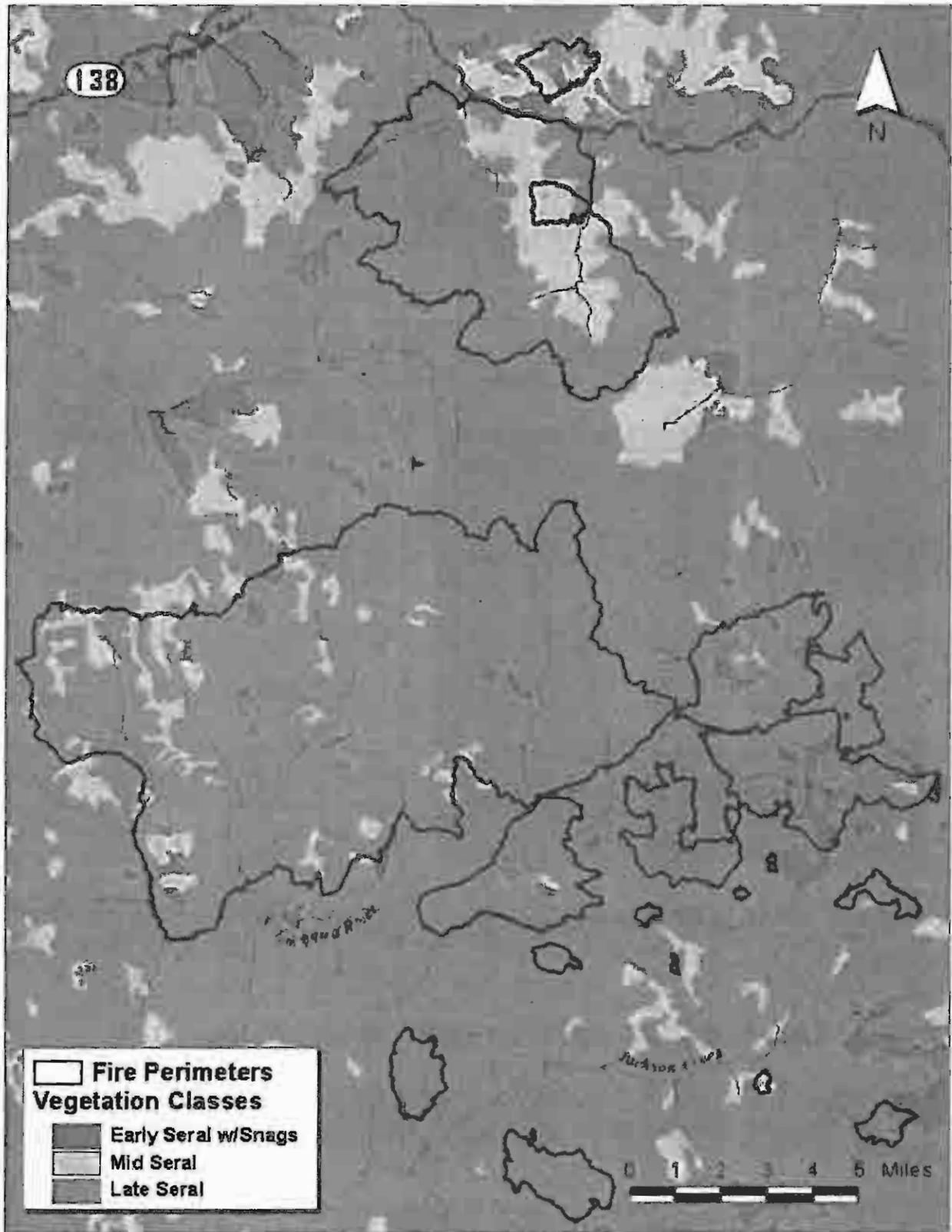


Figure 5: The 2002 Fire Perimeters Overlaid on a 1946 Vegetation Map

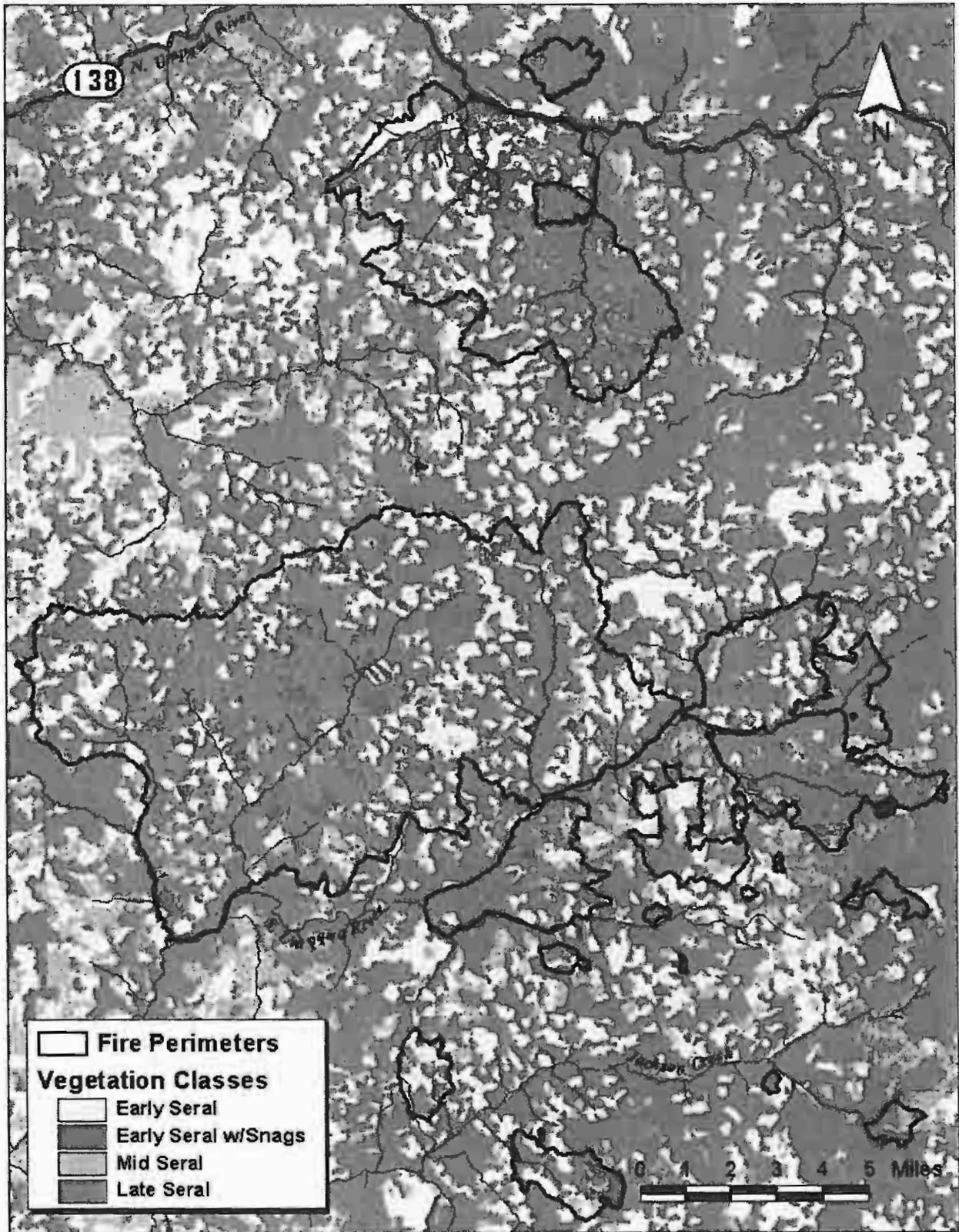


Figure 6: The 2002 Fire Perimeters Overlaid on a Current Vegetation Map

Comparison of Figures 5 and 6 show that:

- Today's forests are more fragmented
- Historic forest patches were much larger in size
- Historic early- and mid-seral patches are noticeably larger in the North Umpqua than in the South Umpqua
- Recent wildfires have created early-seral patches with snags that are comparable in size to historic early-seral patches
- Today's forest landscape does not reflect the differences in fire regimes that normally shape the forest

Desired Vegetation

Ripple (1994) characterized the historic forests of the Umpqua as having the greatest area in stands dominated by large-diameter conifers compared to other forests in the Pacific Northwest. This historic forest pattern, dominated by mature- and late-seral stands, reflected the moderate-severity fire regime characteristic of the Umpqua Cascades. The combination of varied fire frequencies and mixed-fire effects resulted in a mosaic of stand structures and maintained extensive patches of older forest.

At the landscape scale, a desired vegetation pattern is based on the landscape neighborhood and its fire regime. For the area affected by the 2002 fires, the largest such landscape neighborhood is the Boulder Creek Steep/Dry landscape area (Figure 7: Landscape Areas, Fire Perimeters and Sub-Watersheds Boundaries), an area characterized by a complex of low- and moderate-severity fire regimes (Figure 20: Fire Regime Map for Umpqua National Forest, page 25). Using pattern of vegetation characteristic of fire regimes as a guide, the desired vegetation in 100 years for the Boulder Creek Steep/Dry landscape area would be characterized by:

- Fewer, larger patches of early-, mid-, and late-seral vegetation stages
- Increased area in late-seral forest
- Stand rotations and management-patch sizes based on fire behavior characteristics of different forest types (Douglas-fir/hardwood, mixed conifer, dry western hemlock)
- Reduced fuels in existing patches of late-seral forest at low elevation
- Fuel treatments that are aligned to landscape area boundaries and that meet one or both of the following objectives:
 - Restore fire's role in landscape processes
 - Slow fire spread or aid in control of fires in vicinity of young forests and rural urban interface

The authors of the Northwest Forest Plan recognized the role of natural disturbance processes such as wildfire. In fact, the overall goal of the Aquatic Conservation Strategy is to restore historic disturbance patterns and processes within the natural range of variability (USDA, 1994).

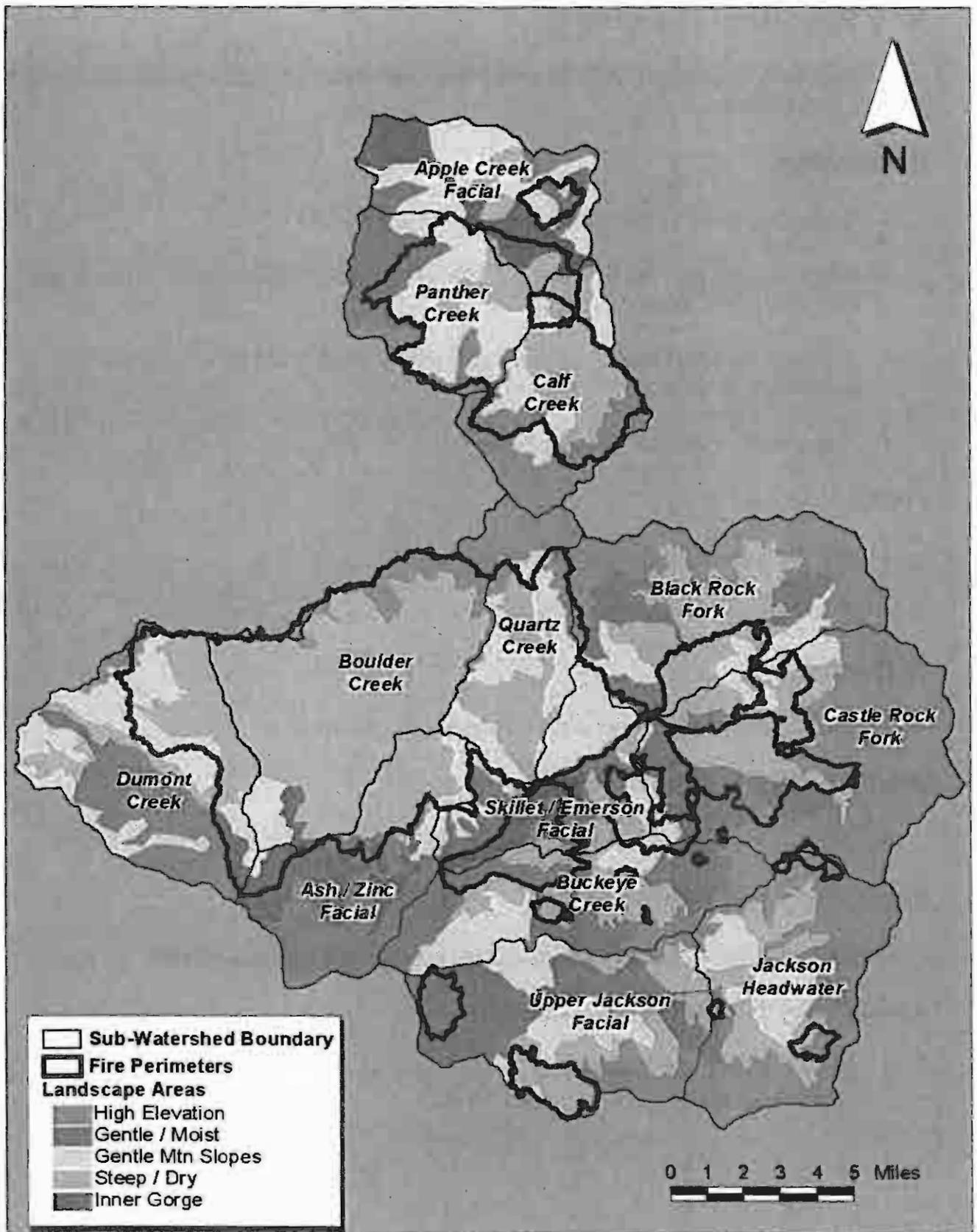


Figure 7: Landscape Areas, Fire Perimeters and Sub-Watersheds Boundaries

Key Resource Questions

The answers to these questions are summarized at the end of the document and responded to in the resource assessments.

Vegetation:

- What is the extent of fire-caused mortality in forest stands?
- Where does the post-fire mortality fall within the range of natural variability of this early-seral structure in the landscape?
- What was the occurrence of noxious weeds prior to the fire, and how may the future disturbance of weeds be affected post fire?
- How should we monitor this distribution?

Fuels:

- How did fuels accumulations affect fire severity?
- What fuels remain on the landscape?

Watershed:

- How will stream flows and sediment regimes be affected by the fire?

Wildlife, Fish and Rare Plants:

- How have the habitats and populations of species of interest been affected by the fire?

Recreation and Cultural Sites:

- What facilities, recreation sites and cultural resources have the fire affected?

Access and Travel Management:

- How did the fire, fire suppression activities, and post-fire emergency road rehabilitation affect the structural integrity of roads within the fire?

Resource Assessment

Vegetation

Fire effects on forest vegetation were analyzed within a landscape area framework (Figure 7: Landscape Areas, Fire Perimeters and Sub-Watersheds Boundaries). *Landscape areas* are places thousands of acres in size that have similar climates, topography, landforms, and vegetation. Landscape area properties help describe landscape-scale disturbance processes such as fire and stream flows. The 2002 fires burned mostly in Steep/Dry landscape areas and the gently sloping upland areas that characterize the Gentle Mountain Slope landscape area (Figure 8: Acres Burned in Fire Landscape Areas). The Gentle Mountain Slopes divide the steep, highly dissected watershed areas such as Boulder and Quartz creeks in the South Umpqua basin, and the Panther and Calf creeks in the North Umpqua River basin.

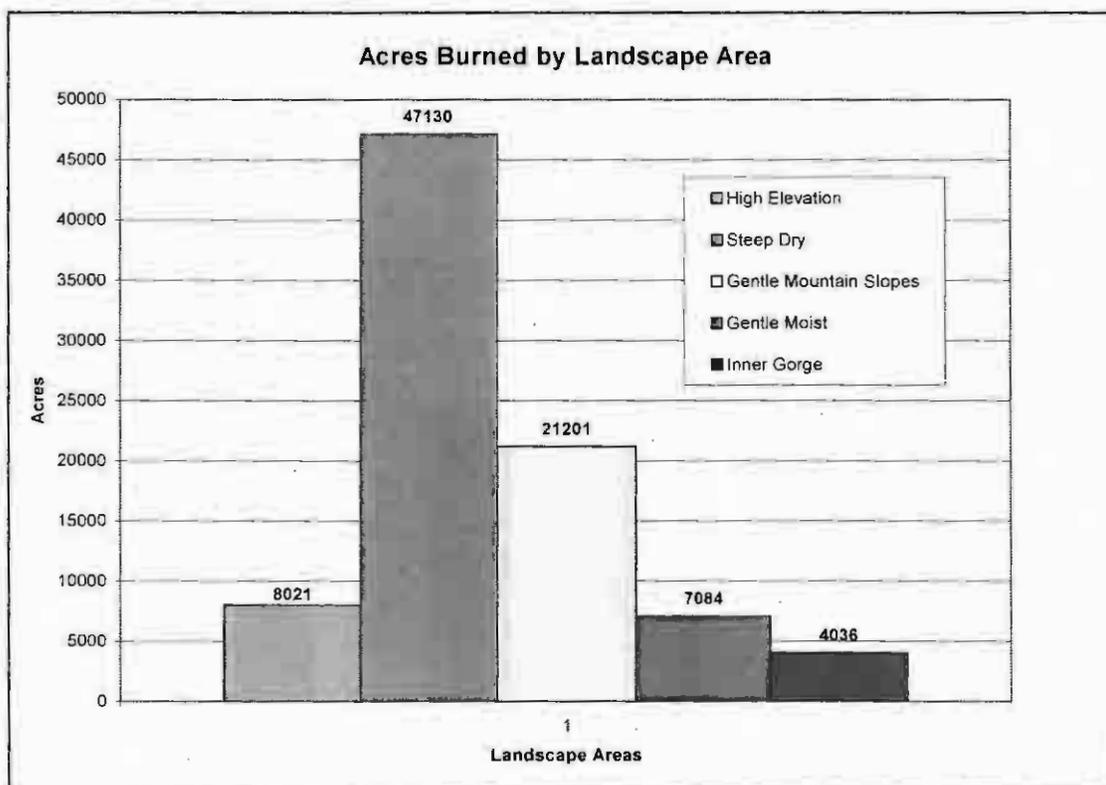


Figure 8: Acres Burned in Fire Landscape Areas

Landscape areas were mapped using patterns of *Landunits*, areas that are smaller than landscape areas and defined by elevation, aspect, and slope (Appendix A). For example, the Warm/South/Steep landunit is located below 4,000 feet (*Warm*) on *South* aspects and *Steep* slopes (greater than 60 percent). Warm/South/Steep landunits dominate the landunit pattern of Steep/Dry landscape areas (Figure 9: Distribution of Landunits).

The distribution of stand-replacement fire effects clearly aligns to the landunits within landscape areas (compare Figure 9: Distribution of Landunits and Figure 10: Distribution of Stand-Replacement Fire). More than one-half of the mortality from the 2002 fires occurred on moderate- to steeply-sloping, southerly aspects below 4,000 feet represented by two landunits (Warm/South/Steep and Warm/South/Moderate).

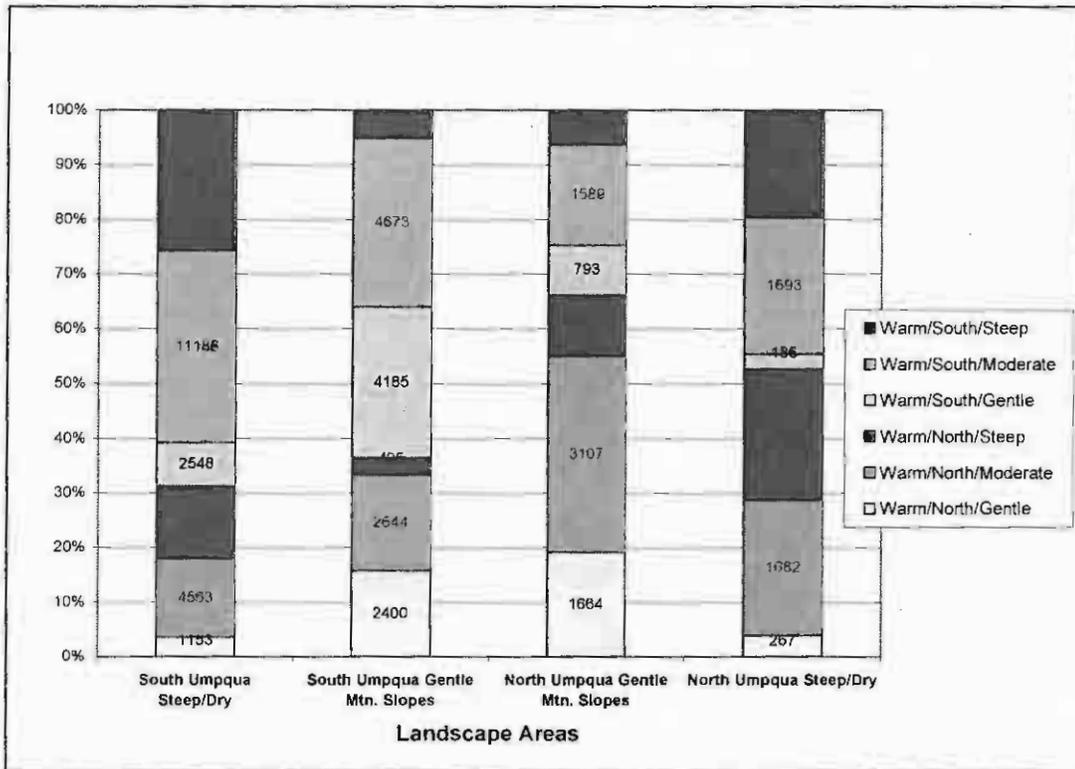


Figure 9: Distribution of Landunits within Landscape Areas (Landunit Acres Listed within Landunits)

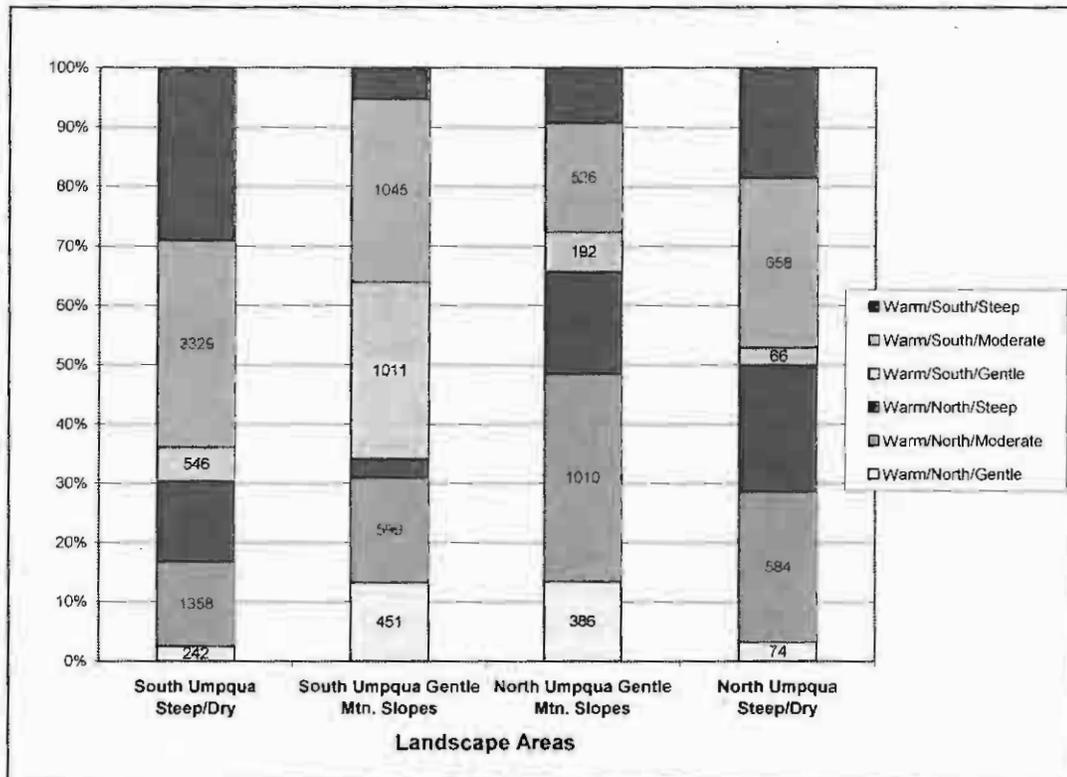


Figure 10: Distribution of Stand Replacement Fire by Landunit within Landscape Areas (Mortality Acres Listed within Landunits)

Fire Severity

Fire severity is important for assessing fire effects on soil productivity and forest vegetation. A map of fire severity is also a good tool for estimating fire-related, tree mortality in the future. Thus, a fire severity classification was created that assesses fire effects to both the forest canopy and forest floor. (Appendix A).

Fire severity is a combination of two maps, one for fire intensity and another of areas where extreme, prolonged heating occurred during the fire (Figure 11: Fire Severity and Sub-Watersheds). *Fire intensity* relates to the rate of fuel consumption and, hence, the rate of fire spread. Areas of high-intensity fire correlate well with areas where crown fire causes tree mortality during the fire. However, fire intensity is not necessarily a good indicator of the effects of fire heat to the forest floor and the soil surface. Heating of the forest floor affects long-term soil productivity by consuming the forest's store of organic matter. Areas of extreme prolonged heating also correlate well with tree mortality in the years to come because heat on the forest floor weakens and kills the living part of the tree trunk.

Fire burned most plantation areas with high intensity and spread rapidly through the canopy of these young stands. However, surface-fire intensity was moderated because fuel accumulations on the ground were relatively light. Thus, many plantations experienced moderate-fire severity (high intensity, low heat).

Many mature- and late-seral forest areas also experienced moderate-severity fire effects even though these stands underburned at low intensity. Moderate-severity effects (low intensity, high heat) occurred where heavy fuel accumulations were encountered and burned with high heat. In these stands, some trees that initially survived the fire can be expected to die over the next five to 10 years due to delayed effects of heat stress or injuries that favor insects or disease.

In general, the four classes of fire severity were not evenly distributed within or between the sub-watershed areas that burned (Figure 11: Fire Severity and Sub-Watersheds). Panther, Boulder, Quartz, and Dumont creeks are watersheds with the largest acreage and the highest percentage of watershed area burned with moderate and high severity (Figure 12: Fire Severity in Sub-Watersheds). Acres are noted on each bar of the graph within each category of severity:

- Panther Creek - 3,325 acres (39 percent moderate to high severity)
- Boulder Creek - 7,400 acres (32 percent moderate to high severity)
- Quartz Creek - 2,900 acres (32 percent moderate to high severity)
- Dumont Creek - 2,900 acres (25 percent moderate to high severity)

In contrast, only 636 acres burned at moderate to high severity in Calf Creek (8 percent).

The distribution of moderate and high severity in riparian areas was similar to that in upland areas (compare Figure 12: Fire Severity in Sub-Watersheds and Figure 13: Fire Severity in Riparian Areas). A comparison shows that moderate- and high-severity areas in watersheds were slightly higher in riparian areas of the same watersheds:

- Panther Creek - watershed 39 percent; riparian 37 percent
- Boulder Creek - watershed 32 percent; riparian 29 percent
- Quartz Creek - watershed 32 percent; riparian 30 percent
- Dumont Creek - watershed 25 percent; riparian 27 percent
- Calf Creek - watershed 8 percent; riparian 6 percent

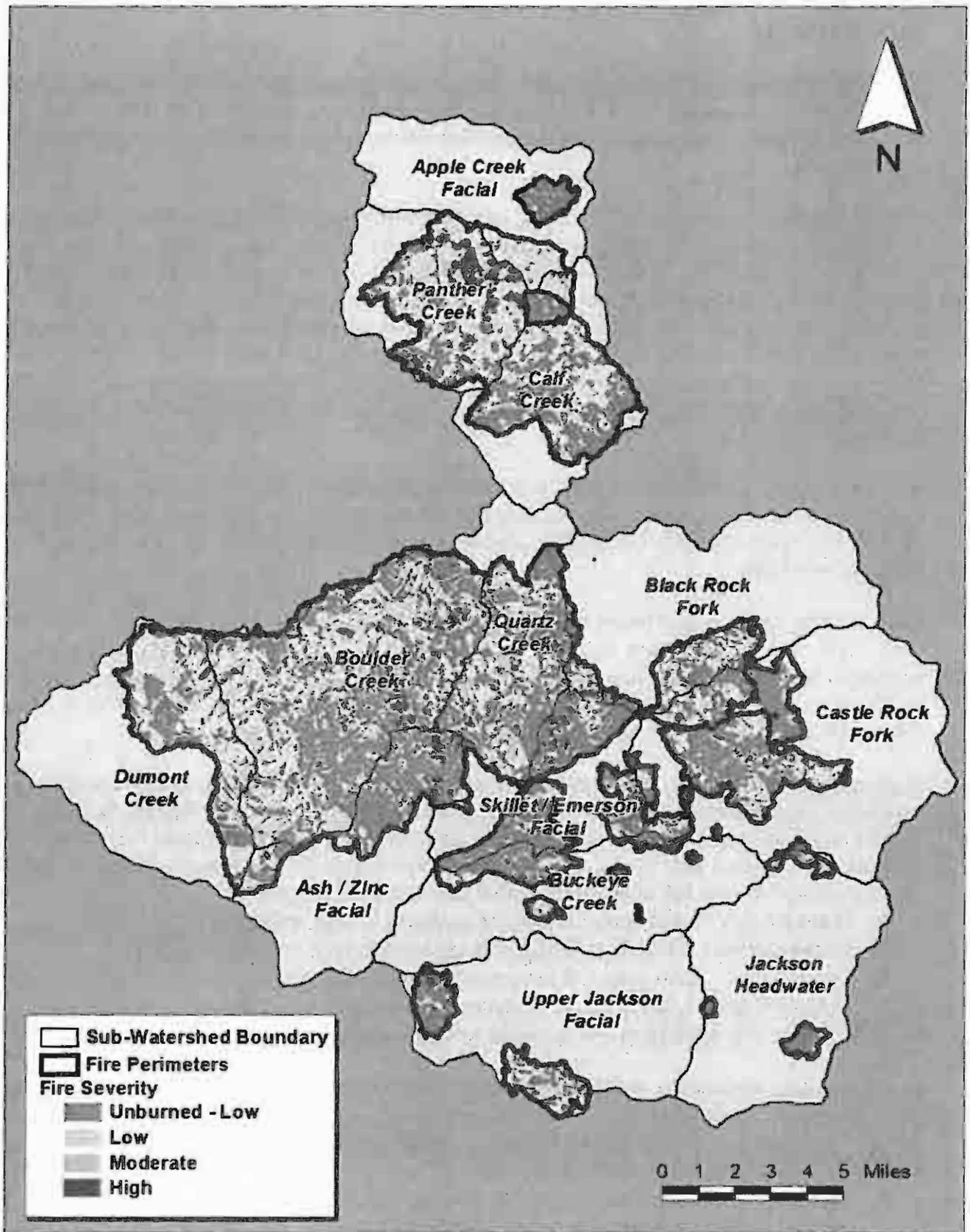


Figure 11: Fire Severity and Sub-Watersheds

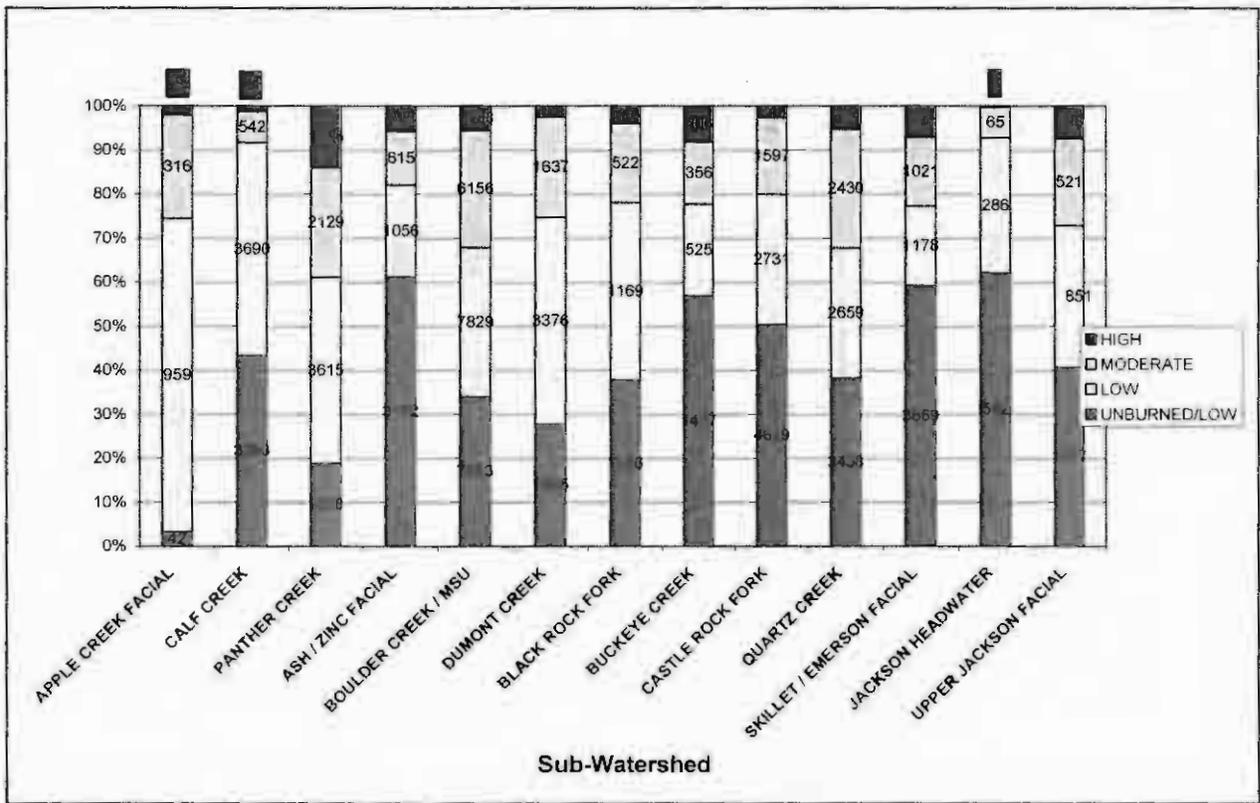


Figure 12: Fire Severity in Sub-Watersheds (acres listed on bar graph)

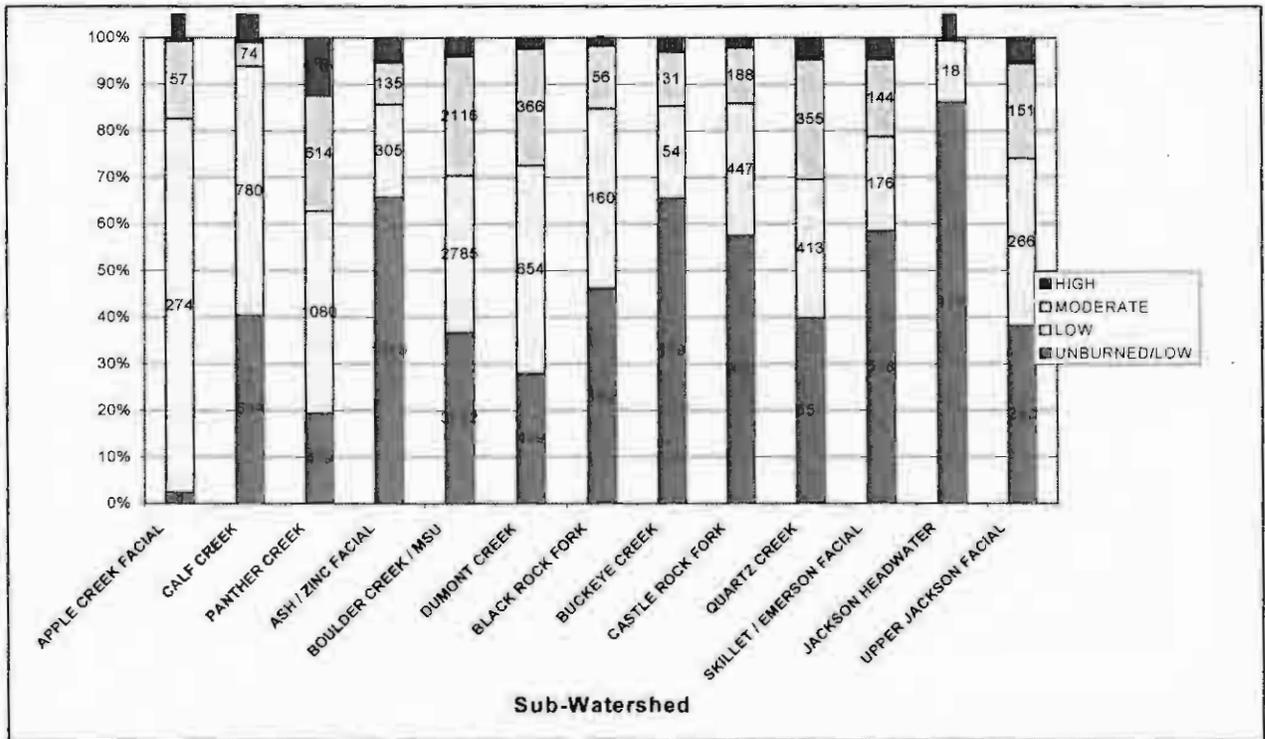


Figure 13: Fire Severity in Riparian Areas (acres listed on bar graph)

The relationship between fire severity and slope position was also analyzed. Slope position is defined as the location of fire effects on the hill slope between a valley bottom and ridge top. The difference in elevation is roughly broken into halves and is categorized as lower and upper slopes. The distribution of fire severity on upper and lower slope positions was very similar (Figure 14: Fire Severity and Slope Position).



Figure 14: Fire Severity and Slope Position

Soil Productivity

Wildfires result in large nutrient losses, particularly nitrogen. Nitrogen compounds are second only to water in limiting the growth of most forests in the South Cascades. The magnitude and significance of nutrient loss on a site varies with the area's overall resilience, as well as the frequency and severity of fires that occur. Simply stated, resilience is the ability of a soil and its forest to respond after a fire. A few generalizations about the resilience of a soil to nutrient losses include:

- Soil productivity increases with the amount of biomass and the nitrogen available on the site. Older stands have the greatest pool of nutrients and organic matter.
- Both nitrogen and biomass increase with the age of the forest on any site.
- Soils on northerly aspects and gentle slopes are the most productive and are resilient to fire because the effects of fire are generally less severe in these areas.
- Most steep slopes have thin, rocky soils and relatively low resilience to nutrient loss.
- Nutrient losses are relatively high in young stands that experience moderate- to high-severity fire effects because the forest floor is relatively thin and a greater portion of nutrients is located in the live vegetation of young stands as compared to older stands.
- Nutrient losses occur in direct proportion to the amount of forest floor and vegetation consumed by fire.

In a simple way, soil resilience to nutrient losses from fire varies with aspect and slope as well as the age of the vegetation on the site. For instance, a north-facing, gently sloping site with an old forest is the most resilient to nutrient loss, while a south-facing, steeply sloping site with a young forest is least resilient because of differences in site moisture and organic matter (Table 1: Soil Resilience, Aspect, Slope and Vegetation Age Relationships).

		SOIL RESILIENCE	
		Less Resilience to Nutrient Loss ►	
		North Aspect Gentle Slope	South Aspect Steep Slope
VEGETATION AGE Increasing Nutrients ▼	Younger Forest	MODERATE	LOW
	Older Forest	HIGH	MODERATE

Table 1: Soil Resilience, Aspect, Slope and Vegetation Age Relationships

The long-term consequences of nutrient losses ultimately depend on how often and how severe fire burns a site. The cumulative effects of fire also depend on how wildfire effects interact with management practices. After a fire, low-resilience sites with young vegetation that burned severely will typically experience the greatest nutrient loss. As a result, forest re-growth will be slowest on these sites. Furthermore, management practices that remove organic matter from low-resilience sites after a wildfire, or prevent the input of nitrogen into the soil, may aggravate the severity of fire effects on long-term soil productivity (nitrogen is added to the soil by plants like *Ceanothus* and nitrogen-fixing micro-organisms that inhabit dead wood). Conversely, soil productivity may actually increase following fire on resilient sites occupied by older, living forests. Where fire burns with low severity on a resilient site occupied by an older forest, site productivity increases as the available nutrients that were tied up in understory vegetation and forest floor organic matter are released to the surviving forest vegetation.

Current and Historic Vegetation

The distribution of vegetation age classes before and after of the 2002 fires shows the extent of vegetation changes that occurred (Figure 15: Vegetation Age Classes Before and After 2002 Fires). The greatest increases in early seral vegetation occurred in Boulder Creek (25 percent of the watershed area), Panther Creek (18 percent), Quartz Creek (9 percent), Calf Creek (8 percent), and Skillet/Emerson Facial watersheds (8 percent). These watersheds also had the largest percentage of burned area among the watersheds within the fire perimeters. Most of the increase in early seral vegetation after the fire came from vegetation that was late seral before the fires. In the Panther Creek watershed, a relatively large area of mid-seral plantations (six percent of the watershed) reverted to early seral as a result of stand-replacement fire effects.

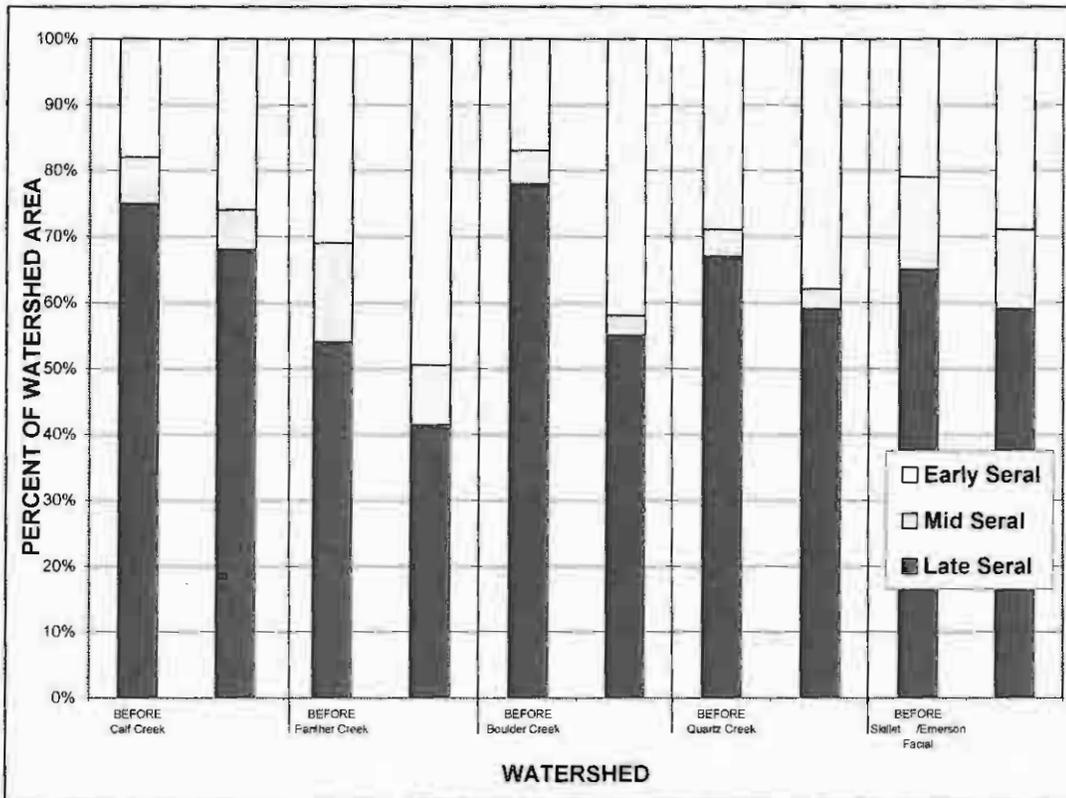


Figure 15: Vegetation Age Classes Before and After 2002 Fires

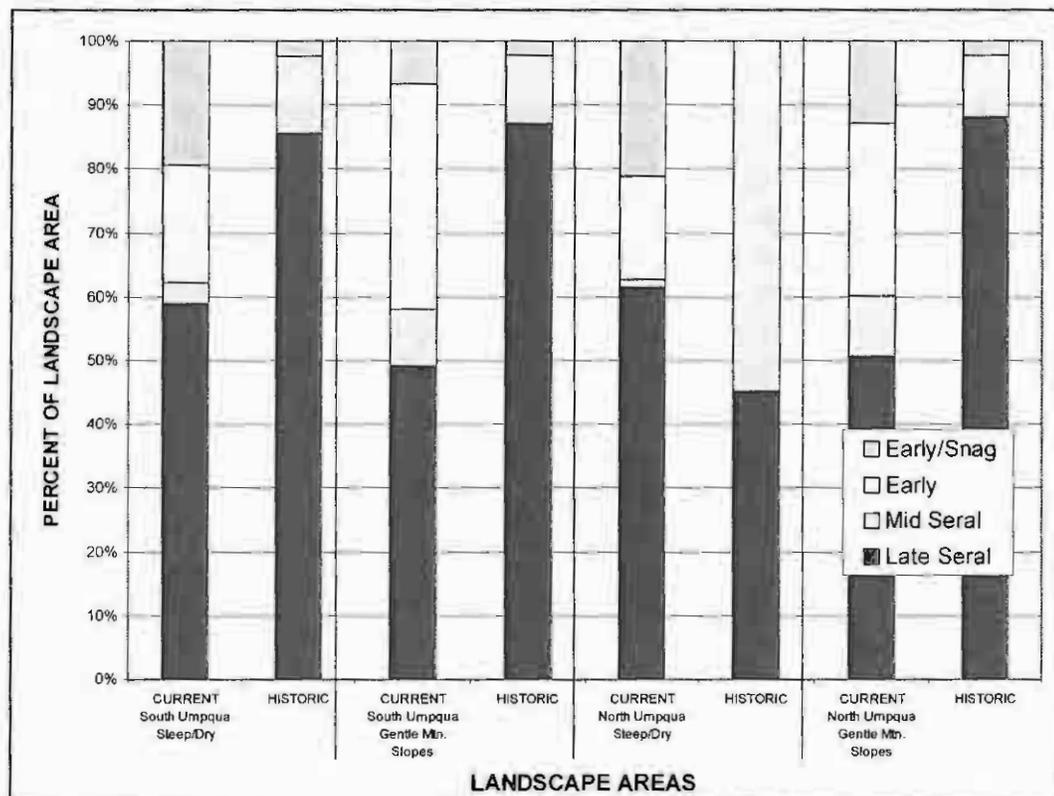


Figure 16: Current and Historic Vegetation Conditions in Landscape Areas

The pre- and post-fire vegetation statistics were generated from a model based on canopy cover and tree diameter classes (Appendix A). The youngest vegetation class, *early-seral*, is the open-canopy stands (canopy closure less than 70 percent). Areas in the older vegetation classes, *mid-seral* and *late-seral*, have closed canopies (canopy closure greater than 70 percent). The mid- and late-seral classes were separated by the mean diameter of trees in these stands, with the late-seral class having a larger mean tree diameter (quadratic mean diameter greater than 17 inches). The percentages of vegetation classes within four fire landscape areas in North and South Umpqua watersheds displays current and historic (1946) vegetation conditions (Figure 16: Current and Historic Vegetation Conditions in Landscape Areas).

Disturbances, such as fire, change the distribution of vegetation in the landscape over time. Thus, a “range of variation” vegetation classes is used to compare the post-fire vegetation with historic conditions. Vegetation maps from various sources show different vegetation distributions because of differences in scale, map criteria and dates. To establish a range of variation for the late-seral forest, several references are available for the Umpqua landscapes:

- The Regional Ecological Assessment Program reported that the range of late-seral in the South Cascades was historically between 40 and 70 percent over the past 250 years (USDA et al. 1993)
- The 1946 late seral condition ranged from about 45 to 85 percent within the fire-affected, landscape areas displayed in Figure 16
- The South Cascades Late Successional Reserve Assessment estimated that the pre-fire, late seral area occupied from 44 to 47 percent of the Boulder, Quartz and Calf Creek watersheds (USDA et al. 1998)
- A 1933 forest survey reported that 78 percent of the Umpqua National Forest was occupied by a large-diameter Douglas-fir forest

The current late-seral forest area ranges from about 50 to 62 percent in North and South Umpqua fire landscape areas, and is considerably less than it was in 1946, except in the South Umpqua drainage (Figure 16). This range falls within the lower half of the combined reference condition range of 40 to 85 percent. If one assumes that the late-seral forest covered as little as 40 percent of the forest at one time in the past, and that the early-seral reference condition occupied one third of the remaining forest, then today’s early-seral should occupy about 10 to 30 percent of the forest area to be within the reference range. However, early-seral vegetation currently occupies an average of 40 percent of the landscape areas and appears outside the natural range of variation. From this perspective, it appears that across the 2002 fire landscape, there is approximately 10 to 30 percent more early-seral and 10 to 20 percent less mid-seral today than there was in the reference periods.

Currently, the early-seral with snag class occupies from 7 to 21 percent of the landscape areas displayed in Figure 16. These are areas where the late-seral forest experienced stand-replacement fire effects. This current condition falls within early-seral range of variation estimated above, 10 to 30 percent of the landscape area.

Fifty-five percent of the plantation areas within the 2002 fire perimeter burned as stand-replacement fires (Appendix A). Plantation mortality is disproportionately high compared to the total area that plantations occupied within the fire perimeter. In fact, mortality in plantations accounted for 41 percent of all mortality on the fires, while the plantation area represented only 22 percent of the total area within the fire perimeter. Younger-age plantations were damaged more than the older plantations

and the unmanaged forest (Figure 17: Stand Replacement Mortality in Managed (Regen) and Unmanaged Stands). In fact, 74 percent of plantations 20 years old or less experienced stand replacement mortality. By comparison, mortality was only 40 to 50 percent in stand 21 to 50 years old.

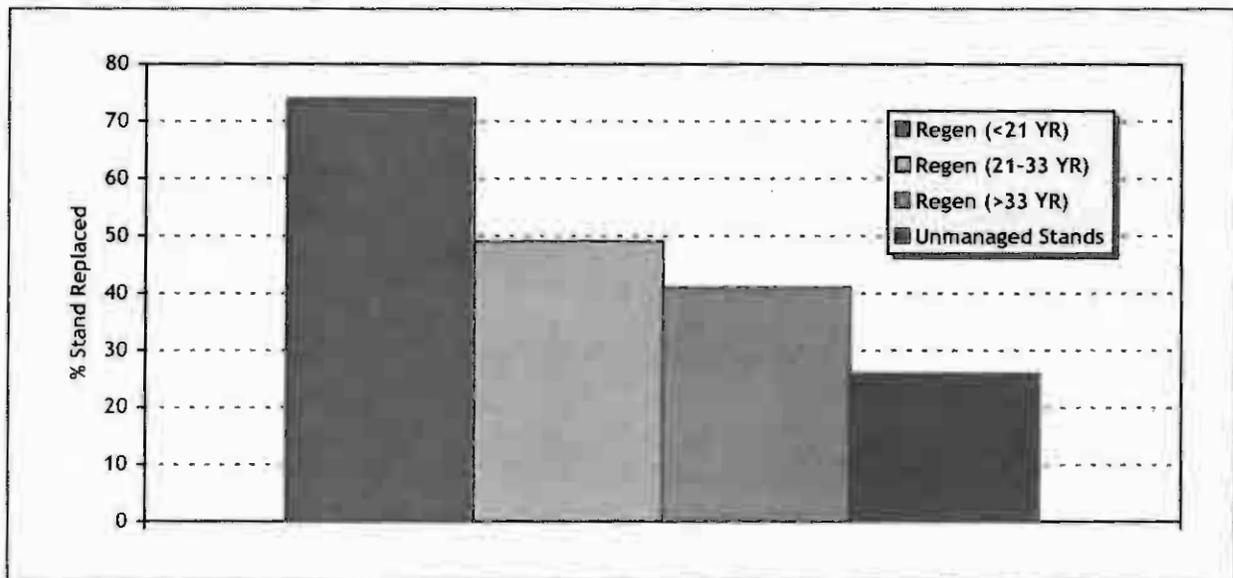


Figure 17: Stand Replacement Mortality in Managed (Regen) and Unmanaged Stands

Research in the moderate-severity fire regime of the mixed-evergreen forest of northern California showed a strong relationship of 1987 fire damage in plantations to fire damage levels in adjacent stands (Skinner and Weatherspoon, 1996). Data suggest that fuel treatments within dispersed locations alone may not reduce fire hazard. The authors suggest that a broader landscape approach to managing fuels may be necessary to reduce fire hazard rather than using individual harvest unit treatments. This may be particularly true where the mixed conifer and Douglas-fir/hardwood forests dominate the vegetation mosaic found in the South Umpqua headwaters.

Estimate of Timber Volumes

Of 88,000 acres of forest burned in 2002, about 17,000 acres of commercial-size forest was killed outright. Of this, nearly 70 percent is located within the Late-Successional Reserve (LSR). In the LSR, the management emphasis is to protect and enhance conditions of late-successional and old-growth forest ecosystems. The remaining 30 percent of the mortality occurs within the Matrix allocation where timber values are emphasized (Figure 18: Board Foot Volume and Figure 19: Mortality of Managed and Unmanaged Stands). Using measurements from the snag survey (Appendix D), the total volume of trees killed by the wildfires was estimated using the “ORGVOL” utility program from “ORGANON”.

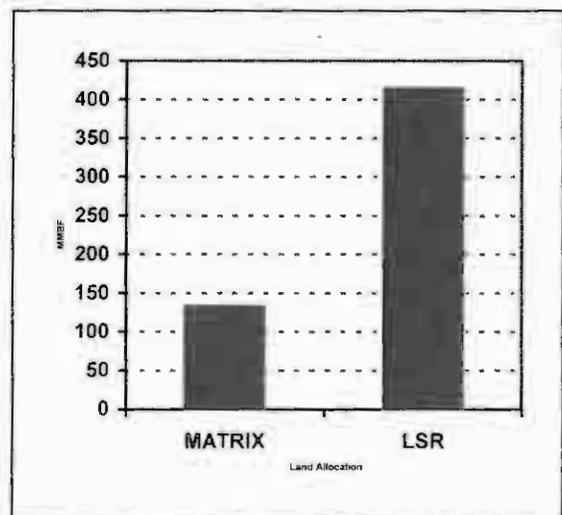


Figure 18: Board Foot Volume (MMBF) Distribution of 2002 Mortality by Land Allocations

Late-seral forest volume estimates averaged 41,000 board foot per acre (41 MBF per acre) and ranged from 14 to 74 MBF per acre. Commercial-size plantations averaged 3 MBF per acre, and ranged from 1 to 10 MBF per acre. This plantation volume was less than 1 percent of total volume.

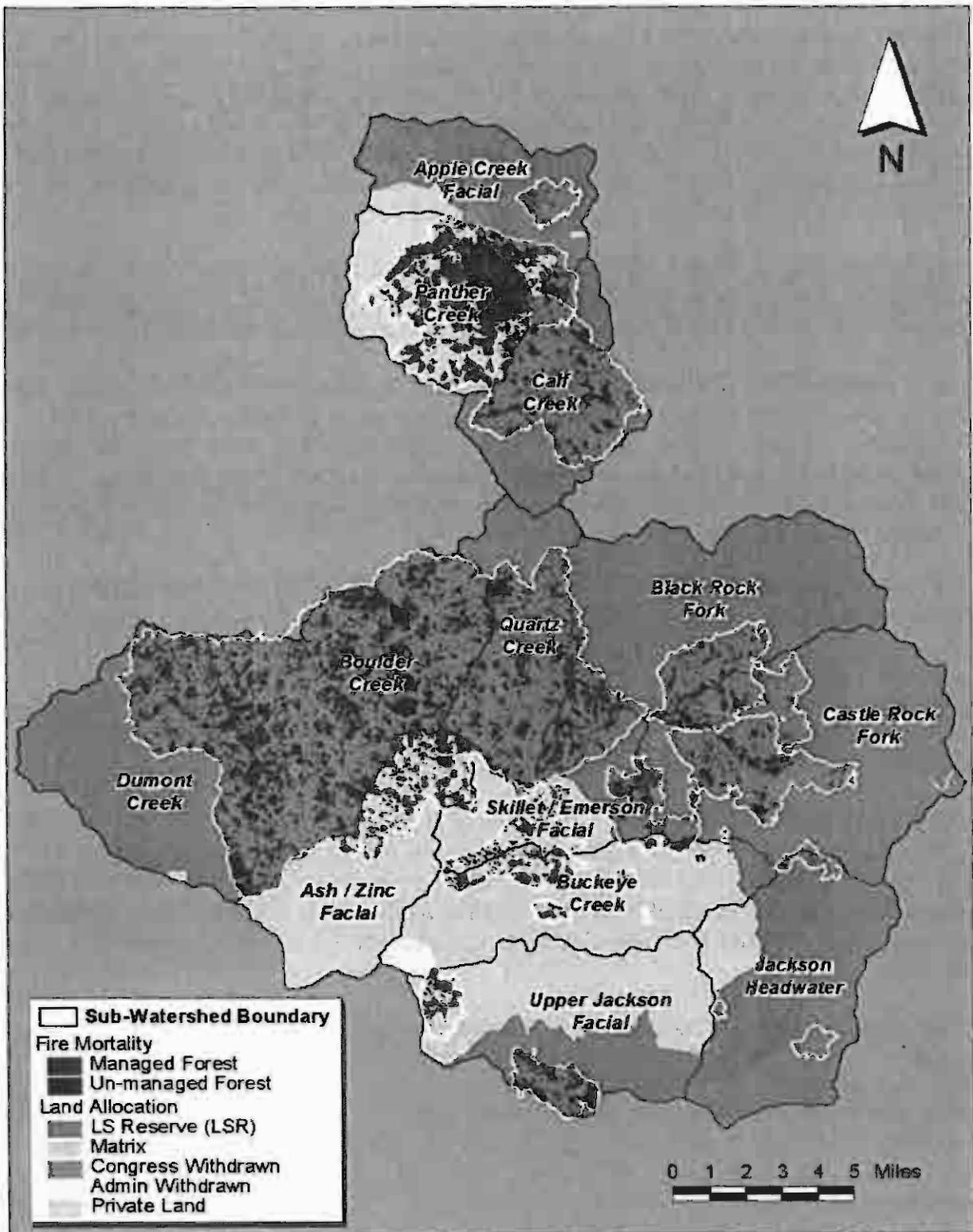


Figure 19: Mortality of Managed and Unmanaged Stands Overlaid on Land Allocations

Noxious Weeds

Meadow knapweed (*Centaurea pratensis*) is the noxious weed most likely to spread into burned areas and disrupt natural vegetative recovery (Appendix A). This weed is already widely established within the perimeter of the Apple Fire and portions of the Boulder Fire as well as along the South Umpqua Road near the Acker Fire. Meadow knapweed is an aggressive, rhizomatous perennial that is known to spread aggressively into timber harvest units. There are recent sale units in the upper part of Calf and Panther Creek watersheds that are filled with meadow knapweed from one edge to the other. Other pre-existing weeds within the perimeter of the Apple and Tiller Complex fires include: scotch broom (*Cystisus scoparius*), tansy ragwort (*Senecio jacobaea*), St. Johnswort (*Hypericum perforatum*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), and diffuse knapweed (*Centaurea diffusa*).

The fire perimeter contains a few areas of scotch broom and a single location of diffuse knapweed that may have already been eradicated. Both species have the potential to spread throughout fire-created openings. All sites of these species within the fire perimeter will be subject to eradication.

Tansy ragwort is well established in some areas, while St. Johnswort is nearly ubiquitous throughout the Umpqua National Forest. St. Johnswort and tansy ragwort will likely spread from the road into recently burned areas. Natural recovery of native vegetation will probably keep these species in check along lower- to mid-slopes where native species will respond most vigorously. Upper slopes and ridges associated with roads, where surface soil erosion is most pronounced, will be most at risk to spread of St. Johnswort and tansy ragwort.

Bull thistle and Canada thistle are widely distributed throughout the area. Bull thistle is also known to heavily infest recently disturbed areas. This species, however, is a taprooted, biennial plant that never persists in numbers for more than a few years. Canada thistle is common on the forest, although it is not known how much is currently near the fires. It is a persistent, perennial species that prefers relatively moist sites and could expand into such sites. There has never been a systematic inventory of noxious weeds in these areas and lower priority weeds are not routinely mapped, so there are likely more locations of noxious weeds than is currently known.

The primary vector for long-distance movement of noxious weeds is vehicle traffic. Because vehicles used for fire suppression came from across the United States, there is potential for introduction of new noxious weed species into these areas. The potential for more local distribution of noxious weeds is even more likely. For instance, the fire camp at Milo was in a pasture known to contain yellow starthistle (*Centaurea solstitialis*), so this species in particular is likely to turn up on the Tiller complex.

Emergency treatments for both the Apple and Tiller Complex fires in 2002 focused in areas disturbed by fire suppression activities and in the immediate vicinity of known sites of noxious weeds with high potential to spread into burned or otherwise disturbed areas. The objective in all cases was to provide cover of native species that discourage invasion of noxious weeds. Fire lines, both hand and tractor, were largely managed by pulling back the berm along with the duff and topsoil. Parts of some tractor lines, staging areas, safety zones, and a spike camp were seeded or planted to native species. In addition, several locations in the immediate vicinity of meadow knapweed and scotch broom were seeded. These areas were all along roads. It should be noted that grass and forb cover

can slow the spread of noxious weeds, but reforestation of burned areas will ultimately be necessary to preclude noxious weed establishment.

Surveys of noxious weed sites within the fire perimeter occurred this fall with additional survey of the burned areas planned for summer of 2003. Surveys will probably need to be continued through at least 2005. Burned Area Emergency Rehabilitation (BAER) funding can be requested annually through 2005 for weed survey. Other than one site of meadow knapweed near a pump chance that was covered with black plastic, a processes known as solarization, meadow knapweed sites within the fire perimeters will be mowed with a weed eater. Isolated plants will be hand pulled. The objective is to prevent weeds from going to seed, otherwise the light, dandelion-like seeds would blow into the burned areas. Scotch broom sites will be treated manually and any new sites of high-priority weeds will be mapped and hand pulled upon discovery. The objective for new sites is to eradicate them before they can become established.

Edible Mushrooms

Morels (*Morchella* spp.) are famous for their ability to respond, often in tremendous abundance, to forest fires (Appendix A). There is every reason to expect a flush of morels to occur this spring in the areas burned within the 2002 Apple and Tiller Complex fires. Because morels are among the most prized of edible mushrooms, this should generate interest by mushroom collectors for both commercial and personal use. The Bland Mountain Fire, which occurred in 1987 on BLM and private lands near the town of Tiller, apparently yielded about 10,000 pounds of morels. Because there were so many fires, particularly here in southwest Oregon, there is no way of knowing the prices or how many collectors will make their way to the Umpqua area.

Morels are a spring mushroom that occur as early as February at the lowest elevations. On the Umpqua National Forest, we are unlikely to see many morels before March. It is probable that the later part of April through May will be the peak of the season. Morels may continue to be collected as late as July at the highest elevations, depending upon snowmelt and early summer precipitation.

Local mushroom experts expect a better morel area in the Tiller Complex area than the Apple Fire, variously citing vegetation type, soils, and aspect as the reason why. Areas dominated by white fir (at least before it burned) are generally considered more reliable than drier sites dominated by Douglas-fir and pines. The areas that burned completely will have morels only if the spring temperatures and precipitation are adequate for the mushrooms to develop to full size in this black, inhospitable environment.

Just how many morels eventually come up will depend on the weather. In the Blue Mountains of northwest Oregon about 200 per acre have been reported as an average with a range of 80 to 480 per acre (Pilz & Molina 2002). Morel production in the burned areas will be strong for the first couple of years and then drop off sharply by the third or fourth year. There will likely be incidental collection of other edible mushrooms such as chanterelles (*Cantharellus* spp.), but morels are the only edible mushroom known to respond positively to fire.

Fire and Fuels

Fire regimes are characterized by fire frequency, intensity, and severity as well as patterns of forest types across landscapes over time (Agee 1993). Fire regimes help to define the role natural fire plays

in an ecosystem. The 2002 fires burned mostly in landscape areas with low- and mixed-severity fire regimes (Figure 20: Fire Regime Map for Umpqua National Forest).

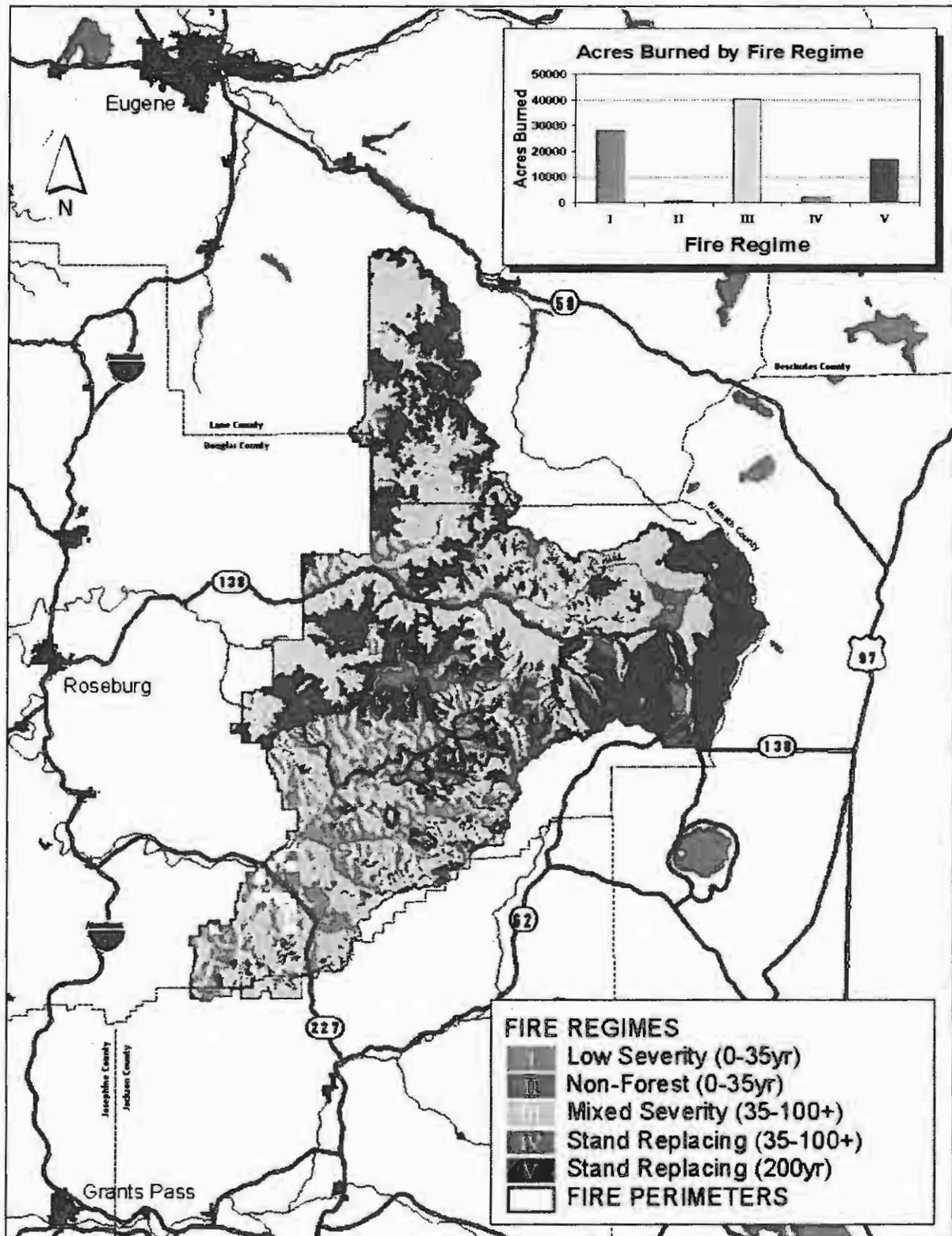


Figure 20: Fire Regime Map for Umpqua National Forest

Much of the Forest is mixed-severity fire regime (Fire Regime III). The divide between the North and South Umpqua rivers represents a transition zone between fire regimes. Larger patch sizes can be observed to the north where fire is less frequent but more severe, while smaller, stand-replacement patches prevail south of the divide due to more frequent, less severe fire. Fire suppression has prevented fire from playing its natural role for at least one or more fire cycles in the low-severity fire regime areas and possibly one fire cycle in the moderate-severity regimes.

Increases in fuel loadings, stand structure and species composition are due to not only to fire suppression but also to climatic changes that have been occurring over several hundred years. A study reconstructing temperatures in western North America analyzed chronology of tree ring densities from 1600 to 1982 (Briffa et al., 1992). Findings indicated widespread warmth during specific time periods that correlate to fire episodes identified in a fire-history study on the northern part of the Umpqua National Forest. Since the 1930's, worldwide annual precipitation has increased an average of 2.4 mm per decade; with much of that increase occurring in North America (Dai, et al 1997). Though enhanced drought conditions have been occurring in 18.6 year intervals since the 1930's (Currie 1981), the general warmer and moister weather trend has favored vegetation growth, which in turn increases the likelihood of higher intensity fires.

Fuels are classified by vegetation type, fuel size and loading, and potential fire behavior. Fuel Models 5 and 10 dominated the pre-fire landscape (Figure 21: Fuel Models used on the Umpqua National Forest). Fuel Model 10 represents most of the timbered stands. Fuel Model 10 stands are often overstocked or over-mature, with large amounts of dead fuel greater than three inches in diameter. Fires burn in surface and ground fuels with greater intensity. Crown torching of individual trees is more frequent in these stands, making fire suppression more difficult.

Fuel Model 5 best represents the early-seral vegetation including shrub communities and even-aged young plantations. As noted previously, these early-seral stands cover a greater portion of the landscape today than occurred historically. Crown fire spreads readily through these young stands: rates of fire spread can be high, and significant areas of mortality can occur in and adjacent to these stands. Less frequent fuel types encountered within the fire perimeters include a grass and timber mosaic (Fuel Model 2 from Figure 21), open mixed-conifer stands with little dead fuel on the forest floor (Fuel Model 8, Figure 21), and small hardwood stands (Fuel Model 9 – not shown).

In 2002, fires burned across the landscape for several weeks, creating a mosaic pattern of low-, moderate- and high-severity effects. These patterns were directly related to available fuels, terrain features, and the influence of local weather. The majority of the timbered stands (Fuel Models 8 and 10, Figure 21) burned at low- to moderate-severity; many of the understory fuels were consumed and the overstory was left mostly intact. Post-fire surface fuel loadings in Model 8 stands are expected to remain light. Implementing vegetation- and fuels-management activities in these stands within the next 5 to 10 years and then repeating fuel-reduction treatments on a regular basis (every 5 to 20 years) would be a cost-effective and beneficial way of enhancing the landscape's resilience to fire.

Surface fuels in post-fire Model 10 stands were partially consumed, and are expected to build to pre-fire levels quickly as understory mortality falls to the ground. Fuels will begin building immediately and will continue until fuels reduction activities or a future fire moves through the area.

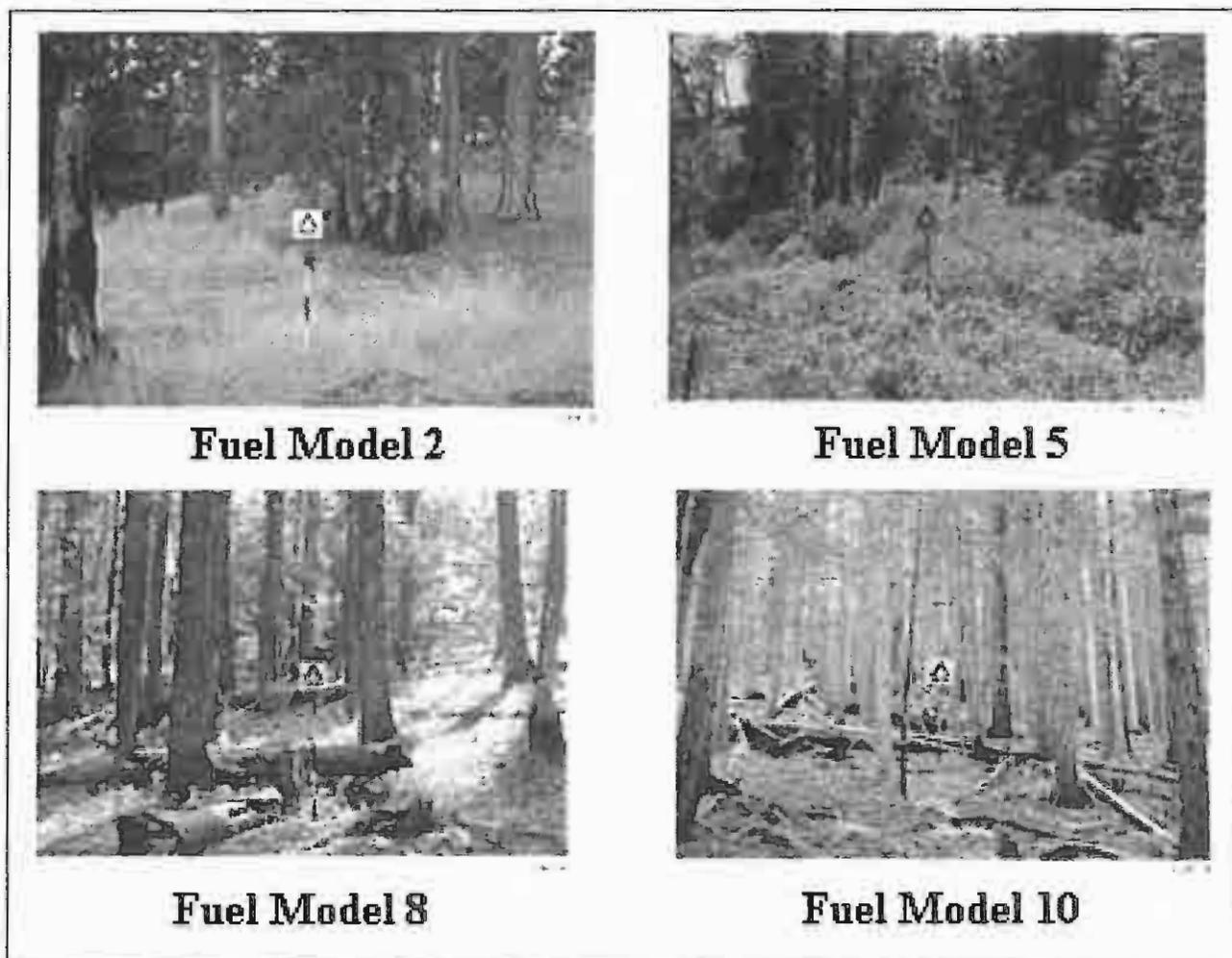


Figure 21: Fuel Models used on the Umpqua National Forest

Where fire burned at higher intensities in timber stands, most, if not all, of the ground fuel was consumed, and most of the green trees were killed. Fuel loadings will build toward pre-fire levels more slowly in these stands since much of the original surface biomass was consumed. Smaller fuels will dominate the forest floor until trees begin to shed larger branches and portions of the trunks begin to weaken and fall.

Recent observations in the 1996 Spring Fire and down-wood inventory in the 2002 Apple Fire provide examples of how fuels change in timbered stands over time and in response to fire severity. Timbered stands in the Spring Fire area that experienced moderate- and high-severity fire, contain enough small fuels present after seven years to carry a fire again. Heavy fuels will continue to accumulate in these stands as snags fragment and fall to the forest floor, but it will take decades for timber to dominate these stand-replacement fire areas. In contrast, timbered stands in the 2002 Apple Fire that experienced low- to moderate-severity have the greatest short-term increase in large-wood fuels on the forest floor (fuel loads approaching 28 tons per acre).

The 2002 fires had a major effect on plantations. Seventy-four percent of plantations under 20 years of age experienced stand-replacement mortality. High-stand densities and low crowns allowed fire to torch and run rapidly through these stands. Shrubs and grasses will dominate these areas for several decades until trees occupy these sites.

Delays in initial attack, fuels accumulations, and terrain played major roles in the rate of fire growth. The landscape areas can be used to visualize how the 2002 fires spread. The majority of the large fires occurred in Steep/Dry landscapes; historically, fires in these areas were frequent and of low intensity. In the 2002 fires, Gentle/Moist and High Elevation landscape areas slowed the spread of fire as it reached these areas. These natural fuel breaks on the borders of the Steep/Dry landscapes proved to be effective places to conduct burnout operations.

Other areas, such as Dumont Creek (along the western edge of the Boulder Fire), are also good potential locations for fuel breaks for three reasons:

- Suppression is easier and safer in gently sloping terrain at the edge of Steep/Dry landscapes
- This location provides a control line that can be used to prevent fire spread further to the west into Urban Interface areas
- It also provides a control line from which hazardous fuels can be reduced using prescribed natural or management-ignited fire

In response to questions raised as to burnout-induced mortality, a burnout area map was created using the fire progression map and personal interviews. Burnout was overlaid with both late-seral and plantation-aged mortality (Figure 22: Fire Burnout areas (orange) and Plantation Mortality (black)). Overall, it appears that burnout did not significantly increase mortality in either the plantations or late-seral stands (Figure 23: Fire Burnout Areas (orange) and Late seral Mortality (black)). While there were economic costs associated with burnout, there were also savings in the potential cost of protecting adjacent private and public lands.

Prior to the 2002 fires, the distribution of heavy fuels was greatest in the Steep/Dry landscape areas (Figure 24: Pre-fire Density of Heavy Fuels and Steep/Dry Terrain). The highest-risk areas on the Forest today are where these heavy fuel concentrations still exist outside the 2002 fire perimeters (Appendix B, Fuel Model Map). Areas of greatest concern include concentrations of fuels and steep/dry terrain in the Black Rock Fork and Jackson Creek headwaters on the Tiller Ranger District, and the headwaters of Steamboat Creek and in the canyons of the North Umpqua River on the North Umpqua Ranger District. Aside from the rural-urban-interface areas, other high-risk areas that are not related to terrain include concentrations of 1996 blowdown at mid elevation throughout the Forest and the lodgepole pine stands on the Diamond Lake Ranger District.

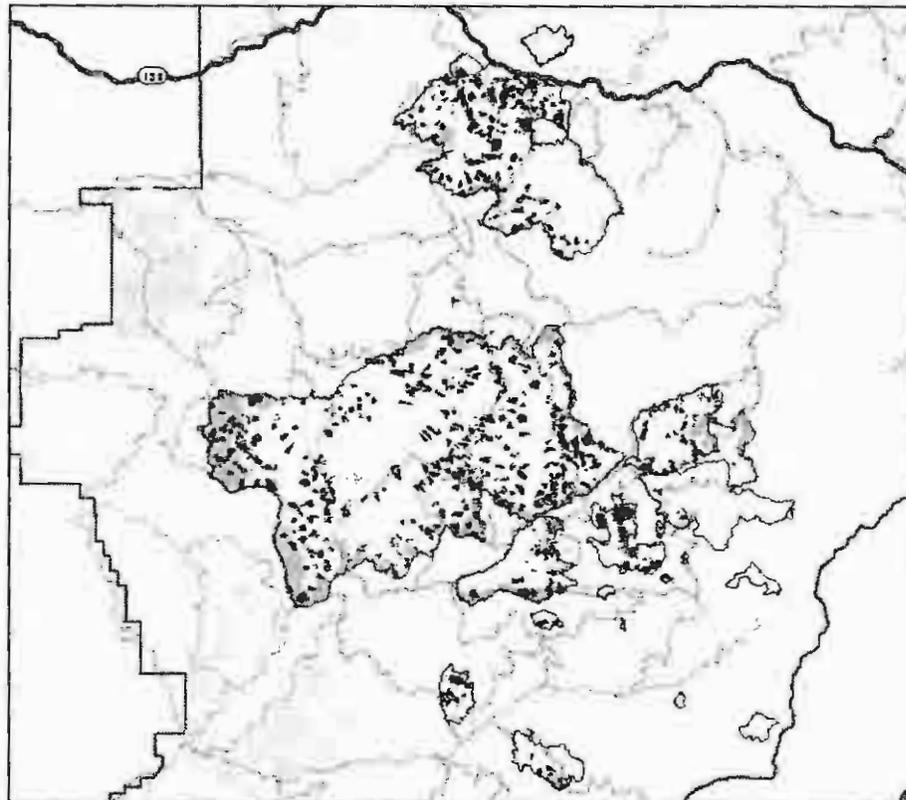


Figure 22: Fire Burnout Areas (orange) and Plantation Mortality (black)

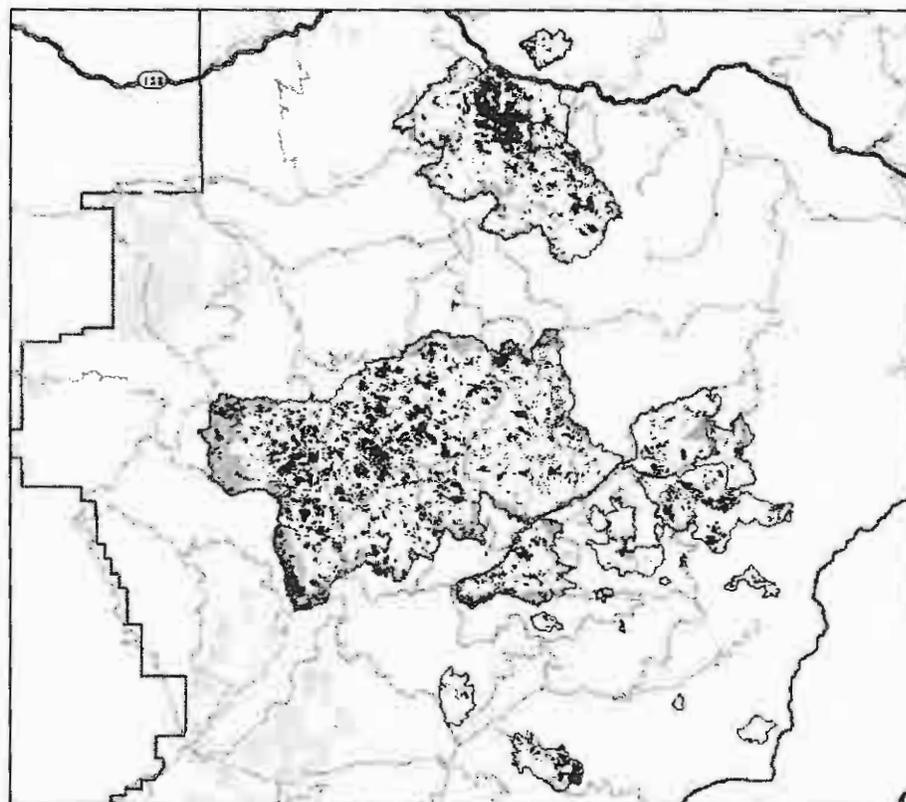


Figure 23: Fire Burnout Areas (orange) and Late Seral Mortality (black)

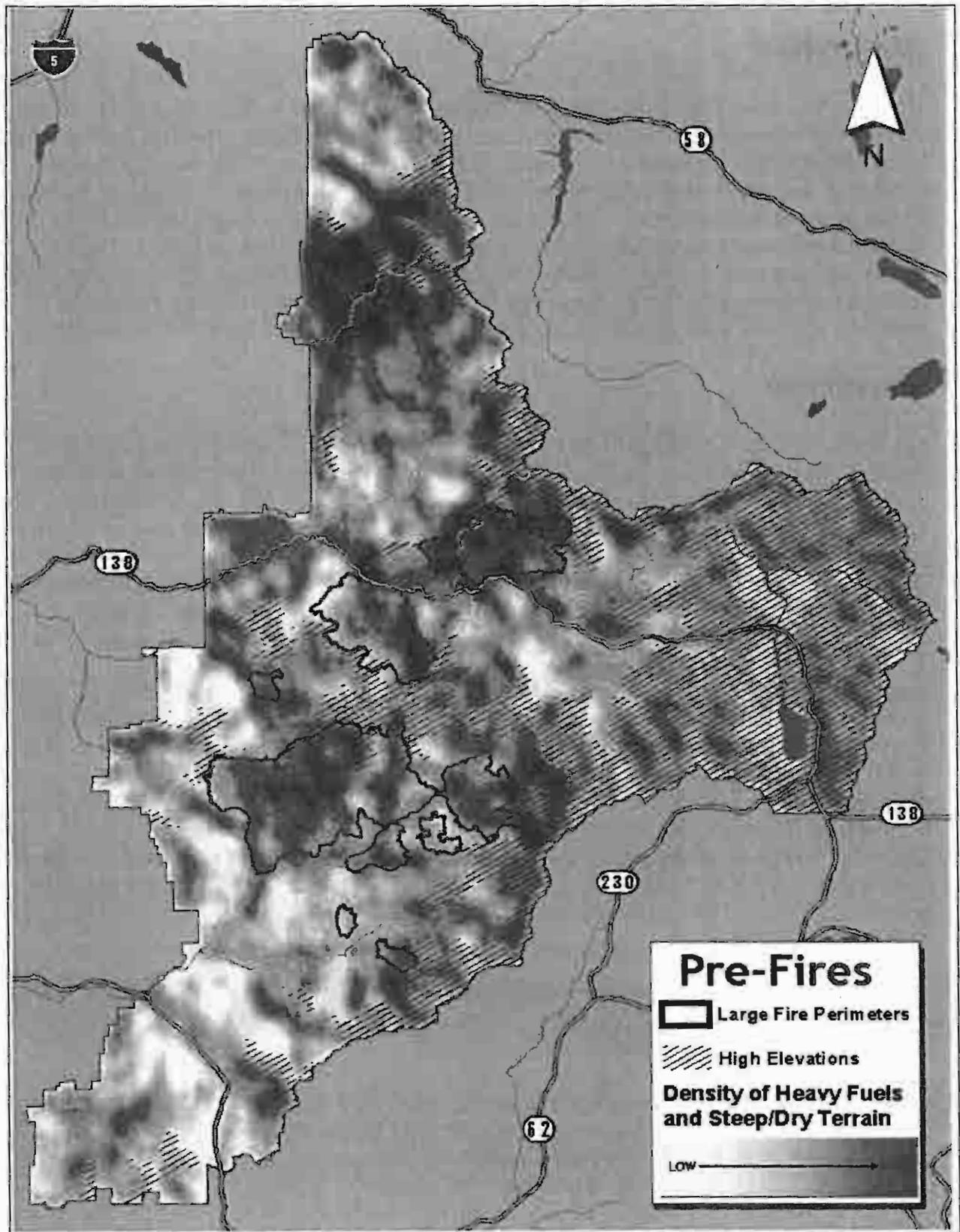


Figure 24: Pre-fire Density of Heavy Fuels and Steep/Dry Terrain

Watershed

The 2002 fires burned in 13 watersheds (Hydrologic Unit Code 6, or “sub-watersheds”) where stream flows, water temperature, and erosion processes are affected to varying degrees (Figure 1, page 2). These varied effects are based on differences in fire intensity and severity, watershed conditions prior to the fires, and future natural- and human-caused disturbance processes. Fire-induced increases in stream flow and sedimentation will affect watershed conditions according to the sensitivity of individual watersheds to erosion processes. Fire effects will trigger both positive and negative impacts to the recovery and restoration of watersheds. Specific hydrologic effects are described in the following sections. A Watershed Sensitivity Index table was developed to help summarize the combined effects of management and natural processes on watershed condition (Appendix C).

Streamflow

The fires created new openings in the forest canopy that have the potential to increase and change the timing of peak streamflows. Increased flows provide the force needed to transport sediment from the landscape and erode stream channels, particularly when associated with rain-on-snow storm events. The influence of canopy openings and physical properties of watersheds were used to determine potential stream flow response and stream bank erosion. Using an analysis adopted from the Augusta Creek Study (Cissel et al., 1998), the potential for altered stream flows is described qualitatively as “hydrologic risk” by combining maps of watershed canopy conditions and rain-on-snow susceptibility. A detailed description of analysis steps and assumption is located in Appendix C.

Stands with less than 70 percent canopy cover are considered “openings” in a hydrologic context. Openings in the forest canopy are more likely to experience snow accumulation in winter (Storck et al, 1999). During warm storms, snow melts more quickly in these openings, leading to increased stream flows (rain-on-snow storm events). After the fire, openings increased in all 13 fire-affected watersheds, and areas with less than 70 percent cover now range from 19 percent (Castle Rock Fork) to 58 percent (Panther Creek, Figure 25: Watershed Area with Canopy Cover Less than 70 Percent). The *pre-fire* range of canopy cover was 16 percent (Castle Rock Fork) to 40 percent (Panther Creek) (Appendix C). Scoping for future projects in watersheds with more than 25 percent openings between 2,000 and 5,000 feet elevation (rain-on-snow zone) will identify peak streamflows as an issue (USDA, 1990).

Elevation, aspect and soil depth were used to develop a map of rain-on-snow susceptibility (Figure 27: Rain-on-Snow Susceptibility). Areas of highest risk for rain-on-snow runoff are mid-elevation, southerly aspects with shallow soil.

Where canopy openings and moderate to high rain-on-snow potential overlap, the risk of peak streamflow increases, or “hydrologic risk”, is indicated. (Figure 28: Hydrologic Risk Map). The greater the area of hydrologic risk in a watershed, the larger the potential for increased peak storm flows and associated stream channel changes. Hydrologic risk in post-fire watersheds ranges from nine percent (Castle Rock Fork) to 28 percent (Boulder Creek, Figure 26: Post-Fire Hydrologic Risk in Watersheds).

Boulder, Quartz, Black Rock Fork and Panther creeks are the watersheds with greatest potential for stream flow increases because of rain-on-snow conditions. The potential effects on streamflows are

greatest immediately and will decline for a period of 30 to 40 years if canopy cover recovers to pre-fire levels. Depending on the streamside vegetation and pre-fire channel conditions, increased streamflows may erode stream banks, dislodge streambed materials, and alter winter habitat for fish.

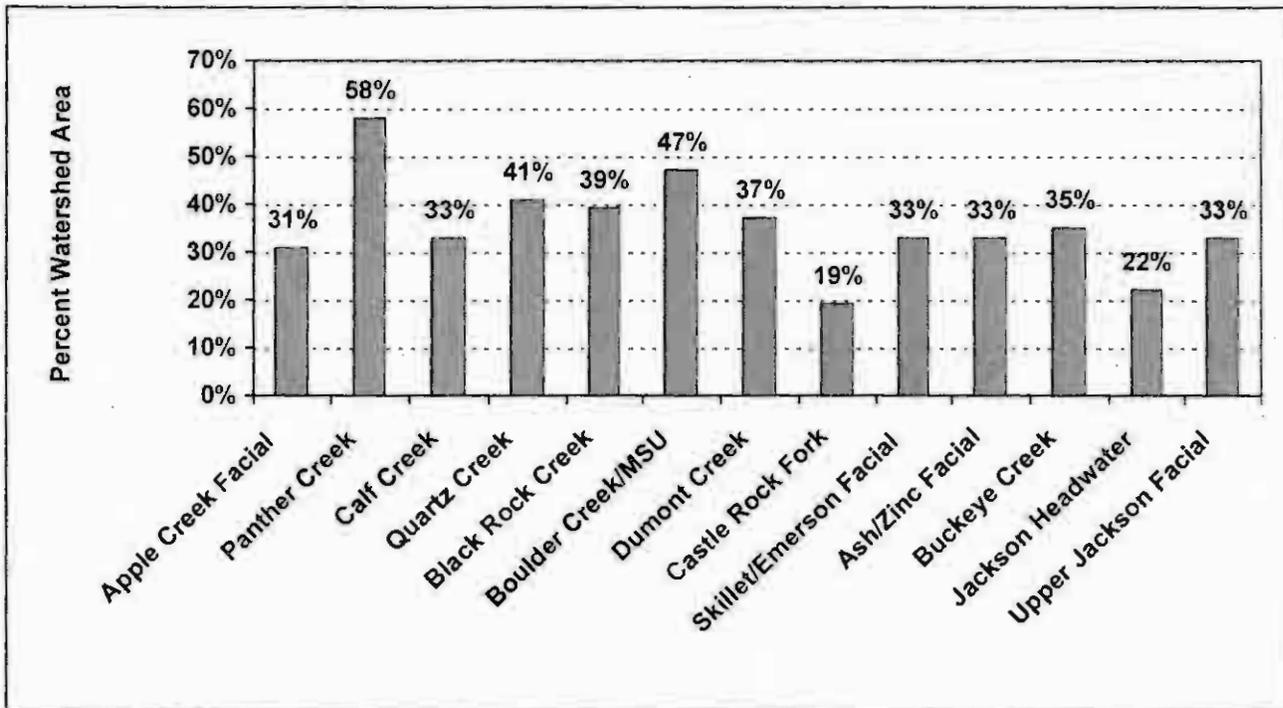


Figure 25: Watershed Area with Canopy Cover Less Than 70 Percent

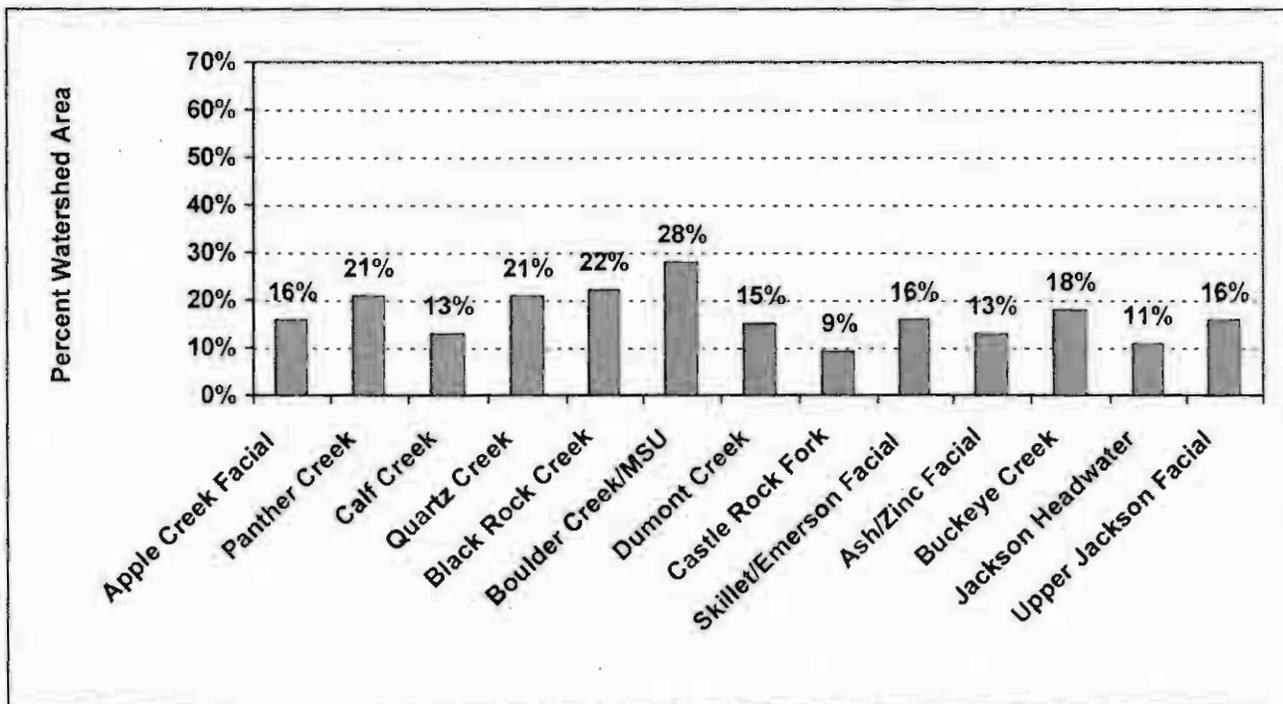


Figure 26: Post-Fire Hydrologic Risk in Watersheds (Areas With Less Than 70 Percent Canopy Cover and Moderate-High Susceptibility to Rain-On-Snow)

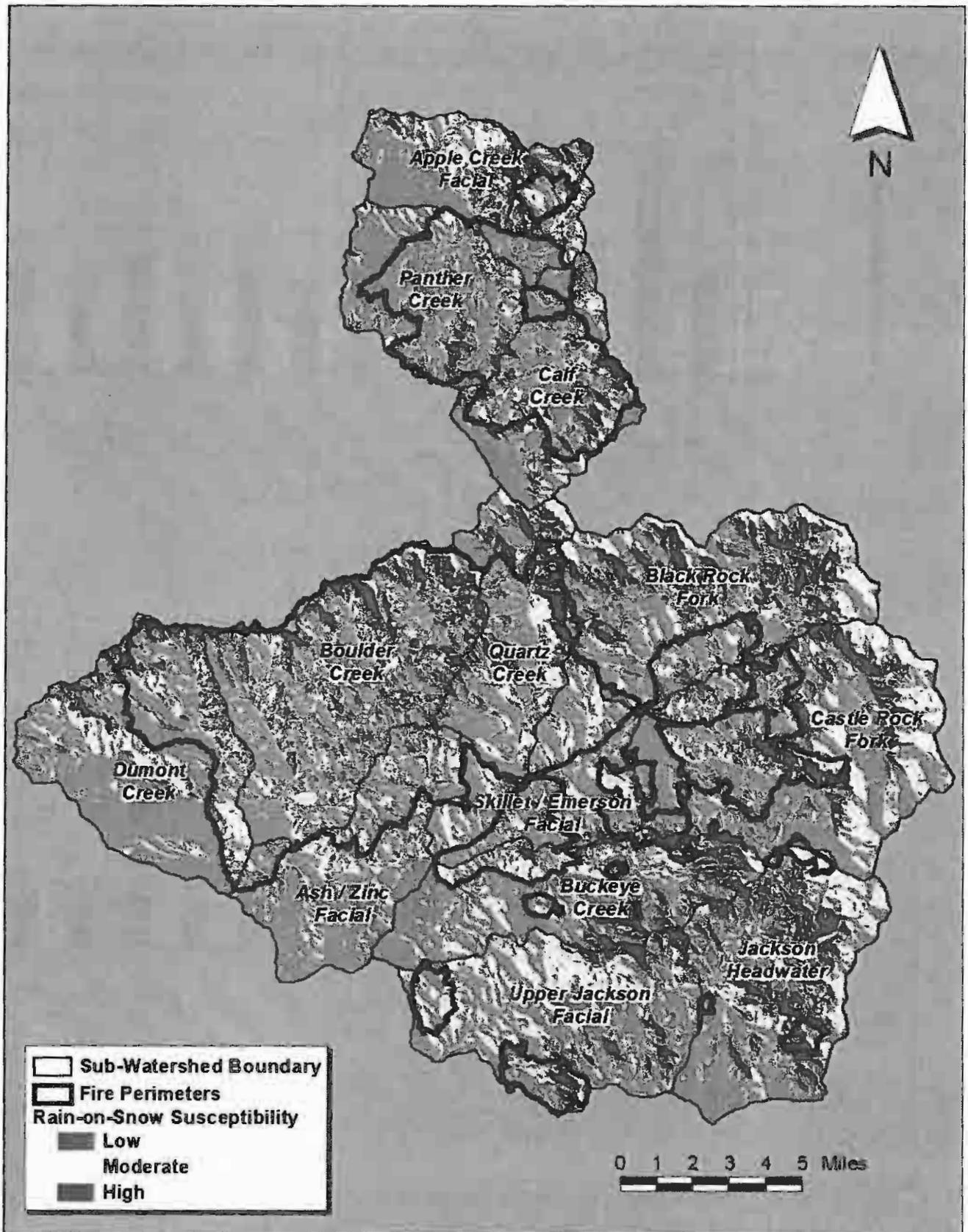


Figure 27: Rain-on-Snow Susceptibility

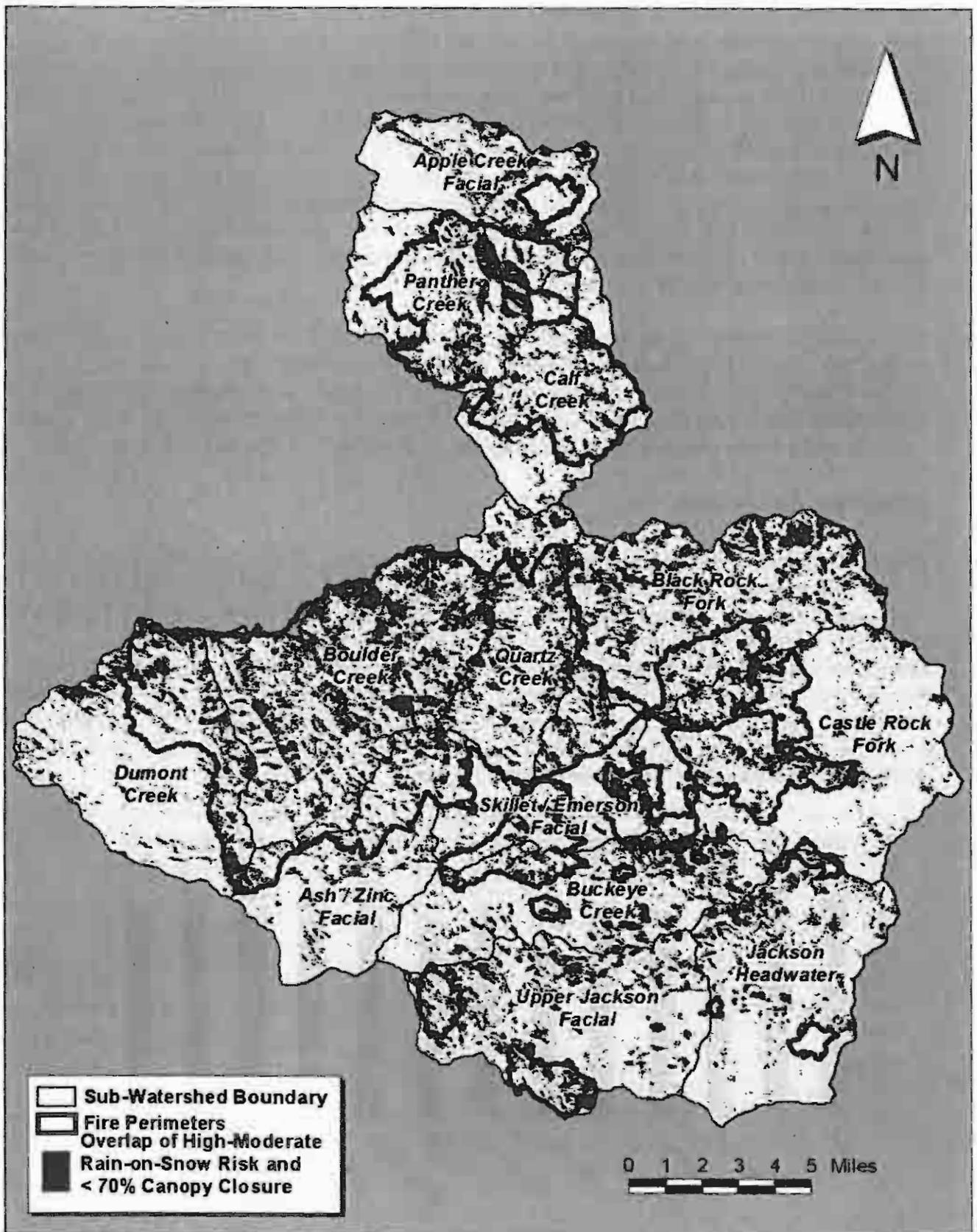


Figure 28: Hydrologic Risk Map

Roads increase peak flows by intercepting subsurface water flows and delivering it to streams via ditch lines. Watersheds with high road densities are believed to experience increased peak flows compared to un-roaded watersheds. The increase in stream peak flows resulting from fire-created openings will add to an existing long-term increase associated with road-related stream extensions. A study of watersheds in the western Cascades of Oregon demonstrated that road construction combined with patch clearcutting ranging from 10 to 25 percent of basin area produced significant, long-term increases in peak streamflows in small (1 square kilometer) and large basins (60 to 600 square kilometers, Jones and Grant, 1997). The same study observed peak streamflow increases from 24 to 32 percent in large basins (comparable in size to the fire watersheds) with more than 15 percent area harvested and approximately four to five percent of the basin area occupied by roads (three to four miles per square mile of road density).

The cumulative effects to peak flows associated with the fires and the road network are expected to be most prevalent in the following watersheds that have at least three miles of roads per square mile and more than 25 percent early-seral vegetation: Skillet/Emerson Facial, Buckeye Creek, Black Rock Fork, Quartz Creek, Dumont Creek, Upper Jackson Facial, and Ash/Zinc Facial, all in the South Umpqua, and Panther Creek in the North Umpqua (Appendix C: Watershed Sensitivity Index).

Riparian Reserves

Tree mortality within the riparian zones will reduce canopy shading and increase stream temperatures to varying degrees in the 13 fire-affected watersheds (Figure 29: Current Vegetation Stage in Riparian Reserves of Perennial Streams). Openings with snags represent patches of fire-killed trees in riparian zones. The more extensive openings are along streams, the more likely stream temperatures will rise as a result of the fires. Panther and Boulder Creeks, and to a lesser extent Dumont and Quartz creeks, and Skillet/Emerson Facial, are the watersheds with the greatest amount of change in early-seral vegetation in the riparian areas of perennial streams. The combined percentage of early-seral and early-seral-with-snag-vegetation classes ranges from 20 percent (Skillet/Emerson Facial) to 49 percent (Panther Creek).

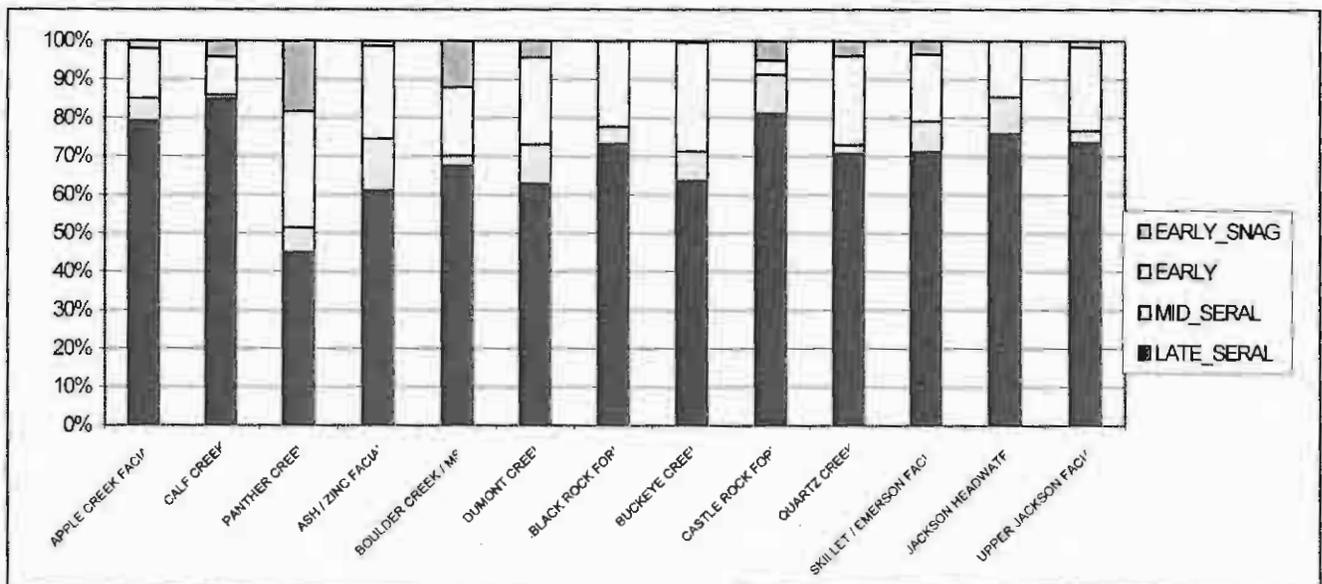


Figure 29: Current Vegetation Stage in Riparian Reserves of Perennial Streams

Landslide erosion is the principal means by which sediment is delivered to streams and fine-sediment levels increase in streams. The overlap of a topographic model that identifies potentially unstable landforms and tree mortality from fires is a good tool for predicting the extent of accelerated mass erosion, including landslide and debris flow hazards (Appendix C: Shalstab model). The 2002 fires will accelerate mass erosion (landslides) in steep terrain where live vegetation, a key component of slope stability, was killed by the fires. The watersheds with the greatest area burned in Steep/Dry landscapes are Boulder Creek, Quartz Creek and Castle Rock Fork in the South Umpqua headwaters, and Panther and Calf creeks in the North Umpqua basin. This accelerated, landslide-erosion process will continue until the re-vegetation of unstable slopes occurs, which is estimated to be a period of 10 to 20 years.

Water Quality Limited Streams

In Oregon, the Department of Environmental Quality (DEQ) is required by the federal Clean Water Act to maintain a list of stream segments that do not meet water quality standards. All streams identified above are on this “303(d)” list for water quality limitations and exceed one or more of the criteria for stream temperatures, habitat modifications, and sediment loading (Appendix C).

Cumulative Watershed Effects to Aquatic Resources

The effects of the 2002 fires on water quality and quantity, habitat for fish and other aquatic organisms, and population responses to habitat changes are difficult to quantify. A complex of future disturbance events, many of which are difficult to predict, will compound the fire effects. Pre-fire habitat conditions provide a baseline for comparison of current fire effects as well as foreseeable future changes in vegetation, hydrologic, and sedimentation processes. Pre-fire resource conditions are largely the result of past management practices, principally stream clean-out, timber harvest, and road construction.

Prior to the 2002 fires, the habitat conditions in most affected watersheds (HUC 6th-field watersheds) range from very low (Boulder Creek) to very high (Castle Rock Fork, Figure 30: Pre-fire Stream Habitat Condition). These ratings are based on a combination of indices of good habitat such as in-stream, large-wood structure as well as indices of management intensity associated with “poor” conditions such as high levels of road density and watershed area harvested (USDA Forest Service, 1995).

Recent management focus in several of these watersheds has been on restoration, with some work underway and more planned in several high-priority watersheds such as Boulder and Dumont creeks. A multi-agency Umpqua basin planning effort identified the Middle North Umpqua (includes Calf Creek) and Middle South Umpqua (includes Dumont and Boulder creeks) watersheds as high priority, and Dumont and Boulder Creeks as “highest of the high” for recovery efforts.

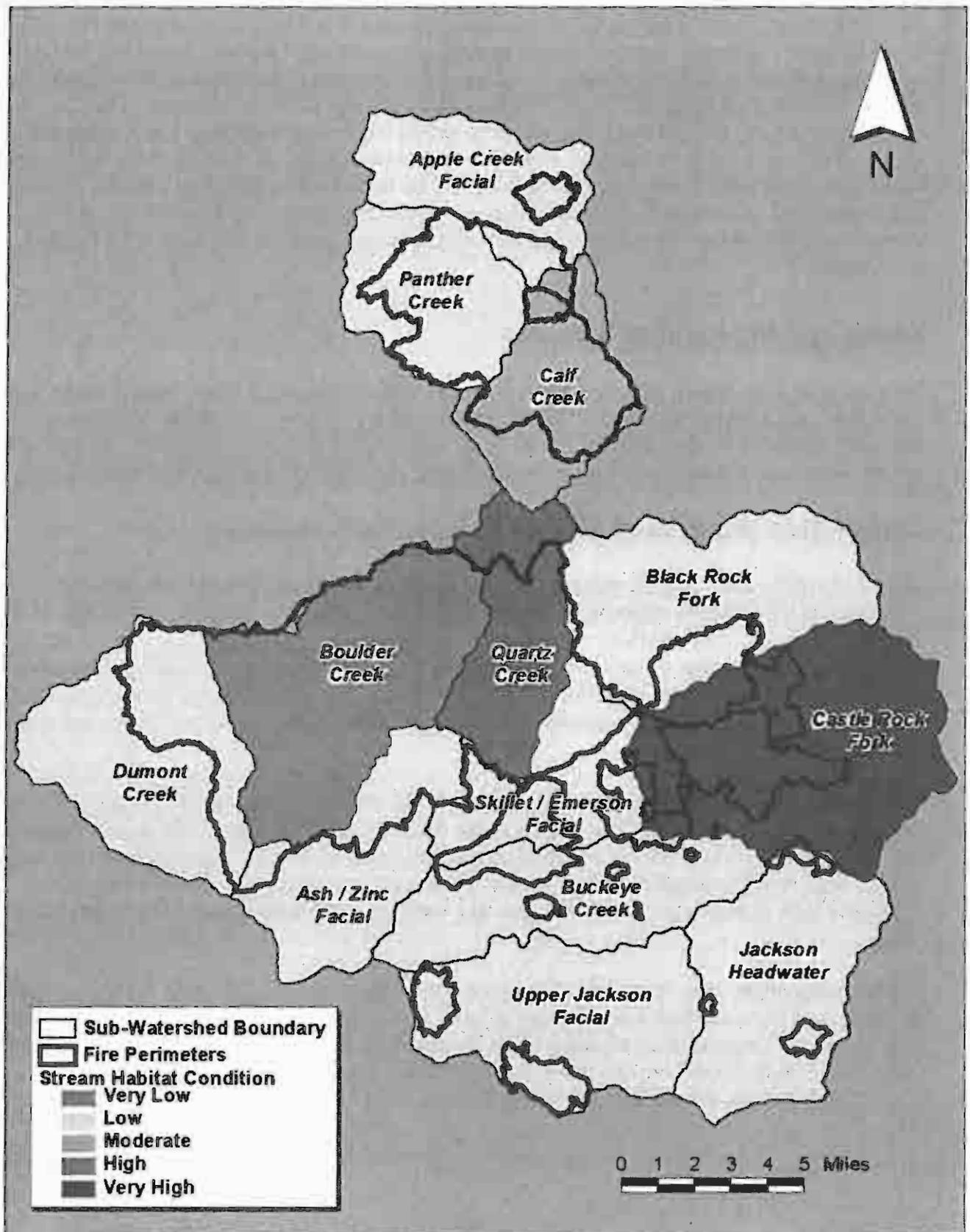


Figure 30: Pre-fire Stream Habitat Condition

Fish, Wildlife and Rare Plants

In general, the effects of wildfire favor some wildlife and reduce or eliminate other species from the burned areas (McIver and Starr 2000). Wildlife populations show a wide response to the burn. Species preferring open, early-seral habitats and “edge” habitat typically undergo population increases, and those needing older forests demonstrate population declines.

The effects of the 2002 fires on aquatic habitat, as well as the planned recovery efforts, are such that there are positive and negative impacts. For example, tree mortality within riparian zones will reduce canopy shading, thus increasing summer water temperatures. Elevated water temperatures are presently a significant factor affecting growth, survival, and production of many aquatic organisms, including most native salmonid species. At the same time, streamside-tree mortality is a source of large wood that will, over the next decade, add important stream structure that is presently lacking within most affected watersheds. Conversely, large wood delivery via landslides may be altered in some areas by a loss of connectivity at road/stream crossings. While dead trees can serve as a source of large wood for restoration efforts, it is not the only solution for stream recovery. Poor existing habitat conditions, presence of valley bottom roads, and altered stream and sediment flows also impact stream restoration efforts.

Fish Populations

All wild stocks of salmon are considered “sensitive” species. At the river-basin scale, it is important to consider the effects of the fires on fish populations. The fires occurred in both the North and South Umpqua river sub-basins, which have different fish stocks and habitat conditions. There are some commonalities, however. For example, coho salmon are a federally listed Threatened species and sea-run cutthroat trout are in decline throughout the basin.

There are some substantial differences between the North and South Umpqua. For example, spring chinook in the North Umpqua are relatively abundant, habitat is high quality and widespread, and they provide for an important fishery; South Umpqua spring chinook are one of the basin’s most endangered stocks, and have a small amount of marginally suitable habitat. While steelhead are more abundant than spring chinook, they have limited habitat in the South Umpqua, primarily in the tributaries. Steelhead populations in the North Umpqua are robust and habitat abundant, including a large amount of mainstem, juvenile-rearing habitat.

As a general rule, those stocks that are at the lowest population level or have the most limited amount of available habitat, are at greatest risk. Based on this concept, the stocks from the South Umpqua are more threatened as a result of the fires than the North Umpqua stocks because the South has a larger amount of area burned, low populations and a relatively small amount of available, suitable habitat. Coho salmon in the South Umpqua are at low levels and the amount of available, suitable habitat is limited. Furthermore, the South Umpqua spring chinook that depend upon a small area of the mainstem South Umpqua will be affected by a larger area of fire effects upstream.

Impacts to Northern Spotted Owls

The wildfire's impact to spotted owls was analyzed at both the provincial and forest scale. Several fires occurred in Oregon's Western Cascade Province, but the majority of wildfires in 2002, and the largest, occurred in the southern portions of the Province (south of the North Umpqua River). Impacts to spotted owl critical habitat throughout the Province are summarized in Table 2 (Table 2: Fire Impacts to Northern Spotted Owl Habitats).

Table 2. Fire Impacts to Northern Spotted Owl Critical Habitat

CHU	Total Acres	Acres Burned	Acres of Habitat Lost (% Total Habitat)	2002 Wildfires
OR-10	79,368	105	(< 0.01%)	Bowl Fire
OR-14	109,868	81	(< 0.01%)	Lucky Fire
OR-20	78,242	9	(< 0.01%)	Shady Dell Fire
OR-28	120,631	147	15 (< 0.01%)	Apple Fire
OR-29	97,040	25,248	5,359 (8.9%)	Tiller Complex
OR-30	71,490	8,532	934 (1.8%)	Tiller Complex
OR-34	64,893	11,816	674 (2.2%)	Timbered Rock

Figure 31 shows the effects the wildfires of 2002 had on Critical Habitat Units (CHU) for the northern spotted owl. The largest impacts were to Critical Habitat Units OR-29 and OR-30 in the Umpqua basin, and OR-34 in the Rogue basin where approximately 6,967 acres of critical habitat were consumed by fire. In total, there was an approximate 0.7 percent decrease in critical habitat within the Western Cascades Province and a 3.9 percent decrease on the Umpqua National Forest. At the forest level, there were several other small wildfires in CHUs not listed in the table (for example, OR-26), but the impacts to these other CHUs are insignificant.

Figure 32 shows the effect of wildfires on northern spotted owl nesting/roosting/foraging habitat since 1996 (Appendix D). Although there has only been an overall 3.3 percent decline in habitat, large un-fragmented blocks of habitat (areas with greater than 70 percent habitat within an average home range of the owl) have decreased by 22.4 percent. The amounts of areas with less than 40 percent habitat (considered as non-viable in the long-term) have increased by 2.9 percent.

The most significant impact to nesting/roosting/foraging habitat occurred on the Apple Fire, where a large "hole" was created in the habitat within the Forest, similar to what occurred in 1996 with the Spring Fire. The Tiller Complex fires reduced a largely un-fragmented block of habitat, but the area still contains enough habitat to be considered viable for long-term populations. These conditions might decrease over the next few years as fire-injured trees die, but the extent of this mortality is hard to predict at this point.

The fires affected 43 spotted owl activity centers (representing nesting sites) were on the Forest. Immediately after the fires, the Tiller Complex had the biggest impact on spotted owl core-area habitats (100-acre nesting areas around activity centers), particularly the Boulder Fire, where an average of 16.8 percent of core habitat was lost. Except for Crooked Fire, fire impact to owl cores was minor, with not more than a five percent loss of habitat in small fire-created patches (0.5 to 2 acres in size). Over the next few years, more mortality from fire-injured trees is expected to increase the negative effects on owl habitat.

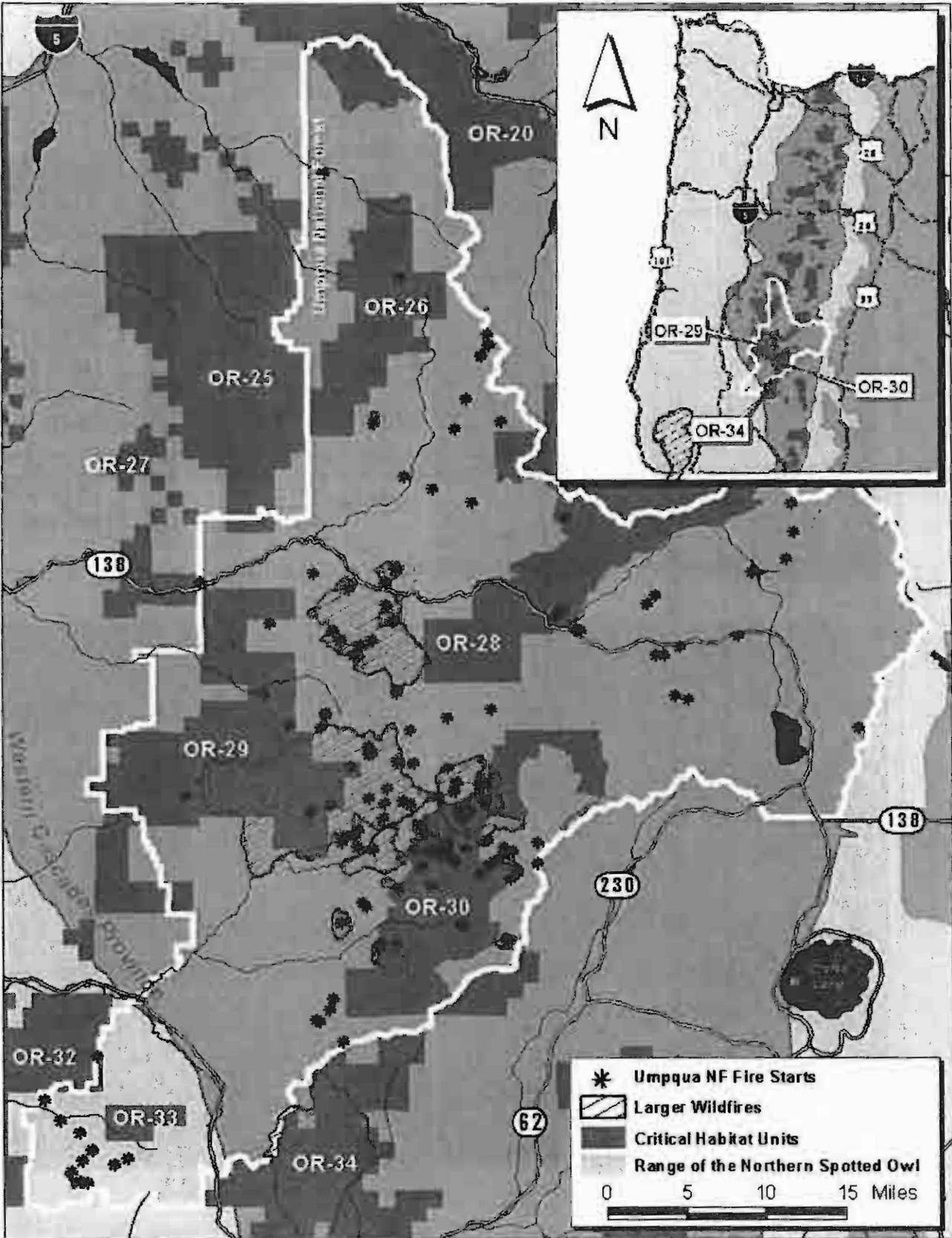


Figure 31: 2002 Wildfire Effects on the Critical Habitat Units for the Northern Spotted Owl

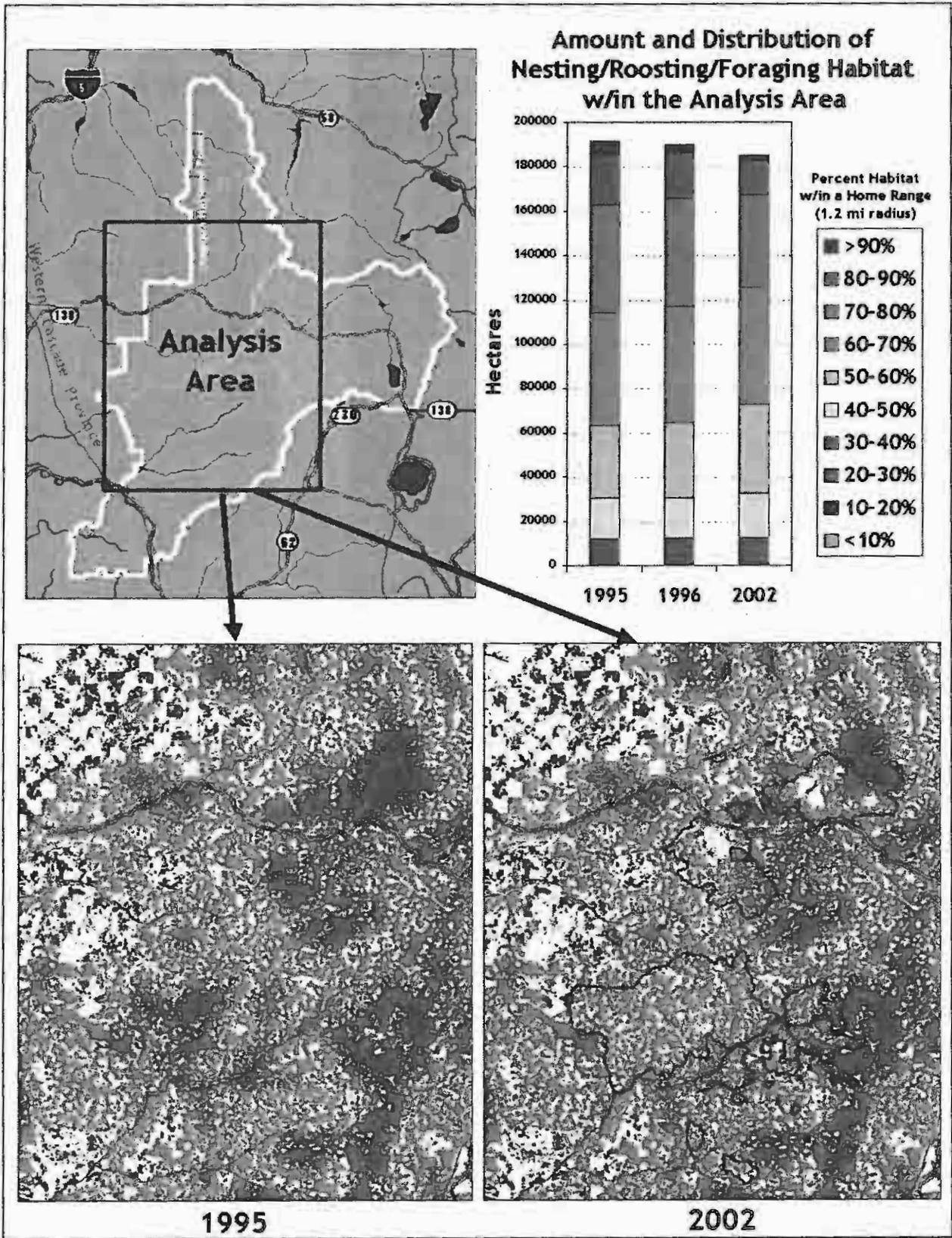


Figure 32: Wildfire Effect on Northern Spotted Owl Nesting/Roosting/Foraging Habitat since 1996

Figure 33 shows two examples of the wildfire impacts to spotted owl core areas. The fires burnt through all, or portions, of 43 separate owl cores. Impacts were mostly low to moderate with only three cores experiencing more than a 33-percent loss of habitat. The Boulder Fire had the largest impact on these habitats. However, there is probably still adequate habitat within and adjacent to the burned core area in Boulder Creek to support the existing owl population.

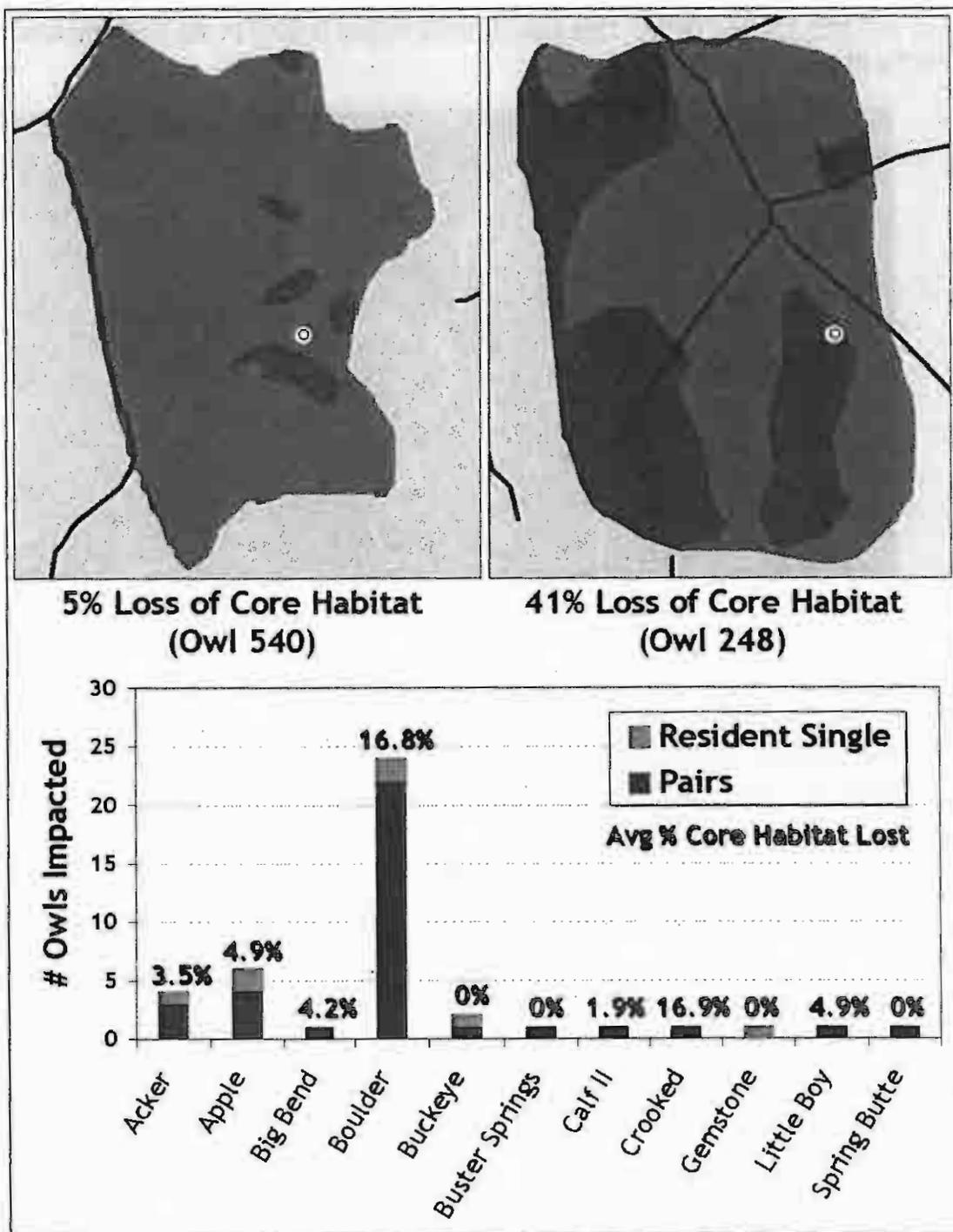


Figure 33: Wildfire Effects to Spotted Owl Core Areas

Impact to Late-Successional Habitat and Reserves

The large Oregon wildfires mainly impacted the Southwestern Oregon and Southern Cascades Late Successional Reserves (SCLSR) (Figure 34: 2002 Wildfires and Late Successional Reserve Network). This assessment only looks at impacts to the Southern Cascades LSR network, specifically Reserve RO-222 (USDA, 1998). This reserve is the largest reserve in the Southern Cascades network and the Pacific Northwest.

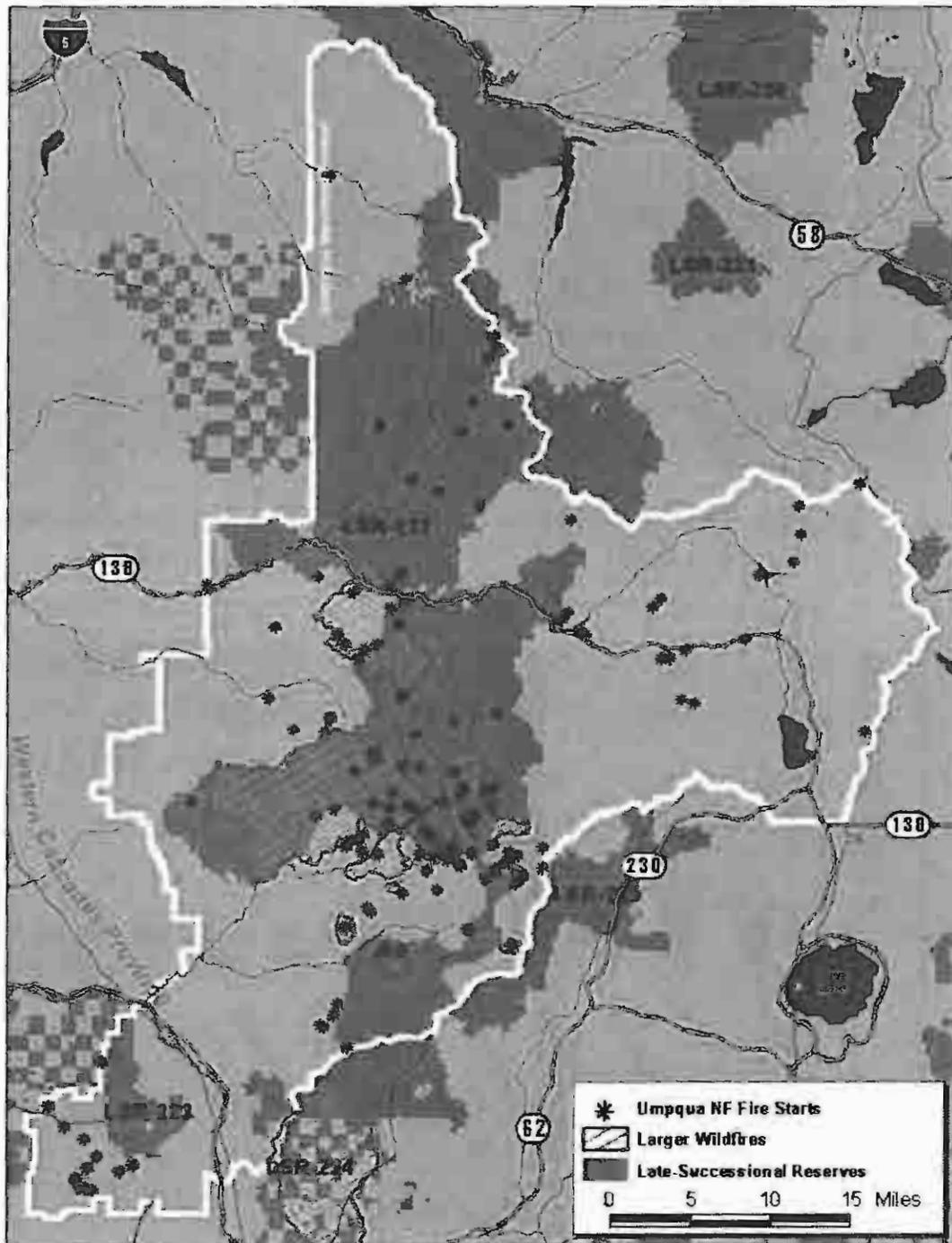


Figure 34: The 2002 Wildfires and Late Successional Reserve Network

Overall, approximately 65,506 acres were burned in this LSR resulting in an immediate loss of about 10,056 acres, or 4.6 percent, of the total amount of late-successional habitat. Over 2,000 stand-replacement patches of late-successional forest were mapped in the reserve using 1:24,000-scale post-fire aerial photographs. These dead forest patches ranged in size from 0.1 to 274 acres. Of these, approximately 210 patches were greater than 10 acres in size (less than 40 percent canopy closure), for a total of 6,101 acres (Table 3: Summary Of Impacts Through Stand-Replacement Fire).

Inventory data from stand-replacement patches for the Apple Fire (Appendix D) indicate that the median density within these patches is 51 trees per acre (≥ 16 -inch Diameter Breast Height). This density is equivalent to typical density levels for stands in the LSR (per Table 49 - USDA 1998) when averaged across the plant series found within the inventory area.

Table 3: Summary Of Stand-Replacement Fire Within Late-Successional Reserves

STATISTIC	ALL PATCHES	PATCHES (≥ 10 ACRE)
Number of Patches	2,250	211
Smallest	0.1 ac	10 ac
Largest	274 ac	274 ac
Average	4.5 ac	29 ac
TOTAL	10,056 ac	6,101 ac

The fires did not impact any of the connectivity hotspots identified in the SCLSR assessment and overall connectivity of the network was not significantly impacted, especially for species with moderate to high mobility such as the northern spotted owl. The largest impacts occurred to those species with low mobility and small home ranges, such as red tree voles and mollusks.

Impacts on Land Birds

Continental and local declines in numerous bird populations have elevated concerns for the future of migratory and resident birds. In the coniferous forests of western Oregon and Washington, twenty-seven land species have experienced significant recent (1980-1996) and/or long-term (1966-1996) declines (Breeding Bird Survey data – Sauer, 2001). Of these, eight species occur in the 2002 fire areas (Table 4: Land birds within the analysis area). The wildfires will have a short-term positive effect on five of the eight species and a negative effect on the others.

Table 4: Land birds within the analysis area with significantly declining population trends in the region

Common Name	Significant Population Declines		Focal Species	Impact
	Short-Term	Long-Term		
Vaux's swift	X		X	+
Rufous hummingbird	X	X	X	+
Olive-sided flycatcher	X	X	X	+
Western wood-pewee		X		+
Brown creeper		X	X	-
Golden-crowned kinglet	X			-
Varied thrush	X		X	-
Fox sparrow	X			+

The Land Bird Strategic Plan (USDA 2000) and the Partners in Flight Conservation Program (PIF 2000) recommend the maintenance and restoration of forest habitats necessary to sustain healthy bird populations over the long-term. Forest habitats range from early- to late-seral forest. These plans have recommendations for forest management at both the stand- and landscape-scale to restore and maintain key habitat attributes (e.g., snags) and ecosystem functions, such as landscape patterns.

Wildfires typically change bird communities with increases in species dependent on stand-replacement fires to maintain adequate subregional-scale populations (Hutto 1995). They also reduce bird species diversity where burn intensity is highest (Sallabanks and McIver 1998). Increases in cavity-nesters, woodpeckers, and ground- and aerial-feeders are expected. On a landscape scale, wildfire creates patches of highly attractive habitat for a distinct array of bird species (Hutto 1995). To maintain healthy populations of these species over the landscape, post-fire forest patches should be managed with great care (Caton 1996, Hejl and McFadzen 1998, Hitchcox 1996, Saab and Dudley 1998). Post-fire habitat is considered optimal habitat for the olive-sided flycatcher, which increase in abundance following fire (Altman and Sallabanks 2000). The role of wildfire in creating snag patches that gradually succeed to mature forests may be critical to some species of birds.

Impacts to Dead-Wood Wildlife Habitat

The importance of dead trees, both standing and down, as wildlife habitat has been recognized for a many decades (Grinnell and Storer 1924, Graham 1925). But snags (dead standing trees) also pose human-safety hazards and serve as an ignition source and fuel for spreading wildfires. Management of this natural resource for healthy forests and wildlife presents challenges, tradeoffs, and risks to other resources (Thomas 2002).

The current standards and guidelines for snag management were created in 1990 (Umpqua National Land and Resource Management Plan) and amended by the Northwest Forest Plan in 1994. These plans require management of cavity-nesting species at or above 60-percent potential population capacity (PPC) for a planning area. Habitat requirements vary by species (Table 5: Snags required to achieve suitable nesting habitat).

Table 5: Snags required to achieve suitable nesting habitat that maintains 60 Percent PPC for cavity excavating bird species (total = 185 snags/100ac)

SPECIES	SNAGS/100 ACRE	DBH	DECAY STAGE
Downy Woodpecker	10	11+	Soft
Red-breasted Sapsucker	27	15+	Hard
Hairy Woodpecker	115	15+	Soft
Northern Flicker	29	17+	Soft
Pileated Woodpecker	4	25+	Hard

To estimate the local extent of this important wildlife habitat and landscape component, un-salvaged, dead-tree forest patches (created by the 2002 fires and others dating back to 1987) were mapped on the Umpqua National Forest and the surrounding forests. The result of this mapping indicate that there are currently about 31,768 acres of burnt forest patches with high amounts of large snags within the Oregon Western Cascades Province (Figure 36: Reference landscape patterns of burnt forest). These are un-salvaged patches of fire-killed trees occurring as large patches or clusters of smaller patches. The majority of acres were created from wildfires in 1996 and 2002 (Figure 35).

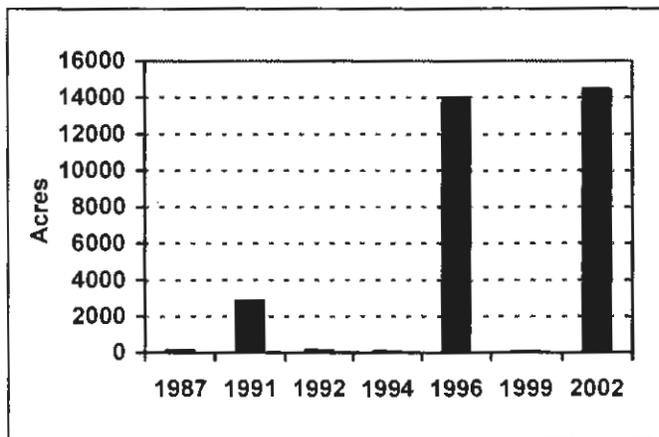


Figure 35: Acres of Un-Salvaged Patches of Fire-Killed Trees

Dead tree patches have largely been missing in the western Oregon landscape because of fire suppression and post-fire salvaging, at least until the 1991 Warner Creek Fire on the Willamette National Forest, which went un-salvaged. These landscape-scale snag patches last only a few decades before forest succession reclaims them. About 30 percent of the dead trees (less than 40 inches DBH) fall down within the first decade (Ohmann and Wadell 2002) and 50 percent of Douglas-fir (less than 16 inches DBH) fall within the first 15 years (Everett et al. 1999). However, larger diameter trees usually stay standing for much longer periods.

There are roughly 29 concentrations of large snag patches (greater than 10 acres per patch) currently scattered across the landscape within the Oregon Western Cascade Province (Figure 36: Reference landscape patterns of burnt forest). The average nearest neighbor distance, a measure of patch isolation, is about 4.2 miles. This is the average, shortest distance from one cluster of patches to another. This should allow for better dispersal of snag-dependent bird species across this area.

To understand how the fires affected dead wood habitat at the local level, a pilot-survey to estimate levels of large snags and down wood was conducted for a large portion of the Apple Fire soon after it was contained. The snag inventory methodology used for this survey is described in Bate et al. (1999). Down-wood levels were estimated using linear transect intercept methods (Wadell 2002).

The wildfire's greatest effect was on large, dead- and down-wood within the late-seral stands, especially those that were stand-replaced and are now early-seral stands with high snag levels (Figure 37: Large Snag Densities). The partially-burned, late-seral forest (that experienced low- to moderate-severity fire) now have snag and log levels that are more than twice pre-fire levels. Interestingly, levels of large, down wood on the burnt, forest floor actually increased in these areas as a result of root systems burning out and trees falling, but not being consumed by the less intense fire, or from falling after the fire was out (Figure 38: Levels of Large Down Wood). The overall stratified average snag density for the pilot-survey area was 20 snags per acre, much higher than the amount required to be left by the Forest Plan (Figure 39: Landscape Distribution of Large Snag Densities).

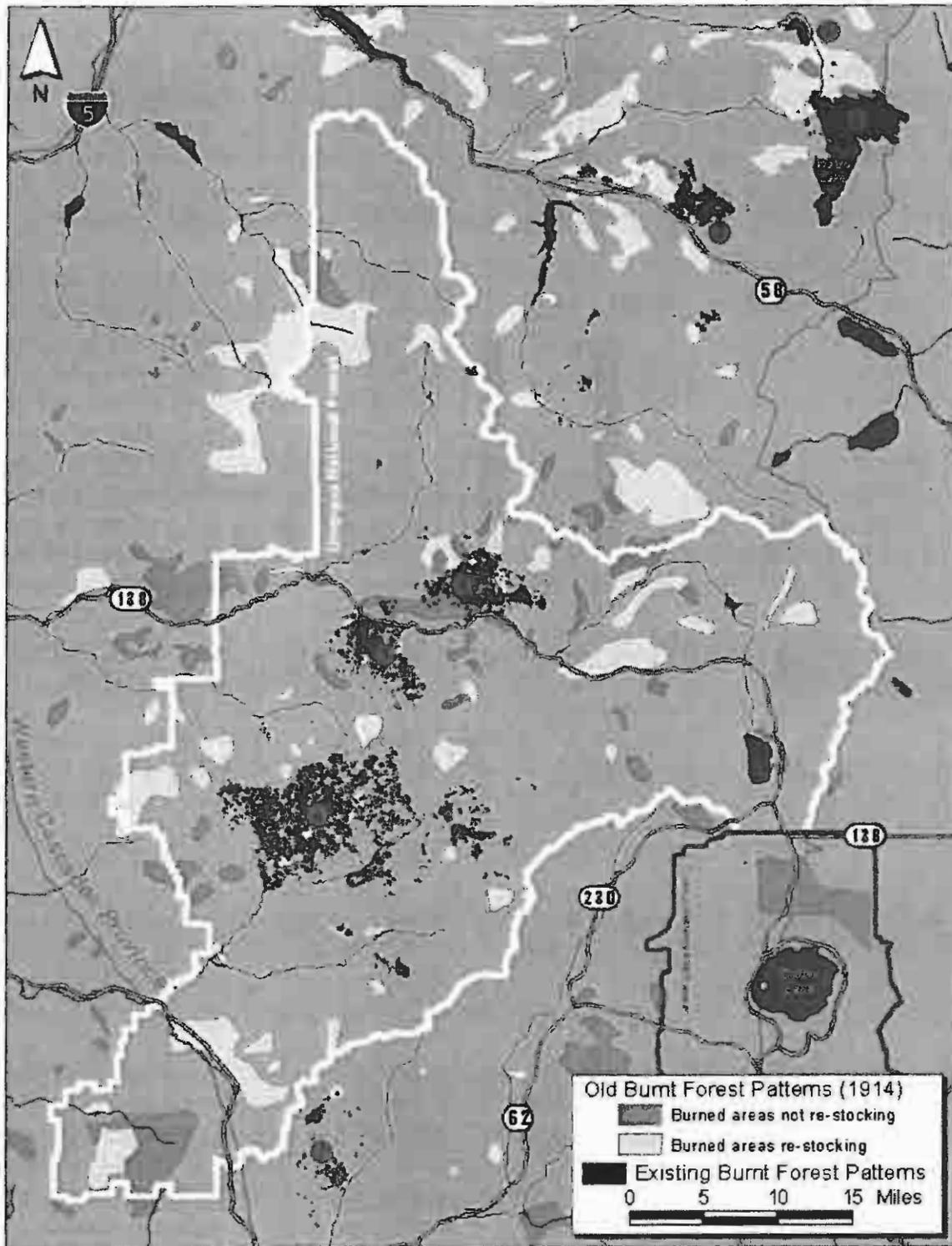


Figure 36: Reference landscape patterns of burnt forest are depicted by the brown and yellow areas. More recently created burnt forest patches are shown in black. The larger patches are numbered:

- | | |
|------------------------------|---------------------------------|
| 1 = Moolack Fire (1996) | 5 = Apple Fire (2002) |
| 2 = Charlton Fire (1996) | 6 = Tiller Complex Fires (2002) |
| 3 = Warner Creek Fire (1991) | 7 = Timbered Rock Fire (2002) |
| 4 = Spring Fire (1996) | |

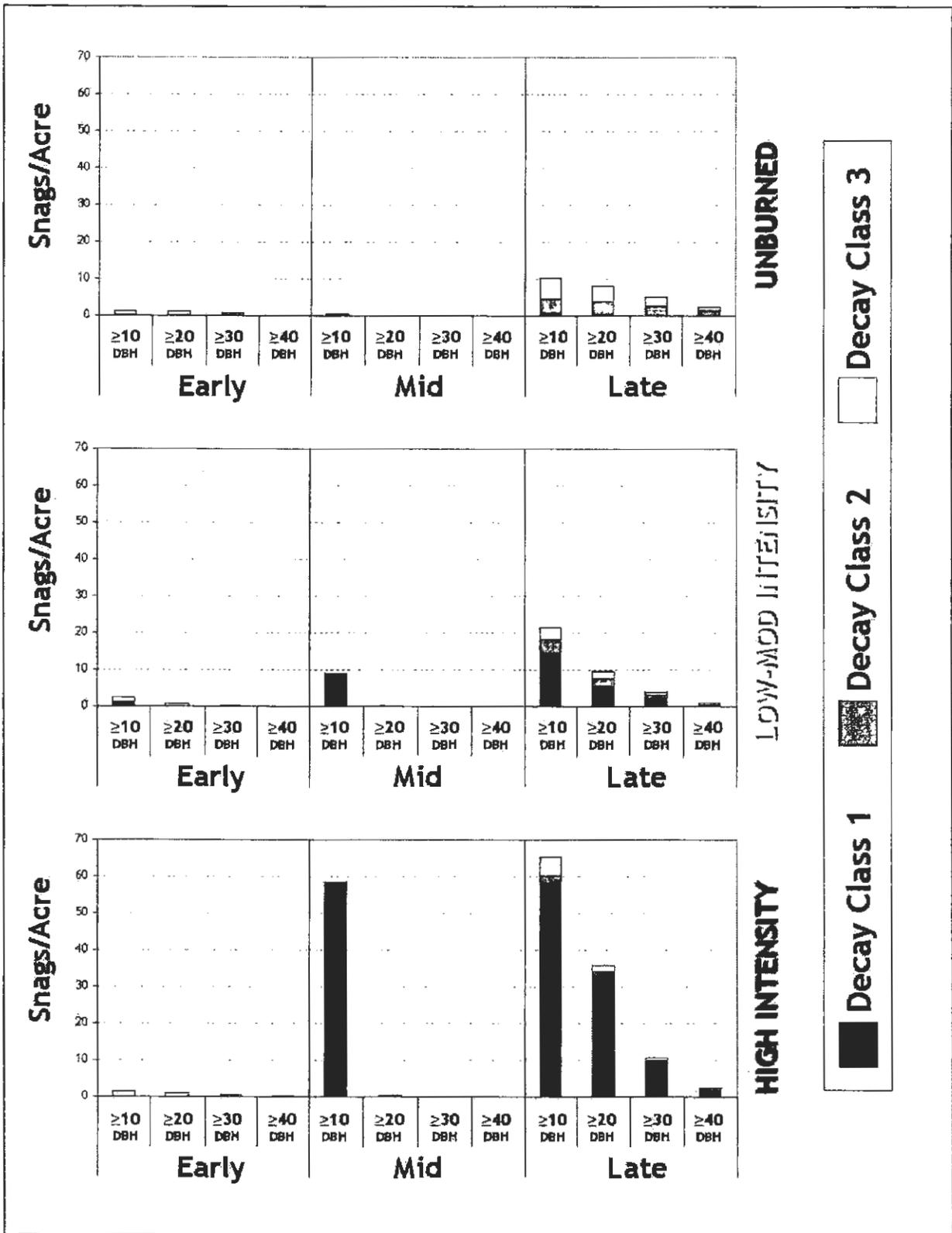


Figure 37: Large Snag Densities (≥ 10 inch DBH and ≥ 5 feet in height) within Burned and Unburned Areas by Seral Stage and Decay Class

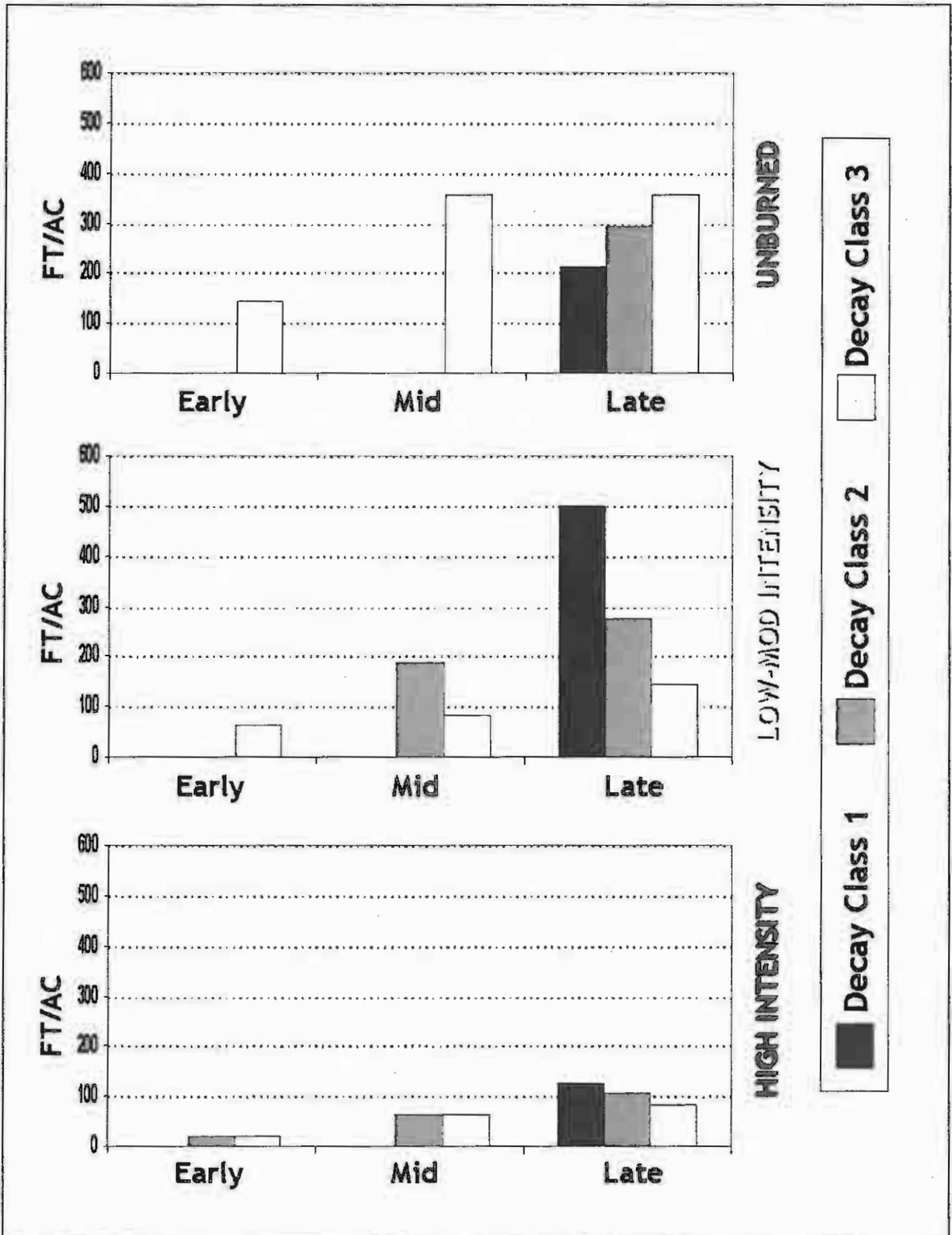


Figure 38: Levels of Large Down Wood (≥ 16 inch small end diameter and ≥ 16 feet in length) within Burned and Unburned Areas by Seral Stage and Decay Class

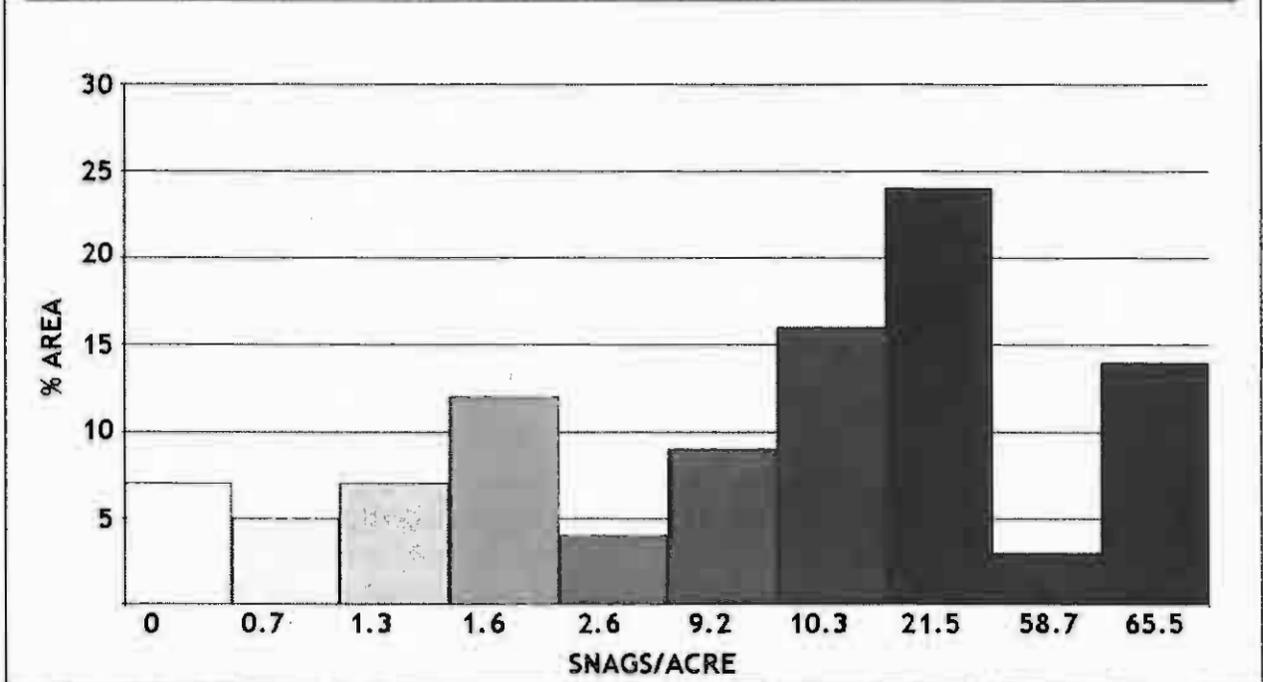
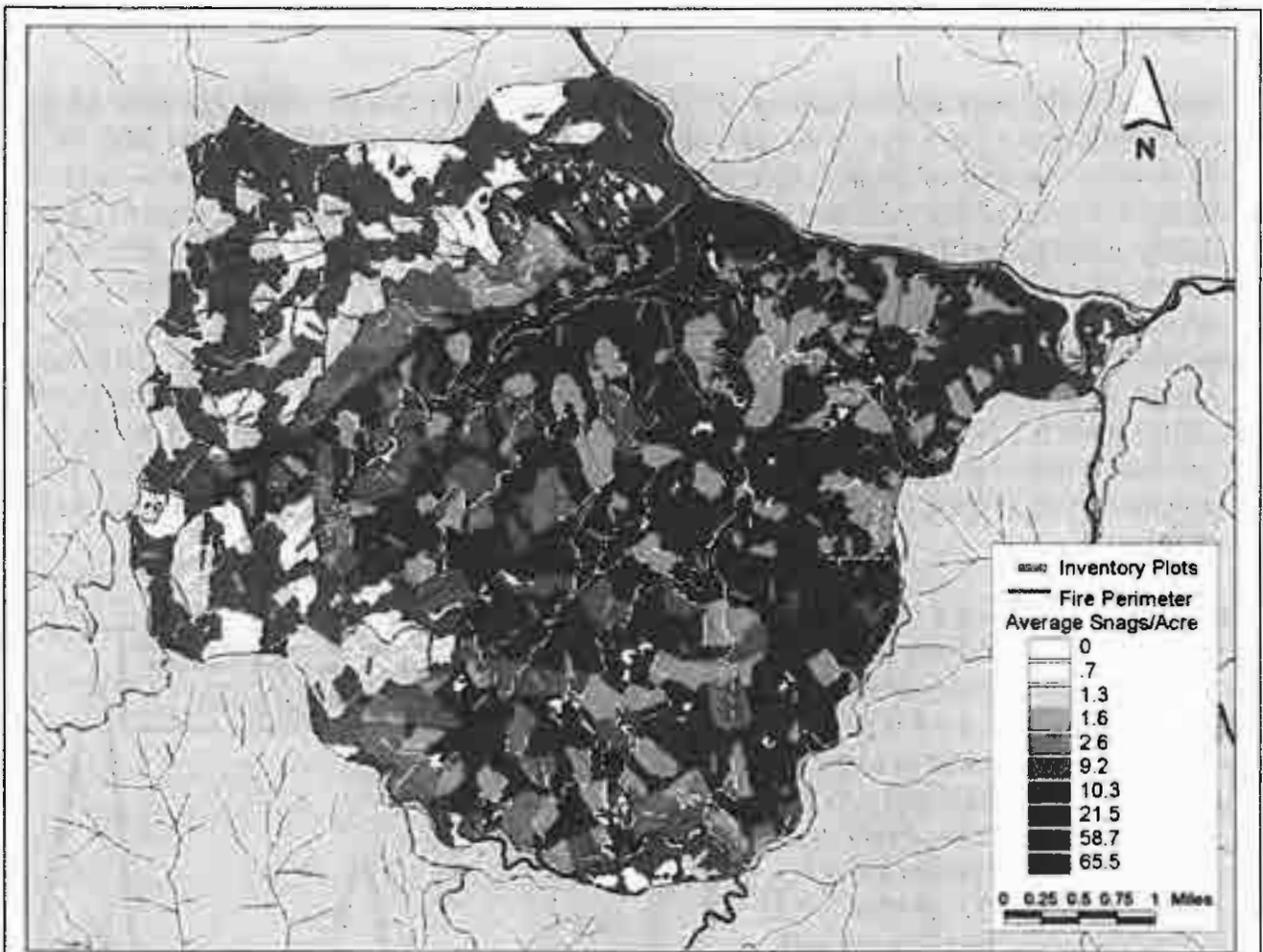


Figure 39: Landscape Distribution of Large Snag Densities within the Pilot-Survey Area

Insect Pests

Dead and dying trees attract a variety of bark beetles and other insects, which can build up large populations that act as a source for infestation of adjacent, green trees (McIver and Starr 2000). In the western Cascades of Oregon, bark beetles--especially the Douglas-fir bark beetle--have caused the most amount of tree mortality in recent times. Bark beetle outbreaks in the western Cascades are usually associated with blowdown events. In fact, the last two epidemics occurred after large-scale blowdown events in 1990 and 1996-97 (Figure 40: Data from regional insect and disease aerial surveys). Endemic levels are maintained by root-disease pockets and by wildfires. To date, no epidemic outbreaks have been documented as a result of wildfires in the Province. Bark beetles usually cause mortality in small patches (greater than one acre) scattered across the forest with usually about 0.1 to 2.5 miles between patches. During one of the more recent and severe beetle outbreaks within the western cascades of Oregon (1992 to 1993), the largest insect-killed patch contained 53 dead trees, with the remaining patches containing considerably fewer (Powers et al. 1999).

Regional insect experts expect to see some increase in endemic levels of Douglas-fir bark beetles from fire-injured trees within the fire perimeter. This is being monitored to better understand the relationship between fire damage and tree mortality in this area. Epidemic outbreaks are not anticipated due to the fact that beetle populations from the 1999 outbreak have diminished. If these fires had occurred two to three years ago, we probably would see a large outbreak (Goheen personal communication). As a result of stressed pine trees due to decades of fire suppression, outbreaks of pine beetles are expected to be higher because of a steadily increasing population.

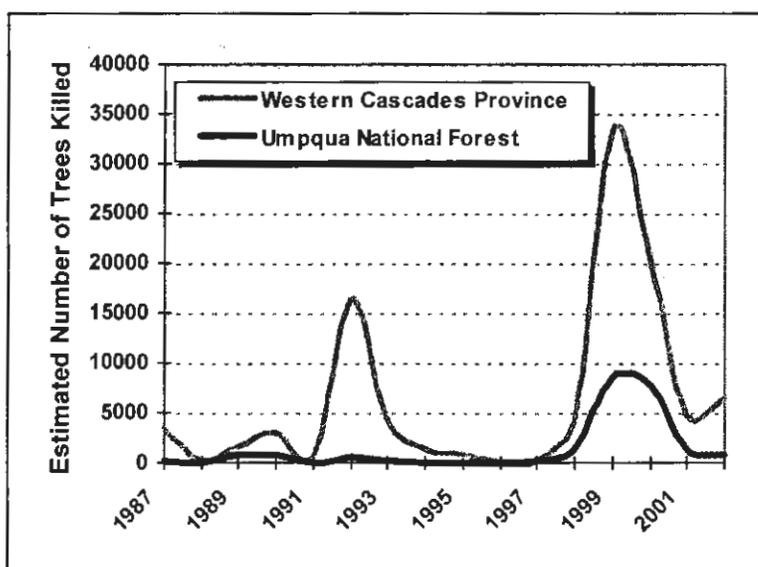


Figure 40. Data from regional insect and disease aerial surveys conducted over the western Cascades shows recent large outbreaks of Douglas-fir bark beetles on the Forest and in the Province

Impact to Big-Game Habitat

The majority of larger 2002 fires burned within the Dixon Big Game/Wildlife Management Unit (Figure 41: Distribution of Big Game Winter Range in the Dixon Big Game/Wildlife Management Unit). This unit is comprised of about 68 percent public land and contains extensive Umpqua National Forest holdings. In 2000, 7,176 hunters spent a total of 48,459 “hunter days” hunting for elk and deer in this area. The Cascade elk hunt is one of the state's most popular and usually runs for seven days during the third week of October. The Dixon Unit accounts for about 13 percent of the total hunt. Elk and deer herds have expanded in this unit in recent years, and 1,117 elk were surveyed in 2001 (not total population numbers). This was the highest amount surveyed in the Cascade region. In 2000, a total of 254 elk and 948 deer were harvested from this unit.

The wildfires will stimulate forage production within the management unit over the next 10 years, with a positive effect on local elk and deer herds. In fact, recent wildfires in the Wallowa District of Oregon are suspected as partial cause for the high-quality habitat in that area (ODFW, 2002). It is possible that invasive noxious weeds will reduce this effect. In areas where the fires killed all the vegetation and opened up the forest, hiding and thermal cover has been lost. Many of the older, conifer plantations that stand-replaced provided this sort of cover. However, most of the stand-replacement took place on the steeper, more rugged terrain, which elk generally avoid, and mostly outside of winter ranges. The Tallow and Acker fires burned over large areas of winter range.

Impacts to Unique Habitat

Several small unique forest habitats, such as meadows and oak woodlands, were burned over by the 2002 fires. These habitats rely on the natural process of wildfire to keep them open and in healthy conditions. Many meadows and oak woodlands are identified on the forest, through watershed analysis, as being in need of prescribed fire. The wildfires of 2002 burned through approximately 1,530 acres of these types of habitat

Impacts to Survey and Management Species

The large fires on the Umpqua impacted 27 known sites for Survey and Manage species. No known sites for bryophytes and vascular plants were affected by the fires, nor were known lichen sites directly impacted. However, four sites were within 100 meters of large fire perimeters and are included in Table 6. Refer to impacts to late-successional habitat for impacts to potential habitat.

Table 6: Fire Impacts to Survey and Manage Species

TAXA GROUP	SCIENTIFIC NAME	COMMON NAME	FIRE SEVERITY	SITES IMPACTED*
FUNGI	<i>Gomphus clavatus</i>	Teeth Fungi	Low	1:103
	<i>Rhizopogon brunneiniger</i>	False Truffle	Low	1:8
	<i>Rhizopogon truncatus</i>	False Truffle	Low	1:41
LICHEN	<i>Nephroma bellum</i>	Kidney Lichen	N/A	1:151
	<i>Ramalina thrausta</i>	Cartilage Lichen	N/A	3:185
MOLLUSK	<i>Helminoglypta hertleini</i>	Oregon Shoulderband	High	1:113
	<i>Megomphix hemphelli</i>	Oregon Megomphix	Low-Mod	7:2300
	<i>Monadenia chaceana</i>	Siskiyou Sideband	Low-Mod	6:131
VERTEBRATE	<i>Arborimus longicaudus</i>	Red Tree Vole	Low-High	7:2464

*Current known sites impacted by wildfire out of total known sites across their ranges.

Impacts to Rare Plants

There were no known sites or suspected habitat for Threatened or Endangered plant species affected by fires in 2002. Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*) is the only federally listed plant species known to occur on the Umpqua National Forest. However, the fires potentially impacted several plants on the Regional Forester's sensitive species list.

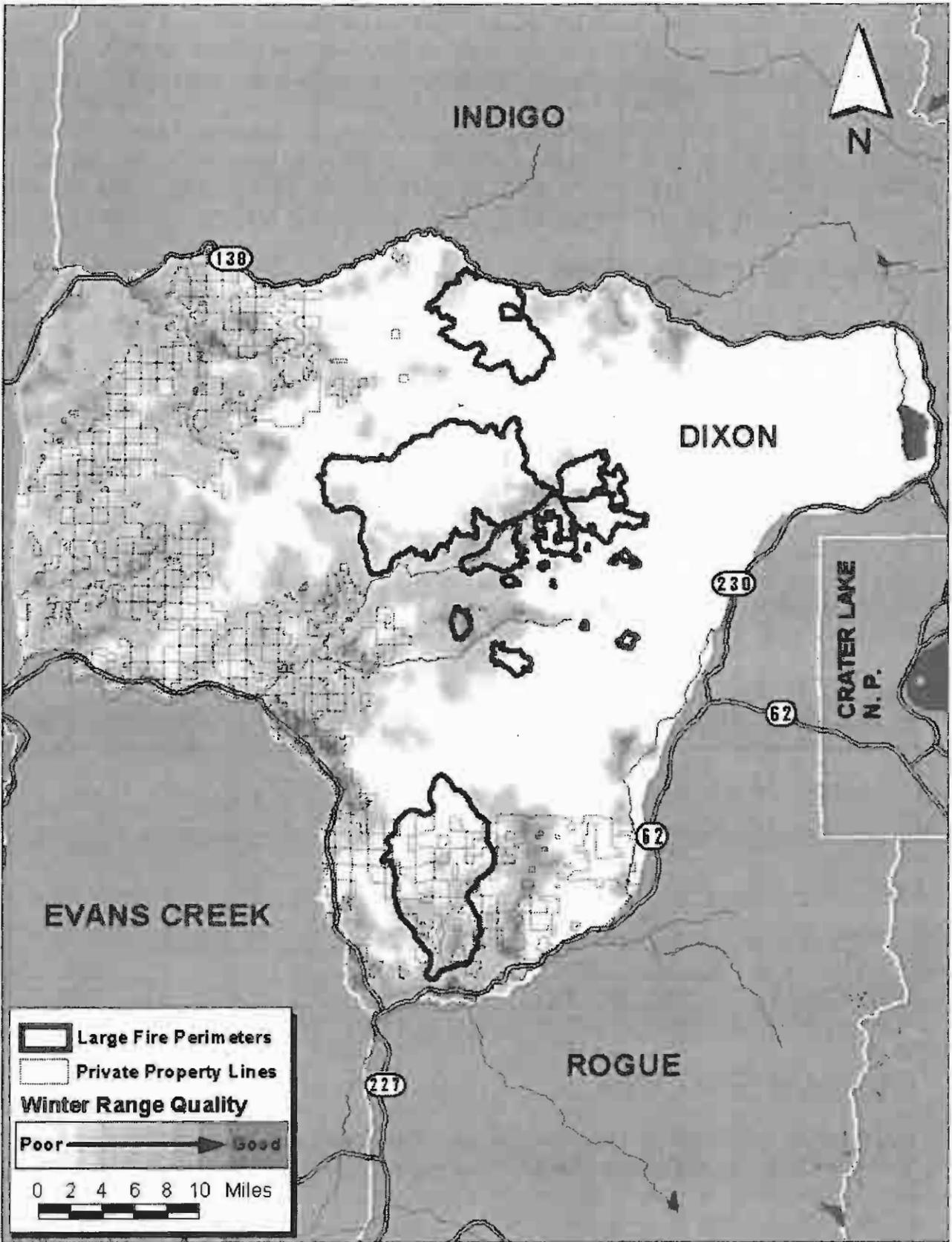


Figure 41: Distribution of Big Game Winter Range in the Dixon Big Game/Wildlife Management Unit

The Limpy fire was within a Research Natural Area that was established principally with rare plants in mind. Umpqua kalmiopsis (*Kalmiopsis fragrans*), northern spleenwort (*Asplenium septentrionale*), and California swordfern (*Polysticum californicum*) all occur within the fire perimeter. Kalmiopsis readily resprouts following a light- to moderate-underburn, which appears to largely characterize the Limpy fire. Northern spleenwort, which occurs as small tufts in crevices of rock outcrops, is probably much more susceptible to mortality from light burns. California swordfern is also associated with rock outcrops. Locations of both species will need to be revisited to determine whether the fire impacted them.

The Boulder Fire burned both populations of *Kalmiopsis* in the South Umpqua drainage. One population was on rock outcrops at the edge of a plantation that burned hot, but it appears that most of the population will survive. The other population was on a more open ridge that is inherently less susceptible to intense burns because of the sparse fuels. There are several populations of Columbia lewisia (*Lewisia columbiana* ssp. *columbiana*) on open ridges and peaks along the divide between the South Umpqua and Little River drainages. These populations have probably not been impacted by fire because of the sparse fuels at the sites.

There are several known locations of Thompson’s mistmaiden (*Romanzoffia thompsonii*) within the Apple and Little Boy fires. The fire probably did not impact the rocky seep habitat for this species, but sites should be monitored next spring to verify persistence of the populations.

There is a mapped site of Umpqua swertia (*Frasera umpquaensis*) at the edge of the Crooked Fire. The Umpqua swertia site was not relocated in a review of the area this fall by the District botanist, but there is a large, widely-scattered population just outside the perimeter of this fire. This tall member of the Gentian family occurs in meadows and open forests along the Rogue-Umpqua divide and may respond favorably to opening of forests through underburning.

There was no systematic survey done for rare plants within all of these burned areas. Additional locations of sensitive species within the fire perimeters may be discovered.

Roads, Trails, Historic, and Pre-Historic Sites

A total of 420 miles of National Forest System roads are located within the boundaries of the 2002 Umpqua fires. Of these roads, about 96 miles, or 23 percent, exist within areas of moderate- to high-burn intensity. A typical road within the burned areas is single-lane, with turnouts, gravel-surfaced and uses ditches and culverts for drainage. The following table includes estimates of road repairs needed as a result of the Tiller and Apple fires:

Table 7: Fire Impacts on Forest Infrastructure

Fire Area	Total Rd. Miles within Fire Area	Rd. Miles within High Intensity Burn Areas	Estimated Steam Crossing Culverts Needing Upgrade	Estimated Other Culverts Needing Replacement/ Installation	Estimated Road Signs Needing Repair/ Replacement
Tiller	332	72	33	30	230
Apple	88	24	27	25	70
Total	420	96	60	55	300

The most prevalent types of road hazards that received emergency treatment included:

- Burnt trees that posed a hazard of falling on the roadway during the next one to five years
- Burnt woody debris located in road fills and holes within the road fills that are likely to collapse under vehicle or foot traffic
- Ditchlines and culvert inlets plugged from falling trees, rocks, and small slides
- Damage or destruction of road signs

The road system will probably require more than normal maintenance for several years. In addition, the risk of failure at stream crossings and culverts will be elevated because of expected increases in plugging, peak streamflows, and shallow-rapid landslides.

During the fall of 2002, the Burned Area Emergency Rehabilitation (BAER) work removed much of the initial debris on the roads and in the ditches, cleaned culverts, and felled the most roadside-hazard trees (Appendix E). Frequent storm patrols and more intense winter road maintenance were conducted during the winter of 2002/2003.

BAER improved many stream crossings with at risk-drainage structures. Treatments included construction of diversion-prevention grade sags, installation of various plug-resistant, inlet sections, and the reduction of vulnerable fill at the site. Culvert replacements, removals, or decommissioning of roads within the fire area may also be considered in the future where the risk of failures is high.

The fires burned over, or adjacent to, five developed-recreation sites, and about 22.7 miles of system trails, including recreation facilities at Fish Lake, Beaver Swamp, and Skimmerhorn trailheads in the Big Bend Fire area (Appendix E). The Boulder Fire affected Boulder Creek Annex Campground. The Apple Fire affected the Panther Creek, Deception Creek, and the Twin Lakes West trailheads. The Boulder Fire also affected Fairy Shelter. Site facilities were not damaged; the primary impact was to vegetation.

The above recreation sites are open to the public. Hazard tree falling over the next few years may alter the visual setting at some sites. Costs may be as high as \$2,000 per site to remove hazards. Consideration will be given to long-term site management before falling large numbers of trees. Removal or re-locate facilities are alternatives to hazard tree removal, especially near aging facilities that need replacement.

Impacts to the 22.7 miles of trails affected by the fires included burned trail signs, partially or completely burned bridges, one damaged, infrared-trail counter, destabilized trail tread, debris slides, and tree fall. The Calf segment of the North Umpqua Trail received extensive impacts including rockslides and fallen trees. The fire also destroyed three trail bridges. The Calf segment of North Umpqua Trail remains closed due to post-fire conditions. The rest of the trails are open to the public, however, most are only passable to hikers due to heavy windfall.

Other unknown, but probable fire effects to trails were slumps, slides, water erosion, and tread settling, especially in areas of high-burn intensity. Trail segments may be re-located where tread repairs are not possible. Costs to restore trails to standard may be as high as \$15,000 per mile. Removing deadfall logs from the trail in subsequent years is estimated at over \$100 per mile.

Fires along the North Umpqua River Wild and Scenic Corridor and South Umpqua river corridor have affected a viewshed up to two miles distant from Highway 138 and Road 28. Fire is a natural occurrence in this landscape and provides visual diversity to these viewsheds. The variety of forest views will increase, especially during the colorful Fall. Large snags produced by fire will enhance these spectacular viewsheds.

Boaters along the North Umpqua River from Horseshoe Bend to Apple Creek Bridge will encounter trees that fell into the river as a result of the fire. Trees in several locations presently span the river and require a portage to avoid these obstacles. The fire burned 3.7 miles of the river corridor to varying intensities and will increase as trees fall in this section.

The Tiller Complex and Apple Fire perimeters contain 21 archaeological sites, three historic sites or structures, and one traditional Native American property. Fire or fire-suppression activities impacted 15 archaeological sites (Appendix E). Impacts to these sites include dozer and hand line, intense burn of tree roots leaving root casts, as well as potential for theft or looting from archaeological sites because of increased visibility. Surveys are incomplete. Archaeological sites are protected from theft and destruction under State and Federal law with criminal and civil penalties.

The Tiller and North Umpqua districts overlay the ancestral homelands of the Southern Molalla, Upper Umpqua, and the Cow Creek Band of Umpqua (Cow Creek). Consultation with the affected Tribes occurred during the emergency measures associated with the fire and will continue for any proposed mitigation of the effects.

Responses to Key Questions

Vegetation:

What is the extent of fire caused mortality in forest stands?

Mortality is concentrated in Steep/Dry landscape areas below 4,000 feet in both North and South Umpqua fire vicinities. Mortality is aligned with steep, south-facing slopes. The pattern of mortality in the unmanaged forest resembles historic, stand-replacement patch sizes and shapes. Three-quarters of the managed stands less than 20 years old experienced stand-replacement fire effects.

An estimated 550 million board feet of timber was killed by fire. Mortality was mapped in 13,432 acres of unmanaged stands and 12,554 acres of plantations. Less than one percent of this total volume is contained in plantation mortality. Nearly 70 percent of the volume is located within the Late Successional Reserve land allocations where there is an emphasis on protecting and enhancing conditions of late-successional and old-growth-forest ecosystems. About 30 percent of the volume is located within the Matrix land allocations where timber values are emphasized (this estimate includes timber in Riparian Reserves in the vicinity of the Matrix land allocations).

Where does the post-fire mortality fall within the range of natural variability of this early-seral structure in the landscape?

The 2002 fires didn't change the pattern of vegetation at a regional scale, but this fire did add a landscape component -- early-seral with snags -- that was previously rare.

What was the occurrence of noxious weeds before the fire, and how may the future distribution of weeds be affected post fire?

Meadow knapweed is the noxious weed most likely to spread and disrupt natural vegetation recovery in burned areas. The primary vector for weed dispersal is vehicular traffic. Vehicles from across the United States came to the fire areas, and the pasture that was used for the fire camp at Milo harbors yellow star-thistle.

How should we monitor this distribution?

Surveys are planned through 2005 to monitor the occurrence and spread of noxious weeds. Planting native species at select locations will discourage invasion and spread of non-native and invasive plants.

Fuels:

How did fuel accumulations affect fire severity?

The extent, and dispersed pattern, of managed, regenerated stands prior to the fire was outside the range of natural variability in most landscape areas. This early-seral vegetation pattern, and the types and arrangement of fuels present, increased the fire's rate of spread and the area of stand-replacement fire effects. On a landscape scale, fires were concentrated in areas of the forest that had both steep terrain and timbered stands with heavy, fuel accumulations.

What fuels remain on the landscape?

Where timbered stands burned at moderate to low intensities, fuel conditions will return to pre-fire conditions in less than 10 years. In areas where fire burned at high intensities, fuels and fire risk will gradually increase over time, and peaking in approximately 15 years.

Watershed:

How will stream flows and sediment regimes be affected by the fire?

Fire effects will accumulate in proportion to the area burned within sub-watersheds. The greatest effects will be in Boulder, Panther and Quartz creeks. Peak stream flows will increase for a period of at least 30 years. Sedimentation will increase for a comparable period, most likely as a result of accelerated, streambank erosion. Landslide hazard will reach a peak within 15 years.

Wildlife and Fish:

How have the habitats and populations of species of interest been affected by the fire?

Contiguous, late-seral habitat decreased by 24 percent within fire perimeter. Owl habitat in the Boulder Fire vicinity is probably still viable for nesting and foraging habitat. The Apple Fire area lost a patch of viable late-seral forest to the fires. The partially burnt late-seral forest that experienced low- to moderate-intensity fire now has snags and log levels more than twice pre-fire levels.

Fire effects are both positive and negative to sensitive fish species, particularly the South Umpqua coho and spring chinook populations. Large, wood, stream structure will improve refuge habitats while fires will adversely affect stream flows and fine sediment delivery in spawning and rearing habitats.

Recreation, Cultural Infrastructure:

What facilities, recreation sites and cultural resources has the fire affected?

The 2002 fires burned over, or adjacent to, five developed recreation sites and about 22.7 miles of system trails. Most are still functional, but will require additional maintenance to mitigate fire hazards. The North Umpqua Trail segment from the Apple Creek bridge to Calf Creek is closed and will require reconstruction.

Twenty-one archaeological resources, one historic structure, a traditional property, and two historic sites were recorded within or adjacent to the burned area. However, systematic inventory is incomplete. Impacts to these sites include dozer and hand line, intense burning of tree roots leaving root casts, and theft or looting from archaeological sites because of increased visibility.

Access and Travel Management:

How did the fire, fire suppression activities, and post-fire emergency road rehabilitation affect the structural integrity of roads within the fire?

The road system will require more than normal maintenance for several years. In addition, the risk of failure at stream crossings and culverts will be elevated because of expected increases in plugging, peak streamflows, and shallow-rapid landslides.

During the fall of 2002, the Burned Area Emergency Rehabilitation (BAER) work removed much of the initial debris on the roads and in the ditches, cleaned culverts, and felled the most roadside-hazard trees (Appendix E). Frequent storm patrols and more intense winter road maintenance were conducted during the winter of 2002/2003.

BAER improved many stream crossings with at risk-drainage structures. Treatments included construction of diversion-prevention grade sags, installation of various plug-resistant, inlet sections, and the reduction of vulnerable fill at the site. Culvert replacements, removals, or decommissioning of roads within the fire area may also be considered in the future where the risk of failures is high

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Comment Submission - The Proposed Expansion of Cascade-Siskiyou National Monument

To Whom It May Concern:

Three days after my article was published in Western Journalism (11-million readers), I received a phone call from a BLM employee, who I thought seemed worried about my having connected the dots between their testimony to the Jackson County Commissioners about their lack of funds for road maintenance on the existing Monument lands (~66,000 acres) and the aggravation of that exact problem via a two-fold expansion of the Monument lands.... in the business world, such an expansion plan would never fly.

Public access is everything, and not just for hikers! And I think this is just one of the key issues that the Monument managers and proponents have completely failed to overcome and also relates to dealing with catastrophic fires (good roads allow fire-fighter and equipment access)....

Some two years ago, I was shocked to learn that the policy related to fire-fighting on the Monument does not allow mechanized firefighting equipment into the Monument to fight fires and instead, it is all done by hand... this is an insane policy given that, if the public forest is lost to ashes, and many rare and endangered species (one of the claimed reasons for allocating land) are destroyed in the fire, any relatively minor damage to the roads, trails and grounds is inconsequential. And any failure to stop a large fire also subjects adjoining private lands to such a failure.

They 'sell' their acquisition and annexation of public and private lands as 'for the People's multiple uses' and then essentially close the People out over time via reduced and ultimately, very limited or no access. Limited roads = limited access, migrating to; No roads = no access. The BLM in Medford seems to have plenty of money for over 100 employees at that office and to buy even more lands, yet state they cannot maintain the roads for 'traditional and historical' public and wildlife uses.

Also, the same BLM employee told me that Senator Merkley's office was submitting questions to the Medford BLM office subsequent to the public input meeting at SOU last week... and as he explained to me, their 'process' does not include answering the Senator's questions directly... their answers are sent to a lawyer at the BLM-DOI in Wash.D.C. and edited/modified as they deem fit before they are subsequently sent to Senator Merkley... What the hell is that? Can't a Senator get a straight answer from a public servant in Medford?

How can Merkley represent the People in this matter if he collects skewed information that is edited to conform with the DOI-BLM talking agenda?

There is a lot of so-called information being pumped into the debate related to this Monument Transportation plan, which quite interestingly was published just 30-days after Joel Brumm (Asst. Director of the Monument) told the Jackson County Commissioners there were inadequate funds to maintain 164 miles of critical roads in the Monument.

We all know it takes many months for documents like the ones just generated by the BLM-DOI (linked at the bottom of the page) to be compiled, written, edited and then finally published; so the last and most recent-relevant word on the subject seems to set with the Monument's Asst. Director Joel Brumm's testimony in Feb. 2016, as cited in the Tribune article linked herein just below; 'no money for the roads'). And that statement is also contrary to the original 'Plan' for the Monument (300+ page doc. from 2002), which stated that, the 'Plan' under which the Monument was formed was properly financed and fully funded.

Jackson County Board of Commissioners

BoC PH Submission # 83

Offered by: W. Simpson

Date: 10-27-16 Received by: [Signature]

During a Feb. 2016 meeting, we have the BLM telling Jackson County Commissioners that the BLM may have to close 164 miles of public access roads in the Monument because they can't afford to maintain them, many of which would be critical assets for fighting catastrophic fires that not only devastate these public lands, but also spread to adjoining private lands... this story appeared in the Tribune in Feb. 2016:

<http://www.mailtribune.com/article/20160202/NEWS/160209934>

My key points are as follows:

The scoping and public input process is highly flawed and moreover, designed so that the preconceived agenda is well supported by its proponents. This was done by using tactics of;

- a. Locating the meeting in a geographical location where the greatest support is centered; and,
- b. Notice of such meetings are by design with short advanced notice; and,
- c. Supporters of the BLM Monument expansion seem to have received some amount of advanced notice over all other stake-holders.... for instance, Siskiyou County Board of Supervisors had extremely short Notice even though ~10,000 acres of public and some private land is located in Siskiyou County.
- d. The timing for the input meeting was during the week and during work-hours for most taxpayers and land-owners / managers.

From my chair, some conditions for expansion should include:

1. All historical and traditional uses of the lands to be annexed will be continued in effect without modification at any time in the future. This includes grazing and water access for livestock on all of the proposed expansion lands (some of which was open-range), hunting, fishing, and private and public access and easements on expansion lands will be honored and kept in force without exception; and,
2. An adequate budget will be provided to stakeholders that proves funding for the ongoing and continuous maintenance of all existing roads (at no cost to the Counties) now and in the future and without and modification (short of majority vote of citizens) such that public access into the existing and any expanded areas of the Monument will be assured now and in the future; and,
3. The lost tax revenues for any lands removed from County tax rolls will be replaced and paid to the County(s) by the Fed. without any strings attached; and,
4. Any/all new lands annexed will be properly managed so that fire risks to adjacent private lands will be minimized via reasonable fire prevention methods, including but not limited to:
 - a. Brushing-out the under-story of the forests and removal of excess fuels from the ground; and,
 - b. Road maintenance to include strategically located fire access roads to allow more effective mechanized ground fire-fighting methods (as opposed to current non-mechanized firefighting).

Respectfully submitted,

Capt. William E. Simpson II - USMM Ret.
Member: Authors Guild
P.O. Box 202 - Yreka, CA 96097

Sent: Wed, Oct 26, 2016 1:08 pm

Subject: Input to be read (at least in part) and entered into the record at the Cascade-Siskiyou Monument hearing on October 27, 2016, in Medford, Oregon

October 27, 2016

For: Cascade-Siskiyou National Monument Public Hearing
Medford, Oregon

I appreciate this opportunity to testify concerning the expansion of the Cascade-Siskiyou National Monument under the Antiquities Act. I am particularly concerned with how this might threaten the continued presence of the well-integrated wild horses in the areas affected. As a wildlife ecologist, I have hiked over a considerable portion of the areas in question and am concerned that the proposed Monument expansion would -- in biased fashion -- target the historic wild horse population in this area for total removal. The Antiquities Act should be about preserving such historic remnant populations as these wild horses, not eliminating them from their rightful, historic and even ancestral home.

The horse is a bonafide native to North America. In fact, there are few species that are so deep-rooted as to their origin and long-standing evolution upon this continent as the horse. This is abundantly proven both in the fossil record and by means of genetic studies.

It is also very important that we realize that the horse is a post-gastric, or caecal, digesting herbivore that complements all of the many ruminant style digesting grazers that are greatly promoted by humanity, such as deer, cattle and sheep. And hand in hand with this is the high mobility of these animals that allows them to disperse their grazing pressure over large areas. They have a sense of the need to rest-rotate their grazing and browsing pressure that stems from age-old instincts. In the horses, the vegetation that is eaten is not as decomposed as is the case with ruminants. The droppings of the horses are not as degraded and so "feed the ecosystem," enriching soils with more humus, and passing more seeds intact and capable of germination. In fact, in many areas of the world where horses are not viewed with bias, they are being used to restore degraded ecosystems, to build soils and reseed lands that have been overgrazed by ruminants, as well as lands that have been over-mined or over burned, etc. Furthermore, by contributing more greatly to the humus content of soils, horses augments these soils' capability to retain water. And this augments water tables, watersheds, rivers, lakes, and all the greater biodiversity that goes with this vital, life-giving substance -- particularly important in arid and semi-arid regions.

In summary, we must not overlook the very great contribution that wild horses can and do make in greatly reducing the risk of catastrophic wildfires, currently on the increase. Since they do not have to expend as much metabolic energy in digesting what they eat compared to ruminants, they can tolerate more dry coarse vegetation, such as dry grasses, forbs, and the leaves of certain shrubs or trees, when compared to ruminants. By eating this dry forage they can prevent major wildfires. This has been proven in many areas where their populations have been greatly reduced or eliminated, then shortly thereafter there is a major wildfire. For example, right here in northern California, the Twin Peaks wild horse and burro Herd Management Area, experienced just such a dramatic reduction in its wild horse and burro population in 2011 by means of a helicopter roundup. Then in 2013, an enormous wildfire devastated this region, burning nearly 350,000 acres and costing the taxpayer many millions of dollars to combat. And there are many other examples, including in the Red Rock scenic area near Las Vegas, Nevada.

Jackson County Board of Commissioners

BoC PH Submission # B4

Offered by: Clawner

Date: 10/27/16 Received by: [Signature]

We must examine BLM's policies toward wild horses. No where in national law is it required that wild horses be excluded from national monuments. In fact, wild horses are a great part of America's national heritage, both as concerns Native Americans and Whites. And this applies here in this part of northern California and southern Oregon. They must not be thoughtlessly discredited and eliminated from these lands.

They are a great aesthetic resource, appreciated by millions for their beauty, something especially evident when they "come alive" in the world of nature. Here they are simply living—being true to their own inherent nature developed over the course of many generations, even millions of years, almost entirely right here in North America. People without bias greatly appreciate wild horses as up-graders of their Quality of Life, and for this reason too they should be treated fairly and with justice.

The wild horses that I observed recently in this region are not degrading the ecosystem, but restoring it.

Please feel free to contact me if you have any questions or comments and to inform me of further opportunities to testify concerning the Monument's expansion.

Sincerely,

Craig C. Downer, Wildlife Ecologist
P.O. Box 456
Minden, NV 89423

From: Colleen Roberts
Sent: Monday, October 31, 2016 4:01 PM
To: BOC-CAO_ADMIN
Subject: FW: IMPORTANT CORRECTION OF ERROR Re: Input to be read (at least in part) and entered into the record at the Cascade-Siskiyou Monument hearing on October 27, 2016, in Medford, Oregon

Not sure this was entered into the record...

Colleen Roberts
Jackson County Commissioner
541-774-6117
robertcl@jacksoncounty.org

From: Craig Downer [mailto:ccdowner@aol.com]
Sent: Thursday, October 27, 2016 7:12 PM
To: ccdowner@aol.com; gemma7@aol.com
Cc: Rick Dyer <DyerRR@jacksoncounty.org>; Doug Breidenthal <BreideDP@jacksoncounty.org>; Colleen Roberts <RobertCL@jacksoncounty.org>
Subject: IMPORTANT CORRECTION OF ERROR Re: Input to be read (at least in part) and entered into the record at the Cascade-Siskiyou Monument hearing on October 27, 2016, in Medford, Oregon

DEAR COLLEAGUES:
PLEASE ACCEPT MY APOLOGIES FOR AN ERROR CONCERNING THE SLOPPILY REMEMBERED YEARS OF THE RUSH FIRE AND EARLIER WILD HORSE ROUNDUP THAT OCCURRED IN THE TWIN PEAKS WILD HORSE AND BURRO HERD MANAGEMENT AREA. THIS BLM ROUNDUP ACTUAL OCCURRED IN SUMMER OF 2010 AND THE BIG FIRE OCCURRED TWO YEARS LATER IN THE SUMMER OF 2012. I WOULD APPRECIATE YOUR CORRECTING THIS OR ADDING THIS NOTE TO THE OFFICIAL INPUT ON THE NATIONAL MONUMENT HEARING. AGAIN MY SINCERE APOLOGIES,
CRAIG

-----Original Message-----

From: Craig Downer <ccdowner@aol.com>
To: gemma7@aol.com
Cc: DyerRR <DyerRR@jacksoncounty.org>; BreideDP <BreideDP@jacksoncounty.org>; RobertCL <RobertCL@jacksoncounty.org>; ccdowner@aol.com
Sent: Wed, Oct 26, 2016 1:08 pm
Subject: Input to be read (at least in part) and entered into the record at the Cascade-Siskiyou Monument hearing on October 27, 2016, in Medford, Oregon

October 27, 2016

For: Cascade-Siskiyou National Monument Public Hearing
Medford, Oregon

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The horse is a bonafide native to North America. In fact, there are few species that are so deep-rooted as to their origin and long-standing evolution upon this continent as the horse. This is abundantly proven both in the fossil record and by means of genetic studies.

It is also very important that we realize that the horse is a post-gastric, or caecal, digesting herbivore that complements all of the many ruminant style digesting grazers that are greatly promoted by humanity, such as deer, cattle and sheep. And hand in hand with this is the high mobility of these animals that allows them to disperse their grazing pressure over large areas. They have a sense of the need to rest-rotate their grazing and browsing pressure that stems from age-old instincts. In the horses, the vegetation that is eaten is not as decomposed as is the case with ruminants. The droppings of the horses are not as degraded and so "feed the ecosystem," enriching soils with more humus, and passing more seeds intact and capable of germination. In fact, in many areas of the world where horses are not viewed with bias, they are being used to restore degraded ecosystems, to build soils and reseed lands that have been overgrazed by ruminants, as well as lands that have been over-mined or over burned, etc. Furthermore, by contributing more greatly to the humus content of soils, horses augments these soils' capability to retain water. And this augments water tables, watersheds, rivers, lakes, and all the greater biodiversity that goes with this vital, life-giving substance -- particularly important in arid and semi-arid regions.

In summary, we must not overlook the very great contribution that wild horses can and do make in greatly reducing the risk of catastrophic wildfires, currently on the increase. Since they do not have to expend as much metabolic energy in digesting what they eat compared to ruminants, they can tolerate more dry coarse vegetation, such as dry grasses, forbs, and the leaves of certain shrubs or trees, when compared to ruminants. By eating this dry forage they can prevent major wildfires. This has been proven in many areas where their populations have been greatly reduced or eliminated, then shortly thereafter there is a major wildfire. For example, right here in northern California, the Twin Peaks wild horse and burro Herd Management Area, experienced just such a dramatic reduction in its wild horse and burro population in 2011 by means of a helicopter roundup. Then in 2013, an enormous wildfire devastated this region, burning nearly 350,000 acres and costing the taxpayer many millions of dollars to combat. And there are many other examples, including in the Red Rock scenic area near Las Vegas, Nevada.

We must examine BLM's policies toward wild horses. No where in national law is it requiree that wild horses be excluded from national monuments. In fact, wild horses are a great part of America's national heritage, both as concerns Native Americans and Whites. And this applies here in this part of northern California and southern Oregon. They must not be thoughtlessly discredited and eliminated from these lands.

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The wild horses that I observed recently in this region are not degrading the ecosystem, but restoring it.

Please feel free to contact me if you have any questions or comments and to inform me of further opportunities to testify concerning the Monument's expansion.

Sincerely,

Craig C. Downer, Wildlife Ecologist
P.O. Box 456
Minden, NV 89423

10/27/2016
Bill Meyer
3333 Viewpoint Dr.
Medford, OR 97504

FOR: Jackson County Board of Commissioners

SUBJECT: My Meaningful Public Testimony to the board regarding opposition to any expansion of the Cascade Siskiyou Monument through the use of O&C Lands.

PUBLIC COMMENT

All here are witness to a crime. This crime is the attempt of those supporting the green agenda and its political henchmen, including Senators Jeff Merkley and Ron Wyden, to STEAL tens of thousands of acres of O&C designated lands, using unlawful methods, to hijack and camouflage the public process, and place these O&C lands unlawfully into an expanded Cascade Siskiyou National Monument. Close to 95 percent of these proposed additional monument lands are O&C lands, and this is an extremely important distinction.

When we follow the rule of law, it is irrelevant how many blue tee-shirted folks stand up and wail "WE WANT THESE LANDS IN A MONUMENT". It's not a popularity contest, for these lands are not theirs to push into monument status. That's not stopping them from trying with all these emotional demonstrations of trumped up "Consensus", which mean nothing. I put you, Jackson County, and other political leaders on notice to simply FOLLOW THE LAW, do your duty, and defend our rights from these unlawful intrusions into a matter of county concern.

What is this county concern? The O&C Act of 1937 enacted by Congress, and still in effect makes it clear that these lands, quote:

"shall be managed for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."

Jackson County Board of Commissioners

BoC PH Submission # 85

Offered by: B. Meyer

Date: 10/27/16 Received by: JH

This act of Congress clearly sets forth the management criteria of these O&C lands. The residents of Jackson County should not be forced to waste our time defending and addressing a matter that was settled in the law a long time ago. There is peace and security within the law – this monument proposal is clearly outside the rule of law and congressional intent, and will sow chaos, both socially and economically.

Let's turn our attention now to the Antiquities Act. The Solicitor for the Department of the Interior told the Secretary of the Interior that the President lacks authority under the Antiquities Act to include O&C lands in a national monument. This was concerning a proposal to put O&C lands in an expansion of the Oregon Caves National Monument. The memo in question is opinion M. 30506.

Another section of the act directs that the monument should be confined to the "smallest area compatible with the proper care and management of the objects to be protected".

The monument expansion proponents are asking us to believe three legal fictions. First, that the Antiquities Act authorizes the president to use O&C land in a monument. Second, that the original monument is too small, while the third fiction is that it's legal and lawful to violate congressional law and intent by stealing these designated O&C lands, and placing them into monument status to satisfy a left wing green environmental agenda.

Remember - It is the sworn fiduciary duty of all elected officials to follow their oath of office, follow the law, defend the constitution, **and defend us from these unlawful intrusions.**

Thank You,

Bill Meyer,
Medford, Oregon

10/14/16

Monument Expansion Testimony

This proposed expansion is a really bad idea for a number of reasons. I am only going to discuss 4 of them.

1. It is inappropriate to use the Antiquities Act to create this expansion.
 - A. This was not the original intent of the act.
 - B. Does not allow for adequate public input.
2. Southern Oregon does not need additional Federal land.
 - A. We already have vast areas managed by the Federal Government.
 - B. At least 13,000 acres of private land have already been added to the existing monument. This proposal will add 14,000 acres initially with more to come as it gets increasingly difficult to operate in or adjacent to the monument.
 - C. Converting private land to Federal takes tax revenues away from Local governments that are essential for schools and roads among other things.
3. This action will "Lock up" productive land that is important for recreation grazing and timber production.
 - A. As roads are closed, the public will be denied access to land they have used for years for hunting, fishing and other recreational activities.
 - B. At least 4 ranchers will lose their grazing permits.
 - C. Two timber sales will be cancelled and no further sales will be created.
4. The federal government already provides more than adequate protection for endangered and threatened species.
 - A. Contrary to what we are being told, the BLM and the Forest Service already devote huge amounts of resources to threatened and endangered species.
 - B. The only species not being adequately protected is the Endangered Southern Oregon Rancher which is a unique subspecies of the Threatened American Rancher.

Bob Morris

Ashland, Oregon

Jackson County Board of Commissioners
BoC PH Submission # 86
Offered by: B. Morris
Date: 10-27-16 Received by: At

Jackson County Board of Commissioners
10 South Oakdale
Medford, OR 97501

October 27, 2016

Re: Expansion of Cascade Siskiyou National Monument

I am a lifelong resident of Jackson County and graduate from the Ashland School system. The area being reviewed for expansion of the Cascade Siskiyou National Monument is of serious concern to me.

The current area of the Monument I grew up in and enjoyed the multiple uses of this land and I also worked on the land before the monument designation. In 2000, then President Bill Clinton and his Secretary of the Interior Bruce Babbitt designated the current monument boundary without full inclusion of the people in Jackson County. One to two years prior to designation there were non-advertised meetings and planning sessions that occurred under that administration with their select invited environmental supporters but failed to include the private landowners, multi-use and natural resource interests.

I was one of a select few that organized the effort to educate our community on the lack of inclusion and destruction to our social and economic value in Jackson County as the monument designation was forced upon us. We brought a large number of citizens, multi-use groups (Cattlemen, Farm Bureau, Motorcyclists, Hunters, Snowmobilers, Timber, etc.) and private landowners to the Jackson County Board of Commission and attempted to gain support and to push for local control. Unfortunately there was not the strength of a unanimous decision of the Commissioners at that time. As we know the monument designation occurred and remains in place today.

Post designation and during the start of the Bush administration I and some others traveled to Washington, DC on two occasions to meet with the Department of the Interior Gale Norton and staff. We were successful in our efforts to get the Secretary and her staff to visit our region on multiple occasions in an effort to possibly advise President Bush to overturn the designation or at a minimum limit the severe impacts that were initially proposed under the designation. There were some small gains made by the direction of Secretary Norton to the local BLM office setting up the management plan but it was not enough to keep several ranching families including 3rd generation ranchers from being forced out.

We have also felt the effects from miles road closures, installation of locked gates, poor access, lack of management and an increase risk of catastrophic fire. The full assault options that are available to our wildland suppression departments (Oregon Department of Forestry) are limited under the monument management plan causing

Jackson County Board of Commissioners

BoC PH Submission #87

Offered by: B. Baumgartner

Date: 10/27/16 Received by: LS

further risk and safety issues to Jackson County and the firefighters that are tasked with wildland fire suppression operations.

I was also involved in the preliminary efforts to bring the option of Coordination the Jackson County Board of Commissioners in 2007/08 as another tool to gain local control and to keep the Federal Government in check under NEPA (National Environmental Protection Act) requirements. It is my opinion this current Board of Commissioners needs to fully assert the Coordination rights on behalf of Jackson County based on the social and economic welfare of this community and the land base that is affected. This monument boundary expansion must be stopped. I applaud your current efforts to be informed, educated and get involved at a serious level now rather than later.

There is an early similarity to the events leading up to the 2000 monument designation. The lack of involvement and full disclosure to the Citizens of Jackson County and those directly impacted. We are at the end of another President's term and his ability to use the Antiquities Act to expand the monument boundary. This time we are better educated and have some tools we can use and with your efforts as our elected leaders you can assist protecting our private and public lands!

Regards,


Bryan Baumgartner
6345 N. Foothill Road
Central Point, OR 97502

Campaign to Elect Dennis Linthicum (CTEDL)

20990 Highway 140 E.
Dairy, OR 97625

October 27, 2016

Board of Commissioners - JACKSON COUNTY

Rick Dyer

Doug Bridenthal

Colleen Roberts

Jackson County Courthouse

10 South Oakdale Ave., Room 214

Medford, Oregon 97501

Dear Members of the BOC,

First, I wish to thank the BOC - Jackson County for holding this hearing to allow public input and to listen to comments regarding the proposed expansion of the Cascade-Siskiyou National Monument.

My name is **Dennis Linthicum** and **I am the Republican candidate for Oregon State Senator District 28 and a former Klamath County Commissioner.**

I strongly oppose the proposed expansion of the Monument.

Our state's two federal Senate members, Ron Wyden and Jeff Merkley have mistaken the conduct arising from a small segment of our population as a green-light for raiding sustainable yield landscapes situated in Oregon. This will only further the goals of small special interest groups while harming the general public.

I diligently oppose allowing the wholesale disruption of an effective land management policy that is known as The O & C Lands Act. That act established that specific lands which were classified as timberlands should be **managed for permanent forest production, and that the timber was to be sold, cut, and removed in conformity with the principle of sustained yield for the purpose of providing a permanent source of timber supply and revenue to the counties wherein those lands are contained.**

The Act also provided for the protection of watersheds, regulation of stream flow, and their ability to contribute to the economic stability of local communities and industries, while also providing recreational facilities. These uses are entirely consistent with our current federal forest policy which promotes the sustainable multi-use/multi-purpose nature of our diverse landscapes.

As a former Klamath County Commissioner, small business owner, and rancher I understand that Oregon needs to utilize the natural resources that we have been blessed with. I also

Jackson County Board of Commissioners

BoC PH Submission # 88

Offered by: D Linthicum

Date: 10/27/16 Received by: [Signature]

understand that locking-up these lands will have detrimental impact on actually preserving the wilderness and natural space that is alluded to by the expansion.

This proposed expansion would essentially nullify and repeal the congressional intent of the 1937 legislation. That the special interest environmental groups desire the repeal, and/or replacement of the O & C legislation is no surprise. What is surprising is that our Senators have abandoned sound principles of representative governance in favor of this special interest cronyism.

Their proposal violates the very tenet of the 1906 Bill For the Preservation of American Antiquities. The 1906 act of Congress is the legislation that introduced the phrase "National Monument" into the American lexicon, but it proposed that language judiciously.

Specifically, the The Antiquities Act of 1906, gives the President authority to create national monuments but contains verbiage for two extremely important elements. In general the President may designate lands owned or controlled by the Government of the United States to be national monuments, provided:

- 1) "the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected." and
- 2) "When such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, **may be relinquished to the Government.**"

First, the smallest confined area appears to have been formerly designated during the original creation of the Cascade-Siskiyou National Monument. Doubling that area appears to be a wholly unqualified "land-grab."

Secondly, the phrase "may be relinquished to the Government" implies that this would require the federal government, including the executive and legislative branches to seek permission from the people of the region.

Tonight, I applaud the BOC - Jackson County for seeking public input on this unnecessary expansion of federal control of our local land which has already been designated and set apart for the benefit our communities. The people of this county, and other O&C counties, still have their full rights and responsibilities and I commend you on your efforts to keep these intact.

Again, thank you for seeking permission from, "WE THE PEOPLE."

Sincerely,

Dennis Linthicum



Republican for Oregon

DENNIS LINTHICUM
Senate District #28





INDIAN HILL, LLC

200 Corporate Way
Grants Pass, OR 97526

Phone: 541-476-7525
Fax: 541-476-3713

October 27, 2016

Jackson County Board of Commissioners
10 S Oakdale Avenue
Medford, OR 97501

RE: Siskiyou Cascade National Monument Expansion

Dear Jackson County Commissioners,

My name is John Krauss and I represent Indian Hill, LLC which owns and manages timberlands in Southwestern Oregon.

First of all, I would like to provide a sketch of the makeup of the national monument and expansion, as seen below:

Existing Monument:	65,000 Acres
Expansion:	65,000 Acres (58,000 OC Acres)
Private (Inside Boundary):	35,000 Acres

The O&C component (82%) is mostly forestland which has been managed for timber production as well as for the other resources for 50 to 100 years. Much is pristine forest which is already roaded where grazing, recreation, wildlife habitat, and watershed quality have always been high on the list of management priorities, along with timber.

We are opposed to the expansion for a number of reasons including the following:

1. One third of the lands inside of the Monument boundaries are private lands and landowners which includes Indian Hill, will undoubtedly see increased regulation and red tape when trying to manage their lands, if the expansion succeeds.
2. Counties which have relied on O&C funds through timber sale receipts will never see another penny from these lands if they become part of a national monument.

Jackson County Board of Commissioners

BoC PH Submission # 89

Offered by: J. Krauss

Date: 10-27-16 Received by: [Signature]

3. The remaining timber companies which still supply several thousand family jobs in southern Oregon are still very dependent on sourcing a portion of their raw material from BLM and Forest Service timber sales. Locking up a large acreage of the O&C timberland base will undoubtedly exacerbate the problem of log supply. The ultimate damage could be the loss of another mill in the region!
4. In special use areas, such as a national park or monument, federal agencies seem to take a less aggressive approach toward fire suppression than other landowners. This could conceivably heighten the risk of private lands burning within monument boundaries.

In closing, the aforementioned are only a few of the reasons that these highly developed O&C lands should not be included in the monument. In any case such far reaching decisions should not be made through the administrative power of the President but rather, should be decided by traveling the normal path through Congress.

Sincerely Yours,



John P Krauss

October 27, 2016

Jackson County Commissioners
Jackson County, Oregon
Dear Commissioners,

Some reasons that my family and I oppose the expansion of the Cascade Siskiyou Monument are as follows.....

Loss of revenue from O&C land. Utilization of timber on O&C lands on a sustainable basis to fund the counties schools and public entities will be forever lost.

Increase fire danger on private and BLM property. The fuels for fires will increase with no management of the forests. Ultimately, this is setting the area up for a huge fire that will cause a lot of destruction of resources and smoke in the valleys that will make our quality of air hazardous.

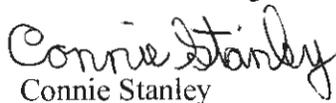
Grazing of cattle utilizes natural resources and decreases fire danger. Cattle utilize the grasses all summer, which enhances wildlife habitat. Studies have shown that elk search for the fresh new grass when they calve that comes each spring and summer after being grazed by cows.

Huge strain on or possibly the end of our business. Our family started using the grazing permit that we have over 100 years ago and it makes our ranch a viable unit. Our situation is such that without the grazing permit we would need to take the cattle somewhere else for the summer and fall grazing season so we can put up hay to feed them in the winter. Pasture ground in this valley is so hard to find and very expensive.

Less revenue to local businesses. If grazing restrictions in the monument make grazing cattle on the allotment unfeasible then businesses we patronize won't be getting near as much business from us and other ranchers.

Wasted time, money, and resources for range improvements that have addressed concerns in key areas. Over a long period of time thousands of dollars have been invested in our allotment in range improvements. They consist of exclosures, water troughs, drift fences and more. We as the permittee and the BLM have worked together to care for the allotment. If we couldn't graze cattle on the allotment anymore these improvements would all be a waste of time and money.


Eugene Stanley


Connie Stanley


Jennifer Kennedy

Jackson County Board of Commissioners

BoC PH Submission #90

Offered by: E. Stanley

Date: 10-27-16 Received by: JH

October 27, 2016

TO: Jackson County Commissioners

FROM: Susan Kendle

Re: Proposed Expansion of the Cascade Siskiyou National Monument

I am opposed to the proposed monument expansion for the following reasons:

- 1) The normal procedures required by the BLM to change or establish any designation or management plan on public lands have been ignored. None of the scientific studies being used are current.
- 2) Only a very few public and private persons have been involved in the planning of this expansion. As permittees on the Conde Allotment, we only found out about it by accident. A few weeks ago. Our range person at the BLM knew nothing about it even though his superiors had knowledge of the proposal. Our allotment constitutes about 1/5th of the proposed expansion.
- 3) Our ranch could no longer operate effectively without the public land used for grazing during the summer.
- 4) Natural resources would be locked up even more than they are now.
- 5) The ability to fight wildfires would be increased and the possibility of wildfires would increase without logging or grazing.

An article in the Mail Tribune on October 16, 2016 written by David Schott covers all these reasons and more. He states that "the 66,500-acre expansion would have a significant impact on Jackson County's environment, economy and county government finances." I agree with him in that it would not be a positive impact on this county or the other counties affected by this expansion.

It seems that public land is becoming private and private land is becoming public.

Thank you,

Susan Kendle



4844 Dark Hollow Road

Medford, OR 97501

Jackson County Board of Commissioners

BoC PH Submission #91

Offered by: S. Kendle

Date: 10-27-16 Received by: dj

October 27, 2016

COMMENTS ON CASCADE-SISKIYOU MONUMENT PROPOSAL
For the Hearing by the Jackson County Commissioners

Dear Commissioners:

Thank you for holding this Hearing on the proposed monument.

I grew up in a publishers family so words and their meanings are very important to me. And I am concerned when I see some these words, that may sound good, such as, "Protecting the entity of the Cascade-Siskiyou region," which might sound like an admirable aim, but how could a monument status really achieve this?

Some of the other phrases are even more puzzling and less specific - "climate change" or "ecological integrity" - just how would monument status significantly effect either of these subjects?

And most important - how could monument status protect it from wildfire - the most likely risk. Actually rapid response time is the best fire protection. Roads - as firebreaks - have proven to be effective in fires such as the 2015 National fire in Crater Lake Park and the Rogue River Forest. A trip along Highway 230, where the National was stopped, is a visual illustration of the effectiveness of fire breaks. Monument status could limit road construction or even maintenance.

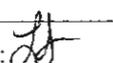
Currently the Oregon State Forestry is the fire protection agency for the proposed area - would there be added restrictions, such as MIST, under monument status? If this resulted in larger, more expensive fires that exceeded the State's backup insurance limit, wouldn't that result in costs to the taxpayers of Oregon?

These BLM lands are O&C, and included in the 1937 Act mandate, monument status would restrict their participation in the timber program.

Jackson County Board of Commissioners

BoC PH Submission # 92

Offered by: T Scott

Date: 10-27-16 Received by: 

Since this will directly effect the O&C County residents - adversely - as it reduces the O&C land base, would it not be appropriate to give a higher priority to local impacts?

At one time Secure Rural Schools compensated for the loss of timber revenue, but this has been fading, so we would be left with neither.

Aside from buzzwords is there much serious support for this expansion? And how should it be measured? In the Owyhee Canyonlands area it was voted on by the local people - who were 90% opposed.

In this area there are several groups in favor, but is that a good criteria?

In 2010, when the Siskiyou Crest was proposed, there were several public meetings, and one main message was that adequate public hearings should be held. One comment was that a "business plan" should be part of any monument, and this seems like a reasonable request, especially if any serious increase in recreation oriented business activity is projected to replace resource uses.

Also in this context of possible unanticipated results of actions, I am reminded of a situation in the Kalmiopsis wilderness / Biscuit Fire area - where there appeared to be little or no funding for reopening and remarking the trails thru the burn. This left it to a group of volunteers doing the work with unpowered hand tools! I also recall - when the Rogue Wild & Scenic was created - there was a dedicated helicopter/repeller crew in Merlin. Later, due to costs, this was replaced by a trail crew without the rapid response helicopter.

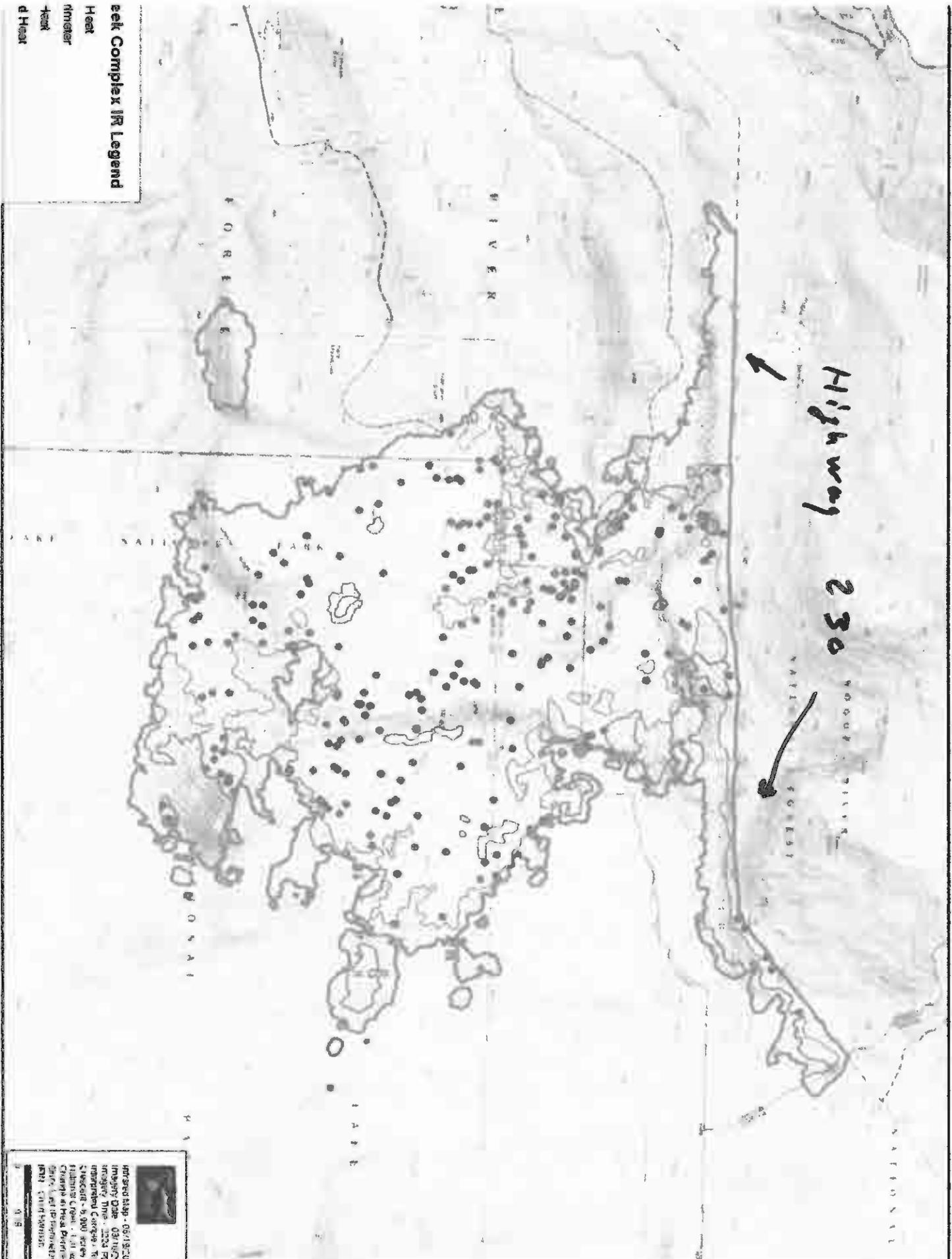
When an areas resources are restricted and effectively "devalued," the ability to protect that area may suffer from financial neglect.

For all these factors I urge you to oppose this monument expansion.

Sincerely,

Trenor Scott
Grants Pass

National Fire 2015



2/18/15

S ← → N

Fire edge ←

Highway
230



[STAR GAZING](#)[YOGA](#)[SEA CREATURES](#)[GARDENING](#)[LEGENDS](#)[MORE](#)

Su

[HISTORY](#)[MODERN HISTORY](#)[US HISTORY](#)

Q: What is Executive Order 13603?

A:

QUICK ANSWER

The National Defense Resources Preparedness executive order or Executive Order 13603 is a type of martial law that grants the Department of Homeland Security the right to take custody of any resource needed from the people of The United States. President Barack Obama signed Executive Order 13603 March 16, 2015. [KNOW MORE](#)

KEEP LEARNING

[What is Executive Order 9066?](#)[What are some negative things that Theodore Roosevelt did?](#)[Who was the first US President to be impeached?](#)

FULL ANSWER

An Executive Order is a direct order issued by the executive branch of government (president or governor) without consultation of the legislative or judicial branches. These orders can only be issued to federal or state agencies, but citizens of the country are incidentally affected by them. George Washington signed the first executive order April 22, 1793.

[LEARN MORE ABOUT US HISTORY](#)Sources: [snopes.com](#)

Ads

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The NSA Is Flagging Emails With These 13 Words, See What They Are

"It is the sacred principles enshrined in the United Nations Charter to which the American people will henceforth pledge their allegiance."

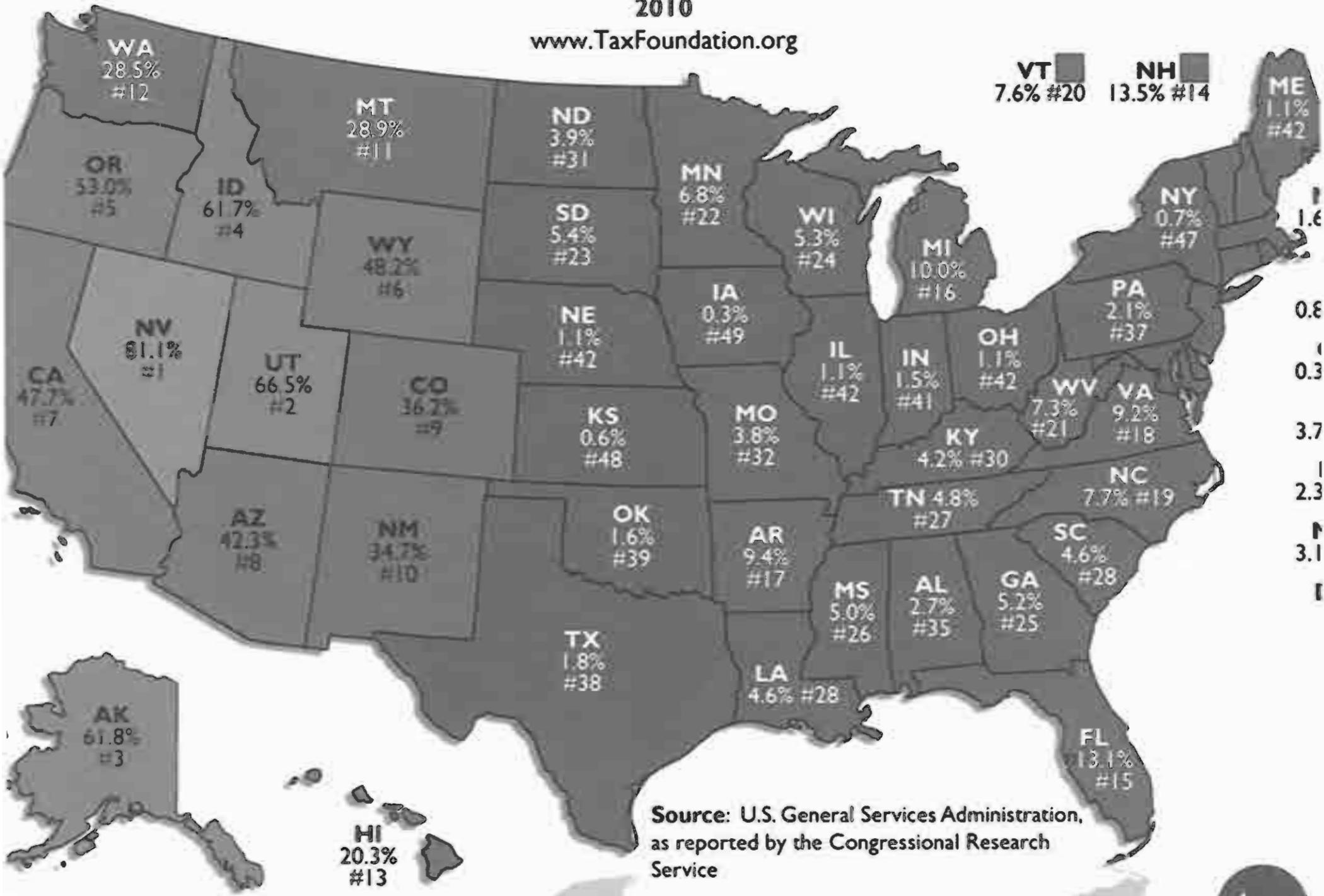
President George Bush,
addressing the U.N.



Federally Owned Land by State

2010

www.TaxFoundation.org



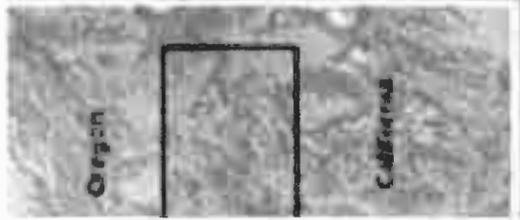
Source: U.S. General Services Administration, as reported by the Congressional Research Service



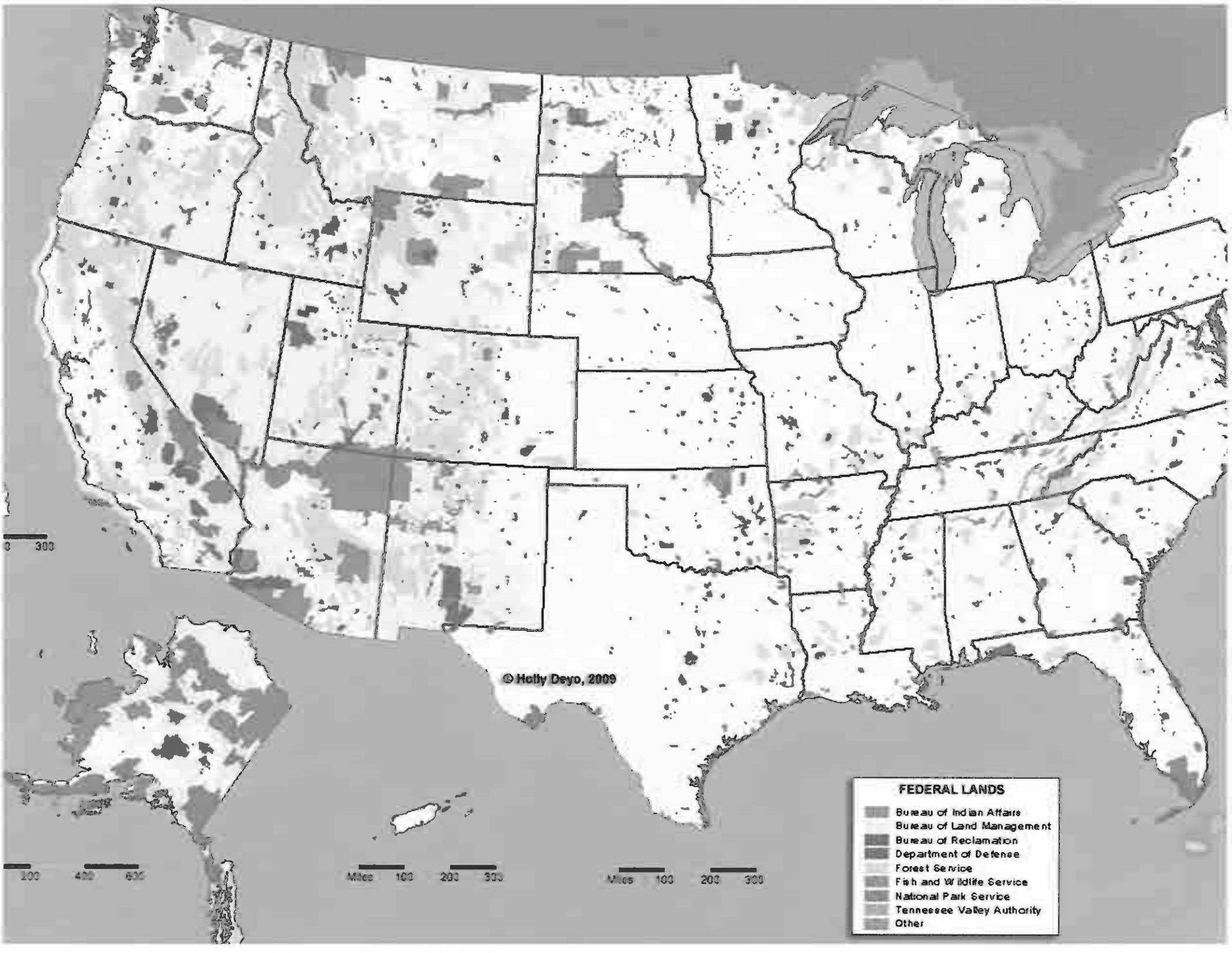
Proposed Siskiyou Crest Boundary



KS Wild's own map



- Park Crest Trail
- Existing Villages
- Oregon Crest N.M.
- Cascades Siskiyou N.M.



© Holly Deyo, 2009

FEDERAL LANDS

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Forest Service
- Fish and Wildlife Service
- National Park Service
- Tennessee Valley Authority
- Other

0 300

0 100 200 300

Miles 100 200 300

Miles 100 200 300

**WATERSHED PRIORITY ASSESSMENT BASED ON PAST PRODUCER HARDROCK
MAS/MILS LOCATIONS ON FEDERAL LANDS IN THE
CONTIGUOUS UNITED STATES**



MAS/MILS Locations

- >300
- 201-300
- 101-200
- 1-100
- 0

MAS/MILS Site

Miles	Kilometers
0	0
100	161
200	322
300	483
400	644
500	805

0 100 200 300 Miles
0 200 416 627 Kilometers

David Ferderer
dferdere@usgs.gov

Figure 1



Map and data compiled by David L. Ferderer, USGS, Reston, VA. All rights reserved. No warranty is made by the USGS for any use of the data.



EXECUTIVE ORDER 13603



AT A TIME OF THE PRESIDENT'S CHOOSING,
THE FEDERAL GOVERNMENT MAY TAKE OVER:

- ▶ "ALL FORMS OF ENERGY"
- ▶ "ALL FORMS OF CIVIL TRANSPORTATION"
- ▶ "ALL USABLE WATER FROM ALL SOURCES"
- ▶ "ALL COMMODITIES AND PRODUCTS THAT ARE CAPABLE OF BEING
DISECTED BY EITHER HUMAN BEINGS OR ANIMALS"
- ▶ "HEALTH RESOURCES - DRUGS, BIOLOGICAL PRODUCTS, MEDICAL
EQUIPMENT, RESEARCH, AND ALL OTHERS WHICH ARE ESSENTIAL TO THE
HEALTH OF THE PEOPLE"

The Emerging Megaregions



Simulated Reserve and Corridor System to Protect Biodiversity

As Mandated by the Convention on Biological Diversity, The Wildlands Project, UN and US Man and Biosphere Program, and Various UN, US Heritage Programs, and NAFTA

Mapping for the area East of the Mississippi and South of the Ohio Rivers is at various stages of completion



taken From: The United Nations Convention on Biological Diversity, Article 8(a); United Nations Global Biodiversity Assessment, Section 13.4.2.2.3; US Man and the Biosphere Strategic Plan; UN and US Heritage Corridor Program, "The Wildlands Project", Wild Earth, 1992. Also see Science, "The High Cost of Biodiversity," 25 June, 1993, pp 1668-1671 and the Border 21 Sidebar of NAFTA

Simulated Reserve and Corridor System to Protect Biodiversity

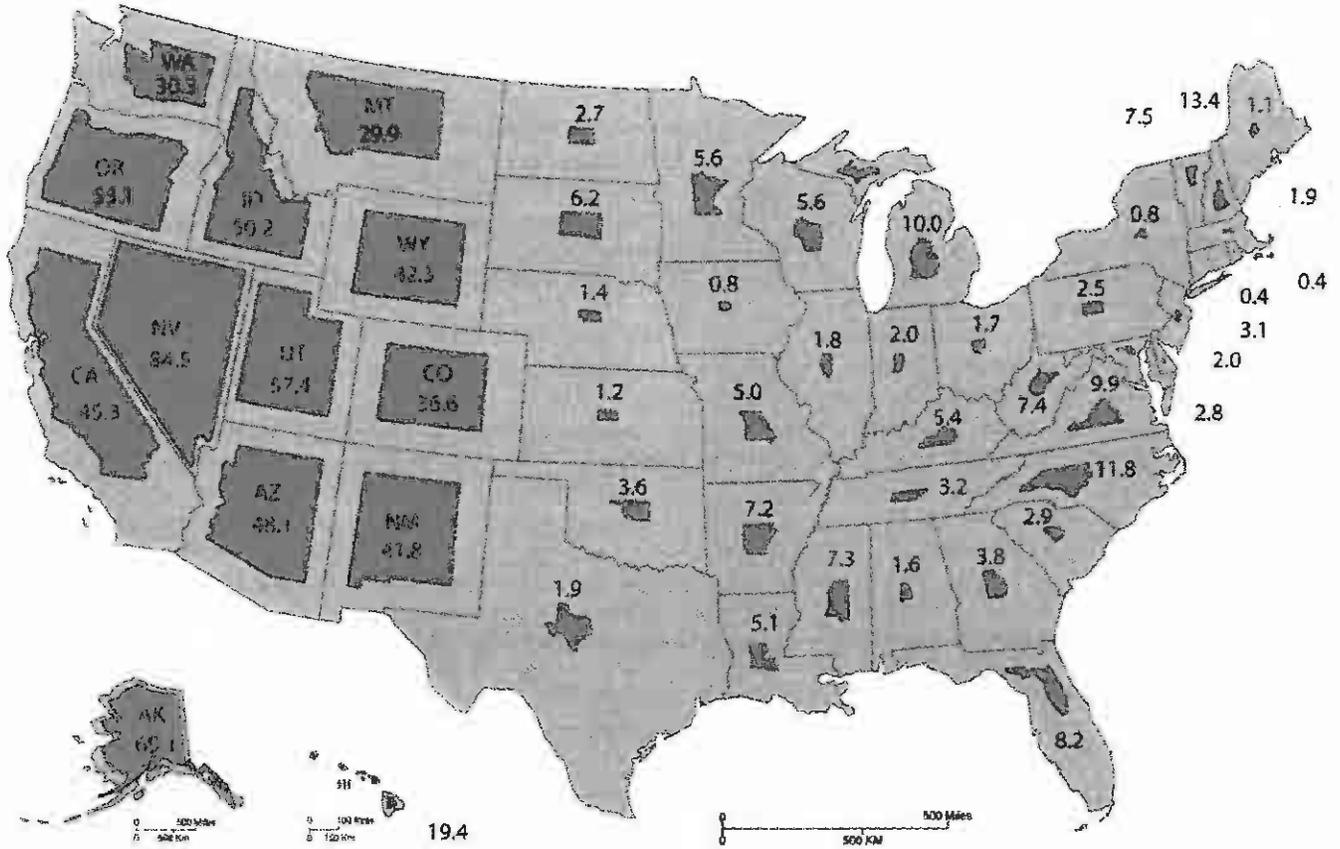
As Required by the UN Covention on Biological Diversity, Wildlands Project,
UN and US Man and Biosphere Programs and World Heritage Program as a
Vital Step in Attaining Sustainable Development

This map was used in the United States Senate to stop the ratification of the
United Nations Convention on Biological Diversity

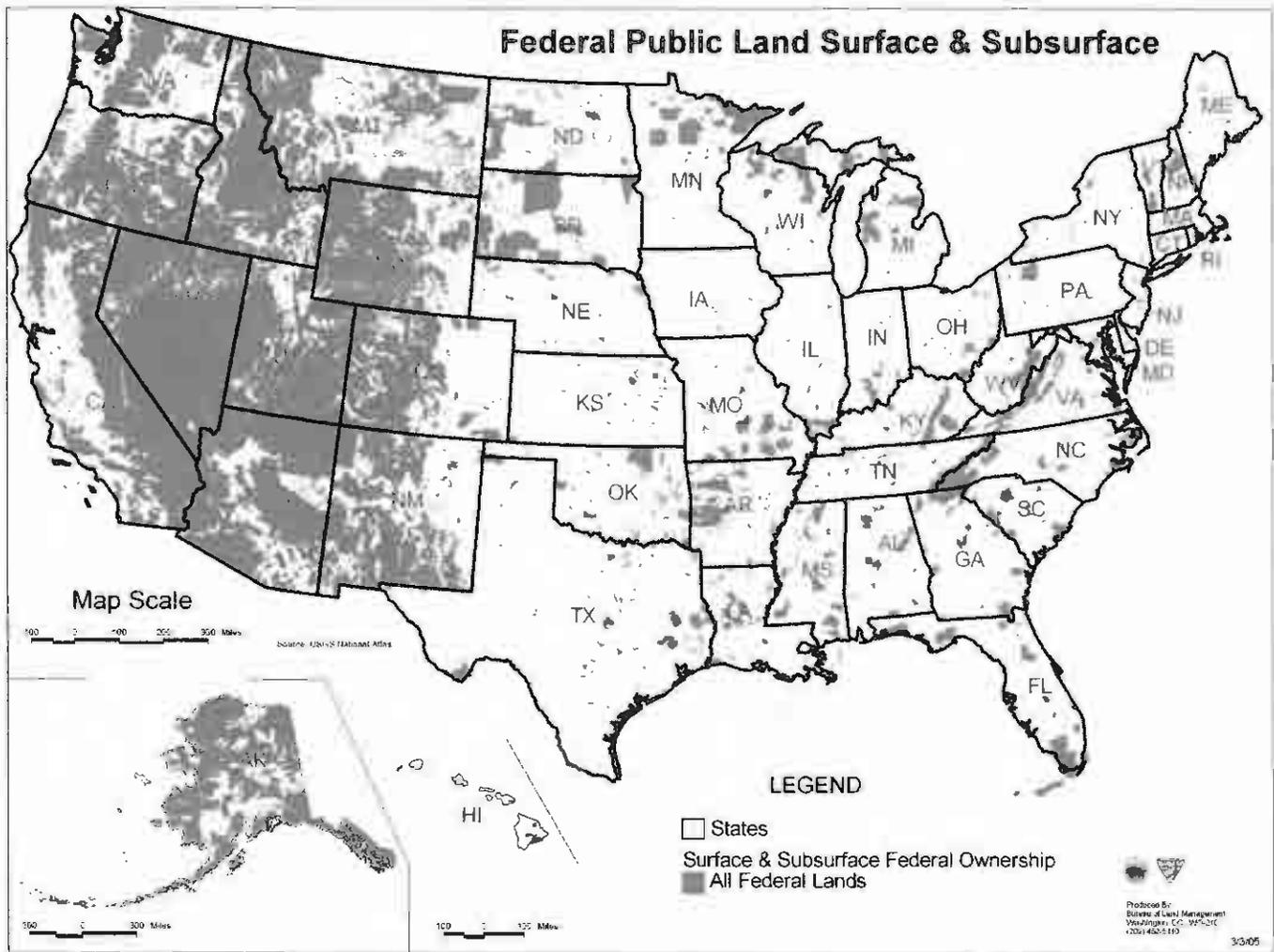


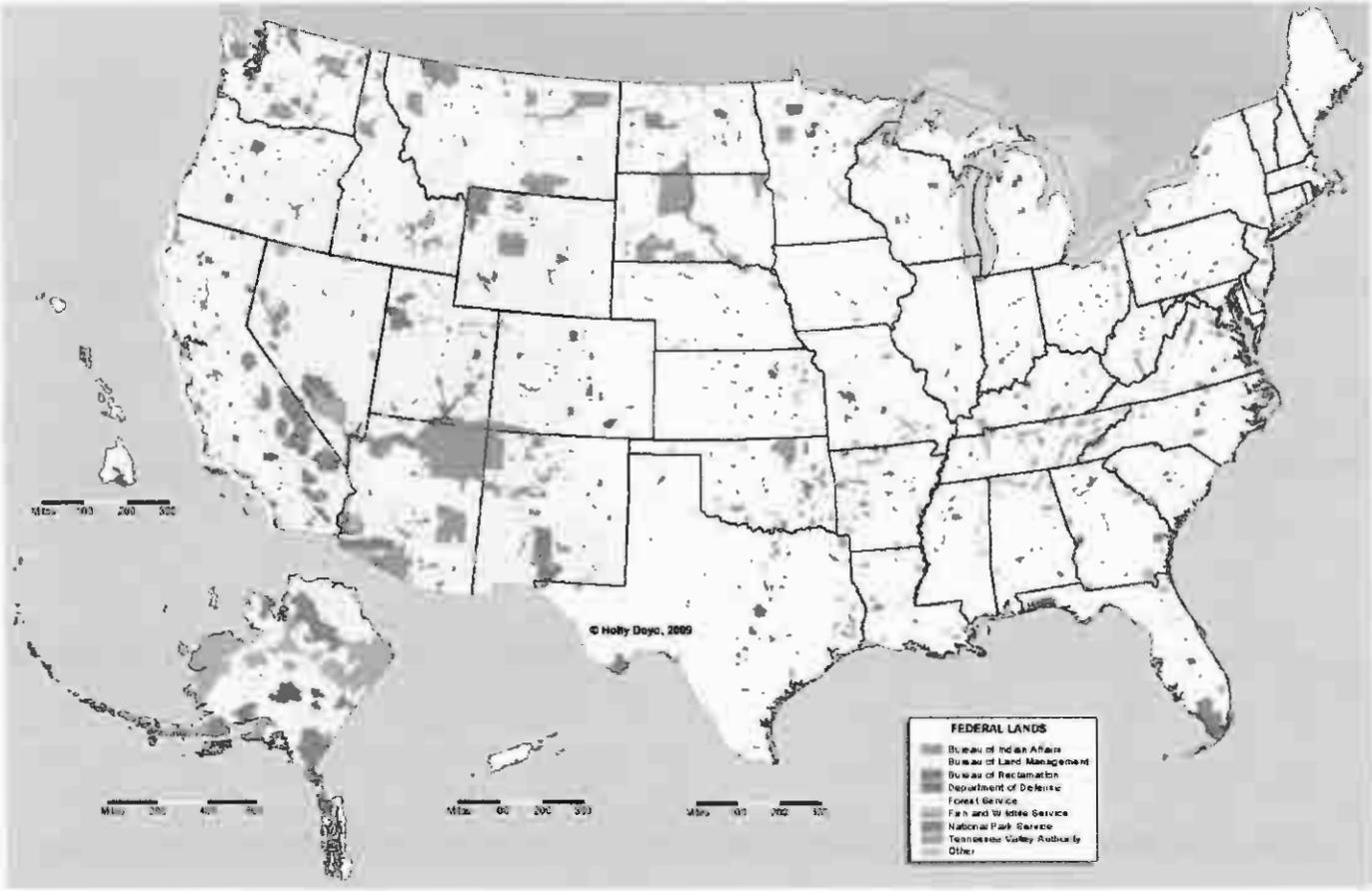
WHO OWNS THE WEST?

Federal Land as a Percentage of Total State Land Area



Data source: U.S. General Services Administration, *Federal Real Property Profile 2004*, excludes trust properties.





P R O S P E C T U S

****THIS IS A SCALE SALE****

ASHLAND RESOURCE AREA
JACKSON MASTER UNIT

Medford Sale #ORM06-TS16-16
September 22, 2016 (DN)

#4 Nedsbar Timber Sale, Jackson County, O&C.

BID DEPOSIT REQUIRED: \$46,300.00

All timber designated for cutting in W ½ NE ¼, NW ¼, Sec. 17, SE ¼, Sec. 20, W ½ SW ¼, Sec. 21, W ½ NE ¼, NW ¼, N ½ SW ¼, SW ¼ SW ¼, Sec. 28, E ½ NE ¼, SW ¼ NE ¼, SE ¼, Sec. 29, T. 39 S., R. 01 W.; Lot 3, Lot 4, S ½ NE ¼, S ½ NW ¼, N ½ SE ¼, Sec. 25, Lot 1, SE ¼ NE ¼, S ½ SE ¼, Sec. 26, NE ¼ NE ¼ Sec. 34, Lot 1, N ½ NE ¼, SE ¼ NE ¼, NE ¼ NW ¼, Sec. 35, SW ¼ NW ¼, W ½ SW ¼, Sec. 36, T. 39 S., R. 02 W.; SE ¼ SE ¼, Sec. 10, W ½ NW ¼, NW ¼ SW ¼, Sec. 14, NE ¼, N ½ SE ¼, Sec. 15, Lot 3, Lot 8, Sec. 25, Lot 7, SE ¼ NE ¼, Sec. 26, S ½ NE ¼, SE ¼ NW ¼, NE ¼ SW ¼, S ½ SW ¼, SE ¼, Sec. 27, S ½ SE ¼, Sec. 28, N ½ NE ¼, SE ¼ NE ¼, Sec. 33, NE ¼ NE ¼, NW ¼, Sec. 34, Lot 1, Lot 3, NE ¼, E ½ NW ¼, NE ¼ SW ¼, Sec. 35, E ½ SW ¼ Sec. 36, T. 39 S., R 03 W., W.M. Oregon.

Approx. Number Merch. Trees	Est. Volume MBF 32' Log	Species	Est. Volume MBF 16' Log	Appr. Price Per MBF*	Est. Volume Times Appraised Price
31,770	2,864	Douglas-fir	3,366	\$68.00	\$228,956.00
479	57	Ponderosa Pine	74	\$28.20	\$2,058.60
32,249	2,921	Totals	3,440		\$231,014.60

*Stumpage values have been determined by market value estimates and analytical appraisal methods were used to compute the appraised price. Additional information concerning the appraised price is available at the Medford Interagency Office.

**Minimum stumpage values were used to compute the appraised price (10% of pond value).

TIMBER AUCTION LOCATION – The timber auction will be held at the Medford Interagency Office, located at 3040 Biddle Road, Medford, Oregon, at 9:00 a.m. on Thursday, September 22, 2016.

Bidders will be restricted to bidding on a unit (MBF) rate of the Douglas-fir volume. All other species will be sold at appraised price per unit (MBF). The minimum bid increment will be \$0.10 per MBF.

CRUISE INFORMATION – All tree species in units other than Group Select have been cruised using the Plot Cruise PCMTRE method. The sample trees have been measured, and the volume expanded to a total unit volume. All tree species Group Select units have been cruised using the 100% Cruise method. These numbers were then combined for a total sale volume. With respect to merchantable trees of all conifer species: the average tree is 12.8 inches DBHOB; the average gross merchantable log contains 39 bd. ft.; the total gross volume is approximately 2,921 M bd. ft.; and 81% recovery is expected. (Average DF is 12.7 inches DBHOB; average gross merchantable log DF contains 39 bd. ft.).

Bidders will be restricted to bidding on a unit (MBF) rate of the Douglas-fir volume. All other

Jackson County Board of Commissioners

BoC PH Submission #93

Offered by: C. Bratt

Date: 10-27-16 Received by: JA

SUBMITTED BY
CHRISTOPHER TRAIL

B6 | Sunday, October 23, 2016 | Mail Tribune

GUEST OPINION

Monument boundaries are inadequate

By Pepper Trail

"... the Cascade-Siskiyou National Monument is an ecological wonder, with biological diversity unmatched in the Cascade Range ... a biological crossroads — the interface of the Cascade, Klamath, and Siskiyou ecoregions, in an area of unique geology, biology, climate, and topography."

— From the first words of the June 9, 2000, Proclamation establishing the Cascade-Siskiyou National Monument

The establishment of the Cascade-Siskiyou National Monument was a landmark in the preservation of our region's remarkable wealth of habitats and species. But are the current boundaries — constrained within a relatively narrow band of elevations and arbitrarily truncated at the Oregon-California border — adequate for the long-term protection of this "ecological wonder"?

This is a question that

has been discussed for the past five years by a diverse group of scientists with much research experience in Southern Oregon. These discussions, involving ecologists, botanists and experts in fish, mammals and birds, culminated in a letter signed by 85 scientists in 2015 that concluded "... it is our professional opinion that expansion of the monument is necessary for the area's extraordinary values to be sustained over the long term."

Biological diversity is not a static count of number of species. It is a dynamic web of ecological connections, dependent on reliable pathways for movement of individuals and populations, continuous flows of water and energy, and a resilient network of habitats allowing adaptation to changing conditions. As scientists learn more about these complex networks, we are able to pinpoint areas in critical need of protection.

The extraordinary variety of species and habitats that the Cascade-Siskiyou National Monument was established to protect today faces mounting threats from encroaching development and climate change. These threats weren't adequately anticipated back in 2000. Any drive along Highway 66 or Dead Indian Memorial Road these days will reveal many large properties for sale. As private lands are developed, the public lands adjacent to but not currently within the monument are increasingly vital as biological connections.

The threat posed by climate change is particularly worthy of attention. When the monument was established in 2000, alarm about climate change was limited mostly to scientists, and its implications were not considered when boundaries were drawn. Less excusably, the term is not mentioned even once in the BLM's 2008 Monument Management Plan, completed

when climate change had emerged as a prime concern of land managers and policy makers. Clearly, well-documented regional trends for reduced snowpack, higher summer temperatures, and more frequent fires must be factored into plans to protect the monument's unique biological values.

With this in mind, the expansion areas prioritized by scientists extend both into higher and lower elevations, significantly increasing the monument's total elevation range and topographic diversity. These sites and their surrounding landscapes fill gaps in protection for Jenny Creek and several other vital watersheds, improving the ability of these aquatic ecosystems to recover and maintain their integrity. They reach out to enclose populations of species at their range limits, critical "first responders" to climate change. And they do all this in an expanded monument that is still a

relatively small area of federal land to set aside for the protection of such an "area of unique geology, biology, climate, and topography."

Much of the public land near the monument but outside current boundaries has already been recognized with special designations such as Areas of Critical Environmental Concern and Special Management Areas. At present, however, they are disconnected and therefore unlikely to sustain their remarkable biological values in the face of increasing threats. In order to function as part of an ecologically integrated landscape, these sites need to be connected and incorporated into an expanded Cascade-Siskiyou National Monument.

Administrative designations and legislative proposals have independently highlighted ecological and other non-commodity values on public lands near the existing monument. Both BLM's new

Western Oregon Plan Revision and Sen. Ron Wyden's and Sen. Jeff Merkley's proposed Senate Bill 132 include many conservation and/or recreation designations over much BLM land near the monument in Oregon. Most of the relatively small area of public land on the California side of the current monument boundary has long been allocated to conservation purposes (with varying degrees of management success).

Building on a foundation of solid science, now is the time for expansion of the Cascade-Siskiyou National Monument to enable spatially comprehensive, cohesive and consistent protection of this biologically unique and valuable landscape. Such an opportunity may not come again.

— Pepper Trail, Ph.D., of Ashland is an ornithologist and conservation co-chair of the Rogue Valley Audubon Society.

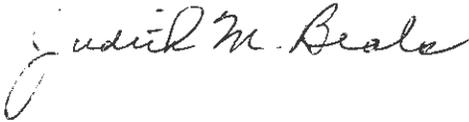
To Whom It May Concern Legally:

I am strongly against the proposed expansion of the Siskiyou-Cascade Monument for the following reasons:

- 1) It's AGAINST THE LAW. Most of the proposed lands are O&C lands and the O&C Act of Congress states that those lands are to be dedicated to sustained harvest ONLY.
- 2) It's ILLEGAL. O&C lands are a COUNTY government issue and the parties who have brought this forward have assumed intervener status. They DO NOT QUALIFY for intervener status per Judge Murphy.
- 3) It's UNLAWFUL. Selective notification of public meetings, as well as times and venues, have been arranged to unjustly benefit those who want the expansion ("backroom" engineering to circumvent the law in hopes there'd be a "done deal" that would take an act of Congress and a cadre of lawyers to reverse).

Sincerely tired of illegal land-grabs,

Judith M. Beals
Gold Hill, OR
October 27, 2016



Jackson County Board of Commissioners

BoC PH Submission # 94

Offered by: J. Beals

Date: 10/27/16 Received by: JD

Please stop the Cascade-Siskiyou monument expansion. I live on and work the family farm that has been in the family for over 100 years. My grandchildren are the 6th generation to live in the Rogue Valley.

My family--my parents, my husband and I, my grown children, and now my two young grandchildren, plus extended family--uncles, aunts, cousins, all use the area proposed for the monument expansion. We hunt deer, elk, grouse and quail. We gather mushrooms and elderberries. We cut firewood and find our Christmas tree. We hike, camp, and fish. We all appreciate and respect the environment. We do not need more restrictions on this area. The environmental groups that are pushing for the expansion do not speak for me, my family, and most Oregonians. Just because they are loud, it does not make them right.

This is public land-keep it accessible.

Sincerely,
Katharine Latham
1149 Oak St.
Ashland, OR 97520

Jackson County Board of Commissioners

BoC PH Submission # 95

Offered by: K. Latham

Date: 10-27-16 Received by: dl

Cascade Siskiyou National Monument Expansion Comments. Chair Dyer, Commissioners, Thank you for the opportunity to speak here today.

My name is Kevin Talbert and . I live at 1291 N Valley View Rd outside Ashland. Thank you for the honor of appointing me to serve the remaining months of Senator Bates term. I am here to testify because I believe that Senator Bates would want to weigh in on this issue.

When I moved here nearly 40 years ago, the population was roughly **half** what it is today, but I was grateful to learn that people that had come before me had the foresight to make sure I could live in a county with a healthy mostly intact ecosystem. They fought for and created such assets like the Crater Lake National Park, the Wild & Scenic Rogue River, and the Bear Creek Greenway to mention a few.

Now we have the question of the Cascade Siskiyou Monument expansion - needed - we are told - by the best science available – to preserve some of the diversity and health of the environment we all share.

I ask you to consider thinking forty years or more ahead when the county's population has **doubled** yet again. If face to face with future generations and those who come after us, will we be able to say we did our best to make sure they have the same healthy environment, ecological diversity, and a region with the kind of recreational opportunities we have?

I understand that we need to consider and protect the rights of private land owners, but the question before us is more about how we manage our public lands, a legacy that belongs to all of us. As you can see, I strongly support the expansion, I hope you will too.

Jackson County Board of Commissioners

BoC PH Submission # 96

Offered by: K. Talbert

Date: 10-27-16 Received by: LD

I oppose the expansion

Gayla Snow
Gayla Snow

2720 Elliott Ave
Medford OR

Jackson County Board of Commissioners

BoC PH Submission # 97

Offered by: G. Snow

Date: 10-27-16 Received by: JS

October 27, 2016

Hearing on the Expansion of the Cascade
Siskiyou Monument Jackson County

I'm concerned about expanding this monument. I'm also surprised at the direction the monument is taking. I thought it would expand toward the Klamath mountains not the Cascades.

One concern I have is that the expansion encompasses Howard Prairie Reservoir and Jenny Creek that flows from it. These and other water features in the monument proposed are important to us in the Rogue Valley. However the water from Jenny Creek is wanted by California officials along with the Klamath River water. This Klamath Watershed is shown in their California integrated water management map.

We on the Rogue River Watershed side of the ridge store some of our water in Howard Prairie as well. The water is moved from Little Butte Creek through Deadwood Tunnel into Howard Prairie Reservoir.

If the dam on Howard Prairie was removed and the water from Jenny Creek was called for from the Klamath Watershed what would happen to Emmigrant Reservoir? What would happen to the irrigation districts in our valley?

Beverly Leyer
Medford, OR

Jackson County Board of Commissioners

BoC PH Submission # 98

Offered by: B. Leyer

Date: 10-27-16 Received by: JL

From: Brett Loper <brloper@hotmail.com>
Sent: Thursday, October 27, 2016 6:41 PM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou Monument Comments

Dear Board of Commissioners, please accept my comments in opposition in any further monument expansion or any further limitations on access within the existing monument. I have hunted in the Greensprings area my entire lifetime and the Clinton Monument has dramatically limited my traditional access to my favorite hunting areas. The BLM has failed miserably in protecting public access and even has a blind eye to individuals posting public lands within the monument(Soda Mt. Road). The BLM has demonstrated an obvious inability to look out for the public's interests in the area and should not be granted more authority to further erode our rights. Monument designation has also stalled any habitat improvement projects in the area which will continue to have negative impacts on game populations. Thank you for considering my comments.

Brett Loper, Life Member, Oregon Hunters Association
3585 Highland Ave.
Grants Pass, Or 97526
541-660-5861

From: Sarah Fowler <fowersarah33@gmail.com>
Sent: Thursday, October 27, 2016 9:27 PM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou Monument expansion

Hello,

I am a land owner who owns land on Tyler Creek Rd inside the current Cascade Siskiyou National Monument. I am writing to register my support for science-based monument expansion. My reasons for supporting expansion include a desire to ensure the continued viability of the endangered and endemic plant species unique to our area and the desire to leave a legacy for my children, grandchildren, and great-grandchildren of a relatively-intact, relatively-wild place that they can go to hunt, fish, camp, and pray.

Thank you for registering my opinion.

Sincerely,
Sarah Fowler
966 Tyler Creek Rd
Ashland, OR 97520

From: Councilor Wise <Councilor1@cityoftalent.org>
Sent: Thursday, October 27, 2016 10:47 PM
To: BOC-CAO_ADMIN
Subject: Comments regarding Cascade Siskiyou National Monument Expansion
Attachments: Statement to JC Commissioners re CSNM Expansion.pdf

Commissioners,

Attached are the complete comments I made before the commission tonight at the public meeting. Thank you for entering them into the record.

Sincerely,

Daniel Wise

Daniel Wise, M.A., M.B.A.

Councilor Seat 1

Councilor1@cityoftalent.org

(541) 535-1566

City of Talent
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Talent, OR 97540
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Talent, Oregon

Jackson County Board of Commissioners
BoC PH Submission #101
Offered by: D. Wise
Date: 10.27.16 Received by: AF

STATEMENT DANIEL WISE, TALENT CITY COUNCILOR

Councilor1@cityoftalent.org

For Jackson County Commissioners' October 27 (2016) public hearing

Re: Proposed Cascade-Siskiyou National Monument expansion

My name is Daniel Wise, and I am a city councilor for the City of Talent, as well as a citizen of Jackson County. I am speaking in support of science-based expansion of the Cascade Siskiyou National Monument and the additional protection of public lands which that expansion would provide. In August of this year, the Talent City Council unanimously passed a resolution expressing our support of expansion of the boundaries of the CSNM and urging national elected officials “to use the best ecological criteria in considering the Monument’s present and future needs—as well as considering quiet recreational opportunities and scenic resources—as they determine appropriate expanded boundaries for the Monument.” We passed that resolution after hearing testimony from citizens of Talent, including several who own property within the proposed Monument expansion, all of whom expressed wholehearted support of expansion. We acted after the Talent Chamber of Commerce unanimously urged us to do so, expressing that “the Monument provides unique recreational and educational opportunities, as well as scenic vistas which will benefit our business climate, economy, and quality of life here in Talent, and all of Southern Oregon.”

Both the Mayor and I spoke at the public meeting sponsored by Senator Merkley and the Department of Interior two weeks ago, further expressing our support for science-based expansion of the Monument.

The Cascade-Siskiyou National Monument holds many values which are essential to the wellbeing of Jackson County and our community. Many of these are economic, such as increased tourism and enhanced livability, but many are less tangible. We are facing a time of climate change and the effects that change is having on plant and animals of our region. Many of those species are already under pressure to survive, and contiguous, intact habitat is essential for their survival. The current Monument is a great first step toward species preservation, but it is not enough. As the scientists have reported, an expanded monument, with increase elevation and terrain variability is essential.

An expanded Monument will limit development pressure on and around these public lands. By doing so, it will provide land bridges and connectivity between various public lands. It will provide expanded recreational opportunities, and it will enhance the natural beauty of our region. It will also allow additional ranchers and property owners to find economically viable ways to seek preservation, rather than exploitation.

Lastly, I wish to address some of the misinformation regarding Monument expansion.

1) Expanding the outer boundaries of the Monument will *not* limit private owners from continuing to utilize their property as they see fit. Only public land will be incorporated into the

Monument;

2) It will not limit access for fishing or hunting, which will continue to be administered by the Oregon Department of Fish and Wildlife;

3) It will not unduly limit motor vehicle access, although some roads may be closed for habitat and hydrological recovery;

4) People will not be discouraged or prohibited from using the public land within the monument.

As one person at the meeting with Senator Merkley stated, once it is gone, it is gone for good.

We have an opportunity to preserve and protect one of the most important natural areas in the world, along with all the plants, animals and people who benefit from it. Jackson County is about more than economics. It is about preserving a future for our children and our children's children.

I urge the Jackson County Commissioners to support expansion of the Cascade-Siskiyou National Monument.

From: Jon Bigman <bigman_const@hotmail.com>
Sent: Friday, October 28, 2016 1:13 AM
To: BOC-CAO_ADMIN

I oppose the enlargement of the Cascade-Siskiyou monument. Too much public land is off limits to hunters and fishers now. Better by far would be to urge and incentivize private landowners to allow crossing access to BLM and Forest Service lands.

Sent from [Mail](#) for Windows 10

From: James ferguson <jmsfrgsn@sbcglobal.net>
Sent: Thursday, October 27, 2016 10:16 PM
To: BOC-CAO_ADMIN
Subject: Support Expansion of Cascade Siskiyou National Monument

Commissioners Dyer, Breidenthal and Roberts:

I arrived late to the public meeting on expansion of the Siskiyou National Monument and was unable to complete a speaker's card. Therefore, I am submitting my comments in written form.

I support science based expansion of the Siskiyou National Monument. I have hiked, hunted and taken interpretive hikes on the Monument. The unique qualities of the Cascade-Siskiyou region and the broad and diverse array of plant and animal species that are able to live there make this area worth preserving.

After 150 years of the land being grazed and logged, and 100 years of fire suppression, no one can say the land that may be included in the Monument is pristine. But it still retains an amazing diversity of plant and animal species. If the monument is not expanded there will be no immediate loss of these species. But if the Monument is not expanded and land use occurs without regard to species needs, diversity will suffer as death by a thousand cuts.

At these times of climatic change and habitat loss it is your responsibility, as elected officials, to take a long term view and support expansion of the Siskiyou National Monument for the economic, environmental and generational benefits it affords us.

Some who call themselves hunters may claim that expanding the Monument boundaries will limit public access. Nothing could be further from the truth. In fact the many thousands of acres that a willing landowner is willing to donate to the expanded monument will increase hunting opportunity as that land has traditionally been private and off limits to public access. I look forward to hunting on that land of an expanded Monument.

It is somewhat humorous that off road enthusiasts claim that expanding the Monument will limit their riding enjoyment. Again, not true. Public roads on the Monument are currently available for them to ride and they currently ride on roads across BLM and Forest Service lands throughout Souther Oregon with little in the way of restriction.

Support by the Commission for logging on public lands is not inconsistent with expansion of the Monument. We simply do not need to log on these particularly sensitive species-rich lands.

The Cascade-Siskiyou National Monument is an economic and recreational asset to Jackson County and Southern Oregon. I would hope that as Commissioners you have the foresight and vision to recognize that opportunity and support the science based expansion of the Siskiyou National Monument.

James D. Ferguson

Sent from my iPad

From: jim figone <jimrah@hotmail.com>
Sent: Friday, October 28, 2016 9:19 AM
To: BOC-CAO_ADMIN
Subject: Contact - Board of Commissioners

Hello;

I would like to add my voice to the many others who have already voiced OPPOSITION to the proposed expansion of the Cascade-Siskiyou National Monument. As a long time resident of the Rogue Valley and Medford homeowner, I have seen how misdirected Government actions have hurt the residents of the Rogue Valley. This is just one more example of that misdirected Government action.

Sincerely,

James Figone

Medford, OR

Sent from [Mail](#) for Windows 10

From: Howard Miller <hmiller@jeffnet.org>
Sent: Friday, October 28, 2016 9:59 AM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou Monumnet

Dear Commissioners:

My husband and I attended the public forum you convened last night in Medford to take testimony regarding the proposed expansion of the Cascade-Siskiyou Monument. Although we were disappointed that some members of the audience seemingly could not understand Commissioner Dyer's plea to be courteous and not applaud, we commend him on his even-handed approach to those speaking. My husband had also attended, but did not speak, at the meeting in Ashland planned by our two state senators earlier this month. That, also, was managed fairly and efficiently, with one speaker 'pro' and the next 'con'; more publicity beforehand brought a larger crowd than last night, but certainly a goodly number of residents participated in the meeting at the high school.

I would like to reiterate a few of the points we made and comment on issues I hope you will consider when perhaps modifying your decision to oppose expansion. With every action a balance must be weighed: who wins and who loses, by how much, and what are the consequences to all affected parties. I was particularly interested in those who own property within the boundary of the present or proposed monument. These are the people most affected and would, I assume, have the most to win or lose. By far the majority who spoke avored being inside the monument! Did that surprise you? These owners assured the Board and the audience that inclusion has not prevented them from full use of their land, and in some cases has proven quite beneficial. As I stated in my testimony, these landlords value their lifestyle and are happy to have this special place protected. Several comments were made about grazing: too many cows in a particular area do degrade the creek banks and grassland. Conscientious ranchers do not allow overgrazing, but work to improve the health of waterways and pastures, as the proprietor of Greensprings Inn pointed out. Some owners are ready to retire and take the money offered for grazing rights to start a new life.

Businesses that rely on outdoor activities certainly win with more recreational, hunting, and fishing opportunities in a larger monument. Chambers of Commerce know that businesses they represent are healthier with a large open space to promote to the tourists and locals who buy from those stores. I can not think of many shops or employers who would be hurt by an expansion.

I was also a little confused when hearing testimony bemoaning the "locking up" of land as a loss to the public. On the contrary! When land is owned by private entities, such as timber companies, most of the property is off-limits, of course. We do not trespass on private property. Public land within a monument is owned *by the people*—that is us. Just this past summer my husband and I spent several days in the Sequoia National Monument SW of the national park. After we had hiked 4 1/2 miles on a lovely trail to see some giant trees, we were surprised to find several families gathered in the grove who had driven to the nearby parking lot. Some said they were staying at campgrounds (within the boundary of the monument), but small children could not hike that far. I wish I had testified as to the availability of using this land, we are not being denied access.

As my husband pointed out, the area needs to be viewed as a whole: the watersheds, streams, flora and fauna—these geographical/biological boundaries do not conform to artificial lines on a map. Therefore, as the scientists explained, protecting the whole ecosystem will bring benefits to the whole community. Words of doom and gloom and takeovers do not move the discussion forward; I would rather the Board honestly assess the benefits and the potential drawbacks of an expansion to the county. Would the loss of \$7 per tree not cut be

offset by the money spent on hunting and fishing licenses (yes, these go into a different fund), equipment and other purchases, the advertising of this public space, and the incalculable joy of being in a unique, beautiful place?

Sincerely,
Deborah Miller (Mrs. Howard)

160m Normal Avenue
Ashland

From: debby@sterfab.com
Sent: Friday, October 28, 2016 10:00 AM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou Monument Extension NO Vote

Dear Commissioners:

Thank you for this opportunity to express my disapproval of this monument (monumental) land grab. The land belongs to the people of Oregon and if we give up control of O&C lands and adjacent lands we will never get them back. This is one more incremental step to takes rights away from the people.

I absolutely oppose this monument extension.

Sincerely,

Debby Sterling

Sams Valley, Oregon

Sent from my iPad

From: Amy Haptonstall <haptonstall.amy@gmail.com>
Sent: Friday, October 28, 2016 10:23 AM
To: BOC-CAO_ADMIN
Subject: Monument

After attending both hearing in regards to the Cascade-Siskiyou Monument expansion it is coming to great awareness that the public is not being properly informed of actions that the government plans to do with their public and private lands. No property owner was notified of the proposal. County officials not informed. Irrigation officials never informed. Some just found out by media in the last week. This is wrong. It is obvious that Senator Merkley and Senator Wyden, City of Ashland and Talent mayors, and some other elected officials are doing behind closed doors business with environmental groups such as Soda Mountain Wilderness, KSWild(Klamath-Siskiyou Wildlands), CascadiaWild, etc. No one can provide any proof of financial gain the current monument has brought or that the expansion with gain. But it is very apparent the loss of revenue from taxation of lands, grazing, multi-use recreation, and loss of O&C Lands.

Majority of the proponents who spoke live within the existing Monument. Protected in their wonderland many of us can not enter anymore. Let them have it. But let us keep our own lands. Most everyone who opposes the expansion uses it in some way, not just looks at the map. Hunting, fishing, rock hounding, firewood, work, ranching, birding, camping, recreating, off-roading (there are no OHV roads so this would end entirely), taking disabled vets for drives and hunting, and some live there. We do not want this monumental expansion. Many opponents oppose due to the loss they have experienced with the current monument.

There are 950 current acres that are ACEC (areas of critical environmental concern), why does it need to grow 66,000 acres? Focus on the 950, that minimal fraction of concern. The Antiquities Acts states to intake the minimal. How can it expand if it was founded based on the minimal?

Due to the behind closed doors dealing, we, the opposition, have little time to fight. So follow the laws. Quit stealing land. We were never informed of this happening and now are told that we have a couple months to prove it is not needed and not wanted when the environmental groups claim they have been working on it with our Senators for years. Why was this public issue not inclusive of both sides? Our senators are greatly failing at representing us, instead are representing special interest groups that are supported by people and organizations outside of Oregon.

We ask to ABOLISH the use of the Antiquities Act in Oregon. We have had enough. We have close to 3 MILLION acres on the line in Oregon right now. THREE MILLION acres. Larger than Delaware and Rhode Island combined, and by the stroke of a pen without proper public notice or input, we lose it as it is.

I am OPPOSED to the CSNM expansion, the Siskiyou Crest Monument, and Owyhee Canyonland monument, and any monument that does not have congressional consent and proper public input and notification here in Oregon or elsewhere.

Amy Haptonstall

5th of 6 generations Ashland, OR native, Siskiyou Crest rancher, Ashland farmer, hunter, birder, mushroom and berry gatherer

From: kathy stasny <kstas53@yahoo.com>
Sent: Friday, October 28, 2016 10:32 AM
To: BOC-CAO_ADMIN
Subject: I support expnasion of Cascade Sidkiyou Monument

Dear County Commissioners, I support the proposed evidence based expansion of the Cascade Siskiyou Monument. Just last week I was hiking with my 2 grandchildren and friends enjoying our assess to the trails and noticing the improvements made to trail markers. They were delighted with the tiny pacific tree frog they found and the various mosses, sedums, and towering climbing trees, as we climbed higher up the trail. Of course in the late spring time this monument is aglow with wild flowers, both common and endemic. This is a biological "Hot Spot" with 3 mountain ranges coming together and the land bridge that is formed going all the way to the coast with the Siskiyou mountains which run east /wast. This is so important for the biodiversity of plant and animal life in this unique environment. .Please Do NOT let your pre concieved bias egged on by a small number of Ranchers and 4 Wheelers, influence you to make decisions based on how we did things 50 to 100 years ago. Look at the science!!!! Sincerely, Kathy Stasny

Jackson County Board of Commissioner:
BoC PH Submission #108
Offered by: K. Stasny
Date: 10-28-16 Received by: AF

From: Rick Dyer
Sent: Friday, October 28, 2016 11:32 AM
To: BOC-CAO_ADMIN
Subject: FW: Monument Expansion

Rick Dyer
Jackson County Commissioner
541-774-6118
dyerrr@jacksoncounty.org

From: JIM MILLER DBA [mailto:MILLER-RANCH@msn.com]
Sent: Thursday, October 27, 2016 3:37 PM
To: Rick Dyer <DyerRR@jacksoncounty.org>
Subject: Monument Expansion

27, October 2016

Subject: Expansion of Monument

Dear Commissioner Dyer,

Thank you for speaking to me on the telephone today.

Things that affect those who are in the Monument and or being surrounded by it.

1st Procedure - No notification of this being done to us. Since the bill has been written up with both US Senator promoting it, it appears the deal is or has already been done with President Obama on board. But the people who live out in the expansion area or are surrounded by it have had no input or don't even know what will be done to them.

I own about 5,000 acres in 2 1860's ranches which are now being bordered by this new expansion. I also have a piece of BLM-ONC land (80 acres) which I lease inside 1 ranch (2,500 acres). I have grazing right for 4 head on this piece. If they take the grazing rights for the 4 head of cattle who will build and pay for the fence to be put around it? What about State water-rights where the water originates on BLM land? How about right-of-way roads where the annual charge for legal access went from \$70.00 per year to \$967 in 2016 and will continue to rise each year according to BLM.

This is a land grab. Well planned in a conspiracy plot. We have been in ownership of our ranches for 80 years. While my health has deteriorated, I have continued to operate it by leasing to a fellow cattleman.

I have 3 grandchildren in the military at this time who have ideas of continuing on with the ranches. They would be the 4th generation for our home and farm.

The Government has bought some additional property in the 1st Monument at low prices because the devaluation due to the restrictions put on by the Monument. If the ranches are not viable then you are forced

Jackson County Board of Commissioners:
BoC PH Submission #109
Offered by: ~~R. Dyer~~ J. Miller
Date: 10-28-16 Received by: AF

to sell. How about the County loss of property taxes. The Jackson County Tax Department has to make up for the loss. How about logging? If you have timber on your land (which I do) and the Government wants to take it from you, do they want to skin you out of your timber.

Many of these questions need to be discussed and agreements made in writing before the expansion is done and locked in and the land owner is cut out of everything before a discussion takes place.

Or as Nancy Polaski says (in regard to Obama Care) we will pass the Bill and then find out.

I for one want to find out what they have in mind for my family and ranch before we pass it and then see what they want to do to us. Conspiracy!

Questions to be asked and answered:

Why is the Monument expansion map not in the BLM data base.

Why does BLM have to print the Monument expansion map off of Mr. Merkley's website.

Why has the BLM Monument manager, BLM assistant Monument manager and the BLM Range manager been

told not to attend Mr. Merkley's meeting and the Board of Commissioner's meeting tonight.

Why is this Monument expansion not BLM sanctioned.

Why does BLM do nothing about the Monument expansion.

Why did Mr. Merkley and Mr. Wyden present a map that was drawn up by private persons and allude that it is

a BLM approved map, when it is not.

James C. Miller - Ranch and Land Owner

From: Rick Dyer
Sent: Friday, October 28, 2016 11:32 AM
To: BOC-CAO_ADMIN
Subject: FW: No on new Monument

Rick Dyer
Jackson County Commissioner
541-774-6118
dyerrr@jacksoncounty.org

From: Ryan Hukill [mailto:ryan@hukills.com]
Sent: Friday, October 28, 2016 7:38 AM
To: Rick Dyer <DyerRR@jacksoncounty.org>
Subject: No on new Monument

With so many of our roads being shut off as it is we cannot let more land be cut off. They argue that this will give more areas for people to hike and canoe exedra. Can't they do this already in the land that is here without confiscating more. I don't see any new roads being cut in any of the forests, all I see is roads that have been there for decades being gated off cutting the public off from even getting out in the forest that aren't even considered a monument. And all this is done by using our tax dollars to build these Gates to gate us out . Thank you for your time

From: BOC-CAO_ADMIN
Subject: FW: Monument

From: david@ddmontgomery.com [mailto:david@ddmontgomery.com]
Sent: Friday, October 28, 2016 8:26 AM
To: Doug Breidenthal <BreideDP@jacksoncounty.org>; Rick Dyer <DyerRR@jacksoncounty.org>
Subject: Monument

Jackson County Commissioners,

Thank you for having the meeting on the monument last night.

I was able to give a 2 min snapshot of my thoughts. Would like to give a few more thoughts here. Thank you.

-The legality of the monument is certainly in question. From the Antiquities Act to the O&C act. More versed people addressed that, but of concern to me.

-being a visual person, I thought about what 50,000 and 500,000 acres looks like. One acre is approximately one football field. 50,000 acres is 78 square miles. That is a visualization I can deal with. That is 3/4 mile each side of I-5 from the California border to Grants Pass. 500,000 acres is 7.5 miles each side of the freeway. That would include Mt. Ashland on one side and Grizzly Peak, and probably Hyatt and Howard Prairie in the Ashland area. That is a lot of land setting aside.

-there were comments about "climate change". Since climate is always changing, are they referring to the current dogma of being in a warmer and drier cycle. What about their thoughts if we go into a cold cycle, as some, including John Casey in his book "Dark Winter" speculate, with good data?

-UN Agenda 21 was mentioned. If not aware of that, this is right along that pathway. <https://www.youtube.com/watch?v=TzEEgtOFFIM>

-there were scientists who spoke (3). As we know all too well, from drug companies and others, that the outcome of a study depends on who is paying for it. And if they are studying it gratis, they usually have an agenda in the outcome.

-some of those who have property in, or adjacent to, the boundaries spoke in favor. Yup, they benefit from having that gov't land next to their property. Ups the land value, a lot. Then there was those in same position who spoke against it for its limitations on them.

-Some of the people speaking in favor are the same people who sue the BLM and USFS for any timber sales. In other words, they are in favor of hands off the lands in whatever means they can find.

Jackson County Board of Commissioners

BoC PH Submission # 111

Offered by: D. Montgomery

Date: 10-28-16 Received by: AF

-I have rafted with Momentum rafting, several times. The woman spoke of how it would impact them, in favor of the monument. I have a disconnect between the river and the monument. Well, she is against removal of the dams, as that would put them out of business.

-The majority of tourist business coming to the valley, in my thoughtful exam, is for the wines, Shakespeare, Crater lake, baseball and soccer tournaments and shopping. Not for a hike in the mountains, as there is Mt Shasta to the South and all along the I-5 corridor Redding to Roseburg. Bend area is a big draw for those with 3 Sisters and Bachelor Mtn.

-one woman stated that their could be logging, snowmobiling and all the other outdoor activities. I doubt that, othewise why would they make it a monument.

-this would do a major impact on Diamond Lake Resort, among others outside JacCo. They are a major site for the snowmobile community in the winter. What a great sport, drive around on the snow, which melts, leaving the land untouched. THE resort would likely go away, taking with it much of the summer activity at the lake.

-FIRST STEP. Several people mentioned that it wasn't big enough! So the person who said it was a first step, probably was privy to future plans. Cas Sunstein wrote a book "Nudge". Thesis of the book was to nudge people a little this way and nudge them a little that way, and pretty soon they were where you wanted them and they are wondering how they got there.

-locks up more natural resources, primarily logging, forever. Logging is certainly decreased already due to mismanagement, changes in vision in the agency, and lawsuits from those endorsing the monument.

-Leaving it as is allows all those infavor to continue to use the land, the butterflies will still fly, and those who have used the land, will be able to continue to use it.

thank you for reading my thoughts, hope you did. A little long, could have been longer, but needed to get these thoughts out.

Based on "testemony" last night, legality and monument just plain being wrong, I hope you continue to OBJECT TO THE MONUMENT. Please make your strong objection to the monument to the Senators

Thank you,

David Montgomery, Jacksonville, OR

From: BOC-CAO_ADMIN
Subject: FW: Monument Expansion

From: Greg Roberts [mailto:grob12541@yahoo.com]
Sent: Friday, October 28, 2016 9:59 AM
To: Doug Breidenthal <BreideDP@jacksoncounty.org>; Rick Dyer <DyerRR@jacksoncounty.org>; Colleen Roberts <RobertCL@jacksoncounty.org>
Subject: Monument Expansion

I was going to say something last night. But, being the head of a County committee I decided to just sit and listen to see what I could learn. And I learned quite a bit actually.

The lack of notification to all parties with a stake in the expansion is very troubling. Especially alarming was finding out the the Klamath Falls and Redding BLM offices had no idea of what was going on. It also became very clear that landowners were cherry picked as to who would find out about it. The cities of Ashland and Talent and their respective chambers of commerce knew more about this or that it was even happening than either the Klamath or Redding BLM offices ought to raise huge red flags here. It is also very disheartening to learn that the Klamath BLM office will close if the expansion happens with the loss of 60 full time permanent family wage jobs. So if that happened is the already overworked and under staffed Medford office supposed to pick up that slack? Really?

Here are some very key points to not lose sight of;

#1. Fire control. Despite what George Sexton claims, the opposite is true. Very true. As proof of that I offer what happened in 2014 during the Oregon Gulch Fire. The behavior of the fire changed hugely when it burned onto the monument lands and encountered the very dense undergrowth and unnaturally dense tree stands there. The fire immediately increased in severity and roared onto adjacent private lands with extreme fire behavior and rapid rate of spread. It was burning at the rate of 1,000 acres an hour. It sent a towering pyrocumulus cloud up over the fire which began to create it's own weather including gusty winds and lightning strikes. That fire behavior was created by the unnaturally dense growth of the monument. It is a fact, I was there. George Sexton is full of garbage. Any professional forester or anybody with any experience fighting fire will tell you that. And as proof that what he said about old growth is garbage, look at what happened at Crater Lake National Park last year in the National Creek Complex and this year in the Bybee Creek Fire. BOTH fires raged through old growth stands of the type that Sexton says will prevent devastating fires. Yeah maybe if everything is wet. But, if they are dried out as the result of drought or low water years, they actually burn with more intensity. Increasing the Monument reduces the tools fire fighers can use to fight major fires that are going to come. No engines, no bulldozers, and no retardant. Not the kind that is really effective. Phoschek. The red thick one. Can't use any of that to fight fire. They will be forced to wait and hope they get conditions that will let them burn out to stop the fire. In the meantime the damage done by unchecked fire can be incredible and will take literally decades for the land to recover from. And they talk about protecting water ways. Fires completely destroy watersheds and every living them in them....including in the water.

#2. Lack of access for "regular people". There was a comment made last night that I really want to put real importance to. One gentleman stated that he does not have the time to make a 20 mile hike. He can't take that much time off work. I know much is being made of the impact to those disabled and infirmed. But this point is as big or bigger. Do you realize how long it takes to do a 5 mile hike when you are carrying a full pack with all the supplies you will need for camping out? Have you ever done it to see how long it takes to go even one mile when you are carrying a pack of 80 pounds? Herein lies the problem. Not everybody has the time or the desire to make days long backpacking trips. One pro expansion supporter said there are all kinds of other places people can go to enjoy the experience they seek here. He is right. And it is true for those wanting the expansion of the monument too. They have all kinds of other places they can go if they wish to make miles long, days long backpacking trips. They keep saying it will be an economic benefit and tourists will flock to the area. They cite that as the carrot on the stick. There has never been a case of that actually happening. The reverse is true. There are plenty of examples of that. Because for every one person who might come for the reasons the pro crowd is stating, 30 or more will not because they cannot access anything.

#3. The coordinated effort to shut down the National Forest Lands in the proposed Crater Lake Wilderness. This too is also being pushed by Wyden and Merkely to our detriment. And, it is not coincidental in the least. It is a strategic move being made. The net result would be to lock up the federal lands from the California border to Highway 50. And from

Jackson County Board of Commissioners:

Highway 58 to Highway 20 it is already Wilderness there. So what they are trying to do is to make the high Cascades one giant wilderness area with severe restrictions on access and use. And for fire fighting this is going to be a nightmare. Go take a good look at the National Creek burn or drive through the Oregon Gulch burn area like I did last week. That is the future that awaits if the environmental extremists get their way. It is just a matter of time before it does.

I could go on making point after point here. I do not believe I have to however. I want to praise you all with the courage to do what is right and to stand up to this. I want to thank you for giving a real chance to the community to be heard. Not like what happened in Ashland last week. I heard one extremist say she thought you all had deaf ears because your minds had been made up. Well it was really easy to make your mind up when you see something as unlawful as this being literally pushed through without proper notification to all the parties involved, including BLM offices. And despite what was said last night the O&C law very much matters here. It was why they tried to cherry pick minor parts of it out to suit their arguments. It was also why they kept attacking what Bill Meyer of KMED said. It is the law and you do not HAVE to be a lawyer to understand it or to quote it.

Just looking at the three reasons I stated, I do not see how you could have done anything but oppose this farce. And, if the federal government insists on doing this, I suggest that Jackson County join forces with the other O&C counties and pursue legal action to block this from happening. There is no legal ground here for them to make do this. In reality, President Clinton did not have the legal standing to create the original monument.

Greg Roberts

From: BOC-CAO_ADMIN
Subject: FW: Testimony for the record on Cascade Siskiyou
Attachments: C-S comments (Autosaved).docx; Chad C-S.docx

From: John O'Keeffe [<mailto:johnhok@hotmail.com>]
Sent: Friday, October 28, 2016 9:26 AM
To: Colleen Roberts <RobertCL@jacksoncounty.org>
Cc: John O'Keeffe <johnhok@hotmail.com>; Jerome Rosa <jerome.rosa@orcattle.com>; Ethan Lane <elane@beef.org>; nathan jackson <njackson001@hotmail.com>
Subject: Testimony for the record on Cascade Siskiyou

Commisioner Roberts

Thank you for the opportunity to testify last night. There were more points I wanted to make, time did not allow, I thought the Commission's efforts to listen and be fair to all present were outstanding.

I would respectfully ask that the two attached items be placed into the record and that you would share them with the other commissioners.

Thanks

John O'Keeffe
President
Oregon Cattlemen's Association
541-947-2590 Home
541-219-1111 Cell

C-S comments

The process appears to be loaded in favor of pro-monument activity. The Talent City council debated the issue in early July. Jackson and Klamath County commission only recently learned of the effort. Pro-monument landowners have been in monument discussions, large acre timber land holders have just learned of the effort.

An observation, due to the disjointed nature of the map, this looks like an intermediate step, not a completed effort, we should stop this overreach now.

If we are to address these habitats at a landscape level we must develop working land models to do so. In much of the west that is already going on, if after 100 years we need to keep these lands in their present condition it would seem continued current management would be very appropriate. Again, this can be done at no cost to the taxpayer, creation of a monument will be very expensive and divert money away from needed programs.

Proponents say that it is science based, yet very little time is left to do an adequate review of the science. The science appears to be somewhat soft, a group of scientist determine that in the presence of climate change the monument should be bigger, no modeling has been done to show how the identified threats would cause a loss of biodiversity. A stronger case could be made that in an altered fire regime, and with the presence of exotic plants active management will be necessary to prevent loss of diversity in the area of the monument.

This effort assumes that federal land management will produce a good result, that is not always the case. In the Warner Wetlands the federal property is chocked with pepperweed, in the private holdings the native meadows are still intact.

An admittedly limited review of BLM grazing documents shows riparian areas to be trending positive, yet not meeting the temperature standard, in some cases these standards are unattainable under any condition, in the presence of a positive trend we need to consider the value of grazing in preventing catastrophic wildfire, one of the major threats to biodiversity in the area.

Federal management is very expensive to the taxpayers, working private lands take care of weeds and fuel levels at no cost to the taxpayer. Often with better result, see above.

The current monument has somewhat of a let burn policy, this is not alright, neighboring properties should not be subject to this risk, these landscapes are not large enough for a let burn policy, and it is absolutely not fair to the neighbors, or the regional economy to try to make these large enough for a let burn policy.

These lands have been grazed for 100 years plus, and are still in good condition, today we understand better than ever how to graze these native systems without negative results. Before anything is changed a study of the land currently managed as a monument should be done, I would expect fuel loads on this ground put the entire region at risk of large intense fire events.

Designations under the Antiquities Act are politically driven, not subject to NEPA, stakeholder input has not been balanced to this point. These designations effect some stakeholder's livelihoods greatly, while giving other stakeholders somewhere to go if they feel like it. This is not an appropriate vehicle to initiate large scale land management.

Comments from Chad Boyd Phd Range Eastern Oregon Agricultural Research Center

* The first thing that struck me about the document is that there doesn't seem to be any overall model of how this system functions. In other words, when I work with a group on management planning, step one is to get to a common understanding of the factors that influence changes in the ecosystem and the specific changes that they promote. For example, in a sagebrush system we might put together a state and transition model that spells out how plant communities change and the management and non-management factors that drive that change. Once that's done we can think about where we are at now, with respect to plant community composition across the landscape, where we want to be in the future, and the management factors that might move us in that direction. In the document I reviewed there is no such discussion. In fact, they pretty much skip right to notion of "bigger is better" without really developing a common understanding of how the ecosystem works to begin with. Also not discussed is any evidence that critical areas outside the current monument boundaries are not functioning as they should be.

* An assumption that seems pervasive throughout the document is the need for "protection". This is where a lack of an overall model for how this system works becomes problematic. As written, the argument for expansion seems to be that specific ongoing actions are causing or will cause undesirable changes that need to be mitigated by curtailing such actions. What those changes are and how those changes are tied to current or future management remains elusive. This is particularly apparent with statements such as those contained in the 5th bullet on page 5. Here the authors list a wide variety of land uses and then suggest that these uses will "create habitat fragmentation, disturb wildlife populations, threaten water quality, adversely affect native vegetation, and encourage the spread of non-native weeds". Again, where is the model that demonstrates the implied effects. Also, there were no references associated with this text.

* There is no discussion of potential active management actions (e.g. vegetation manipulations) that may need to be undertaken to maintain biodiversity over time. As above, there is an implicit assumption that placing a larger area under protective designation will somehow inherently overcome impediments to diversity. This seems naïve, especially when the climate future is uncertain.

* On the subject of climate, the authors imply that larger areas will be needed to create conditions in which the ecosystem can be resilient to a future climate. There are a couple of problems with that. First off they don't really describe or defend their vision of what constitutes a "resilient" ecosystem, which seems somewhat critical if the whole idea is to expand the current monument designation to increase said resiliency. Second, about the only thing we know for sure regarding climate is that it's going to change. Exactly what it changes to, when that happens, and the

ecological implications of such changes are fairly uncertain at this point. So, in a nutshell, the authors are suggesting monument expansion to promote an undefined resilient ecosystem in response to an uncertain climate future.

* Obviously this document was written in support of monument expansion and I get that. What really troubles me the most though is that there are just enough references interspersed to suggest that there is some level of scientific certainty that the proposed expansion will garner expected results. Completely missing from the document is any form of adaptive management in which results are tracked through time and management adjusted as needed, as dictated by the results. It bothers me because the only way to realistically manage complex ecosystem problems over time is to employ an adaptive management design. Science can help tell us where to start the process, but after that, we have to use active feedback from the management process to adjust course over time.

* The one part of the document that I thought made a lot of sense was the notion of management of entire watersheds. I think we know enough about the interconnected nature of watersheds to suggest that only managing a portion of a watershed for biodiversity is not likely to produce positive results over time.

From: BOC-CAO_ADMIN
Subject: FW: Support Monument Expansion

From: Alison Kling [mailto:aliking@aol.com]
Sent: Friday, October 28, 2016 2:15 PM
To: BOC-CAO_ADMIN <BoC-CAO_Admin@jacksoncounty.org>
Subject: Support Monument Expansion

Dear County Commissioners:

Thank you for holding the public hearing last night, Thursday, October 27th, on the Cascade-Siskiyou National Monument.

I am submitting the remarks I made publicly last night for the record.

Cordially,
Alison Kling

October 27, 2016

We bought property on the Greensprings almost 40 years ago. We raised our family hiking and exploring all over that area from the valley creeks to the mountain peaks. We're now finally building a house of our own on that land within the monument boundaries. It's our house, our land, and we're doing what we want – the monument designation of surrounding federal lands does not impact our private land use.

We've continued to hike and explore within the existing monument, and in areas of the proposed expanded monument – which are pretty spectacular. Just as we will put a roof on our house to protect and secure the vulnerable and valuable contents of our home, so too, should a metaphorical roof be put on the monument, expanding wide enough to adequately protect and secure the treasures and unique characteristics within.

Please reconsider your position and **support the expansion of the monument.**

Thank you.

Alison Kling

15170 Hwy 66
Ashland, OR 97520
541-482-8703
aliking@aol.com

Jackson County Board of Commissioner:
BoC PH Submission # 114
Offered by: A. Kling
Date: 10-28-16 Received by: AF

From: Stephanie Danyi <sdanyi@gmail.com>
Sent: Friday, October 28, 2016 3:22 PM
To: BOC-CAO_ADMIN
Subject: CSNM expansion testimony

Dear Jackson County Board of Commissioners,

My name is Stephanie Danyi & I'm a resident of Central Point. I love living in Southern Oregon because of the biodiversity, opportunities for outdoor recreation & our natural resources.

I attended the public hearings regarding the Cascade Siskiyou National Monument (CSNM) Expansion in Ashland, OR on Friday 10/14/2016 and in Medford, OR on Thursday 10/27/2016. I had signed up to speak, but needed to leave early as I was sick and needed to take care of my health.

At the public hearings, I listened to and **heard** the testimony on both sides. It sounds like we share the same values: public access to lands, protection of biodiversity & continued economic opportunities. I urge you to consider how to best honor our community's values based on evidence & research, over person emotion or financial gain. When doing so, please prioritize the long term vision vs short term gain. Please consider the impact of this decision as it relates to our children's future.

I am passionate about science & earned my Masters of Science degree at SOU. I have worked for a variety of land management agencies, including the federal government, as a botanist & in habitat restoration. I have performed botanical research in Colorado, Hawaii, Indiana, California, and Oregon. Southern Oregon, and in particular the lands in and around the Cascade Siskiyou National Monument, has some of the highest biodiversity, and endemic species than anywhere else in the United State. Many species in this area are threatened and only occur within proposed monument lands, such as the Vesper Sparrow, Franklin's Bumble Bee, and the Mariposa Lily. I would like to see more land protected to ensure the survival of these species.

I have also worked for the outdoor tourism industry. I enjoy outdoor recreation and I believe that public access to these lands is important. This may mean hiking in to enjoy places, where once you could drive to. That is okay. I believe a balance can and should be found between motorized and non-motorized recreation. People come to Southern Oregon to enjoy the natural beauty and the plentiful recreation activities. Hiking the PCT has become increasingly popular and more tourism dollars are pouring into the Southern part of the state because of the ease of access to these wild places. Development of our towns, to augment the natural beauty, will only continue to bring in tourism dollars. Please take a complete look at the economic impacts of the monument. Yes, timber brings in money, but it also comes at a cost.

There was an argument made that the outdoor tourist industry is seasonal and doesn't provide full time jobs, whereas land management would. Having worked in both industries, I can attest that both are part time work and often workers are hired without benefits. This is something to be debated and discussed at another time and does not provide a solid basis for choosing one way or another on the monument expansion.

I could go on, but I will stop here to simply say:

I support science based expansion of the Cascade Siskiyou National Monument.

Thank you for taking the time to listen to us and hear from our community.

Stephanie
Lynn
Danyi

3366 Snowy Butte Ln
Central Point, OR 97502

Personal cell: 317-460-5351

Jackson County Board of Commissioners

BoC PH Submission #115

Offered by: S. Danyi

Date: 10-28-16 Received by: AF

From: David Levine <david.levine@comcast.net>
Sent: Friday, October 28, 2016 3:46 PM
To: BOC-CAO_ADMIN
Subject: WE WANT A DEMOCRATIC PROCESS NOT A PRESIDENTIAL PROCLAMATION!

Dear Board Chair Dyer

Please accept this email in reference to the proposed additions to the Cascade - Siskiyou Monument. I am a member of OHA and also Backcountry Hunters and Anglers and am disappointed in the decision to increase the Monument, add further restrictions to public use and access where it is neither necessary nor well thought out just as frustrating is that these large-scale land use changes are not following a real democratic process. Instead this appears to be happening through executive fiat, at the urging of single party senators who have not bothered to include other interests. This needs to be a thoughtful and deliberate process taking notice of all persons and interests affected, and working towards a solution that encompasses all interests, diverse and even adverse.

This inclusionary process has worked and been especially effective in the West and in Oregon, itself. Just look to the Greater Sage Grouse Plan which was a collaborative effort to preserve habitat for Sage Grouse, yet involved multiple users and interests from ranchers, farmers, hunters, oil and gas lessors and environmentalists to work together to preserve access, use and opportunity. Perhaps a better example is the Oregon Wolf Plan which allowed the reintroduction of wolves to Oregon (although recent environmentalist lawsuits against delisting, a discussed and agreed upon part of the plan, is disappointing). The process worked and should be applied here. All stakeholders have an interest and frankly, I am frustrated as a hunter and a conservationist that my input is being disregarded.

Why is this being held one hearing on short notice? Where is the science that the "scientists" feel supports a need to expand? Whose opinions are being relied upon to support increasing the National Monument size and are they objective? What "mounting pressures" are coming from adjacent public lands that require Monument designation? These are all legitimate questions that deserve answers and a fair opportunity to be discussed. The current framework doesn't appear to allow that. Everything feels rushed. Finally How can anyone claim support of local officials, and the public, prior to conducting any meetings or outreach?

Please halt this process and let all stakeholder be heard. Thank you for your consideration.

David Levine

From: P N <pn1941@yahoo.com>
Sent: Saturday, October 29, 2016 10:08 AM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou Monument

If the additional monument is established you will be effectively keeping Americans with Disabilities and our older Americans from enjoying the wilderness as they cannot access it without using a motor vehicle.

From: Jim Robbins <jrobb616@gmail.com>
Sent: Saturday, October 29, 2016 11:15 AM
To: BOC-CAO_ADMIN
Subject: Expansion of the Monument

I am a concerned citizen and I am against the expansion of the Monument because it will restrict access to maintain the land and control or fight fires and restrict Recreation. The Monument is large enough. I also object because of the sneaky and lawless way that this attempt has tried to be pushed through without public input and that the areas effected the most have not been given notice of these actions. Everyone involved should go about there desires no matter what side of the issue they stand in a lawful manner. We need to stop this action now.

--

Thank You,

Jim Robbins - (jrobb616@gmail.com)

From: tiffany@tifstradingpost.com
Sent: Sunday, October 30, 2016 3:25 PM
To: BOC-CAO_ADMIN
Subject: Comments on Monument Expansion

Cascade-Siskiyou Monument Comments

As stated on the BLM website, the O&C Lands Act requires the BLM-managed lands be used *for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities...* It also requires that 50 percent of the revenue generated from management of the lands be returned to the 18 counties that contained revested lands.

The proposed monument expansion takes none of this into account. I've been told that there is no cost to the expansion & that it won't affect people's lives. Aside from completely ignoring the intent of O&C Act, as well as several other laws, expansion would certainly remove revenue generating opportunities for Jackson and other counties. It seems to me that IS a cost & would impact ALL the people's lives in the county. It's irritating to watch productive, revenue-generating opportunities being regulated out of existence time after time while the government is reaching into my back pocket to pay for poorly negotiated government contracts & other money-wasting projects. We have to PRODUCE things to pay for ourselves ...my back pocket is not the magic money fairy!

I'm also getting tired of finding out about these actions when they are done or nearly done while being told not to worry...I have a "stake holder" representing me throughout the process. Who are these "stake holders" and how do they know how to represent me if they never ask? I don't know about you, but I don't feel very represented.

In addition, I understand that once this area becomes a "Monument" it is a World Heritage Site and control reverts to UNESCO and the United Nations. Who thinks this is a good idea? Why are we giving away chunks of our country?

As county commissioners, it is your obligation to make decisions based on what is best for the people of your county. It's your constitutional duty to stand against actions that adversely affect your constituents. I am hopeful that you will take ALL comments into consideration & do what's best for the people you represent. And, since you asked...I am against the proposed expansion of the Cascade-Siskiyou Monument.

Thank you for your time,

Tiffany Ryan
181 Upper Applegate Rd #16
Jacksonville, OR 97530

From: Amy Haptonstall <haptonstall.amy@gmail.com>
Sent: Sunday, October 30, 2016 5:01 PM
To: BOC-CAO_ADMIN
Subject: Monument Expansion

The law on closing of roads on federal land was changed in 1976 solely to allow government agencies to close roads. However, any roads that were in place at that time were not allowed to be closed. This has been challenged in court several times and in every case the government has lost, the extent, in one Utah case, the government was required to open an old wagon road through a wilderness area.

The expansion of the Cascade-Siskiyou Monument has problems in several areas. First, current law requires that O&C lands have timber harvest to supply funds to the county for the operation of the county and jobs for the people of the county. This also reduces fuels which reduces fire hazards and gives the agency money to manage the land. Having fought forest fires for many years, I know that the roads are very important for both acting as a fire break and supplying access for equipment. When loggers are working in the area they are the ones who supplied us(FS) for initial attack, if no harvest is taking place their equipment will not be available. This combined with reduced roads and build-up of fuels will mean that this will eventually burn, at this point the timber will be lost and with it the monies for management, the jobs, and the pristine bio-diversity. That has occurred through many years of management.

The illegal closing of roads has already happened in the current CSNM. Another good example of an illegal road closure is the roads in the Ashland Watershed. This area used to be a great place for people to take a Sunday drive and gave them a chance to see a very nice part of our public lands. For people who are not able to walk great distances this was a valuable public resource. The Forest Service has had this area locked up illegally for many years. Closing of roads was one of many jobs I had carried while working for the Forest Service in this area, we followed the law that is no longer being followed by FS and other agencies. In my opinion, private people should not be required to take the government to court to get this area re-opened.

Our elected representatives should make sure that these agencies are required to follow the law. Our elected representatives seem to be more interested in catering to a few special interest contributors than to look out for the people who elected them.

Joe Delsman

30 years service

Ashland Ranger Station, Rogue River National Forest, retired

Jackson County Board of Commissioners

BoC PH Submission #120

Offered by: A. Haptonstall

Date: 10-30-16 Received by: AF

From: Gary & Peggy Shontz <gpshontz@gmail.com>
Sent: Sunday, October 30, 2016 5:38 PM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou Monument Expansion

I am oposed to the expansion of the Cascade-Siskiyou Monument. Enough is enough.

Thanks,
Gary Shontz

From: Jack Williams <fishnspringers@gmail.com>
Sent: Sunday, October 30, 2016 6:32 PM
To: BOC-CAO_ADMIN
Subject: Cascade-Siskiyou National Monument

We would like to submit these comments to the Jackson County Commissioners relative to the proposed expansion of the Cascade-Siskiyou National Monument. We strongly support monument expansion. We believe that the existing monument is an excellent amenity for country residents. We often hike and fish in the Cascade-Siskiyou National Monument. Expansion of the monument, to the northwest in Jackson County would improve hiking opportunity for local residents. We believe that the tourism and scenic benefits of monument expansion will only increase in the future. Monument status maintains strong public access while protecting the natural features that attract us to this area.

Sincerely,

Jack and Cindy Williams
4393 Pioneer Road
Medford, OR 97501

From: Eric Patterson <Epatterson@lithia.com>
Sent: Monday, October 31, 2016 9:21 AM
To: BOC-CAO_ADMIN
Subject: Snowmobiling

To whom it may concern –

I'm a long time resident of Jackson County and enjoy multiple outdoor activities that Southern Oregon has to offer.

My family and I belong to Rogue Snowmobilers for 20 years plus and strongly oppose the expansion of the Cascade Siskiyou Monument.

Sincerely

Eric Patterson

Corporate Facility Manager

541-774-7619 Office

541-301-3146 Cell

epatterson@lithia.com

Jackson County Board of Commissioners:

BoC PH Submission # 123

Offered by: E. Patterson

Date: 10-31-16 Received by: AE

From: Dwight Pech <dwpech@gmail.com>
Sent: Monday, October 31, 2016 10:01 AM
To: BOC-CAO_ADMIN
Subject: Monument

Please DO NOT support increasing the size of the monument, as we believe there is already too much government regulation! Thank You, Dwight Pech VP---Lake Creek Historical Society
VP---Lake Creek Grange

From: Robin Godden <robin@centralequip.net>
Sent: Monday, October 31, 2016 10:09 AM
To: BOC-CAO_ADMIN
Subject: RE: Cascade-Siskiyou Monument proposal

RE: Cascade-Siskiyou Monument Proposal

We at Central Equipment Co., Inc. have 18 employees whom all strongly disagree with establishing yet another monument in **OUR** states recreational areas!!!!

- **HOW** can this be of any benefit to our community?
- What use is something that is completely ***non-usable*** to a community? All the public land belongs to **EVERYONE**, so **NO** vote other than on a local level. By the people, for the people whom it will affect!
- How can someone that has **NEVER** even visited these areas make a decision to close part of **OUR** state?!!!
- We also enjoy riding snowmobiles in the proposed areas, as well as over 150 other families belonging to the local Rogue Snowmobilers Club. Once the snow has melted...you cannot even tell we have ridden in those areas.
- We feel that these decisions should **ONLY** be made at a **LOCAL** level....**PERIOD!**

Thank you for your consideration in this matter,
All the Employees at Central Equipment Co., Inc.

**CENTRAL
EQUIPMENT**

Constructing & Cultivating Relationships For Over 30 Years!

3008 Biddle Road
Medford, OR 97504
P: 541-779-7443
F: 541-779-5518
T: 888-779-7444

From: BOC-CAO_ADMIN
Subject: FW: PRESS RELEASE: LaMalfa Expresses Opposition to Cascade-Siskiyou National Monument Expansion Proposal

-----Original Message-----

From: Ryan, Erin Marie <ErinMarie.Ryan@mail.house.gov>
To: gemmaster7 <gemmaster7@aol.com>
Sent: Fri, Oct 28, 2016 7:41 pm
Subject: FYI: PRESS RELEASE: LaMalfa Expresses Opposition to Cascade-Siskiyou National Monument Expansion Proposal



For Immediate Release
October 28, 2016

CONTACT: Kevin Eastman
Phone: (202) 308-8529

LaMalfa Expresses Opposition to Cascade-Siskiyou National Monument Expansion Proposal

Washington, DC – Rep. Doug LaMalfa (R-CA) today released the following statement opposing proposals to expand the Cascade-Siskiyou National Monument:

“Any expansion of the Cascade-Siskiyou National Monument would not only negatively impact private property rights, public access and forest management, but would occur over the objections of local residents.

“Time and time again, this administration has ignored the views of residents to impose new federal restrictions on public and private land through misuse of the Antiquities Act. Monument designations invariably restrict the public’s right to access public lands, damage property owners’ ability to access and use their land, and hurt rural economies.

“That’s why my colleagues and I passed legislation on the House floor to defund monument designations in Siskiyou and Modoc Counties and protect the rights of those who live and work in the area.

“It’s time that this administration listen to those who are actually impacted by these designations, rather than deciding that Washington knows best.”

The Interior Appropriations bill for the 2017 fiscal year, HR 5538, contains language specifically defunding any monument designation in Siskiyou and Modoc Counties (Section 453), both of which have passed resolutions opposing unilateral Presidential designations. The bill was passed by the House on a 231 – 196 vote (Roll no. 477) and is now being considered in the Senate.

LaMalfa also cosponsored HR 3389, the National Monument Designation Transparency Act, with five members of the California delegation to reform the Antiquities Act by requiring Congressional approval before designations become permanent, requiring economic analysis of proposed designations, and limiting the size of designations.

Congressman Doug LaMalfa is a lifelong farmer representing California’s First Congressional District, including Butte, Glenn, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Sierra, Siskiyou and Tehama Counties.

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From: Colleen Roberts
Sent: Monday, October 31, 2016 12:37 PM
To: BOC-CAO_ADMIN
Subject: FW: Proposed Cascade Siskiyou Monument Expansion - Comments
Attachments: Chris Cadwell Comments on Proposed Monument Expansion..docx

For the record....

Colleen Roberts
Jackson County Commissioner
541-774-6117
robertcl@jacksoncounty.org

From: Chris Cadwell [mailto:ccadwellconsulting@gmail.com]
Sent: Monday, October 31, 2016 12:14 PM
To: Colleen Roberts <RobertCL@jacksoncounty.org>; 'Kelley Minty Morris' <kmorris@klamathcounty.org>
Cc: ccadwellconsulting@gmail.com
Subject: Proposed Cascade Siskiyou Monument Expansion - Comments

Commissioners Roberts and Morris

Please consider the attached comments as you prepare your summary of your hearings on the Cascade Siskiyou Nation Monument Proposed Expansion.

I have sent these comments to Senator Merkley as well.

Thank You – Chris Cadwell

To: Senator Merkley
Jackson and Klamath County Board of Commissioners

10/31/2016

Topic: Proposed Cascade Siskiyou Monument Expansion - Comments

I am a retired BLM employee that spent 33+ years working in western Oregon. During my career I worked as a forester in Medford, and Roseburg which gave me a sound understanding of these particular forests in southwest Oregon. I have had a role as senior analyst in the development of every major forest management plan and associated policies since before the Northwest Forest Plan. In my retirement, as a consultant, I have kept current on issues related to the western BLM forest and have read both the draft and final BLM Resource Management Plans (RMPs) and associated Environmental Impact Statements (EISs). The comments below are my own.

I listened to the testimony via the web broadcast of the Jackson county hearing. I live outside of Springfield Oregon so travel to the hearings on such short notice was not feasible. I only add comments that I do not believe were covered by others. I do not support the expansion proposal.

One of the scientists gave a very carefully crafted statement that the BLM's "2008" RMP did not consider climate change. It inferred that BLM has not ever considered this issue. The 2008 EIS acknowledged that at the time the science was not conclusive about the effect a change in climate would have on the forest. There was conflicting science particularly on precipitation changes and it would be too speculative to address in the EIS given a reasonably foreseeable timeframe standard. The recent 2016 EIS and RMP did a far more in depth consideration on climate change and predictions on wildfire effects on the BLM lands.

Both of the 2008 and 2016 BLM EISs were done in conjunction with the US Fish and Wildlife Service. Neither of the EISs identified issues that would warrant or recommend expansion of the monument as a solution. The Federal Agencies have collectively been studying these specific lands to develop a management strategy since 2005. Those efforts were done with full public disclosure, as NEPA requires, publishing the science that was considered, implications of alternative management approaches, and provided multiple opportunities for the public to provide input. In contrast the very recent push to expand the monument has no comparable public disclosure of the implications of expanding the monument.

Both of the EISs concluded that driest portions of southwest Oregon, which covers the proposed monument area, have forest conditions that are over stocked and are in need of forest resiliency treatments. As BLM found harvest on a sustainable cycle with uneven aged management can improve fire resiliency today and maintain those conditions in the future. Harvest of some commercial trees is vital to permit openings for the next generation of forest to develop and make the non-commercial fuels treatments economically viable. Access is vital to be able to conduct these treatments over time. Sustained Yield Forestry as prescribed for these O&C lands can improve and sustain multiple forest values which Oregonians care about.

C Cadwell Consulting

Chris Cadwell · Forester / Analyst

Springfield Oregon
(541) 726-0882
ccadwellconsulting@gmail.com



Over 33 Years Experience · Federal Forests Plans and Policies

4033 Fieldbrook Avenue
Medford, OR 97504
October 28, 2016

RECEIVED

Board of Commissioners
10 South Oakdale, Room 214
Medford, OR 97501

NOV 01 2016
Jackson County
Board of Commissioners

Dear Commissioners:

I am writing to state my strong objection to the proposed expansion of the Cascade-Siskiyou National Monument.

This is just a continuation of political rather scientific and professional management of the public lands of the West. The designations of both the Soda Mountain Wilderness area and the existing Cascade-Siskiyou National Monument were both results of political maneuvering and "back-door politics" using the Antiquities Act, rather than existence of values and criteria that fully meet legal requirements. Both areas have considerable "impacts of man" such as roads, rights-of-way and even a man-made lake. If the legal requirements and professional resource evaluations had been properly applied, neither area should have been designated. Such designations should have been reviewed and addressed by the U.S. Congress! Nonetheless both areas having been designated and established by past Presidential executive power actions.

It was recognized in the past by the Medford Bureau of Land Management staff and officials that there exists an area within the BLM Ashland Field Office management area, acreage possessing unique flora and ecological values. The BLM thus had planned to designate an Area of Critical Environmental Concern from which to develop and implement a management plan. Local interest groups weren't satisfied with this designation and wanted a much larger land area with more restrictive and a more permanent designation. As a result of working with certain politicians and the President using the Antiquities Act, the 95 square mile Cascade-Siskiyou National Monument was established. The existing monument certainly contains more than adequate land area to protect and manage the subject flora and ecological values!

Now these special interest groups want to expand the monument by an additional 104 square miles to a whopping 190 square miles, a size which is definitely not required! Such expansion would permanently restrict an additional large area from use of, and access to important public natural resource values. Such access would further prohibit timber thinning and harvesting both of which would reduce extremely high wildland fire danger, in addition to providing much needed revenues to the counties. Southwestern Oregon annually experiences roughly 300 wildland fires each year. Limited access in the proposed area would greatly reduce federal and state wildland fire suppression opportunities and actions, not to mention the sky rocketing wildland fire suppression

Jackson County Board of Commissioners

BoC PH Submission # 128

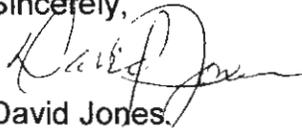
Offered by: D. Jones

Date: 11-1-16 Received by: [Signature]

cost, along with devastation of natural resources, private properties and their improvements. Such wildland fires would put unhealthy smoke and particulates in the air affecting people with respiratory conditions. Certainly tourists would not be drawn to ugly devastated landscapes. Water quality would be adversely affected for clean water and fisheries. Access would severely be restricted or eliminated for most of the public land users, especially elderly people and citizens with disabilities, who rely on vehicular access to enjoy our natural resources. Even healthy young recreational users such as mountain bikers and hunters would be prevented from enjoying our public lands! This is unacceptable for the future of our public lands and their resource values! After all, the public lands belong to everyone to use and enjoy, not just a few selfish members of special interest groups.

In summary, I strongly oppose the proposed further expansion of the Cascade-Siskiyou National Monument boundaries for the above reasons plus further misuse and abuse of the Antiquities Act and executive powers to set aside public lands which do not meet the criteria and intent of the Antiquities Act.

Sincerely,

A handwritten signature in cursive script, appearing to read "David Jones", written in black ink.

David Jones.

The Principal Rare Earth Elements Deposits of the United States—A Summary of Domestic Deposits and a Global Perspective



Scientific Investigations Report 2010–5220

Cover photo: Powders of six rare earth elements oxides. Photograph by Peggy Greb, Agricultural Research Center of United States Department of Agriculture.

The Principal Rare Earth Elements Deposits of the United States—A Summary of Domestic Deposits and a Global Perspective

By Keith R. Long, Bradley S. Van Gosen, Nora K. Foley, and Daniel Cordier

Scientific Investigations Report 2010–5220

**U.S. Department of the Interior
U.S. Geological Survey**

U.S. Department of the Interior

KEN SALAZAR, Secretary

U.S. Geological Survey

Marcia K. McNutt, Director

U.S. Geological Survey, Reston, Virginia: 2010

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Contents

Introduction and Background.....	1
The Rare Earth Elements	3
Basic Geology of Rare Earth Elements	3
Mineralogy of United States Deposits	7
References Cited.....	14
Current Sources and Domestic Reserves	15
Concentration of Supply	15
Risk of Supply Interruption.....	17
Domestic and World Resources.....	18
Developing Rare Earth Elements Resources	19
Developing a Rare Earth Elements Mine	21
Summary.....	23
References Cited.....	24
The Principal Rare Earth Elements Deposits of the United States	27
Glossary of Terms	27
References Cited.....	27
Alaska— Bokan Mountain.....	28
Salmon Bay.....	35
California— Mountain Pass Deposit and Mine.....	36
Music Valley Area.....	40
Colorado— Iron Hill Carbonatite Complex.....	41
Wet Mountains Area	45
Idaho— Diamond Creek Area	49
Hall Mountain	51
Lemhi Pass district, Idaho–Montana.....	53
Illinois— Hicks Dome	56
Missouri— Pea Ridge Iron Deposit and Mine.....	57
Nebraska— Elk Creek Carbonatite	63
New Mexico— Capitan Mountains.....	65
El Porvenir District.....	66
Gallinas Mountains.....	67
Gold Hill Area and White Signal District.....	69
Laughlin Peak Area.....	70
Lemitar and Chupadera Mountains	71
Petaca District.....	72
Red Hills Area	73
Wind Mountain, Cornudas Mountains	74
New York— Mineville Iron District	75
Wyoming— Bear Lodge Mountains.....	78
Phosphorite Deposits in the Southeastern United States	80
Placer Rare Earth Elements Deposits	84
Idaho—Placer Deposits	86
North and South Carolina—Placer Deposits	90
Florida and Georgia—Beach Placer Deposits	93

Figures

Index map of the principal rare earth elements districts in the United States	2
The Rare Earth Elements	
1. Periodic table of the elements.....	4
2. Rare earth elements mineral-processing flow sheet for the Mountain Pass mine, California	8
Current Sources and Domestic Reserves	
3. Criticality matrix for selected imported metals.....	17
Alaska	
4. Simplified geologic map of Bokan Mountain, Alaska	29
5. Map of major vein and dike systems associated with Bokan Mountain, Alaska	32
California	
6. Google Earth image of Mountain Pass mining district, California	37
7. Photograph of northwest-facing view of Mountain Pass district, California	38
8. Photograph of dolomitic carbonatite of Sulphide Queen orebody, California.....	38
Colorado	
9. Photograph of northwest-facing view of Iron Hill, Colorado.....	42
10. Photograph of outcrop of pyroxenite unit in Iron Hill carbonatite complex, Colorado ..	44
11. Photograph of Sewell Ranch thorium vein, Wet Mountains, Colorado.....	46
12. Photograph of west-facing view of McClure Mountain, Colorado	47
Idaho	
13. Photograph of view to west of Lemhi Pass, Idaho-Montana boundary	54
14. Photograph of outcrop of Wonder vein, Lemhi Pass district, Idaho-Montana	54
Missouri	
15. Generalized geologic map of 2275 level of Pea Ridge iron mine, Missouri	59
New York	
16. Map of Mineville district, New York	76
Phosphorite Deposits in the Southeastern United States	
17. Map of locations of phosphogenic provinces of the southeastern United States	81
Placer Rare Earth Elements Deposits	
18. Photograph of heavy-mineral layers in quartz beach sand, Chennai, India.....	84
Idaho—Placer Deposits	
19. Generalized map of known monazite placer districts, Idaho	87
20. Photograph of Porter Brothers dredge, Bear Valley, Idaho	88
North and South Carolina—Placer Deposits	
21. Map of monazite placers of North and South Carolina.....	91
Florida-Georgia—Beach Placer Deposits	
22. Map of locations of Recent and Pleistocene sands, Georgia.....	94
23. Map of sample and mine locations of monazite, Georgia and Florida.....	95

Tables

The Rare Earth Elements

1. Estimates of the crustal abundances of rare earth elements5
2. Classification of rare earth elements–bearing mineral deposits6
3. Rare earth elements, thorium, and uranium content of minerals.....9
4. Dominant rare earth elements–bearing minerals in the United States.....11
5. Distribution of rare earth elements in selected rare earth elements deposits12
6. Usage of rare earth elements.....13
7. Production of rare earth elements mines in 2009.....13

Current Sources and Domestic Reserves

8. World production and reserves of rare earth elements minerals in 2009.....15
9. Measures of concentration for selected world metal mining industries.....16
10. Domestic reserves and resources of rare earth elements.....19
11. Reserves and resources of rare earth elements outside of the United States.....20
12. Time required to obtain permits, construct, and commission recent metal mines in the United States22
13. Time required to develop selected mines outside of the United States.....24

Alaska—Bokan Mountain

14. Uranium production from the Ross-Adams mine, Alaska30
15. Dimensions of main orebodies at Bokan Mountain, Alaska.....31
16. Resource estimates for main prospects on Bokan Mountain, Alaska, and surrounding property33

Colorado—Iron Hill

17. Median concentrations of rare earth elements in carbonatite stock and pyroxenite unit at Iron Hill, Colorado43

Idaho—Hall Mountain, Last Chance

18. Concentrations of rare earth elements in vein samples from Hall Mountain, Idaho51
19. Concentrations of rare earth elements in samples from Last Chance vein, Idaho-Montana55

Missouri—Pea Ridge

20. Rare earth elements and thorium concentrations in four breccia pipes at Pea Ridge, Missouri60

China—Two Chinese deposits

21. Rare earth elements oxide concentrations of two Chinese deposits compared with major U.S. deposits.....61

Wyoming—Bear Lodge Mountains

22. Typical rare earth elements distribution in Bear Lodge Mountains deposit, Wyoming.....79

Abbreviations Used in This Report

cm	centimeter
ft	foot
ft ³	cubic foot
g/cm ³	gram per cubic centimeter
in.	inch
km	kilometer
km ²	square kilometer
kt	thousand metric tons
lb	pound
m	meter
mi	mile
mi ²	square mile
mm	millimeter
ppm	parts per million
t	metric ton
HREE	heavy rare earth elements
LREE	light rare earth elements
REE	rare earth elements
U.S.	United States
USGS	United States Geological Survey
REO	rare earth oxide
TREO	total rare earth oxide
WGS84	World Geodetic System of 1984 (the reference coordinate system used by global positioning systems)

The Principal Rare Earth Element Deposits of the United States—A Summary of Domestic Deposits and a Global Perspective

By Keith R. Long,¹ Bradley S. Van Gosen,² Nora K. Foley,³ and Daniel Cordier³

Introduction and Background

The rare earth elements (REE) are fifteen elements with atomic numbers 57 through 71, from lanthanum to lutetium (“lanthanides”), plus yttrium (39), which is chemically similar to the lanthanide elements and thus typically included with the rare earth elements. Although industrial demand for these elements is relatively small in tonnage terms, they are essential for a diverse and expanding array of high-technology applications. REE-containing magnets, metal alloys for batteries and light-weight structures, and phosphors are essential for many current and emerging alternative energy technologies, such as electric vehicles, energy-efficient lighting, and wind power. REE are also critical for a number of key defense systems and other advanced materials.

Section 843 of the National Defense Authorization Act for Fiscal Year 2010, Public Law 111-84, directs the Comptroller General to complete a report on REE materials in the defense supply chain. The Office of Industrial Policy, in collaboration with other U.S. Government agencies, has initiated (in addition to this report) a detailed study of REE. This latter study will assess the Department of Defense’s use of REE, as well as the status and security of domestic and global supply chains. That study will also address vulnerabilities in the supply chain and recommend ways to mitigate any potential risks of supply disruption. To help conduct this study, the Office of Industrial Policy asked the U.S. Geological Survey (USGS) to report on domestic REE reserves and resources in a global context. To this end, the enclosed report is the initial USGS contribution to assessing and summarizing the domestic REE resources in a global perspective.

In 2009, the Mineral Resources Program of the USGS organized a new project under the title Minerals at Risk and For Emerging Technologies in order to evaluate mineral resource and supply issues of rare metals that are of increasing

importance to the national economy. Leaders and members of this project, with the assistance of the USGS National Minerals Information Center, prepared the enclosed USGS report on domestic REE resources. The USGS Mineral Resources Program has investigated domestic and selected foreign REE resources for many decades, and this report summarizes what has been learned from this research. The USGS National Minerals Information Center (formerly Minerals Information Team) has monitored global production, trade, and resources for an equally long period and is the principal source of statistics used in this report.

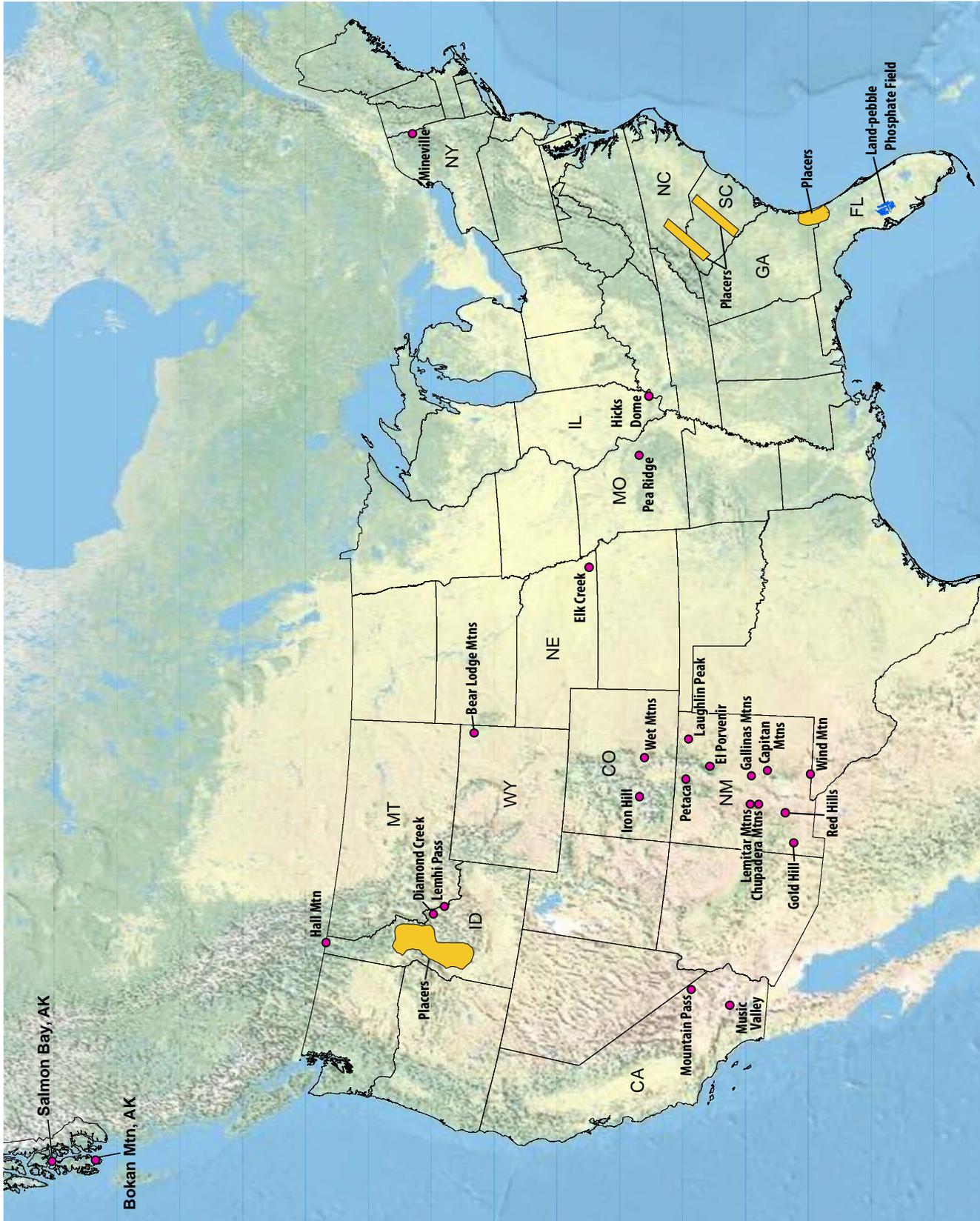
The objective of this study is to provide a nontechnical overview of domestic reserves and resources of REE and possibilities for utilizing those resources. At the present time, the United States obtains its REE raw materials from foreign sources, almost exclusively from China. Import dependence upon a single country raises serious issues of supply security. In a global context, domestic REE resources are modest and of uncertain value; hence, available resources in traditional trading partners (such as Canada and Australia) are of great interest for diversifying sources of supply. This report restates basic geologic facts about REE relevant to assessing security of supply, followed by a review of current United States consumption and imports of REE, current knowledge of domestic resources, and possibilities for future domestic production. Further detail follows in a deposit-by-deposit review of the most significant domestic REE deposits (see index map). Necessary steps to develop domestic resources are discussed in a separate section, leading into a review of current domestic exploration and a discussion of the value of a future national mineral resource assessment of REE. The report also includes an overview of known global REE resources and discusses the reliability of alternative foreign sources of REE.

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2 The Principal Rare Earth Elements Deposits of the United States



Principal rare earth elements districts in the United States, which are described in this report.

The Rare Earth Elements

The rare earth elements (REE) comprise 15 elements that range in atomic number from 57 (lanthanum) to 71 (lutetium) on the periodic table (fig. 1). These elements are also commonly referred to as “lanthanides.” Yttrium (atomic number = 39) is also included with the REE group, because it shares chemical and physical similarities with the lanthanides.

Traditionally, the REE are divided into two groups on the basis of atomic weight: the light rare earth elements are lanthanum through europium (atomic numbers = 57 through 63); and the heavy rare earth elements are gadolinium through lutetium (atomic numbers = 64 through 71). Yttrium (atomic number = 39), although light, is included with the heavy REE group because of its common chemical and physical affiliations with the heavy REE in nature.

Most of the REE are not as rare as the group’s name suggests. They were named rare earth elements because most were identified during the 18th and 19th centuries as oxide components within seemingly rare minerals. Cerium is the most abundant REE, and it is actually more common in the Earth’s crust than is copper or lead. All of the REE except promethium are more abundant than silver or mercury (Taylor and McLennan, 1985). The rare earth elements are commonly found together in the Earth’s crust because they share a trivalent charge (+3) and similar ionic radii. Detailed information on the REE is described in Emsley (2001), and an overview of the geology, production, and economics of REE is provided by Castor and Hedrick (2006).

Basic Geology of Rare Earth Elements

Several geologic aspects of the natural occurrence of rare earth elements strongly influence the supply of rare-earth-elements raw materials. These geologic factors are presented as statements of facts followed by a detailed discussion. This section is placed before the balance of the report because an understanding of these facts is critical to the discussion that follows and should be read first.

Although rare earth elements are relatively abundant in the Earth’s crust, they are rarely concentrated into mineable ore deposits.

The estimated average concentration of the rare earth elements in the Earth’s crust, which ranges from around 150 to 220 parts per million (table 1), exceeds that of many other metals that are mined on an industrial scale, such as copper (55 parts per million) and zinc (70 parts per million). Unlike most commercially mined base and precious metals, however, rare earth elements are rarely concentrated into mineable ore deposits. The principal concentrations of rare earth elements are associated with uncommon varieties of igneous rocks, namely alkaline rocks and carbonatites. Potentially useful concentrations of REE-bearing minerals are also found in placer deposits, residual deposits formed from deep weathering of igneous rocks, pegmatites, iron-oxide copper-gold deposits, and marine phosphates (table 2).

Alkaline igneous rocks form from cooling of magmas derived by small degrees of partial melting of rocks in the Earth’s mantle. The formation of alkaline rocks is complex and not fully understood but can be thought of as a geologic process that extracts and concentrates those elements that do not fit into the structure of the common rock-forming minerals. The resulting alkaline magmas are rare and unusually enriched in elements such as zirconium, niobium, strontium, barium, lithium, and the rare earth elements. When these magmas ascend into the Earth’s crust, their chemical composition undergoes further changes in response to variations in pressure, temperature, and composition of surrounding rocks. The result is an astonishing diversity of rock types that are variably enriched in economic elements, including the rare earth elements. The mineral deposits associated with these rocks are likewise quite diverse and awkward to classify, in that the distinctive features of these deposits and their rarity can result in classifications that have only one or a few known examples.

Classification of ores related to alkaline rocks is also controversial. Table 2 presents a relatively simple classification that follows analogous categories for deposits related to nonalkaline igneous rocks. Some of the more unusual alkaline rocks that host, or are related to, REE ores are carbonatite and phoscorite, igneous rocks composed principally of carbonate and phosphate minerals, respectively. Carbonatites, and especially phoscorites, are relatively uncommon, as there are only 527 known carbonatites in the world (Woolley and Kjarsgaard, 2008). Economic concentrations of REE-bearing minerals occur in some alkaline rocks, skarns and carbonate-replacement deposits associated with alkaline intrusions, veins and dikes cutting alkaline igneous complexes and surrounding rocks, and soils and other weathering products of alkaline rocks.

Weathering of all types of rocks yields sediments that are deposited in a wide variety of environments, such as streams and rivers, shorelines, alluvial fans, and deltas. The process of erosion concentrates denser minerals, most notably gold, into deposits known as placers. Depending on the source of the erosion products, certain rare earth elements-bearing minerals, such as monazite and xenotime, can be concentrated along with other heavy minerals. The source need not be an alkaline igneous rock or a related rare-earth deposit. Many common igneous, metamorphic, and even older sedimentary rocks contain enough monazite to produce a monazite-bearing placer. As a result, monazite is almost always found in any placer deposit. However, the types of placers with the greatest concentrations of monazite are typically ilmenite-heavy mineral placers, which have been mined for titanium oxide pigments, and cassiterite placers, which are mined for tin.

In tropical environments, rocks are deeply weathered to form a unique soil profile consisting of laterite, an iron- and aluminum-rich soil, as much as many tens of meters thick. The processes of soil formation commonly concentrate heavy minerals as residual deposits, resulting in an enriched-metal layer over the underlying, unweathered bedrock. When a rare-earth deposit undergoes such weathering, it may be enriched in rare earth elements in concentrations of economic interest.

Periodic Table of the Elements

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18										
1 H 1.01	2 He 4.00	3 Li 6.94	4 Be 9.01	5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18	11 Na 22.99	12 Mg 24.30	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95										
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.61	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80										
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (97.91)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.75	52 Te 127.60	53 I 126.90	54 Xe 131.29										
55 Cs 132.91	56 Ba 137.33	57 La 138.91	72 Hf 178.49	73 Ta 180.95	74 W 183.85	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (208.98)	85 At (209.99)	86 Rn (222.02)										
87 Fr (223.02)	88 Ra (226.03)	89 Ac (227.03)	104 Rf (261.11)	105 Ha (262.11)	106 Sg (263.12)	107 Boh (263.10)	108 Hs (264.10)	109 Mt (265.10)	110 Ds (266.10)	111 Rg (267.10)	112 Cn (268.10)	113 Nh (269.10)	114 Fl (270.10)	115 Mc (271.10)	116 Lv (272.10)	117 Ts (273.10)	118 Og (274.10)										
58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (144.91)	62 Sm 150.36	63 Eu 151.97	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.04	71 Lu 174.97	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237.05)	94 Pu (244.06)	95 Am (243.06)	96 Cm (247.07)	97 Bk (247.07)	98 Cf (251.08)	99 Es (252.08)	100 Fm (257.10)	101 Md (258.10)	102 No (259.10)	103 Lr (262.11)

Figure 1. Periodic table of the elements. The rare earth elements comprise 15 elements, which range in atomic number from 57 to 71, including lanthanum (La) to lutetium (Lu). The elements are also commonly referred to as "lanthanides." Yttrium (Y, atomic number 39) is also typically included with the rare earth elements group because it shares chemical, physical, and application properties with the lanthanides.

Table 1. Estimates of the crustal abundances of rare earth elements.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. Unit of measure, parts per million]

Rare earth element	Mason and Moore (1982)	Jackson and Christiansen (1993)	Sabot and Maestro (1995)	Wedephol (1995)	Lide (1997)	McGill (1997)
Lanthanum	30	29	18	30	39	5 to 18
Cerium	60	70	46	60	66.5	20 to 46
Praseodymium	8.2	9	5.5	6.7	9.2	3.5 to 5.5
Neodymium	28	37	24	27	41.5	12 to 24
Samarium	6	8	6.5	5.3	7.05	4.5 to 7
Europium	1.2	1.3	0.5	1.3	2	0.14 to 1.1
Gadolinium	5.4	8	6.4	4	6.2	4.5 to 6.4
Terbium	0.9	2.5	0.9	0.65	1.2	0.7 to 1
Dysprosium	3	5	5	3.8	5.2	4.5 to 7.5
Holmium	1.2	1.7	1.2	0.8	1.3	0.7 to 1.2
Erbium	2.8	3.3	4	2.1	3.5	2.5 to 6.5
Thulium	0.5	0.27	0.4	0.3	0.52	0.2 to 1
Ytterbium	3.4	0.33	2.7	2	3.2	2.7 to 8
Lutetium	0.5	0.8	0.8	0.35	0.8	0.8 to 1.7
Yttrium	33	29	28	24	33	28 to 70
Scandium	22		10	16	22	5 to 10
Total	206.1	205.2	159.9	184.3	242.17	

A particular type of REE deposit, the ion-absorption type, is formed by the leaching of rare earth elements from seemingly common igneous rocks and fixing the elements onto clays in soil. These deposits are only known in southern China and Kazakhstan and their formation is poorly understood.

Among pegmatites, a group of very coarse grained intrusive igneous rocks, the niobium-yttrium-fluorine family, comprises a large number of subtypes formed in different geologic environments. These subtypes are granitic in composition and are usually found peripheral to large granitic intrusions. In general, however, rare earth elements-bearing pegmatites are generally small and are of economic interest only to mineral collectors.

The iron-oxide copper-gold type of deposit has been recognized as a distinct deposit type only since the discovery of the giant Olympic Dam deposit in South Australia in the 1980s. The Olympic Dam deposit is unusual in that it contains large amounts of rare earth elements and uranium. An economic method for recovering rare earth elements from these deposits has not yet been found. Many other deposits of this type have been identified around the world, but information on their rare earth elements content is generally lacking. Trace amounts of rare earth elements have also been identified in magnetite-apatite replacement deposits.

Karst bauxites, aluminum-rich soils that accumulate in cavernous limestone (underlying karst topography) in Montenegro and elsewhere, are enriched in rare earth elements, but the resulting concentrations are not of economic interest (Maksimović and Pantó, 1996). The same can be said for marine phosphate deposits, which can contain as many as 0.1 percent REE oxides (Altschuler and others, 1966). As a result, recovery of rare earth elements as a byproduct of phosphate fertilizer manufacture has been investigated.

The ores of rare earth elements are mineralogically and chemically complex and commonly radioactive.

In many base and precious metal deposits, the metals extracted are highly concentrated in a single mineral phase, such as copper in chalcopyrite (CuFeS_2) or zinc in sphalerite (ZnS). Separation of a single mineral phase from rock is a relatively easy task. The final product is a concentrate typically sent to a smelter for final extraction and refining of the metals. Zinc, for example, is almost entirely derived from the mineral sphalerite, such that the global zinc smelting and refining industry has developed a highly specialized treatment of this mineral. Thus, production of zinc has a pronounced cost advantage in that a single standard technology is used, and the development of a new zinc mine is a largely conventional process.

6 The Principal Rare Earth Elements Deposits of the United States

Table 2. Classification of rare earth elements-bearing mineral deposits.

Association	Type	Example
Peralkaline igneous rocks	Magmatic (alkali-ultrabasic)	Lovozero, Russia.
	Pegmatite dikes (alkali-ultrabasic)	Khibina Massif, Russia.
	Pegmatite dikes (peralkaline)	Motzfeldt, Greenland.
	Hydrothermal veins and stockworks	Lemhi Pass, Idaho.
	Volcanic	Brockman, Western Australia.
	Metasomatic-albitite	Miask, Russia.
Carbonatites	Magmatic	Mountain Pass, California.
	Dikes and dialational veins	Kangakunde Hill, Malawi.
	Hydrothermal veins and stockworks	Gallinas Mtns., New Mexico.
	Skarn	Saima, China.
	Carbonate rock replacement	Bayan Obo, China.
	Metasomatic-fenite	Magnet Cove, Arkansas.
Iron oxide copper-gold	Magnetite-apatite replacement	Eagle Mountain, California.
	Hematite-magnetite breccia	Olympic Dam, South Australia.
Pegmatites	Abyssal (heavy rare earth elements)	Aldan, Russia.
	Abyssal (light rare earth elements)	Five Mile, Ontario.
	Muscovite (rare earth elements)	Spruce Pine, North Carolina.
	Rare earth elements-allanite-monazite	South Platte, Colorado.
	Rare earth elements-euxenite	Topsham, Maine.
	Rare earth elements-gadolinite	Ytterby, Sweden.
	Miarolitic-rare earth elements-topaz-beryl	Mount Antero, Colorado
	Miarolitic-rare earth elements-gadolinite-fergusonite	Wasau complex, Wisconsin.
Porphyry molybdenum	Climax-type	Climax, Colorado.
Metamorphic	Migmatized gneiss	Music Valley, California.
	Uranium-rare earth elements skarn	Mary Kathleen, Queensland.
Stratiform phosphate residual	Platform phosphorite	Southeast Idaho.
	Carbonatite-associated	Mount Weld, Western Australia.
	Granite-associated laterite	South China.
	Baddeleyite bauxite	Poços de Caldas, Brazil.
	Karst bauxite	Montenegro.
Paleoplacer	Uraniferous pyritic quartz pebble conglomerate	Elliot Lake, Ontario.
	Auriferous pyritic quartz pebble conglomerate	Witwatersrand, South Africa.
Placer	Shoreline Ti-heavy mineral placer	Cooljarloo, Western Australia.
	Tin stream placer	Malaysia.

Current mineral-processing practice is capable of sequential separation of multiple mineral phases but it is not always cost effective to do so. When elements of interest are found in two or more mineral phases, each requiring a different extraction technology, mineral processing is relatively costly. Many rare earth elements deposits contain two or more rare earth elements-bearing phases. Therefore, rare earth elements deposits in which the rare earth elements are largely concentrated in a single mineral phase have a competitive advantage. To date, REE production has largely come from single-mineral-phase deposits, such as Bayan Obo (bastnasite), Mountain Pass (bastnasite), and heavy-mineral placers (monazite).

Rare earth elements-bearing minerals, once separated, contain as many as 14 individual rare earth elements (lanthanides and yttrium) that must be further separated and refined. The complexity of extracting and refining rare earth elements is illustrated by a metallurgical flow sheet for the Mountain Pass mine in California (fig. 2). Unlike metal sulfides, which are chemically simple compounds, REE-bearing minerals are quite complex (table 3). Base metal sulfide ores, such as sphalerite (ZnS), are typically smelted to burn off sulfur and separate impurities from the molten metal. The resulting metal is further refined to near purity by electrolysis. Rare earth elements, on the other hand, are typically extracted and refined through dozens of chemical processes to separate the different rare earth elements and remove impurities.

The principal deleterious impurity in REE-bearing minerals is thorium, which imparts an unwanted radioactivity to the ores. Because radioactive materials are difficult to mine and handle safely, they are heavily regulated. When a radioactive waste product is produced, special disposal methods must be used. The cost of handling and disposing of radioactive material is a serious impediment to the economic extraction of the more radioactive REE-rich minerals, in particular monazite, which typically contains considerable amounts of thorium. In fact, imposition of tighter regulations on the use of radioactive minerals drove many sources of monazite out of the rare earth elements market during the 1980s.

The complex metallurgy of rare earth elements is compounded by the fact that no two REE ores are truly alike. As a result, there is no standard process for extracting the REE-bearing minerals and refining them into marketable rare earth compounds. To develop a new rare earth elements mine, the ores must be extensively tested by using a variety of known extraction methods and a unique sequence of optimized processing steps. Compared with a new zinc mine, process development for rare earth elements costs substantially more time and money.

Mineralogy of United States Deposits

The main REE-bearing minerals found in the United States are euxenite, bastnasite, xenotime, monazite, and allanite. Samarskite, aeschynite, fergusonite, parisite, synchisite, tengerite, ancylite, florencite, britholite, kainosite, and thalenite have also been identified in United States deposits (table 4). Euxenite $[(Y,Er,Ce,U,Pb,Ca)(Nb,Ta,Ti)_2(O,OH)_6]$ is

an oxide mineral that forms a series with the mineral polycrase $[(Y,Ca,Ce,U,Th)(Ti,Nb,Ta)_2O_6]$. Other rare earth elements oxide (REO) minerals, such as fergusonite, aeschynite, and samarskite, have similar properties, making identification in hand sample difficult. Euxenite is black with a tabular to prismatic habit, making it indistinguishable from rutile, a common oxide mineral, when found in massive form. However, euxenite does not have any cleavage planes and, unlike rutile, has a conchoidal fracture. Furthermore, because euxenite is ordinarily found in granite pegmatites, it is commonly associated with quartz, feldspars, columbite (now called ferrocolumbite), tantalite (now called ferrotantalite or manganocolumbite), and monazite.

Bastnasite (also spelled bastnäsite or bastnaesite) is a rare REE-bearing carbonate mineral $[(Ce,La,Y)CO_3F]$ that forms a series with the mineral hydroxyl-bastnasite $[(Ce,La)CO_3(OH,F)]$. Bastnasite can be pale white, tan, gray, brown, yellow, or pink, with a pearly, vitreous, or greasy to dull luster. Bastnasite usually forms small rounded hexagonal or short prismatic crystals, though it can also form rosettes and spheres. Both massive and granular varieties have been observed. Bastnasite is closely related to the mineral parisite $[Ca(Ce,La)_2(CO_3)_3F_2]$ and has been known to replace crystals of allanite.

Xenotime is a Y-bearing phosphate mineral (YPO_4) and can be yellowish brown to reddish brown with a vitreous to resinous luster. Less common colors include gray, salmon pink, and green. Xenotime is usually an accessory mineral in acidic and alkaline rocks, though it has been observed in mica schists and quartz-rich gneisses; it may also be a detrital mineral. Xenotime can easily be confused with zircon because of similarities in crystal habit and overall appearance. However, xenotime is not as hard as zircon and demonstrates perfect $\{100\}$ cleavage.

Monazite is a REE- and thorium-bearing phosphate mineral $[(Ce,La,Y,Th)PO_4]$ and typically contains 60–62 percent total rare-earth oxides. Monazite's resistance to chemical weathering and its high specific gravity account for its association with other resistant heavy minerals such as ilmenite, magnetite, rutile, and zircon. Because monazite is radioactive, however, grains can be metamict, which means they have lost their crystalline structure owing to radioactive decay. Crystals of monazite are yellow to brown or orange-brown with a vitreous and resinous or adamantine luster. Monazite grains are usually equant to prismatic with wedge-shaped terminations. Both granular and massive forms exist.

Allanite $[Ca(Ce,La,Y,Ca)Al_2(Fe^{2+},Fe^{3+})(SiO_4)(Si_2O_7)O(OH)]$, which belongs to the epidote mineral group, is one of the more common REE-bearing minerals in igneous rocks but is rarely concentrated enough to be an ore of REE. Allanite grains are tabular and usually black, though dark brown to brownish violet varieties also occur. Allanite has a conchoidal fracture and is commonly metamict because of the radioactive decay of thorium. The presence of a halo or dark ring inside the mineral grain is also an effect of its radioactivity. Most commonly, allanite is found as an accessory mineral in igneous rocks, such as granites, syenites, diorites, and associated pegmatites.

8 The Principal Rare Earth Elements Deposits of the United States

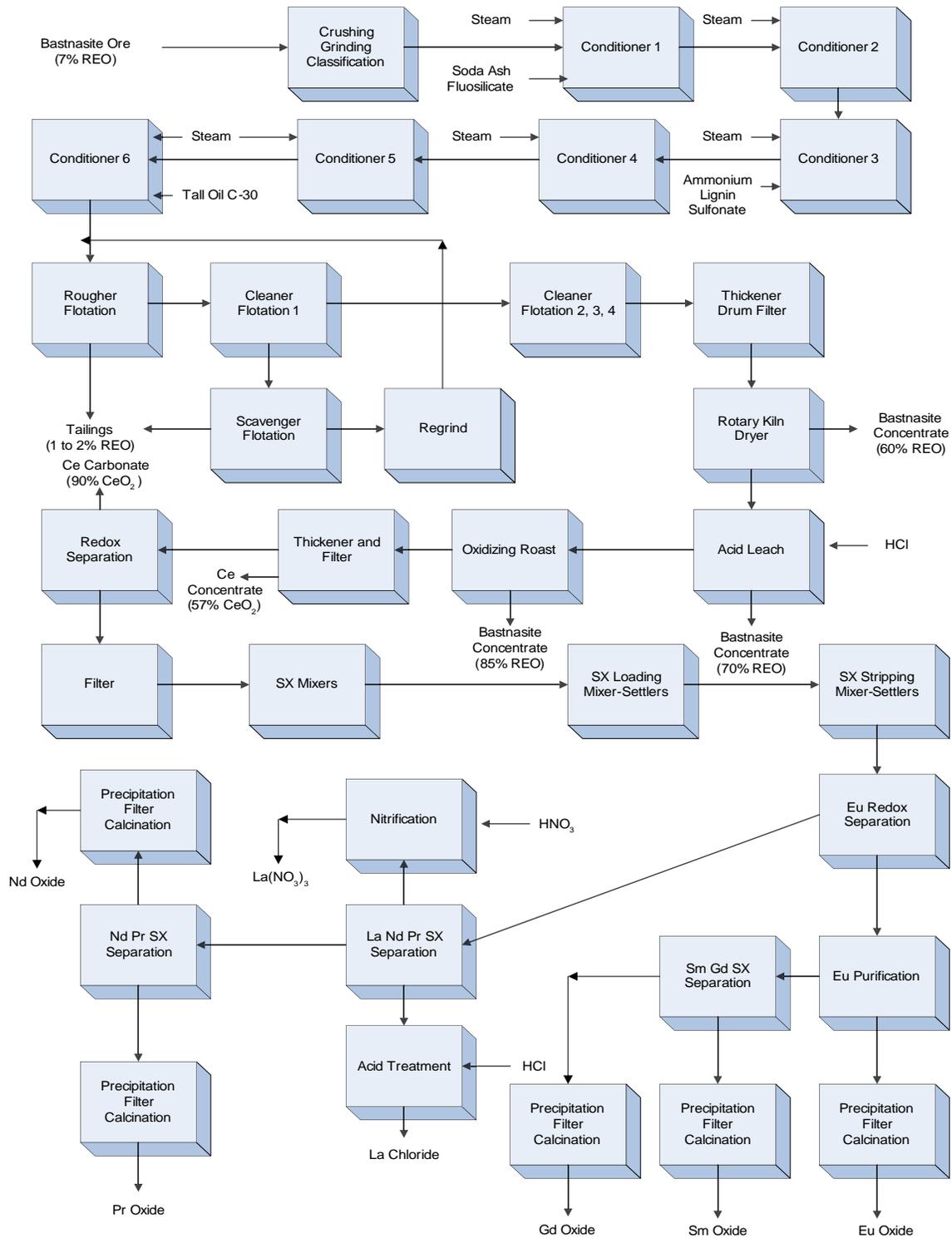


Figure 2. Rare earth elements mineral-processing flow sheet for the Mountain Pass mine, California, about 1995. From one type of ore, no less than 12 rare earth elements products were obtained. REO, rare earth oxides; Ce, cerium; Eu, europium; Gd, gadolinium; La, lanthanum; Nd, neodymium; Pr, praseodymium; Sm, samarium; HCl, hydrochloric acid. (Gupta and Krishnamurthy (2005), Castor and Hedrick (2006)).

Table 3. Rare earth elements, thorium, and uranium content of minerals found in rare earth elements deposits.

[--, not available; REO, rare earth elements oxides. Minerals in bold have historically been processed to recover rare earth elements. Small quantities of other minerals may be found in deposits that are or have been mined or in unmined deposits]

Mineral	Formula	Content (weight percent)		
		REO	ThO ₂	UO ₂
Allanite (Ce)	(Ce,Ca,Y) ₂ (Al,Fe ²⁺ ,Fe ³⁺) ₃ (SiO ₄) ₃ (OH)	3 to 51	0 to 3	--
Allanite (Y)	(Y,Ce,Ca) ₂ (Al,Fe ³⁺) ₃ (SiO ₄) ₃ (OH)	3 to 51	0 to 3	--
Anatase	(Ti,REE)O ₂	--	--	--
Ancylite (Ce)	SrCe(CO ₃) ₂ OH·H ₂ O	46 to 53	0 to 0.4	0.1
Bastnasite (Ce)	(Ce,La)(CO ₃)F	70 to 74	0 to 0.3	0.09
Brannerite	(U,Ca,Y,Ce)(Ti,Fe) ₂ O ₆	--	--	--
Britholite (Ce)	(Ce,Ca) ₅ (SiO ₄ ,PO ₄) ₃ (OH,F)	56	1.5	--
Brockite	(Ca,Th,Ce)(PO ₄) ₂ ·H ₂ O	--	--	--
Calcio-ancylite (Ce)	(Ca,Sr)Ce ₃ (CO ₃) ₄ (OH) ₃ ·H ₂ O	60	--	--
Cerianite (Ce)	(Ce ⁴⁺ ,Th)O ₂	--	--	--
Cerite (Ce)	Ce ₉ Fe ³⁺ (SiO ₂) ₆ [(SiO ₃)(OH)](OH) ₃	--	--	--
Cheralite	(Ca,Ce,Th)(P,Si)O ₄	--	≤30	--
Chevkinite	(Ca,Ce,Th) ₄ (Fe ²⁺ ,Mg) ₂ (Ti,Fe ³⁺) ₃ Si ₄ O ₂₂	--	--	--
Churchite (Y)	YPO ₄ ·H ₂ O	--	--	--
Crandallite	CaAl ₃ (PO ₄) ₂ (OH) ₅ ·H ₂ O	--	--	--
Doverite	YCaF(CO ₃) ₂	--	--	--
Eudialyte	Na ₄ (Ca,Ce) ₂ (Fe ²⁺ ,Mn ²⁺ ,Y)ZrSi ₈ O ₂₂ (OH,Cl) ₂	1 to 10	--	--
Euxenite (Y)	(Y,Ca,Ce,U,Th)(Nb,Ta,Ti) ₂ O ₆	--	--	--
Fergusonite (Ce)	(Ce,La,Y)NbO ₄	--	--	--
Fergusonite (Y)	YNbO ₄	--	--	--
Florencite (Ce)	CeAl ₃ (PO ₄) ₂ (OH) ₆	--	1.4	--
Florencite (La)	(La,Ce)Al ₃ (PO ₄) ₂ (OH) ₆	--	1.4	--
Fluocerite (Ce)	(Ce,La)F ₃	--	--	--
Fluocerite (La)	(La,Ce)F ₃	--	--	--
Fluorapatite	(Ca,Ce) ₅ (PO ₄) ₃ F	0 to 21	0 to 0.01	--
Fluorite	(Ca,REE)F	--	--	--
Gadolinite (Y)	Y ₂ Fe ²⁺ Be ₂ Si ₂ O ₁₀	40	--	--
Gagarinite (Y)	NaCaY(F,Cl) ₆	--	--	--
Gerenite (Y)	(Ca,Na) ₂ (Y,REE) ₃ Si ₆ O ₁₈ ·2H ₂ O	--	--	--
Gorceixite	(Ba,REE)Al ₃ [(PO ₄) ₂ (OH) ₅]·H ₂ O	--	--	--
Goyazite	SrAl ₃ (PO ₄) ₂ (OH) ₅ ·H ₂ O	--	1.4	--
Hingganite (Y)	(Y,Yb,Er) ₂ Be ₂ Si ₂ O ₈ (OH) ₂	--	--	--
Imoriite (Y)	Y ₂ (SiO ₄)(CO ₃)	--	--	--
Kainosite (Y)	Ca ₂ (Y,Ce) ₂ Si ₄ O ₁₂ (CO ₃)·H ₂ O	--	--	--
Loparite (Ce)	(Ce,Na,Ca)(Ti,Nb)O ₃	32 to 34	--	--

10 The Principal Rare Earth Elements Deposits of the United States

Table 3. Rare earth elements, thorium, and uranium content of minerals found in rare earth elements deposits.—Continued

[--, not available; REO, rare earth elements oxides. Minerals in bold have historically been processed to recover rare earth elements. Small quantities of other minerals may be found in deposits that are or have been mined or in unmined deposits]

Mineral	Formula	Content (weight percent)		
		REO	ThO ₂	UO ₂
Monazite (Ce)	(Ce,La,Nd,Th)PO ₄	35 to 71	0 to 20	0 to 16
Parisite (Ce)	Ca(Ce,La) ₂ (CO ₃) ₃ F ₂	59	0 to 0.5	0 to 0.3
Perovskite	(Ca,REE)TiO ₃	≤37	0 to 2	0 to 0.05
Pyrochlore	(Ca,Na,REE) ₂ Nb ₂ O ₆ (OH,F)	--	--	--
Rhabdophane (Ce)	(Ce,La)PO ₄ ·H ₂ O	--	--	--
Rhabdophane (La)	(La,Ce)PO ₄ ·H ₂ O	--	--	--
Rinkite (rinkolite)	(Ca,Ce) ₄ Na(Na,Ca) ₂ Ti(Si ₂ O ₇) ₂ F ₂ (O,F) ₂	--	--	--
Samarskite	(REE,Fe ²⁺ ,Fe ³⁺ ,U,Th,Ca)(Nb,Ta,Ti)O ₄	--	--	--
Sphene (titanite)	(Ca,REE)TiSiO ₅	≤3	--	--
Steenstrupine (Ce)	Na ₁₄ Ce ₆ Mn ₂ Fe ₂ (Zr,Th)(Si ₆ O ₁₈) ₂ (PO ₄) ₇ ·3H ₂ O	--	--	--
Synchysite (Ce)	Ca(Ce,La)(CO ₃) ₂ F	49 to 52	1.6	--
Synchysite (Y) (doverite)	Ca(Y,Ce)(CO ₃) ₂ F	--	--	--
Thalenite (Y)	Y ₃ Si ₃ O ₁₀ (F,OH)	--	--	--
Thorite	(Th,U)SiO ₄	≤3	--	10 to 16
Uraninite	(U,Th,Ce)O ₂	--	--	--
Vitusite (Ce)	Na ₃ (Ce,La,Nd)(PO ₄) ₂	--	--	--
Xenotime (Y)	YPO ₄	52 to 67	--	0 to 5
Yttrifluorite	(Ca,Y)F ₂	--	--	--
Zircon	(Zr,REE)SiO ₄	--	0.1 to 0.8	--

Lateritic deposits—highly weathered soil horizons, rich in iron and aluminum oxide minerals, which develop in a tropical or forested warm environment—have been studied as a potential source of REE; these lateritic REE deposits may contain large resources when they overlie low-grade primary sources, such as carbonatites and syenites. At present, however, only two districts (both in southern China) have been mined in this capacity. These surficial clay deposits account for 14 percent of Chinese REE production (Wu and others, 1996). The ore is referred to as REE-bearing ionic absorption clay and forms weathering crusts over granite (Ren, 1985; Wu and others, 1996). Laterite clays from Longnan in the Jiangxi Province yield heavy REE- and Y-rich material whereas ore from Xunwu is light REE-rich (O'Driscoll, 2003).

The relative abundance of rare earth elements within and among deposits is highly variable, but light rare earth

elements are typically more abundant than heavy rare earth elements.

The relative proportion of the different rare earth elements in an orebody is quite variable (table 5). The chief differences can be seen in the relative proportion of light to heavy rare earth elements. REE orebodies are typically somewhat enriched in the light REE—lanthanum to gadolinium—compared with average crustal abundances. In comparison, most rare earth ores are notably depleted in the heavy REE—terbium to lutetium. A minority of deposits are relatively enriched in heavy REE, most commonly those that contain xenotime as the principal REE mineral.

Given that each individual rare earth element has its own particular uses and market (table 6), the proportions of the various rare earth elements in a deposit are unlikely to parallel those of demand for rare earth elements. For instance, the most abundant rare earth element, cerium, is available in quantities

Table 4. Dominant rare earth elements-bearing minerals identified in the United States.

Mineral	Formula
Oxides	
Aeschynite	(Ce,Th,Ca...)[(Ti,Nb,Ta) ₂ O ₆]
Euxenite	(Y,Er,Ce,U,Pb,Ca)(Nb,Ta,Ti) ₂ (O,OH) ₆
Fergusonite	YnbO ₄
Samarskite	(Y,Er,Fe,Mn,Ca,U,Th,Zr)(Nb,Ta) ₂ (O,OH) ₆
Carbonates	
Ancylite	Sr(Ce,La)(CO ₃) ₂ (OH)·(H ₂ O)
Bastnasite	(Ce, La, Y)CO ₃ F
Parisite	Ca(Ce,La) ₂ (CO ₃) ₃ F ₂
Synchisite	Ca(Ce,Nd,Y,La)(CO ₃) ₂ F
Tengerite	Y ₂ (CO ₃) ₃ ·n(H ₂ O)
Phosphates	
Britholite	(Na,Ce,Ca) ₃ (OH)[(P,Si)O ₄] ₃
Florencite	(La,Ce)Al ₃ (PO ₄) ₂ (OH) ₆
Monazite	(Ce,La,Th,Nd,Y)PO ₄
Xenotime	YPO ₄
Silicates	
Allanite	Ca(Ce,La,Y,Ca)Al ₂ (Fe ²⁺ ,Fe ³⁺)(SiO ₄)(Si ₂ O ₇)O(OH)
Kainosite	Ca ₂ (Ce,Y) ₂ (SiO ₄) ₃ CO ₃ ·H ₂ O
Thalenite	Y ₂ [Si ₂ O ₇]

that exceed demand for traditional uses (Heymann, 2010). Most REE deposits currently (2010) considered for development are enriched in light REE and would likely flood the market for cerium if put into production. By contrast, heavy REE are in short supply with limited reserves. Certain rare earth elements, such as lutetium, presently have no market and are not worth recovering at this time.

Rare earth elements are typically obtained as a byproduct or coproduct of mining other mineral commodities.

When the economic viability of a mining project is assessed, the potential mineral products are divided into principal products and byproducts. The principal product, for example zinc in a zinc mine, contributes most to the value of the minerals produced. Generally, returns from the principal product are sufficient to pay the costs of mining and processing. All other products are referred to as byproducts, whose returns typically bolster the overall profitability of a mine. Where two or more products of essential value are obtained, they are called coproducts. A salient

feature of rare earth elements mining is that REE-rich minerals may be byproducts or coproducts of mining other mineral commodities.

Mine production decisions are driven by demand for principal products, not for byproducts. Thus, production of byproduct REE will vary subject to changes in demand for principal products and will be relatively unresponsive to demand for REE. China currently (2010) accounts for about 96 percent of global rare earth elements production (table 7). Of a total production of 120,000 metric tons, about 55,000 metric tons was produced as a byproduct of the Bayan Obo iron mine. This fact means that at least 44 percent of world rare earth elements production is a byproduct. Of the remaining Chinese production, about 25,000 metric tons is produced in southern China as a primary product from ion-adsorption deposits. The status of remaining Chinese production is unclear. The balance of global REE production is as a byproduct. Conceivably, as much as 90 percent of global rare earth elements production is as a byproduct or coproduct.

Table 5. Distribution of rare earth elements in selected rare earth elements deposits.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides]

Rare earth element	Average upper crustal abundance (percent) Wedepohl (1995)	Bastnasite		Bastnasite		Monazite		Xenotime		High Y REE laterite		Low Y REE laterite		Bulk ore	
		Mountain Pass, USA (percent) Castor (2008)	Bayan Obo, China (percent) Hedrick (2004)	Green Cove Spring, USA (percent) Hedrick (2004)	Lehat, Malaysia (percent) Hedrick (2004)	Longnan, China (percent) Hedrick (2004)	Xunwu, China (percent) Hedrick (2004)	Bear Lodge, USA (percent) Castor (2008)	Strange Lake, Canada (percent) Castor (2008)						
Lanthanum	19.3	33.8	23.0	17.5	1.2	1.8	43.4	30.4	4.6						
Cerium	39.2	49.6	50.0	43.7	3.1	0.4	2.4	45.5	12.0						
Praseodymium	3.8	4.1	6.2	5.0	0.5	0.7	9.0	4.7	1.4						
Neodymium	15.5	11.2	18.5	17.5	1.6	3.0	31.7	15.8	4.3						
Samarium	2.8	0.9	0.8	4.9	1.1	2.8	3.9	1.8	2.1						
Europium	0.6	0.1	0.2	0.2	Trace	0.1	0.5	0.4	0.2						
Gadolinium	1.7	0.2	0.7	6.6	3.5	6.9	3.0	0.7	2.5						
Terbium	0.3	0.0	0.1	0.3	0.9	1.3	Trace	0.1	0.3						
Dysprosium	1.7	0.0	0.1	0.9	8.3	6.7	Trace	0.2	8.2						
Holmium	0.4	0.0	Trace	0.1	2.0	1.6	Trace	0.0	1.7						
Erbium	1.3	0.0	Trace	Trace	6.4	4.9	Trace	0.0	4.9						
Thulium	0.2	0.0	Trace	Trace	1.1	0.7	Trace	<0.01	0.7						
Ytterbium	0.9	0.0	Trace	0.1	6.8	2.5	0.3	0.5	4.0						
Lutetium	0.2	Trace	Trace	Trace	1.0	0.4	0.1	<0.01	0.4						
Yttrium	12.3	0.1	Trace	2.5	61.0	65.0	8.0	<0.01	52.8						

Table 6. Usage of rare earth elements.

[Each rare earth element has its own applications and market. Source: Lynas Corporation (2010)]

Application	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Y	Other
Magnets	--	--	23.4	69.4	--	--	2	0.2	5	--	--
Battery alloys	50	33.4	3.3	10	3.3	--	--	--	--	--	--
Metal alloys	26	52	5.5	16.5	--	--	--	--	--	--	--
Auto catalysts	5	90	2	3	--	--	--	--	--	--	--
Petroleum refining	90	10	--	--	--	--	--	--	--	--	--
Polishing compounds	31.5	65	3.5	--	--	--	--	--	--	--	--
Glass additives	24	66	1	3	--	--	--	--	--	2	4
Phosphors	8.5	11	--	--	--	4.9	1.8	4.6	--	69.2	--
Ceramics	17	12	6	12	--	--	--	--	--	53	--
Other	19	39	4	15	2	--	1	--	--	19	--

Table 7. Production of rare earth elements mines in 2009.

[Source: USGS Mineral Commodity Summaries (U.S. Geological Survey, 2010). TREO, total rare earth elements oxide]

Country	Mine	2009 output (metric tons TREO)	Primary product	Byproduct
Brazil	Buena Norte	650	Ilmenite concentrate	Monazite concentrate.
China	Bayan Obo	55,000	Iron ore	Bastnäsite concentrate.
	Sichuan ¹	10,000	Bastnäsite concentrate	
	South China ¹	45,000	Rare earth elements	
India	Heavy-mineral sands	2,700	Ilmenite concentrate	Monazite concentrate.
Malaysia	Ipoh sand plant	380	Cassiterite concentrate	Xenotime concentrate.
Russia	Lovozero	2,500	Loparite concentrate	Rare earth elements chloride.

¹Many small producers and a few medium-large producers. The Chinese rare earth elements-mining industry is currently (2010) undergoing government-directed rationalization to reduce the number of producers.

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Current Sources and Domestic Reserves

The United States currently imports all of its rare earth elements (REE) raw materials from foreign sources, principally China (U.S. Geological Survey, 2010). This has not always been the case. The USGS annually reports global and domestic production and trade in REE in its publications Minerals Yearbook and Mineral Commodity Summaries. Prior to 1998, when production from the Mountain Pass mine in California was curtailed, the United States produced most of the light REE consumed domestically and by free market countries. Heavy REE were obtained from imported monazite concentrates. That changed in the 1980s after China became the dominant global supplier of light and heavy REE (Papp and others, 2008). In 2002, the Mountain Pass mine in California, the sole domestic producer of REE minerals, shut down. Although the mine has continued to produce REE materials from stockpiled raw materials, no new REE ores are being mined. Since then, the United States has obtained all of its REE raw materials from imports, principally from China. China accounts for 95 percent of global REE production despite having only 36 percent of identified world reserves (table 8).

Concentration of Supply

The high concentration of production of REE in one country is not unusual for a minor metal commodity. For example, a single mine in the United States supplies 86 percent of world demand for beryllium and two mines in Brazil account for 92 percent of world niobium production (U.S. Geological Survey, 2010). Such concentration of supply, which has long been of concern in regard to price manipulation, also raises issues related to reliability of supply. Given an equal risk of a natural disaster, industrial accident, labor strike, political strife, or anything else that might interrupt production, a single source of supply is inherently more risky than multiple sources of supply. Even though these various risks are not equal among countries, concentration of supply is a key indicator of mineral-supply risk.

Table 9 compares the supply situation of REE with other internationally traded minerals using several measures of concentration. These measures are used by economists to study market concentration and by regulators for antitrust purposes. In table 9, concentration ratios, abbreviated CR2 and CR3, measure the total percent share in United States imports and world production of the top two or top three supplier countries, respectively. A high percentage, such as the CR2 of 94 percent and CR3 of 96 percent shown for REE (excluding

Table 8. World production and reserves of rare earth elements minerals in 2009.

[In 2009, China produced 95 percent of world rare earth elements although it had only 36 percent of rare earth elements reserves. TREO, total metric tons of rare earth oxides]

Country	2009			
	Production		Reserves	
	TREO (metric tons)	Share (percent)	TREO (metric tons)	Share (percent)
Australia	0	0	5,400,000	5
Brazil	650	0.5	48,000	0.05
China	120,000	95	36,000,000	36
Commonwealth of Independent States	2,500	2	19,000,000	19
India	2,700	2	3,100,000	3
Malaysia	380	0.3	30,000	0.03
United States	0	0	13,000,000	13
Other	0	0	22,000,000	22
Total	126,230		99,000,000	

Table 9. Measures of concentration for selected world metal mining industries.

[CR2 and CR3, two-county and three-county concentration ratios, respectively. NHI, normalized Herfindahl index. The higher the index, the more concentrated are mineral production and United States imports. CR2 and CR3 are rounded to the nearest percent resulting, in some cases, in a slight discrepancy between the concentration ratios and the normalized Herfindahl index. RI, country risk index. See text for an explanation of indices. Data are for 2007, the latest year for which complete information is available from the U.S. Geological Survey (2010)]

Mineral commodity	Import reliance (percent)	United States imports (percent)				World production (percent)			
		CR2	CR3	NHI	RI	CR2	CR3	NHI	RI
Antimony	86	90	98	0.42	1.9	91	94	0.77	2.3
Bauxite and alumina	100	50	64	0.19	4.6	46	58	0.16	2.8
Bismuth	95	62	80	0.26	0.8	75	90	0.29	2.3
Cobalt	78	43	56	0.13	1.7	52	63	0.20	1.4
Copper	37	75	88	0.32	1.5	44	51	0.16	2.4
Gallium	99	57	73	0.21	1.3	51	65	0.19	1.9
Indium	100	72	81	0.31	1.3	68	76	0.36	1.4
Manganese	100	54	65	0.21	2.9	46	64	0.17	2.8
Nickel	17	59	68	0.23	1.0	32	46	0.10	2.6
Niobium	100	96	97	0.79	2.7	100	100	0.90	2.9
Platinum	94	50	65	0.17	1.5	91	94	0.63	2.9
Rare earth elements	100	94	96	0.83	1.9	99	100	0.94	2.0
Rhenium	86	95	98	0.81	1.8	59	68	0.26	2.3
Tantalum	100	35	50	0.13	1.6	75	85	0.35	2.0
Tin	79	69	79	0.31	3.2	74	91	0.30	3.3
Titanium	64	85	94	0.39	3.3	55	77	0.23	2.2
Tungsten	70	50	69	0.19	3.3	81	86	0.57	2.3
Vanadium	100	66	74	0.35	1.5	72	97	0.33	1.5
Yttrium	100	96	99	0.78	1.8	100	100	0.98	2.0
Zinc	58	67	82	0.19	1.1	52	66	0.19	1.9

yttrium and scandium), indicates that imports and world production are principally derived from one or two countries. A third measure is the Herfindahl index (Stigler, 1983), which was originally developed to measure the degree of competition in an industry. It is calculated according to the equation

$$HI = \sum_{i=1}^n s_i^2$$

where s_i is the share in global production or United States imports by country i with n countries. The larger this index, the more concentrated are world production and United States imports by country. The Herfindahl index can be normalized

$$NHI = \frac{HI - \frac{1}{n}}{1 - \frac{1}{n}}$$

such that the index ranges from 0 to 1.0, which facilitates comparison between different mineral commodities. A normalized Herfindahl Index of 1.0 indicates concentration in a single country; an index of 0 indicates that all countries have exactly the same share in United States imports or world production.

As shown in table 9, all three of these indices place REE (including yttrium) at the top of all mineral commodities in terms of concentration of United States imports and

world production. Antimony and niobium, which are mostly produced in China and Brazil, respectively, have very similar concentration indices. Rhenium is an example of a mineral commodity that the United States largely imports from a single country, Chile, but whose global production is not particularly concentrated.

On the basis of these data, it is no exaggeration to say that China dominates the world REE industry. This dominance is attributable to China’s large, high-quality resources of REE coupled with minimal capital investment, low labor costs, and lack of environmental regulation (Hurst, 2010). Referring back to table 8, China has only about a third of global REE; hence, a lower cost of production is a reasonable explanation for China’s position as the world’s dominant REE producer. Papp and others (2008) show that REE prices dropped dramatically from 1997 to 2008, consistent with the introduction of significant amounts of lower priced Chinese REE.

Risk of Supply Interruption

Assessing our nation’s vulnerability to mineral-supply disruptions is a classic exercise in risk analysis. The analysis has two components: the nature and probability of threats, and assessment of potential impact. Quantitative measurement of these components would be useful in ranking the relative security of supply of the various mineral commodities used and imported by the United States. A first step was made by a special committee of the National Research Council when it recommended the criticality matrix as a tool for assessing mineral supply risk (National Research Council, 2008). The criticality matrix is a plot that subjectively contrasts supply risk on

one axis and the effect of supply restriction on the other. The authors of the study ranked various imported metals, including REE, on a scale of 1 to 4 (low to high) as shown in figure 3. Rare earth elements were ranked 4 (high) for supply risk and 3 (moderately high) for effect of supply restriction.

An analysis of the effect of supply restrictions requires a level of economic analysis that is outside the traditional responsibilities of the U.S. Geological Survey and beyond the scope of this report. Long (2009) proposed combining the quantitative measures of concentration discussed above with measures of country risk to obtain a relative ranking of minerals by supply risk. A similar approach was independently adopted by the Raw Materials Supply Group of the European Union in a recent study of European mineral security (Raw Materials Supply Group, 2010). The European Union study does include a rough measure of the economic effect of a mineral supply disruption.

There are many measures of country risk from which to choose. Long (2009) used the Country Risk Classification that is published annually by the Organization for Economic Co-operation and Development (Organization for Economic Co-Operation and Development, 2008). This classification is a measure of a country’s credit risk or likelihood that a country will service its external debt. Countries are subjectively ranked on a scale from 0 to 7, where 0 is the lowest degree of risk and 7 the highest. An aggregate country risk index for a commodity is obtained as the sum of individual country risk indices weighted by share in United States imports or world production (table 9). This aggregate country risk index likewise falls on the scale of 0 to 7. Table 9 illustrates how these indices and ratios can be used. Comparison of concentration indices for

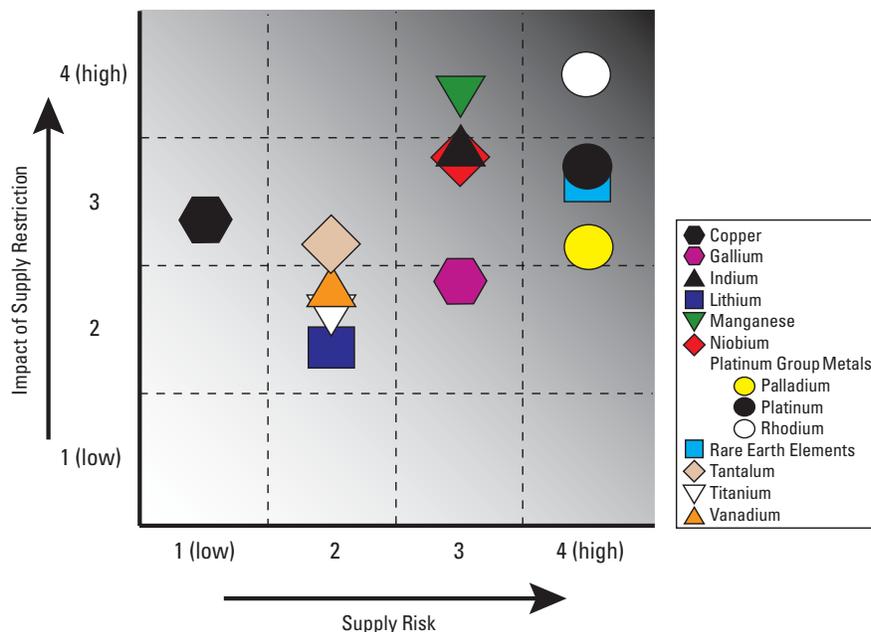


Figure 3. Criticality matrix for selected imported metals (National Research Council, 2008).

United States imports and for world production shows whether imports are more concentrated than global production, thus indicating opportunities for further diversification of supply. A high import concentration index with a low country risk index suggests that imports are obtained from stable trading partners such as Canada and Australia. High indices across the board are cause for greatest concern and indicate those commodities that are of greatest risk.

The European Union study (Raw Materials Supply Group, 2010) used the World Bank's World Governance Indicators as a measure of political risk. The World Bank estimates six governance indicators: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption (World Bank, 2010). The European Union study unfortunately does not specify which indicator was used or, if all indicators were used, how they were combined. The U.S. Geological Survey has identified other indicators of country risk, such as the Economic Freedom Score (Heritage Foundation, 2010), the Corruption Perceptions Index (Transparency International, 2010), and rankings of countries for mining investment (Behre Dolbear, 2010; McMahon and Cervantes, 2010).

Aside from an indicator of country risk, the European Union study also used a subjective ranking of the degree to which other minerals can substitute for the mineral in question, measures of recycling rates and environmental policy risk, and a rescaled Herfindahl index to measure mineral supply concentration. Using these indicators, some 14 metals and minerals were shortlisted as critical raw materials for European Union member nations, "critical" in this case signifying a high degree of both supply risk and economic importance. The shortlisted metals and minerals are antimony, beryllium, cobalt, fluor spar, gallium, germanium, graphite, indium, magnesium, niobium, platinum group metals, REE, tantalum, and tungsten (Raw Materials Supply Group, 2010). Long (2009) listed 15 metals and minerals: antimony, barite, chromite, cobalt, fluor spar, gallium, graphite, indium, niobium, platinum group metals, REE, rhenium, tantalum, titanium, and tungsten as those minerals with the greatest supply risk to the United States economy. The two lists are very similar. The differences are beryllium, which is imported by Europe from the United States; barite, critical to the US oil and gas industry; and chromite, rhenium, and titanium, whose supply was rated as less risky in the European Union report.

In both the USGS and European Union studies of mineral supply risk, REE rank highest as mineral raw materials of critical concern, given uncertain future supplies and their importance to advanced industrial economies. Neither of these studies addressed measures to mitigate these risks but each did recommend further study, including examination of mineral policy options. There are geologic factors, however, that should be considered in future studies of REE supply, such as the extent and quality of domestic REE resources, undeveloped resources in other low-risk countries, and the time it takes to develop these resources into producing mines.

Domestic and World Resources

The main body of this report is a review of the geology and known mineral resources of the principal domestic United States deposits of REE minerals discovered to date (2010). These resources are summarized in table 10. It is important to recognize that resource estimates are of differing accuracy and reliability, depending on the degree of exploration undertaken to date. Many of the estimates in table 10 are obtained by inference from surface exposures of mineralization, a small number of samples, and inferences or assumptions about how deep mineralization extends. Some deposits have been explored at depth by core drilling. A very few have been drilled on a narrowly spaced grid sufficient for an estimate of how much mineralized material may be economic to mine. The potential economic viability of any of these resources can be reliably assessed only with sufficient drilling, pilot plant-scale metallurgical testing, and definitive economic analysis. Only one domestic deposit, Mountain Pass, California, meets those criteria and can be reported to contain a sizable reserve of REE-bearing ore.

Table 11 reports reserves and resources in REE deposits worldwide, divided into three categories. The first category comprises deposits sufficiently explored to estimate a mine plan resource. Although a mine has been designed or already exists for each of these deposits, they have not been demonstrated to be economically viable by means of a definitive feasibility study; hence, they are classed as resources. The second category comprises measured, indicated, and inferred resources for well-explored deposits that have not yet been subject to a feasibility study that includes a mine design. The third category, unclassified resources, is a mixed bag of known resources that are unlikely to be exploited, such as Pilanesberg, South Africa, which is now within a national park, and the Olympic Dam mine, Australia, where extensive study has found that REE are not economic to recover even as a byproduct. Other deposits in this category have been little explored and the resources are inferred from surface exposures and limited sampling. No reliable data are available for mines and deposits in China, Russia, and North Korea.

The first two categories of resources are the only short- and medium-term sources of additional REE that might contribute to the global supply. These categories will likely be augmented through further exploration at existing mines and development projects. It is possible that long-term supply can be met through exploration of known deposits that have had little or no drilling and by the discovery of new deposits. The projects listed in the first two of the categories shown in tables 10 and 11 put an upper limit on a near-term potential for production of REE mineral supplies. This limit can be put at about 14 million tons of contained total REE oxides (TREO), with a country risk index of near zero because almost all of that production potential is in the United States, Australia, and Canada.

Table 10. Domestic reserves and resources of rare earth elements, excluding heavy-mineral placer and phosphate deposits.

[TREO, total rare earth oxides. Reserves proven and probable classified according to definitions and standards of the Securities and Exchange Commission (Securities and Exchange Commission = <http://www.sec.gov/index.htm>). Inferred resources classified according to the standards of Canadian National Instrument 43-101 (Canadian National Instrument 43-101 = <http://www.ccpq.ca/profprac/index.php?lang=en&subpg=natguidelines>). Unclassified resources based on little or no drilling. For data on resources in heavy-mineral placer and phosphate deposits, which are not of economic interest, see Jackson and Christiansen (1993)]

Deposit		Tonnage (metric tons)	Grade (percent TREO)	Contained TREO (metric tons)	Source
Reserves—Proven and probable					
Mountain Pass,	California	13,588,000	8.24	1,120,000	Molycorp, Inc. (2010).
Resources—Inferred					
Bear Lodge,	Wyoming	10,678,000	3.60	384,000	Noble and others (2009).
Resources—Unclassified					
Bald Mountain,	Wyoming	18,000,000	0.08	14,400	Osterwald and others (1966).
Bokan Mountain,	Alaska	34,100,000	0.48	164,000	Keyser and Kennedy (2007).
Diamond Creek,	Idaho	5,800,000	1.22	70,800	Staatz and others (1979).
Elk Creek,	Nebraska	39,400,000			Molycorp, Inc. (1986).
Gallinas Mtns.,	New Mexico	46,000	2.95	1,400	Jackson and Christiansen (1993).
Hall Mountain,	Idaho	100,000	0.05	50	Staatz and others (1979).
Hick's Dome,	Illinois	14,700,000	0.42	62,000	Jackson and Christiansen (1993).
Iron Hill,	Colorado	2,424,000,000	0.40	9,696,000	Staatz and others (1979).
Lemhi Pass,	Idaho	500,000	0.33	1,650	Staatz and others (1979).
Mineville,	New York	9,000,000	0.9	80,000	McKeown and Klemic (1956).
Music Valley,	California	50,000	8.6	4,300	Jackson and Christiansen (1993).
Pajarito,	New Mexico	2,400,000	0.18	4,000	Jackson and Christiansen (1993).
Pea Ridge,	Missouri	600,000	12	72,000	Grauch and others (2010).
Scrub Oaks,	New Jersey	10,000,000	0.38	38,000	Klemic and other (1959).
Wet Mountains,	Colorado	13,957,000	0.42	59,000	Jackson and Christiansen (1993).

Long-term prospects for the discovery of new reserves and resources depend on sufficient exploration. About 150 projects worldwide that are prospecting and exploring for rare earth elements are known to the U.S. Geological Survey (U.S. Geological Survey, 2010). Most of this activity began in the last 2 years and it will be some time before results are known. Whether this exploration further diversifies REE mineral supplies depends on discovering deposits of adequate size and quality in the right countries. Probability of discovery requires a quantitative mineral resource assessment, which has never been done for REE minerals in any country. The last REE deposit discovered and developed into a mine in the United States was the Mountain Pass mine in California, discovered in 1949 and put into production in 1953. That was more than 50 years ago and is not indicative of the time required to discover and develop REE deposits in today's regulatory climate. During the past 50 years outside of China, there has been little REE exploration and almost no mine development; hence, we have no real REE exploration and development record to draw upon for assessing the future pace of discovery and development.

Developing Rare Earth Elements Resources

Rare earth elements resources are distributed between many mineral deposits, but only a proportion will be economic to develop and mine. By convention, that portion of resources that is economic to mine is classified as a "reserve." That a rare earth deposit contains reserves does not mean that it will be developed and mined—it means only that it is economic to do so. Among the many rare earth reserves available, mining companies will select the most profitable to develop, potentially leaving less profitable reserves undeveloped. Reserves may also be undeveloped because of adverse land use restrictions, civil strife, and a host of other political and social factors.

Developing a new mine requires a prolonged effort of prospecting, exploration, process development, feasibility studies, permitting, construction, and commissioning. These efforts are broadly sequential but commonly overlap. The time required to complete all steps is variable but appreciable, particularly compared with the time typically required by non-extractive industries. Studies of the time required to complete

20 The Principal Rare Earth Elements Deposits of the United States

Table 11. Reserves and resources of rare earth elements outside of the United States, excluding heavy-mineral placer and phosphate deposits.

[TREO, total rare earth elements oxides. Heavy-mineral placers are mined for rare earth elements in only a few places, such as India and Malaysia, and reserve information is unavailable. Reserves and resources classified according to one of several national standards, such as Canadian National Instrument 43-101, JORC, and SAMREC codes. (JORC, The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2004 edition) (<http://www.jorc.org/>); SAMREC, South African Mineral Resource Committee, <http://www.samcode.co.za/downloads/SAMREC2009.pdf>.) Unclassified resources based on little or no drilling. Reliable data on rare earth elements reserves and resources in China, North Korea, and Russia are not available. Where reserves and resources are given for the same deposit, resources include reserves. For data on other resources in heavy-mineral placers and in phosphate deposits, see Jackson and Christiansen (1993)]

Deposit		Tonnage (metric tons)	Grade (percent TREO)	Contained TREO (metric tons)	Source
Measured-in-pit resources					
Brockman,	Australia	4,290,000	0.2	8,600	Chalmers (1990).
Mount Weld,	Australia	2,100,000	15.5	326,000	Lynas Corporation (2010).
Thor Lake (Lake Zone),	Canada	12,010,000	1.70	204,000	Paul and Stubens (2009).
Steenkampskraal,	South Africa	249,500	11.80	29,500	Great Western Minerals Group Ltd. (2009).
Measured, indicated, inferred resources					
Brockman,	Australia	50,000,000	0.23	115,000	Chalmers (1990).
Cummins Range,	Australia	4,170,000	1.72	72,000	Navigator Resources Ltd. (2009).
Dubbo,	Australia	73,200,000	0.89	651,500	Alkane Resources (2010).
Mount Weld,	Australia	15,020,000	8.60	1,292,000	Lynas Corporation (2010).
Narraburra,	Australia	55,000,000	0.03	16,500	Capital Mining Ltd. (2009).
Nolans Bore,	Australia	30,300,000	2.80	849,000	Arafura Resources Ltd. (2010).
Hoidas Lake,	Canada	2,847,000	2.00	57,000	Dunn (2009).
Strange Lake,	Canada	137,639,000	0.97	1,335,000	Daigle and Maunula (2010).
Thor Lake (Lake Zone),	Canada	175,930,000	1.43	2,516,000	Paul and Stubens (2009).
Thor Lake (North T),	Canada	1,136,000	0.71	8,000	Palmer and Broad (2007).
Zeus (Kipawa),	Canada	2,270,000	0.11	2,500	Knox and others (2009).
Kvanefjeld,	Greenland	457,000,000	1.07	4,890,000	Greenland Minerals and Energy Ltd. (2009).
Kangankunde Hill,	Malawi	2,500,000	4.24	107,000	Lynas Corporation Ltd. (2007).
Unclassified resources					
John Galt,	Australia	382,000	7.96	30,400	Northern Uranium Ltd. (2010).
Olympic Dam,	Australia	>2,000,000,000	0.50	>10,000,000	Oreskes and Einaudi (1990).
Yangibana,	Australia	3,500,000	1.70	59,500	Jackson and Christiansen (1993).
Araxá,	Brazil	450,000,000	1.80	8,100,000	Filho and others (2005).
Catalão I,	Brazil	10,000,000	0.90	90,000	Hirano and others (1990).
Pitinga,	Brazil	164,000,000	0.15	246,000	Bastos Neto and Pereira (2009).
Poços de Caldas,	Brazil			115,000	Wedow (1967).
Seis Lagos,	Brazil	2,900,000,000	1.50	43,500,000	De Sousa (1996).
Tapira,	Brazil	5,200,000	10.5	546,000	Hirano and others (1990).
Kasagwe,	Burundi	67,000	1.50	1,000	Jackson and Christiansen (1993).

Table 11. Reserves and resources of rare earth elements outside of the United States, excluding heavy-mineral placer and phosphate deposits.—Continued

[TREO, total rare earth elements oxides. Heavy-mineral placers are mined for rare earth elements in only a few places, such as India and Malaysia, and reserve information is unavailable. Reserves and resources classified according to one of several national standards, such as Canadian National Instrument 43-101, JORC, and SAMREC codes. (JORC, The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2004 edition) (<http://www.jorc.org/>); SAMREC, South African Mineral Resource Committee, <http://www.samcode.co.za/downloads/SAMREC2009.pdf>.) Unclassified resources based on little or no drilling. Reliable data on rare earth elements reserves and resources in China, North Korea, and Russia are not available. Where reserves and resources are given for the same deposit, resources include reserves. For data on other resources in heavy-mineral placers and in phosphate deposits, see Jackson and Christiansen (1993)]

Deposit		Tonnage (metric tons)	Grade (percent TREO)	Contained TREO (metric tons)	Source
Oka,	Canada	210,000,000	0.127	267,000	Orris and Grauch (2002).
Mrima Hill,	Kenya	6,000,000	16.2	972,000	Pell (1996).
Ak-Tyuz,	Kyrgyzstan	15,000,000	1.00	150,000	Malyukova and others (2005).
Karajilga,	Kyrgyzstan	957,000	0.70	6,700	Bogdetsky and others (2001).
Kutessai II,	Kyrgyzstan	20,228,000	0.22-0.3	<60,000	Stans Energy Corp. (2010).
Sarysai,	Kyrgyzstan	7,000,000	0.20	14,000	Bogdetsky and others (2001).
Pilanesberg,	South Africa	13,500,000	0.70	94,500	Lurie (1986).
Zandkopsdrift,	South Africa	31,500,000	3.60	1,130,000	Frontier Minerals (2009).
Kizilcaören,	Turkey	4,695,000	2.78	130,500	Morteani and Satir (1989).
Dong Pao,	Vietnam	500,000,000	1.40	7,000,000	Kušnir (2000).
Mau Xe North,	Vietnam	557,000,000	1.40	7,800,000	Kušnir (2000).

this process typically examine the interval between recognition of a potentially economic deposit and the commencement of commercial production. Peters (1966) examined the development history of a large number of mines and divided them into four classes. The first class requires a preproduction period of 2 years or less. This class of mine is characterized by simple ores of high unit value, the applicability of conventional mining and mineral processing methods, the absence of need for much additional transportation or power infrastructure, an assured market, and the requirement for only short-term financing. A modern example in this class would be a small- to medium-sized open pit-heap leach gold deposit in Nevada. Gold has a high unit value and ready market. The pertinent mining and mineral processing technology is also simple and well-known, with excellent local infrastructure, and regulatory authorities have much experience with this type of mining.

The other three categories are characterized by increasing complexity of ores, size of operations, infrastructure and financing needs, and lower unit values. The last category has a preproduction period of 7 years or more. A modern example would be a nickel laterite mine, the metallurgy of which is quite troublesome; many such nickel mines have required in excess of 10 years of process development plus delays because of market timing. Developing a new nickel laterite mine is best timed to open during a period of high nickel prices. A new REE mine would almost certainly fall into this last category for many of the same reasons—complex metallurgy and restricted opportunities for market entry.

The time to develop a mine in each category is likely to take longer today than it did when Peters (1966) did his study. Most modern mines are developed under a comprehensive regulatory environment where, in the United States at least, environmental studies, due diligence studies by financing sources, permitting, public participation, and due process require substantial amounts of time. Further delays may be caused by public controversy and litigation against a proposed mine. These delays are illustrated in table 12, which tallies the time it took to develop metal mines that opened in the United States since 2000. The time to obtain a permit has required as many as 17 years, and one mine, the Pogo, Alaska gold mine, was developed under an expedited permitting schedule that still took 7 years. For a small gold mine in Nevada, once permits were obtained, the time to construct and put a mine into operation took 1 month. For the Kensington, Alaska, gold mine, however, whose operating permits were contested in the courts, the process lasted 63 months. Ramp-up times for new mines took from 2 to 12 months; the longest was for Pogo, Alaska, which had unexpected metallurgical difficulties.

Developing a Rare Earth Elements Mine

The first step in developing a new REE mine is to locate a suitable REE deposit. Exploration for new deposits may be in either of two contexts: greenfield exploration to find new deposits in areas not previously mined and brownfield exploration in and adjacent to current and past mining activity.

Table 12. Time required to obtain permits, construct, and commission recently opened metal mines in the United States.

[NYA, not yet achieved, production not yet begun or commercial operations not achieved; PGE, platinum group elements. Yes, long permitting and development delays because of litigation by government agencies and nongovernmental organizations]

Mine		Commodity	Permitting began	Permitting completed	Production began	Commercial operations began	Litigation reported
Alta Mesa,	Texas	U	1999	2004	10/2005	1/2006	
Arizona 1,	Arizona	U	mid-2007	2009	NYA	NYA	Yes.
Ashdown,	Nevada	Mo Au	2/2004	11/2006	12/2006	NYA	
Buckhorn,	Washington	Au	1992	9/2006	10/2008	11/2008	Yes.
Carlota,	Arizona	Cu	2/1992	6/2007	12/2008	1/2009	Yes.
Eagle,	Michigan	Ni Cu Co PGE	4/2004	1/2010	NYA	NYA	Yes.
East Boulder,	Montana	PGE	1995	1998	6/2001	1/2002	
Kensington,	Alaska	Au	3/1988	6/2005	9/2010	NYA	Yes.
Leeville,	Nevada	Au	7/1997	8/2002	10/2006	4th quarter 2006	
Lisbon Valley,	Utah	Cu	2/1996	7/2004	1st quarter 2006	NYA	Yes.
Pend Oreille,	Washington	Zn	1992	9/2000	1/2004	8/2004	
Phoenix,	Nevada	Au	1/1999	1/2004	10/2006	4th quarter 2006	
Pogo,	Alaska	Au	12/1997	4/2004	2/2006	4/2007	
Rock Creek,	Alaska	Au	2003	8/2006	9/2008	NYA	Yes.
Rossi (Storm),	Nevada	Au	1990	3Q/2006	3/2007	12/2007	
Safford,	Arizona	Cu	4/1998	7/2006	4th quarter 2007	2nd half 2008	Yes.
Turquoise Ridge,	Nevada	Au	9/1995	5/2003	2004	NYA	

Greenfield exploration may target frontier areas with no previous exploration or may follow up on past exploration results. Brownfield exploration includes searching for extensions to known reserves and resources within or near a mine as well as new deposits in the vicinity of existing operations. The latter may extend the life of an existing mine or result in the complete redevelopment of a former mine.

Exploration is an uncertain process conducted with limited capital. An explorer's objective is to find a deposit of the targeted type, size, and quality with the least amount of expense. Thus, any particular location of merit is rarely exhaustively explored. Exploration will proceed on the basis of favorable indicators so long as objectives are met within budget. An exploration project will be curtailed if evidence is found that contraindicates the prospectivity of the target or if results are insufficient to justify further work. Exploration commonly runs in cycles, prompted by short- to medium-term increases in mineral prices. The low side of a price cycle may prompt little or no exploration activity. Any particular prospect may undergo many episodes of exploration by different parties during many decades; the exploration episodes are motivated by price cycles, new cost-saving technology, improved exploration concepts and methods, and the vagaries of land access and exploration management.

In the case of REE, very little exploration has ever been done and the most intense period ever of direct exploration for REE is currently underway (2010). Many important past discoveries have been serendipitous—the world's largest REE mine, Bayan Obo in China, was first mined for iron ore. The “funny” steel produced from this ore was investigated and found to be contaminated with REE (Laznicka, 2006). Mountain Pass, California, was found in the course of a U.S. Geological Survey radioactivity reconnaissance project that expected to find uranium. Many REE-bearing carbonatite deposits were initially explored as a source of niobium or phosphates.

The discovery of a REE deposit must be proved by extensive trenching, drilling, and sampling. Drilling will initially be on a widely spaced grid to evaluate the extent and richness of mineralization. If results are favorable, the deposit will be drilled on progressively narrower spacing until a measured resource of adequate size is established. Concurrently, baseline environmental studies will be completed and bulk samples obtained for metallurgical testing. A conceptual mine plan and metallurgical plan will be engineered and a preliminary economic feasibility study undertaken. If the results of these studies are favorable, further work will develop an optimized mine plan, validate metallurgical processing on a pilot plant scale, begin application for permits, and conduct a definitive

economic feasibility study. If the results of the feasibility study are positive, financing will be sought and permitting further advanced along with detailed plant engineering. Permitting will typically require an approved plan of operations, a positive environmental impact study, and some kind of final permission by a government agency. If external financing is required, an independent due diligence study will verify the results of the feasibility study.

Once financing and regulatory approval are in place, a construction decision will be announced. Ongoing detailed engineering design will be completed, long lead-time items will be ordered, construction work will be bid on, and contracts will be awarded. Construction begins as soon as possible and is executed quickly to minimize interest and opportunity costs. As mine components are completed, they will be tested and placed in operation with a ramp-up period until full commercial production at the planned output rate is achieved. The ramp-up process may be completed smoothly in a matter of months or may encounter unanticipated difficulties that require an extended period of time to solve. Some mines have failed at this stage because of ore grades that are lower than expected or metallurgical processes that do not work as planned.

Up to this point, a mining company has been spending large amounts of money without any revenue from mineral sales. Capital must be supplied internally, from net revenues of a mining company's other operations, or externally from banks or investors. The cost of borrowing these funds is considerable and repayment cannot even start until a mine goes into production. The largest of currently (2010) proposed new REE mining operations, including Mountain Pass, California, have reported premining capital requirements of a half a billion dollars or more.

A mine will operate until reserves are exhausted. Today, mine closure and reclamation are planned before a mine is built; reclamation is undertaken concurrent with operations wherever possible. Mobile equipment and structures are removed. Roads, waste stockpiles, tailings, and surface facilities are also reclaimed in an attempt to restore the land to its previous use and appearance. Large open pits are not typically backfilled because of the large energy and CO₂ emissions costs of doing so. Instead, to minimize environmental impact they are reclaimed as landscape features.

Only one REE mine, at Mountain Pass, California, has ever been developed in the United States. That occurred in the early 1950s and is not illustrative of what is required to develop such a mine today. Nickel laterite deposits were suggested above as a useful analog for the development of a new REE mine. This comparison is particularly apt for a REE laterite deposit, such as Mount Weld, Australia. Niobium-bearing carbonatites are another close analog. These two deposit types share complex and difficult metallurgy and typically require extended periods of time to develop. The time that was

required to bring into production recently developed nickel laterite mines and most niobium carbonatite mines is shown in table 13. All of these mines were developed outside of the United States and the permitting delays noted in table 12 do not pertain in this case.

The time from discovery to initial production for the mines listed in table 13 range from 5 to 50 years, permitting to initial production 1 to 7 years, and ramp-up times were 3 to 42 months, except in the case of Araxá, Brazil, which suffered some unusual political delays. These development times are in line with the results of Peters (1966) and indicate that in some instances a relatively rapid pace of development can be obtained. It should be noted, however, that the most advanced REE projects other than Mountain Pass, California, namely Mount Weld and Dubbo in Australia, have required years of metallurgical testing and development and fall into the fourth, 7-year-or-more category of Peters (1966).

Summary

United States domestic reserves and inferred resources of REE are approximately 1.5 million tons, which are large compared with peak domestic consumption of REE of 10,200 tons in 2007 (U.S. Geological Survey, 2010). How much of that reserve and resource will be economically available, when, and at what rate, cannot be addressed with the data at hand. It can be said that the reserves and inferred resources reported in table 10 are of light REE and that these two potential mines may not be able to meet domestic needs for heavy REE with the production plans currently (2010) proposed. The pipeline of new REE projects within the United States is rather thin, with 10 out of 150 REE exploration projects identified worldwide. If we extend our analysis to reliable trading partners, such as Australia and Canada, prospects for diversifying supply and meeting future demand are considerably improved. Unfortunately, the time required for development of new REE mines is on the order of at least a decade, perhaps much longer in the United States, and forecasting future supply that far into the future is hazardous.

The lack of mining industry exploration of REE deposits in the last few decades is paralleled by a low level of geological research. The U.S. Geological Survey has demonstrated in related studies that the first step in improving our understanding of REE resources and prospects for further discoveries is to conduct national and global mineral resource assessments. Rare earth elements are one of the commodities under consideration for the next National Resource Assessment, scheduled to begin in 2012. Preliminary work is underway as part of the Minerals at Risk and for Emerging Technologies Project, which will be completed at the end of Fiscal Year 2011.

Table 13. Time required to develop selected mines outside of the United States.

[These mines selected as close analogs of the mining and metallurgical methods required by a rare earth elements mine. NYA, commercial production not yet achieved]

Mine	Country	Commodity	Discovery date	Permitting completed	Production began	Commercial operations began
Ambatovy	Madagascar	Ni Co	1960	3/2007	Late 2010	NYA
Araxa	Brazil	Nb	1955	1960	1st quarter 1961	1966
Barco Alto	Brazil	Ni	1981	12/2006	3/2010	2011
Bulong	Australia	Ni	1971	9/1996	3/1999	9/1999
Catalão I	Brazil	Nb	1970	1974	1976	1977
Cawse	Australia	Ni Co	1994	9/1996	1/1999	6/2000
Goro	New Caledonia	Ni Co	1982	10/2004	Late 2010	NYA
Murrin Murrin	Australia	Ni Co	1984	5/1996	5/1999	12/2003
Niobec	Canada	Nb	6/1967	11/1973	1/1976	3/1976
Onça Puma	Brazil	Ni	1970s	8/2005	3rd quarter 2010	Early 2011
Raventhorpe	Australia	Ni Co	Late 1960s	3/2004	10/2007	NYA
Ururu Utsumi	Brazil	U	1971	1975	7/1981	1982
Vermelho	Brazil	Ni	1966	7/2005	4th quarter 2012	NYA

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The Principal Rare Earth Elements Deposits of the United States

The largest rare earth elements (REE) deposits in the United States are found in carbonatites and alkaline igneous rocks and are concentrated in veins genetically and spatially associated with alkaline igneous intrusions. The association of REE with alkaline igneous rocks also places REE in close association with minerals that host other valuable elements, such as titanium, niobium, phosphorus, and thorium (Van Gosen and others, 2009).

The major REE deposits in the United States are found in

- Carbonatites and alkaline igneous complexes;
- Veins related to alkaline intrusions;
- Some iron ore deposits associated with magmatic-hydrothermal processes; and
- Stream and beach deposits (placers) derived from the erosion of alkaline igneous terranes.

The principal REE districts in the United States are briefly summarized in this report. More-detailed descriptions of these districts and their mineral deposits are available in the References Cited section. The Mountain Pass REE mine, California, may resume operation within the next 2 years, and some of the districts mentioned in this report have experienced recent exploration activity to evaluate their REE resource potential.

Glossary of Terms

Alkaline igneous rock: A series of igneous rocks that formed from magmas and fluids so enriched in alkali elements that sodium- and potassium-bearing minerals form constituents of the rock in much greater proportion than normal igneous rocks. For detailed discussions of alkaline igneous rocks and their scattered geographic distribution refer to Sorensen (1974) and Woolley (1987).

Carbonatite: A rare, carbonate igneous rock formed by magmatic or metasomatic processes. Most carbonatites consist of 50 percent or more primary carbonate minerals, such as calcite, dolomite, and ankerite. They are genetically associated with, and therefore typically occur near, alkaline igneous rocks. Thorough treatises on carbonatites are provided by Tuttle and Gittins (1966), Heinrich (1980), and Bell (1989).

Epithermal: Mineral veins and ore deposits formed within the Earth's crust from warm water at shallow depths and relatively low temperatures (50–200°C), generally at some distance from the magmatic source.

Hypabyssal: An igneous intrusion that solidified at shallow depths before reaching the Earth's surface.

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Alaska—Bokan Mountain

Location: Southern area of Prince of Wales Island, the southernmost island in Alaska. Latitude: 54.91299 N., Longitude: 132.13509 W.; datum: WGS84

Deposit type and basic geology: Several northwest-trending “vein-dike” systems cut linearly through a zoned, peralkaline granite pluton. The vein-dike deposits contain rare earth elements, thorium, and uranium concentrations of several percent each. Individual vein-dike systems extend as much as 2.6 km (1.6 mi) along strike, composed of multiple, subparallel, thin veins that individually rarely exceed 1.5 m (5 ft) in width.

Status: Active, ongoing exploration and assessment of the rare earth elements vein systems in the district by Ucore Rare Metals; its exploration work in the district began in 2007 and has continued into the 2010 field season (<http://www.ucoreraremetals.com/bokan.asp>).

Production: Between 1957 and 1971, the Ross-Adams mine was operated by three different companies to fulfill a contract with the Atomic Energy Agency; it produced roughly 85,000 tons (77,000 metric tons) of ore with a grade of about 1 percent uranium oxide and 3 percent thorium oxide.

Estimated resources: An assessment by the U.S. Bureau of Mines (Warner and Barker, 1989) suggested that collectively the vein-dike systems in the district represent a resource of 6.8 million tons (6.2 metric tons) of ore that average 0.264 percent rare earth elements, about one-third of which is yttrium. Recent assay results released by Ucore Rare Metals suggest that in some of the vein-dike deposits the rare earth elements content (dominated by yttrium) can locally exceed 11 percent.

Detailed Discussion

Bokan Mountain is situated near the southern tip of Prince of Wales Island, which is the southernmost island in the Alaska panhandle and which covers an area of about 7–10 km² (3–4 mi²) (fig. 4) (Warner and Barker, 1989; Philpotts and others, 1998). The Upper Triassic to Middle Jurassic host rock (Lanphere and others, 1964; De Saint-Andre and others, 1983) is a riebeckite-acmite-bearing peralkaline granite with a crudely circular shape that intruded Paleozoic igneous and sedimentary rocks (Staatz, 1978). The core riebeckite granite porphyry contains subordinate aplitic aegirine granite and is surrounded by an outer annulus composed of predominantly aegirine granite porphyry (Thompson, 1988; Philpotts and others, 1998). Pegmatite-aplites with thorium, rare earth elements (REE), and low levels of gold are also present on Bokan Mountain and were emplaced in contact zones around the intrusive granite (Staatz, 1978; Warner and Barker, 1989; Philpotts and others, 1998). In addition, various dikes cut across

all of the rocks near Bokan Mountain, with compositions that include andesite, dacite, basalt, lamprophyre, quartz, monzonite, rhyolite, aplite, and quartz latite (Warner and Barker, 1989). Some of the more felsic dikes contain high levels of accessory Nb, REE, and Th.

The aplitic pegmatites are found throughout the peralkaline granite and range in shape from lensoidal bodies to elongated pods. Examples are radioactive pegmatites exposed in the IML prospects on the east flank of Bokan Mountain, about 1 km (0.6 mi) north-northwest of the Ross-Adams mine (MacKevett, 1963; Warner and Barker, 1989). Most of the pegmatites contain complex mineralogies that include quartz, albite, aegirine, and zircon, with variable amounts of allanite, ilmenite, riebeckite, arsenopyrite, and fluorite (Warner and Barker, 1989). Because of alteration of riebeckite, along the border zone pegmatites typically contain disseminated iron and titanium spinels, as well as magnetite. The cores of the pegmatites consist of milky white massive quartz. The trace element compositions of the pegmatites is equally complex and may contain elevated percentages of Au, Be, Nb, REE, hafnium (Hf), Li, Ta, Sn, Th, U, Y, and Zr. The wall rock also contains a halo that is enriched in these elements, with minerals that include aegirine, sericite, and hematite alteration (Warner and Barker, 1989). Feldspar is largely altered to clay minerals.

In 1955, uranium was discovered in the shear zones and fractures at Bokan Mountain. However, the Ross-Adams mine was the only commercially productive open pit mine in the area. The Ross-Adams mine extracted ore from the Ross-Adams pipe on the Cub claim, which lies along the contact between aegirine syenite and aegirine granite porphyry. An irregularly shaped north-northwest-trending body, the pipe measures 24 m (79 ft) across and was mined along strike for more than 300 m (984 ft) (Thompson, 1988). Between 1957 and 1971, the Ross-Adams mine was operated by three different companies and produced roughly 85,000 tons of ore with a grade of about 1 percent U₃O₈ and 3 percent ThO₂ (Stephens, 1971; Thompson, 1988; Warner and Barker, 1989). Climax Molybdenum operated the mine from 1957 to 1959 and produced 315,000 lb of U₃O₈, and Standard Metals produced another 300,000 lb of U₃O₈ between 1959 and 1964 (table 14). From 1970–1971, Newmont Exploration produced 687,000 lb of U₃O₈, at which time operations were suspended, leaving approximately 365,000 tons of uranium ore unmined (Warner and Barker, 1989).

A private report for the U.S. Department of Agriculture of work conducted by Kent and Sullivan (2004) indicates that a total of 90,700 tons of uranium ore with an unknown grade has been produced at the Ross-Adams mine; in contrast, Cathrall (1994) reports that a total of 209,400 tons of 1 percent uranium oxide (U₃O₈) ore was produced. Several companies, including Standard Metals, Cotter Corp., Union Carbide, Santa Fe Minerals, Dome Minerals, and Humble Oil, conducted exploration drilling on the Bokan Mountain property during 1971–1981 (Kent and Sullivan, 2004). The property is currently (2010) under study by Ucore Rare Metals; the

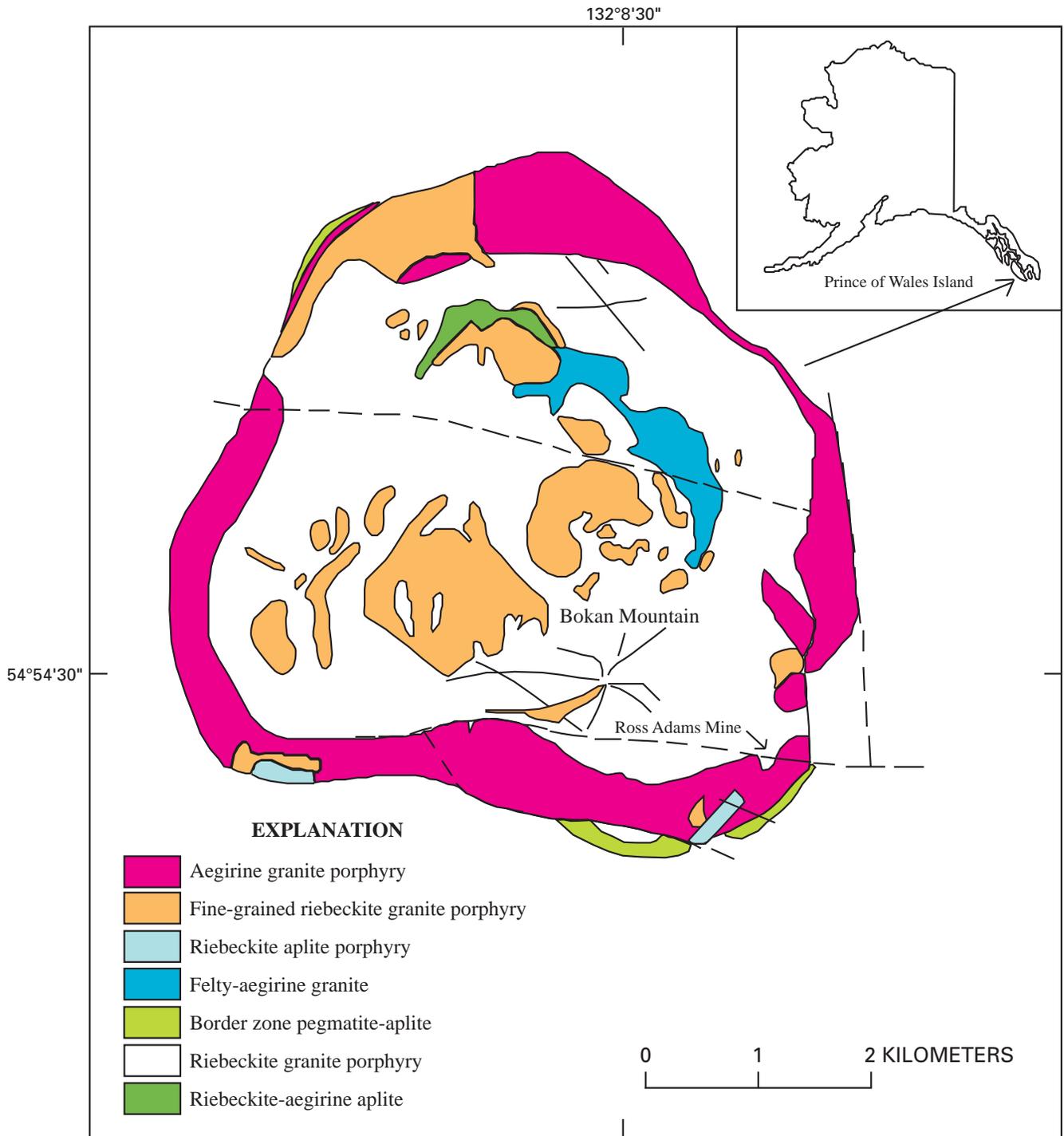


Figure 4. Simplified geologic map of Bokan Mountain, Alaska. Modified from Thompson (1988).

Table 14. Uranium production from the Ross-Adams mine, Alaska.

[Source: Warner and Barker, 1989. Stephens (1971) reported 83,000 tons of uranium ore at about 1% U_3O_8 . Kent and Sullivan (2004) reported 90,700 tons of ore of unknown grade. Cathrall (1994) reported 209,400 tons of 1 percent U_3O_8 , making the total U_3O_8 produced 4.2 million pounds. lb, pound]

Year	Mining company	Amount mined (tons)	U_3O_8 produced (lb)	Grade (percent U_3O_8)
1957	Climax Molybdenum Corp.	15,000	315,000	1.05
1959–1964	Standard Metals Corp.	15,000	300,000	1.0
1970–1971	Newmont Exploration, Ltd.	55,600	687,000	0.62
	Total	85,600	1,302,000	
	Weighted average			0.76

company began an intensive new exploration program in 2007 that continued to the present throughout an area of about 20 mi² that includes the Ross-Adams mine property (<http://www.ucoreraremetals.com/bokan.asp>). Preliminary reports based on these new data suggest an inverse relationship between U and REE; U is located near the margin of the granite complex and more abundant REE more distant from the intrusive complex. However, ore having a high percentage of U is generally also enriched in REE—especially the heavy rare earth elements (HREE), Y, Zr, Be, and Nb. For example, Ucore Rare Metals reports finding about 6 m of core having a grade of 0.26 percent light rare earth elements (LREE) and 3.6 percent HREE in the orebody's I & L vein system.

Rare earth elements-bearing uraniumiferous orebodies also lie in the northwest-striking shear zones within the stock granite, where they measure as thick as 3 m (3.3 ft) and as long as 30 m (98 ft) along strike (Thompson, 1988). The main uranium minerals include uranorthorite and coffinite in a gangue of quartz and feldspar (Warner and Barker, 1989; Heylman, 1999). Typically, uranorthorite is the dominant ore mineral; it forms yellowish to brownish ovoids that are 0.2 to 2 mm in diameter (Thompson, 1988). Hematite may be found as rims on uranorthorite grains or in fine veinlets that extend along microfractures between ovoids. Less than 2 percent of the ore also consists of sulfide species such as pyrrhotite, pyrite, chalcopyrite, galena, sphalerite, marcasite, acanthite, and bornite (Thompson, 1988). Within and adjacent to the orebodies, pervasive hydrothermal albite and minor amounts of chlorite, fluorite, calcite, quartz, sericite, and tourmaline precipitated during wall-rock alteration (Thompson, 1988).

In addition to the mineralized shear zones, U- and REE-mineralized veins and dikes extend out from Bokan Mountain all the way to the West Arm of Kendrick Bay. Most of the veins and dikes are parallel to subparallel (table 15) and crop out on the southeast side of Bokan Mountain, although an exception is the Geiger dike, which is located on the northwest side of the mountain (fig. 5). Overall, the veins and dikes tend to bifurcate and anastomose, especially away from the granite stock, which makes them appear more like members of a system rather than individual bodies (Philpotts and others, 1998).

On the whole, ore mineralization is confined to microfractures in the dikes or the interstices between larger silicate grains (Warner and Barker, 1989). For example, the I & L vein system strikes west-northwest (table 15) and is located within the peralkaline granite stock on the east side of Bokan Mountain (MacKevett, 1963; Warner and Barker, 1989). The system measures 2.6 km (1.6 mi) long and is composed of many thin, subparallel veins that individually rarely exceed 1.5 m (5 ft) in width (Staatz, 1978; Warner and Barker, 1989). Of the two main splays in the I & L vein system, the western splay (closest to the Bokan Mountain granite) is hosted by limonite-stained peralkaline granite and pegmatite (Warner and Barker, 1989). The Dotson dike system terminates in the northwest at a right-lateral offset to the I & L vein system and extends about 2 km (1.2 mi) to the southeast; this system of veins has a width around 1 km (0.6 mi) (Staatz, 1978; Philpotts and others, 1998). The Dotson dike system likely extends southeastward beneath the West Arm of Kendrick Bay (Warner and Barker, 1989). The Geiger dike extends northerly from near an aplite outlier of the peralkaline granite to the north shore of South Arm Moira Sound; it is a continuous dike system of one to five or more parallel, radioactive dikes (Warner and Barker, 1989). The Cheri dike system consists of steeply dipping, subparallel, radioactive dikes that cut albitized quartz diorite country rock (Warner and Barker, 1989). In some places, pyroxene-rich masses appear within the dikes whereas magnetite, pyrite, and epidote appear along the edges. Rare fluorite and secondary uranium have also been identified within all of these "vein-dike" systems (Warner and Barker, 1989).

The Upper Cheri dikes are subparallel to and southwest of the Cheri dikes. On the whole, the dikes are very similar to those of the Cheri dike system, with comparable mineralogy, structure, setting, radioactivity, and intrusive characteristics (Warner and Barker, 1989). The Geoduck dikes can be traced southeasterly along a strike of N. 40°–50° W. for about 2.9 km (1.8 mi) (Warner and Barker, 1989) (table 15). Texturally, the dikes are fine to medium grained and granular and banded or cut by veinlets of quartz or opaque minerals. In addition, the Geoduck dike system has, for most of its strike length, chlorite- and epidote-altered pyritic quartz diorite wall rocks (Warner and Barker, 1989).

The veins and dikes are of importance because they contain anomalously high amounts of Be, Nb, REE, Ta, and Hf-rich zirconium (table 16). From 1984 to 1987, the U.S. Bureau of Mines investigated several prospects on Bokan Mountain and in the surrounding area, including the mineralized dikes. Collectively, the dikes indicate a resource of 6.8 million tons of ore that average 0.264 percent REE oxides, about one-third yttrium (Warner and Barker, 1989). In addition, the dikes are extensively enriched in yttrium and heavy rare earth elements (HREE) relative to the light rare earths (LREE); yttrium is present at 1,000 times its normal crustal abundance. This composition contrasts with REE deposits elsewhere in the United States and is important because most of the HREE and yttrium in the United States is imported (Warner and Barker, 1989). The most abundant REE are, in order of generally decreasing abundance, Y, Ce, Nd, La, and Sm. Gadolinium, Dy, Ho, Er, and Tm are also present in variable and sometimes noteworthy concentrations (Warner and Barker, 1989). On average, the dikes also contain 0.727 percent zirconium oxide and 0.155 percent niobium oxide, while the amount of thorium and uranium in the dikes is negligible. Trace to minor amounts of other valuable elements are also present, including Be, Ga, Ge, Au, Hf, Pb, Li, Pd, Rb, Ag, Sr, Ta, Sn, V, and Zn.

The minerals of the euxenite-polycrase series host most of the Nb found in the dikes, though minor amounts are also contained in columbite (now called ferrocolumbite), aeschynite, and fergusonite (Warner and Barker, 1989). Thalenite, or its alteration product tenerite, contains the observed Y as well as inclusions of xenotime. Other REE are contained within the minerals bastnasite, parisite, synchysite,

xenotime, and monazite. Thorium and uranium are present in thorite and uranothorite. Other minerals identified in the dikes include aegirine, barite, biotite, calcite, epidote, fluorite, galena, iron oxides, magnetite, microcline, microperthite, native silver, pyrite, riebeckite, sphalerite, and zircon. Philpotts and others (1998) examined a 3-km (1.9 mi) transect from the margin of the Bokan Mountain peralkaline granite stock along a micro-pegmatite and aplite vein-dike system enriched in Y-REE-Zr-Nb, and they identified minerals such as arfvedsonite, taeniolite, and gittinsite, as well as several other REE-, Zr-, and Nb-bearing phases. By use of various analytical methods, the examined transect was found to be generally enriched in Y and HREE and to have a pronounced negative Eu anomaly, which largely agrees with the results obtained by Warner and Barker (1989) for several dike systems in the Bokan Mountain area.

Similar to the mineralogy of the dike systems, the mineralogy of the I & L vein system is complex. In particular, U, Th, and REE are present in several different minerals from different parts of the veins, and they are usually in a gangue dominated by quartz and albite (Staatz, 1978; Keyser and McKenney, 2007). Generally, U is located in Th-bearing uraninite, although it can be found in brannerite in some of the transverse veins (Staatz, 1978). Secondary U minerals, such as kasolite and sklodowskite, have been identified, but they are rare (Keyser and McKenney, 2007). In the northwest part of the vein system, thorite is the main thorium mineral, while allanite is found in the southeastern part of the system as well as in the transverse veins. Other rare earth minerals besides allanite include bastnasite, xenotime, and monazite. However,

Table 15. Dimensions of main orebodies in the Bokan Mountain district, Alaska.

[m, meter; --, not available]

Prospect	Deposit type	Trend	Length (m)	Average width (m)	Estimated depth (m)	Source
Dotson shear zone	Shear zone, fracture controlled	--	--	3.0	--	Warner and Barker (1989).
Ross-Adams pipe	Shear zone, fracture controlled	N-NW	300	24	--	Thompson (1988).
Cheri	Dike	N. 45° W.	1,097	0.9	264	Warner and Barker (1989).
Upper Cheri	Dike	--	366	1	--	Warner and Barker (1989).
Dotson	Dike	--	2,134	0.9	762	Warner and Barker (1989).
Geiger	Dike	N. 15° E. to N. 30° W.	1,707	1.5	762	Warner and Barker (1989).
Geoduck	Dike	N. 40° W. to N. 50° W.	2,896	0.5	762	Warner and Barker (1989).
I & L vein system	Dike	NW	2,600	≤1.5	--	Staatz (1978).

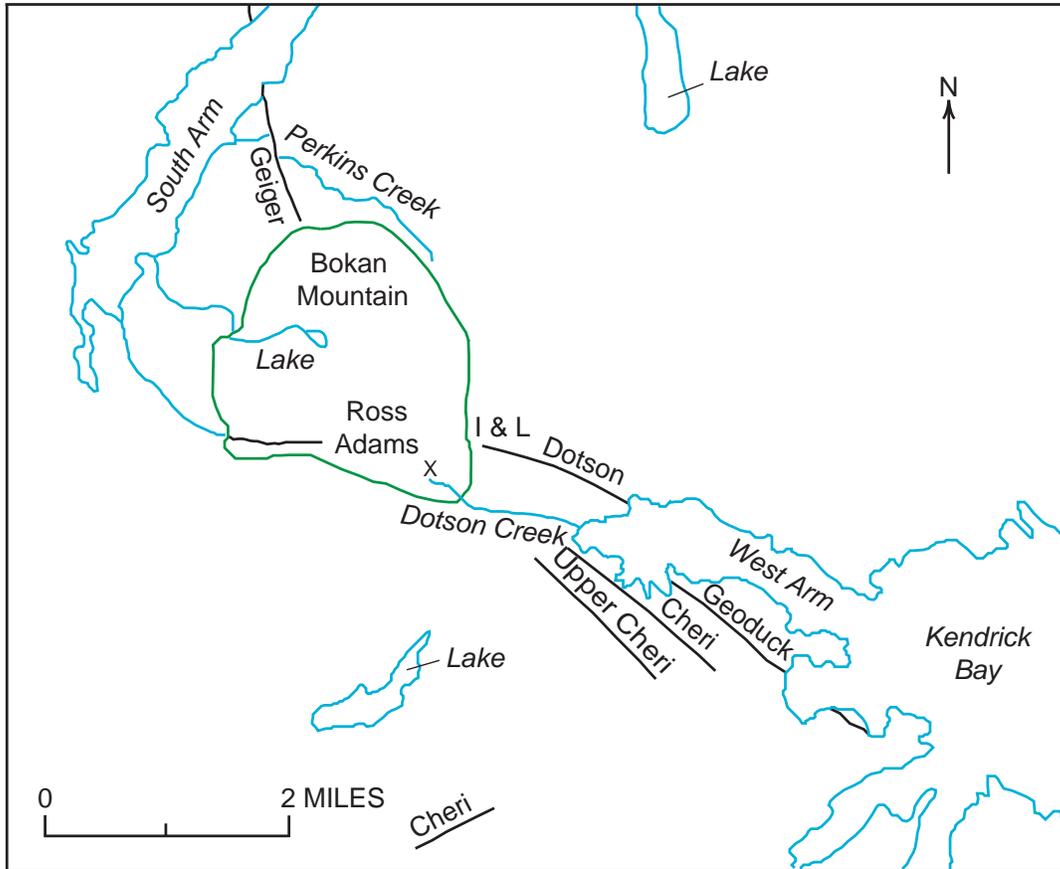


Figure 5. Map of major vein and dike systems associated with Bokan Mountain, Alaska. Modified from Heylman (1999).

the distribution of the REE oxides is unusual in that one part of a vein may contain mostly LREE (for example, bastnasite) whereas another part of the same vein has predominantly HREE (for example, xenotime) (Staatz, 1978).

In addition, the I & L vein system contains anomalous amounts of Be, Nb, Zr, Ba, Sr, Sn, Pb, Zn, Cu, and Mo (table 16). Most of the Nb-rich minerals are located in euxenite-polycrase or columbite-tantalite series. (Columbite and tantalite are obsolete names for a mineral series; columbite is now named ferrocolumbite ($\text{Fe}^{2+}\text{Nb}_2\text{O}_6$), which forms two mineral series, one with ferrotantalite ($\text{Fe}^{2+}\text{Ta}_2\text{O}_6$) and the other with manganocolumbite [$(\text{Mn}^{2+}, \text{Fe}^{2+})(\text{Nb}, \text{Ta})_2\text{O}_6$]).

Commonly, these minerals are associated with zircon as microveinlets. Alternatively, these minerals may replace albite and quartz in the vein matrix. Other minerals include aegirine, barite, biotite, calcite, epidote, fluorite, galena, iron oxides, potassium feldspar, magnetite, pyrite, riebeckite, native silver, and sphalerite (Staatz, 1978).

Many of the dikes in the Bokan Mountain area crop out in heavily forested areas and thus the bedrock is covered by thick vegetation (Warner and Barker, 1989). For instance, the Upper Cheri dike system can be traced only intermittently because of muskeg cover, glacial till, or obscuration by hillside talus where it is open-ended. On the northwest end of the Upper Cheri, the dike system passes under a low-lying creek valley (Warner and Barker, 1989). Heavy soil cover also prohibits detailed mapping in the I & L vein system. In addition, accessibility to the area is limited given that the topography of the Bokan Mountain area ranges from moderately steep to precipitous (Keyser and McKenney, 2007). Although deep-water marine access is available to and from Ketchikan and Prince Rupert by way of Kendrick Bay and Moira Sound, accessing more remote sections of the area must be achieved by helicopter, boat, or on foot. In spite of these limitations, the mineralization could have considerable economic potential.

Table 16. Resource estimates for main prospects on Bokan Mountain, Alaska, and surrounding property.

[%; percent; --, not available. Source of data: Warner and Barker (1989) and Keyser and McKenney (2007)]

Prospect	Resource (tons)		U ₃ O ₈ (percent)	Nb ₂ O ₅ (percent)	ThO ₂ (percent)	Y ₂ O ₃ (percent)	ZrO ₂ (percent)	REO (percent)	BeO (percent)	Ta ₂ O ₅ (percent)
	Indicated	Inferred								
Cheri ¹	--	73,000	0.012	0.089	0.025	0.095	0.320	0.281	0.025	0.01
Cheri ¹	--	458,000	0.020	0.175	0.042	0.222	0.650	0.461	0.03	0.01
Cheri ¹	4,443,000	--	0.014	0.123	0.032	0.180	0.410	0.352	0.025	0.01
Upper Cheri	481,000	--	0.014	0.099	0.025	0.159	0.460	0.411	--	--
Dotson shear zone	--	2,039,000	0.009	0.083	0.071	0.113	0.009	0.132	--	--
Dotson dike ¹	8,490,000	--	0.011	0.103	0.052	0.138	0.260	0.21	0.16	0.026
Geiger ¹	--	2,450,000	0.021	0.219	0.009	0.168	2.430	0.458	--	0.014
Geiger ¹	4,693,000	--	0.021	0.219		0.168	2.430	0.458	--	0.014
Geiger ¹	2,600,000	--	0.008	0.062	0.009	0.163	1.000	0.149	--	--
Geoduck ¹	--	1,378,000	0.015	0.148	0.031	0.374	0.640	0.375	0.028	--
Geoduck ¹	9,528,000	--	0.012	0.112	0.021	0.200	0.390	0.319	0.028	--
I & L	--	21,000	0.094	0.186	0.114	--	0.094	--	--	--
I & L	--	23,000	--	0.096	--	--	--	--	--	--
I & L	--	50,000	--	0.100	--	--	--	--	--	--
I & L	--	6,000	--	0.300	--	--	--	--	--	--
I & L	37,000	--	--	0.100	--	--	--	--	--	--
I & L	5,000	--	--	0.300	--	--	--	--	--	--
ILM	586,000	--	0.017	0.176	--	0.083	3.340	0.353	--	--
Ross-Adams mine	--	365,000	0.17	--	0.460	0.400	0.320	0.32	--	--
Sunday Lake	27,000	--	0.59	0.070	3.640	1.030	0.380	0.329	--	--
Total		30,890,000		6,863,000						

¹Trace percentages of Ge, Hf, Pb, Zn, and Au also present.

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Alaska—Salmon Bay

Location: Northeast shore of Prince of Wales Island, the southernmost island in Alaska. Latitude: 56.31915 N., Longitude: 133.17145 W.; datum: WGS84

Deposit type and basic geology: Short, irregular, and lenticular veins of radioactive carbonate-hematite crop out along the coast for about 13 km (8 mi). Some veins can be traced for more than 91 m (300 ft) between the low-tide line and forest cover. The veins cut the Salmon Bay greywacke, a thick formation of Silurian age. On average, the veins are 5–8 cm (2–3 in.) wide, though they normally range from less than 2 cm (1 in.) to as much as 0.76 m (2.5 ft). A few veins reach 1.5–3 m (5 to 10 ft) in width.

Status: Apparently little geologic work has been done in this area since the 1950s.

Production: No past production.

Estimated resources: The average of seven samples taken from one of the more radioactive veins was 0.034 percent equivalent uranium (eU) or 0.156 percent equivalent thorium (eTh), which equates to 0.178 percent equivalent ThO₂ (eThO₂) (Houston and others, 1955). The fluorine-rich carbonates from the highest-grade rare earth elements vein yield an average content of 0.79 percent rare earth oxides. Because of the short, lenticular, and irregular nature of the veins, the average grade or total reserves was not calculated.

Detailed Discussion

Reconnaissance for radioactive deposits in southeastern Alaska in 1952 identified radioactive minerals in the vicinity of Salmon Bay, Alaska, located on the northeastern shoreline of Prince of Wales Island. Short, irregular, and lenticular veins of radioactive carbonate-hematite crop out along the coast for about 13 km (8 mi), roughly 5 km (3 mi) northwest and 8 km (5 mi) southeast of Salmon Bay (Houston and others, 1955). Some of the veins can be traced, however, for more than 91 m (300 ft) between the low-tide line and forest cover. The veins cut the Salmon Bay greywacke, a thick formation of Silurian age that ranges in color from reddish brown to grayish green (Houston and others, 1955). On average, the veins are 5–8 cm (2–3 in.) wide, though they normally range from less than 2 cm (1 in.) to as many as 0.76 m (2.5 ft). A few veins reach 1.5–3 m (5 to 10 ft) in width.

The predominant minerals in the veins are dolomite-ankerite and alkali feldspar, with lesser amounts of hematite, pyrite, siderite, magnetite, quartz, chalcedony, and chlorite (Houston and others, 1955). Other minerals identified include parisite, bastnasite, muscovite, fluorite, apatite, thorite, zircon, monazite, epidote, topaz, garnet, chalcopyrite, and marcasite. The radioactivity in the veins is caused by thorite and monazite, both of which contain thorium. The fluorocarbonates

parisite and bastnasite are found in nonradioactive carbonate-hematite veins, which are also located along the coast and are wider than the radioactive veins. Of the two fluorocarbonates, parisite is more abundant and appears to be a late-stage mineral that fills in small vugs or was deposited along fractures in the host carbonate vein (Houston and others, 1955).

Seven samples taken from one of the more radioactive veins averaged 0.034 percent equivalent uranium (eU) or 0.156 percent equivalent thorium (eTh), which equates to 0.178 percent equivalent ThO₂ (eThO₂) (Houston and others, 1955). The fluorocarbonates from the highest-grade rare earth vein yield an average content of 0.79 percent rare earth oxides. Because of the short, lenticular, and irregular nature of the veins, no calculation of the average grade or total reserves was attempted. However, analyses of samples from the Paystreak vein on Pitcher Island were sufficient to enable preliminary estimates. Houston and others (1955) reported approximately 68.6 lb (31 kg) of Th or 78.1 lb (35.4 kg) of ThO₂ per foot (0.3 m) of depth for the 100-ft (30.5-m) portion of the vein sample.

Additional exploration of the Salmon Bay deposit is necessary to more fully evaluate the economic potential of this resource, as little work has been done in this area since the 1950s.

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California—Mountain Pass Deposit and Mine

Location: Northeastern corner of San Bernardino County, California. Latitude: 35.47812 N., Longitude: 115.53068 W.; datum: WGS84

Deposit type and basic geology: A massive carbonatite called the Sulphide Queen body forms the core of the Mountain Pass igneous complex and hosts the bulk of the rare earth elements resources in the district. This carbonatite body has an overall length of 730 m (2,395 ft) and average width of 120 m (394 ft). The typical ore contains about 10–15 percent bastnasite (the ore mineral), 65 percent calcite or dolomite (or both), and 20–25 percent barite, plus other minor accessory minerals (Castor and Nason, 2004). The Sulphide Queen carbonatite body is the largest known mass of high-grade rare earth elements ore in the United States.

Status: Molycorp ceased its mining of the Mountain Pass rare earth elements deposit in 2002 when its permit expired. In 2009, Molycorp announced its intentions to resume mining at Mountain Pass by the year 2012.

Production: Rare earth elements were mined in the district beginning in 1952, with nearly continuous production until 2002. The mine's peak output, around 1990, was 20,000 metric tons/year (22,000 tons/year) of rare earth elements oxides.

Estimated resources: Molycorp estimates that the remaining deposit holds 20 to 47 million metric tons (22 to 52 million tons) of ore with an estimated average grade of 8.9 percent rare earth elements oxide.

Detailed Discussion

The Mountain Pass deposit sits near the eastern edge of the Mohave Desert in the northeastern corner of San Bernardino County, California. It lies just north of Interstate Highway 15 near Mountain Pass, about 60 mi (96 km) southwest of Las Vegas, Nevada (figs. 6 and 7).

The Mountain Pass deposit is commonly recognized as the largest known rare earth elements (REE) resource in the United States, with current reserves estimated to be greater than 20 million metric tons of ore with an average grade of 8.9 percent rare earth elements oxide (Castor and Hedrick, 2006). A massive carbonatite called the Sulphide Queen body forms the core of the Mountain Pass igneous complex and hosts the bulk of the REE mineral resources in the district. This carbonatite body has an overall length of 730 m (2,395 ft) and average width of 120 m (394 ft) (Olson and others, 1954). The typical ore contains about 10–15 percent bastnasite (the ore mineral), 65 percent calcite or dolomite (or both), and 20–25 percent barite, plus other minor accessory minerals (Castor and Nason, 2004). The Sulphide Queen carbonatite body is

the largest known mass of high-grade REE ore in the United States. Light REE are preferentially concentrated in the Mountain Pass ore (Castor, 2008).

Molycorp ceased its mining of the Mountain Pass REE deposit in 2002 when its permit expired. However, in 2009, Molycorp announced its intentions to resume mining at Mountain Pass by the year 2012. The mine's open pit—inactive since 2002—covers about 22 hectares (55 acres) of area and is about 122 m (400 ft) deep. In July 2009, Molycorp reached agreement with Arnold Magnetic Technologies Corp. of Rochester, New York, to make permanent magnets using REE mined at Mountain Pass (Mining Engineering, 2009). Molycorp announced that “Plans call for mining to resume at Mountain Pass by 2012, at the rate of about 972 t/d [972 metric tons per day; 1,000 tons per day] of ore, enough to produce 20 kt [20,000 metric tons; 22,000 tons] of rare earth oxides for sale each year” (Mining Engineering, 2009, p. 8); it has received approval to double its output volume with time. The mine's peak output 20 years ago was 20,000 metric tons per year of rare earth oxides (Mining Engineering, 2009). Molycorp estimates that the remaining deposit holds 20 to 47 million metric tons (22 to 52 million tons) of ore (Mining Engineering, 2009).

The Sulphide Queen carbonatite stock and nearby carbonatite dikes are associated with Proterozoic, potassium-rich igneous rocks—biotite shonkinite, hornblende and biotite syenite, and granite—that intruded Precambrian metamorphic and igneous rocks (Olson and others, 1954; Castor, 2008). The Sulphide Queen body was originally mapped as three rock types with local variations—gray calcite-barite rock (fig. 8), ferruginous dolomitic rock, and silicified carbonate rock (Olson and others, 1954). All phases of the stock contain bastnasite. Age determinations indicate that the Sulphide Queen carbonatite was emplaced 1375 ± 5 million years ago (DeWitt and others, 1987), about 25–35 million years after the alkaline igneous intrusions in the district (Castor, 2008).

In addition to the massive Sulphide Queen carbonatite stock, several carbonatite dikes are exposed in the Mountain Pass district. These dikes include the Birthday veins north and northwest of the Sulphide Queen mass and other carbonatite dikes southeast of the stock. The Sulphide Queen stock and the carbonatite dikes are exposed across an area of less than 1 mi² in the district. The carbonatite dikes range from a few inches to about 6 m (20 ft) in thickness and can be exposed for as much as 122 m (400 ft) along strike (Olson and others, 1954). Like the Sulphide Queen stock, the carbonatite dikes are abundant in calcite (as much as 90 percent of the dike) and barite (as much as 30 percent); but in contrast to the stock, individual dikes may or may not contain bastnasite. Accessory minerals include siderite, quartz, fluorite, galena, pyrite, apatite, crocidolite, wulfenite, biotite, thorite, hematite, magnetite, goethite, and potassium feldspar (Olson and others, 1954; Castor and Nason, 2004; Castor, 2008). The carbonatite dikes range in total REE oxide content from 2.03 to 18.64 percent (Olson and others, 1954; Staatz and others, 1980).



Figure 6. Google Earth image of the Mountain Pass mining district, California. Molycorp’s open pit mine—inactive since 2002—is at the center of this view; the pit covers about 55 acres (22 hectares) and is about 400 ft (122 m) deep. (Image used with permission of Google.)

The REE content of the Mountain Pass district was first discovered in April 1949, when a couple of uranium prospectors noted modest radioactivity on their Geiger counter on Sulphide Queen hill and at the Birthday vein, located 1,219 m (4,000 ft) to the northwest (radioactivity reflected the thorium content of the carbonatite). They grabbed samples of radioactive rock and took it to the U.S. Bureau of Mines office in Boulder City, Nevada. Analyses of the samples by the Bureau of Mines, confirmed by laboratories of the USGS, found that the rock was rich in bastnasite—a rare earth–carbonate–fluorine mineral—which subsequently became the primary ore mineral of Mountain Pass. Later in 1949, the prospectors

filed claims on the Birthday vein system. In November of 1949, the USGS initiated a high-priority field study of the Mountain Pass district, which mapped, described, and sampled the district in detail; this field work led to the discovery of the massive Sulphide Queen carbonatite stock (Shawe, 1953; Olson and others, 1954).

Mappers collected 59 outcrop samples of the Sulphide Queen stock, which in total showed an average content of 6.9 percent REE oxides. Molybdenum Corporation of America (later “Molycorp”) purchased the claims from the prospectors in February 1950 and prepared plans to mine these bastnasite deposits. In 1952, Molybdenum Corporation of America began



Figure 7. Northwest-facing view of Mountain Pass district, California, about 1997, viewed from the Mineral Hill area south of Interstate Highway 15. An outcrop of ultrapotassic rock is in the right foreground. (Photograph by Stephen B. Castor, Nevada Bureau of Mines and Geology; used with permission.)



Figure 8. Dolomitic carbonatite ("beforsite," described by Castor, 2008) of the Sulphide Queen orebody, Mountain Pass district, California. This sample is very high grade ore; it contains more than 12 percent rare earth oxide. bar, barite phenocrysts; b+cc, fine-grained bastnasite mixed with calcite; brown to yellow mineral is dolomite. (Photograph by Stephen B. Castor, Nevada Bureau of Mines and Geology; used with permission.)

mining of the surface outcrops and built small processing facilities in the district. The early prospecting and discovery history of the Mountain Pass district is thoroughly described by D.F. Hewett, as the foreword to Olson and others (1954).

Although the report is more than half a century old and was written prior to large-scale mining in the district, the USGS report of Olson and others (1954) remains the most comprehensive published report on the geology of the Mountain Pass district. The geologic mapping, lithologic descriptions, and mineralogy described in the report have been proven through the several decades of development to be an accurate geologic accounting of the district. The results of more recent geologic and geochemical research in the district, which includes sub-surface information, are detailed by Castor (2008).

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California—Music Valley Area

Location: Sixteen km (10 mi) southeast of Twentynine Palms in Riverside County, southern California. Latitude: 33.98423 N., Longitude: 115.93254 W.; datum: WGS84

Deposit type and basic geology: The xenotime deposits of the Music Valley area are situated within the Pinto Gneiss of probable Precambrian age. Biotite-rich zones in the gneiss can contain abundant orange xenotime grains, commonly forming 10–15 percent of the biotite zones and locally comprising about 35 percent xenotime.

Status: A reported deposit with apparently no current exploration activity.

Production: These deposits had no past production. Small-scale exploration of these deposits during the late 1950s investigated their radioactivity.

Estimated resources: No resource estimate has been made for this district. In 1957, rock chip samples were collected in radioactive, biotite-rich intervals of the Pinto Gneiss that had been exposed in exploration prospect pits. Results from five samples found 3.5 to 8.8 weight percent yttrium.

Detailed Discussion

Music Valley lies in the Pinto Mountains about 16 km (10 mi) southeast of Twentynine Palms in Riverside County, southern California, and just to the northeast of Joshua Tree National Park. During 1949 and 1952, reconnaissance ground and airborne radiometric prospecting by the USGS in conjunction with the U.S. Atomic Energy Commission led to the discovery of radioactivity anomalies in the Music Valley area. This discovery led to local exploration efforts to find the source of the radioactivity. By 1959, only traces of uranium had been found in this area, but localized concentrations of xenotime suggest that the radioactivity originated in thorium rather than uranium.

All of the xenotime deposits of the Music Valley area lie within the Pinto Gneiss of probable Precambrian age (Evans, 1964), the oldest rock unit exposed in this area. The Pinto Gneiss consists of roughly equal amounts of quartz and plagioclase feldspar, and it averages approximately 35 percent biotite (Evans, 1964). Accessory minerals present in trace amounts in the gneiss include sericite, apatite, magnetite, zircon, and sphene, and local monazite, actinolite, orthoclase, microcline, perthite, and muscovite. Biotite-rich zones in the gneiss can contain abundant orange xenotime grains that commonly form 10–15 percent of the biotite zones and locally comprise about 35 percent xenotime (Evans, 1964).

In the Music Valley area, xenotime concentrations are distributed throughout a northwest-trending zone that is about 4.8 km (3 mi) in width by 9.7 km (6 mi) in length. According to Evans (1964, p. 10): “Xenotime is almost entirely confined to the Pinto Gneiss where it is irregularly distributed and only

locally concentrated in sufficient quantity to give an abnormal radioactive anomaly. It nearly always occurs in biotite-rich lenses, pods, and folia.”

In 1957, rock-chip samples were collected in radioactive, biotite-rich intervals of the Pinto Gneiss that had been exposed in exploration prospect pits. Five rock-chip samples collected from the most radioactive prospect, the U-Th deposit, found the following concentrations (Evans, 1964, table 2, p. 21):

Element	Concentration (wt percent)
Y	3.5–8.8
La	0.26–0.34
Ce	0.47–0.94
Nd	0.24–0.41
Dy	0.22–0.41
Yb	0.46–0.75
Th	0.31–0.49

To better evaluate the potential rare earth elements resources within the Music Valley area requires additional detailed mapping, sampling and analyses, and perhaps core drilling.

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Colorado—Iron Hill Carbonatite Complex

Location: Located near the small town of Powderhorn, about 35 km (22 mi) south-southwest of Gunnison, Colorado. Latitude: 38.25319 N., Longitude: 107.05328 W.; datum: WGS84

Deposit type and basic geology: A massive carbonatite stock forms the core of the Iron Hill carbonatite complex. The carbonatite stock is enriched in rare earth elements, niobium, and thorium; the adjacent pyroxenite unit is enriched in these elements also and in substantial amounts of titanium.

Status: Since 1990, Teck Resources Ltd. has owned many of the patented claims within this intrusive complex. Its interests have focused on the substantial titanium resource within the pyroxenite unit of the complex. Currently (2010), it appears that Teck Resources is not actively conducting work at this property.

Production: No mineral resources have been produced from this intrusive complex, despite its varied and substantial mineral resources (Van Gosen and Lowers, 2007).

Estimated resources: The U.S. Geological Survey (Staatz and others, 1979) estimated that the carbonatite stock of Iron Hill contains 655.6 million metric tons (722.7 million tons) of carbonatite. On the basis of the averaged analytical results of 28 samples of the carbonatite stock—0.4 percent total rare earth elements oxides and 0.004 percent thorium oxide—Staatz and others (1979) calculated potential reserves within the stock of 2.6 million metric tons (2.865 million tons) of rare earth elements oxides and 28,190 metric tons (31,080 tons) of thorium oxide. Applying an average grade of 0.057 percent niobium oxide, Staatz and others (1979) estimated a reserve of 374,000 metric tons (412,000 tons) of niobium oxide in the carbonatite stock of Iron Hill. For an area of the pyroxenite unit, Teck Resources reported that “mineable proven, probable and possible reserves***are 41.8 million tonnes [46 million tons] grading 13.2% TiO₂ [titanium oxide] within an open-ended global proven, probable and possible geologic resource of 1.6 billion tonnes [1.8 billion tons] grading 10.9% TiO₂” (Shaver and Lunceford, 1998, p. 63).

Detailed Discussion

The Iron Hill carbonatite complex is exposed for 31 km² (12 mi²) near the small town of Powderhorn, about 35 km (22 mi) south-southwest of Gunnison, Colorado. The intrusion is alkaline with a prominent carbonatite stock at its core. This intrusive complex is noteworthy because of its classic geology and its mineral resource potential (Van Gosen and Lowers, 2007). This intrusive complex was described by Olson and Hedlund (1981, p. 5) as “the best example of the

carbonatite-alkalic rock association in the United States and is one of the outstanding occurrences in the world, comparable to many of the classic areas in Africa and other continents.” The primary rock types of the complex are, from oldest to youngest, pyroxenite, uncomphgrite, ijolite, nepheline syenite, and carbonatite (Olson, 1974; Hedlund and Olson, 1975; Olson and Hedlund, 1981; Armbrustmacher, 1983). Substantial titanium concentrations have been measured in the pyroxenite unit, which is thought to host the largest titanium (Ti) resource in the United States (Thompson, 1987; Shaver and Lunceford, 1998; Van Gosen and Lowers, 2007). The carbonatite stock is enriched in rare earth elements (REE), niobium (Nb), and thorium (Th); the pyroxenite unit is also enriched in these elements plus vanadium (V). Thus, it may be economic to extract several resources from this complex with a well-coordinated mine and mill plan. Thus far, none of these resources has been developed at Iron Hill.

A dolomitic carbonatite stock was the last major igneous phase of the Iron Hill intrusive complex. The stock forms Iron Hill (fig. 9) and the ridge to its northwest, and it is exposed throughout an area of about 3.7 km (2.3 mi) long by 1.9–0.8 km (1.2–0.5 mi) wide, making it the largest exposed carbonatite mass in the United States. Staatz and others (1979) estimated that the carbonatite stock of Iron Hill contains 655.6 million metric tons (722.7 million tons) of carbonatite. On the basis of the averaged analytical results of 28 samples of the carbonatite stock—0.4 percent for total rare earth oxides and 0.004 percent ThO₂—Staatz and others (1979) calculated potential reserves within the stock of 2.6 million metric tons (2.865 million tons) of rare earth elements oxides and 28,190 metric tons (31,080 tons) of ThO₂. Recent sampling of the Iron Hill carbonatite stock by Van Gosen (2008) found median values (from 13 samples) of 0.19 percent total rare earth oxides (table 17) and 0.0035 percent ThO₂; this result represents estimated resources within the stock of about 1.22 million metric tons (1.34 million tons) of rare earth elements oxides and about 23,000 metric tons (25,300 tons) of ThO₂. (Median values were used for the Van Gosen (2008) data because a few individual results exceeded the upper analytical limit of detection for an element.)

Applying an average grade of 0.057 percent Nb₂O₅, Staatz and others (1979) estimated a reserve of 374,000 metric tons (412,000 tons) of Nb₂O₅ in the carbonatite stock of Iron Hill. Armbrustmacher and Brownfield (1979) found 0.003 to 0.2 weight percent Nb (niobium) in 28 samples of the carbonatite stock. Van Gosen (2008) found median values of 0.0595 weight percent Nb₂O₅ from 13 samples of the stock, suggesting an estimated resource of 390,000 metric tons (430,000 tons) of Nb₂O₅.

As noted earlier, the pyroxenite unit of the Iron Hill complex is enriched in titanium and likely is the largest titanium resource in the United States. In 1968, Buttes Gas & Oil Company purchased the properties of the Iron Hill intrusive complex. It focused its exploration and development primarily on titanium resources in the perovskite-rich pyroxenite on the northeast side of the Cimarron fault (Thompson, 1983). Exploration by Buttes Gas & Oil continued at the site into the 1980s.



Figure 9. Northwest-facing view of Iron Hill, Gunnison County, southwestern Colorado. Iron Hill is formed by a massive carbonatite stock that forms the center of an alkaline intrusive complex. This complex hosts many mineral resources, including titanium, niobium, rare earth elements, and thorium (Van Gosen and Lowers, 2007). The carbonatite stock is estimated to consist of 655.6 metric tons of carbonatite containing 2.6 million metric tons of rare earth elements oxides, 28,200 metric tons of thorium oxide, and 373,700 metric tons of niobium oxide (Staatz and others, 1979, p. 30).

A 1976 newspaper article in the *Denver Post* (February 25, 1976, p. 31) reported that company officials stated that their studies had identified 419 million tons (380 metric tons) of reserves averaging 12 percent TiO_2 . Thompson (1987, p. 27) noted, “In 1976, Kaiser Engineers, Inc. prepared a computer ore reserve analysis indicating a reserve of 390,000,000 tons (350 million metric tons) assaying 11.5 percent TiO_2 . Since 1976, additional drilling has increased the reserve to at least 500 million tons (450 million metric tons) of about the same grade.” Thompson (1983, 1987) summarizes the exploration work at Iron Hill during the 1970s and 1980s by Buttes Gas & Oil and its subsidiary companies, and he describes the processing steps that were being considered to most effectively extract titanium from the rock.

In 1990, Teck Resources Ltd. entered into a joint venture partnership with Buttes Gas & Oil Company to explore the titanium resources of the Iron Hill intrusive complex. In 1994, Teck Resources purchased 100 percent interest in the properties. Since then (and by 2010), Teck Resources delineated an orebody within the pyroxenite rock in the northeastern area of the intrusive complex, calculated reserve estimates, and conducted mineral processing, marketing, and environmental baseline studies to evaluate the economic viability of developing these titanium resources (Shaver and Lunceford, 1998). Teck Resources reported that “mineable proven, probable and possible reserves...are 41.8 million metric tons (46 million tons) grading 13.2 percent TiO_2 within an open-ended global proven, probable and possible geologic

resource of 1.6 billion metric tons (1.8 billion tons) grading 10.9 percent TiO_2 ” (Shaver and Lunceford, 1998, p. 63).

More recently, Van Gosen (2008) collected 24 widely scattered near-surface samples of the pyroxenite unit in the northern part of the intrusive complex (fig. 10). Results showed a high concentration of 5.74 percent Ti (titanium) with a median value of 3.2 percent Ti content. For comparison, Best (1982, p. 615) reported that the titanium content of typical pyroxenite is approximately 0.88 percent. Also, Upton (1967, p. 283) reported that the Iron Hill pyroxenite contained the highest titanium concentrations among his example chemistries of alkaline pyroxenites worldwide.

Similar to the central carbonatite stock, the pyroxenite unit at Iron Hill also is enriched in rare earth elements (table 17), niobium, and thorium and, additionally, vanadium. Pyroxenite samples collected by Van Gosen (2008) contained median values of 0.143 percent total rare earth elements oxide content (table 2), 0.036 percent Nb_2O_5 , 0.0025 percent ThO_2 , and 0.046 percent V_2O_5 .

The high REE resource estimates at Iron Hill, Colorado, are biased by the very large volume of the host rocks—the carbonatite and the pyroxenite unit—which are exposed throughout very large areas and extend at depth for at least several hundreds of meters. Also, note that REE concentrations at Iron Hill—about 0.14–0.19 percent REE oxide—are substantially lower than the concentrations in the Mountain Pass carbonatite deposit (California), which reportedly averages 8.9 percent rare earth oxide.

Table 17. Median concentrations of rare earth elements in samples of carbonatite stock and pyroxenite unit, Iron Hill carbonatite complex, Colorado.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. ppm, parts per million; wt percent, weight percent. Data from Van Gosen (2008)]

Carbonatite stock (13 samples)				Pyroxenite unit (24 samples)			
Element	Median value (ppm)	Oxide	Oxide equivalent (wt percent)	Element	Median value (ppm)	Oxide	Oxide equivalent (wt percent)
La	344	La ₂ O ₃	0.040	La	264	La ₂ O ₃	0.031
Ce	681	Ce ₂ O ₃	0.080	Ce	508	Ce ₂ O ₃	0.060
Pr	89.7	Pr ₂ O ₃	0.010	Pr	60.2	Pr ₂ O ₃	0.007
Nd	337	Nd ₂ O ₃	0.039	Nd	227	Nd ₂ O ₃	0.026
Sm	47.8	Sm ₂ O ₃	0.006	Sm	39.1	Sm ₂ O ₃	0.005
Eu	11	Eu ₂ O ₃	0.001	Eu	10.6	Eu ₂ O ₃	0.001
Gd	33.7	Gd ₂ O ₃	0.004	Gd	31.1	Gd ₂ O ₃	0.004
Tb	3.72	Tb ₂ O ₃	0.0004	Tb	3.64	Tb ₂ O ₃	0.0004
Dy	8.04	Dy ₂ O ₃	0.0009	Dy	14.1	Dy ₂ O ₃	0.002
Ho	1.10	Ho ₂ O ₃	0.0001	Ho	2.04	Ho ₂ O ₃	0.0002
Er	2.63	Er ₂ O ₃	0.0003	Er	4.48	Er ₂ O ₃	0.0005
Tm	0.29	Tm ₂ O ₃	0.00003	Tm	0.45	Tm ₂ O ₃	0.00005
Yb	1.6	Yb ₂ O ₃	0.0002	Yb	2.5	Yb ₂ O ₃	0.0003
Lu	0.17	Lu ₂ O ₃	0.00002	Lu	0.29	Lu ₂ O ₃	0.00003
Y	27.9	Y ₂ O ₃	0.004	Y	47.8	Y ₂ O ₃	0.006
Total	1,590		0.186		1,215		0.143



Figure 10. Outcrop of pyroxenite unit in the northern part of the Iron Hill carbonatite complex, southwestern Colorado. Analyses of 24 widely scattered samples of this pyroxenite unit collected throughout the complex contained median abundances of 5.3 percent titanium oxide, 0.06 percent cerium oxide, 0.143 percent total rare earth elements oxides, 0.036 percent niobium oxide, 0.0025 percent thorium oxide, and 0.046 percent vanadium oxide (Van Gosen, 2008).

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Colorado—Wet Mountains Area

Location: In the Wet Mountains and surrounding area in Fremont and Custer Counties of south-central Colorado. Latitude: 38.16695 N., Longitude: 105.21388 W.; datum: WGS84

Deposit type and basic geology: Thorium (Th) and rare earth elements (REE) are noted in veins, syenite dikes, fracture zones, and carbonatite dikes (Armbrustmacher, 1988) associated with three Cambrian alkaline complexes (Olson and others, 1977) that intruded the surrounding Precambrian terrane. Thorium-REE–mineralized veins and fracture zones, which are distal to the three alkaline intrusive complexes, have the highest economic potential for thorium and rare earth elements resources. The thorium-REE veins and fracture zones are linear features, typically 1–2 m (3.3–6.6 ft) thick, but a few are as much as 15 m (49 ft) thick. Some individual thorium veins can be traced in outcrop for 1.5 km (0.9 mi) and some radioactive fracture zones as much as 13 km (8 mi). Most of these vein and fracture-zone deposits lie within a 57 km² (22 mi²) tract of Precambrian gneiss and migmatite located south and southeast of a quartz syenite complex at Democrat Creek. Christman and others (1953, 1959) mapped nearly 400 veins in this area.

Status: No apparent exploration activity is underway in this district at present (2010). Many of the prospective vein and fracture-zone deposits occur on private lands.

Production: No thorium or rare earth elements have been produced from the district. Modest exploration activity, apparently during the 1950s, prospected the radioactive veins in the district; the prospecting included shallow trenching.

Estimated resources: The U.S. Geological Survey (Armbrustmacher, 1988) estimated that the vein and fracture zone deposits of the Wet Mountains area contain the following resources:

- Thorium oxide (ThO₂)
 - Reserves of 58,200 metric tons (64,200 tons);
 - Probable potential resources of 145,600 metric tons (160,500 tons);
- Total light rare earth elements
 - Reserves of 26,600 metric tons (29,300 tons);
 - Probable potential resources of 66,500 metric tons (73,270 tons)
- Total heavy rare earth elements
 - Reserves of 17,700 metric tons (19,540 tons);
 - Probable potential resources of 44,300 metric tons (48,850 tons).

(This estimate was based on average concentrations of 0.46 percent ThO₂, 0.21 percent total light rare earth elements oxides, and 0.14 percent total heavy rare earth elements oxides.)

Detailed Discussion

This thorium-rare earth elements (REE) district, located in Fremont and Custer Counties of south-central Colorado, may be comparable in thorium and REE resources to the Lemhi Pass district of Idaho-Montana. Thorium-REE deposits are exposed throughout an area of about 60 km (37 mi) north to south by 24 km (15 mi) west to east. Thorium and REE are found in veins, syenite dikes, fracture zones, and carbonatite dikes (Armbrustmacher, 1988) associated with three Cambrian alkaline complexes (Olson and others, 1977) that intruded the surrounding Precambrian terrane. These three alkaline complexes are the McClure Mountain Complex (Shawe and Parker, 1967; Armbrustmacher, 1984), the Gem Park Complex (Parker and Sharp, 1970), and the complex at Democrat Creek (Armbrustmacher, 1984). The thorium-REE-mineralized veins and fracture zones, which are distal to the three alkaline intrusive complexes, have the highest economic potential for thorium and REE resources.

On the basis of 201 samples of veins and fracture zones, the USGS (Armbrustmacher, 1988) estimated that the vein and fracture zone deposits of the Wet Mountains area contain the following resources:

- Thorium oxide (ThO₂)
 - Reserves of 58,200 metric tons (64,200 tons);
 - Probable potential resources of 145,600 metric tons (160,500 tons);
- Total light rare earth elements
 - Reserves of 26,600 metric tons (29,300 tons);
 - Probable potential resources of 66,500 metric tons (73,270 tons);
- Total heavy rare earth elements
 - Reserves of 17,700 metric tons (19,540 tons); and
 - Probable potential resources of 44,300 metric tons (48,850 tons).

This estimate incorporates average concentrations of 0.46 percent ThO₂, 0.21 percent total light REE oxides, and 0.14 percent total heavy REE oxides.

The thorium-REE veins and fracture zones are linear features, typically 1–2 m (3.3–6.6 ft) thick, but a few are as much as 15 m (49 ft) thick (fig. 11). Some individual thorium veins can be traced in outcrop for 1.5 km (0.9 mi) and some radioactive fracture zones for as much as 13 km (8 mi). Most of these vein- and fracture-zone deposits are distributed within a 57 km² (22 mi²) tract of Precambrian gneiss and migmatite located south and southeast of a quartz syenite complex at Democrat Creek. Christman and others (1953, 1959) mapped

nearly 400 veins in this area. The dominant minerals forming these veins are smoky and clear quartz, microcline, barite, iron oxides, carbonates, and accessory rutile and sulfide minerals. Waxy, red thorite is the primary thorium mineral.

Thorium-REE minerals in the Wet Mountains district are also deposited in carbonatite dikes and small plugs. The carbonatite dikes are especially associated with the McClure Mountain complex (Staatz and Conklin, 1966). The carbonatites take a variety of forms, such as composite dikes with two or more generations of carbonate side by side with lamprophyre (Heinrich and Salotti, 1975; Armbrustmacher and others, 1979); phreatic explosion breccia pipes satellite to the McClure Mountain complex (the Pinon Peak breccia pipes of Heinrich and Dahlem, 1967); and siliceous carbonate dikes associated with amethyst veining (the Amethyst carbonatites of Heinrich and Shappirio, 1966). Armbrustmacher (1979) separated the carbonatites into two groups: replacement carbonatites and primary magmatic carbonatites. Replacement carbonatites have microscopic textures that indicate the nearly

complete pseudomorphous replacement of relict igneous dike minerals by carbonate minerals. The replacement carbonatite dikes have ThO_2 contents of <0.1 percent (Armbrustmacher and Brownfield, 1978). In contrast, the primary magmatic carbonatite dikes do not display mineral replacement textures and are enriched in elements and minerals typical of magmatic carbonatites, such as thorium, niobium, and REE that reside in the minerals thorite, bastnasite, synchysite, ancylite, and monazite. Thorium concentrations in the primary magmatic carbonatite dikes commonly exceed 0.1 percent ThO_2 . However, thorium is more concentrated and is present in greater volume in the quartz-iron oxide-barite vein and fracture-zone deposits of the district in comparison with the carbonatites (Armbrustmacher, 1988).

From 52 samples of primary magmatic carbonatite in the Wet Mountains area, Armbrustmacher (1988) found average concentrations of 0.17 percent ThO_2 and 2.15 percent total rare earth oxides. Armbrustmacher (1988) calculated that the seven largest carbonatite dikes in the district contain the following:



Figure 11. Sewell Ranch thorium vein (between yellow lines), Wet Mountains, Custer County, south-central Colorado. This northwest-southeast-trending Cambrian vein, 9 ft (2.7 m) wide here, cuts about perpendicular to foliation of Precambrian mafic gneiss country rock. Analysis of outcrop samples of this vein collected by this study found 762 ppm Th (0.087 percent Th oxide); 495 ppm La; 1,280 ppm Ce; 752 ppm Nd; 296 ppm Sm; 78.5 ppm Eu; 174 ppm Gd; 16.2 ppm Tb; 14.5 ppm Ho; 4.16 ppm Tm; 25.2 ppm Yb; and 3.42 ppm Lu.

- ThO₂
Reserves of 119 metric tons (131 tons);
Probable potential resources of 683 metric tons (753 tons);
- Total REE oxides
Reserves of 2,270 metric tons (2,500 tons);
Probable potential resources of 12,970 metric tons (14,300 tons).

The Wet Mountains area also contains thin (≤ 2 m thick) red syenite dikes that contain anomalous thorium and REE, particularly where the dikes are located nearest the intrusive centers. The syenite dikes are composed primarily of alkali feldspar and ferric oxides, with trace amounts of thorite, barite, rutile, xenotime, bastnasite, and brockite (Armbrustmacher, 1988). Samples of red syenite veins analyzed by this

study found only 30–40 parts per million (ppm) Th, equivalent to 0.0034–0.0046 percent ThO₂, and 590–680 ppm total rare earth elements. Cerium accounts for about 40 percent of the rare earth content of the syenite dikes.

Sampling and geochemical analyses completed during this study showed that the syenite, mafic, and ultramafic rock units that form the core of the three intrusive complexes do not contain particularly large concentrations of thorium or REE. Samples of the quartz syenite pluton of the complex at Democrat Creek had an average content of 62 ppm Th (0.007 percent ThO₂) and 700 ppm total rare earth elements. Gabbro and pyroxenite units of the Gem Park complex showed no greater than 13 ppm Th and average total rare earth elements content of 190 ppm. In the McClure Mountain complex, all samples of the plutonic units of hornblende-biotite syenite (fig. 12), nepheline syenite, pyroxenite, and gabbro contained less than 10 ppm Th and no more than 355 ppm total rare earth elements content.



Figure 12. West-facing view of McClure Mountain, Fremont County, Colorado. The mountain is composed of a hornblende-biotite syenite phase of McClure Mountain complex. This stock is genetically related to thorium-rare earth elements vein deposits of Wet Mountains area. However, this rock unit and other core units of three intrusive complexes in this area contain only modest concentrations of thorium and rare earth elements. The thorium- and rare earth-bearing minerals crystallized in epigenetic vein and fracture-zone deposits distal to the alkaline intrusive complexes.

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Idaho—Diamond Creek Area

Location: This vein district lies on the eastern slope of the Salmon River Mountains, about 13 km (8 mi) north-northwest of Salmon, Idaho. Veins of the Diamond Creek district are found throughout an area only 4 km (2.5 mi) long by 0.8 km (0.5 mi) wide. Latitude: 45.29112 N., Longitude: 113.95174 W.; datum: WGS84

Deposit type and basic geology: The veins are hosted by Proterozoic quartzite and siltite and by Mesoproterozoic granite. The Diamond Creek veins are mineral fillings in fractured and sheared bedrock; the veins are as much as 7.6 m (25 ft) thick in the metasedimentary rocks (quartzite and siltite) but rarely more than 0.6 m (2 ft) thick in the granite (Staatz and others, 1979). These veins contain considerable amounts of hydrous iron oxide minerals, accompanied by disseminated thorium–rare earth elements–bearing minerals. The vein deposits with copious amounts of yellow-to-brown iron oxides (limonite and goethite) appear to contain the highest thorium (Th) and rare earth elements (REE) concentrations.

Status: No apparent exploration activity is underway in this district at present (2010). Within the last decade, Thorium Energy Inc. sampled vein deposits in the district.

Production: No thorium or rare earth elements have been produced from the district. In the Diamond Creek area, the larger veins were explored to evaluate their radioactivity in the latest 1940s into the early 1950s by use of bulldozed trenches, short adits, and hand-dug pits (Anderson, 1958). Most of the Diamond Creek area is soil covered, and thus the veins are exposed only by workings and road cuts.

Estimated resources: Sampling of the veins of the Diamond Creek district by the U.S. Geological Survey (Staatz and others, 1979, eight samples) found total REE oxide contents of 0.59 to 5.51 percent and thorium oxide contents of 0.04 to 1.71 percent (only one sample had more than 1 percent ThO₂). Most of the samples were more greatly enriched in the light REE compared with the heavy REE. Staatz and others (1979) estimated total reserves for the district of 2,870 tons (2,600 metric tons) of total rare-earth oxides and total probable potential resources of 75,500 tons (68,500 metric tons) of total REE oxides, using an average grade of 1.22 percent total REE oxides. Recent exploration and sample analysis by Thorium Energy Inc. supports the previous data reported by the USGS and the Atomic Energy Commission., including average total REE content of 0.80 percent and thorium content of 0.12 percent.

Detailed Discussion

The Diamond Creek district in eastern Idaho contains thorium- and rare earth elements (REE)-bearing veins similar to those in the Lemhi Pass district, 56 km (35 mi) to the southeast. This vein district lies on the eastern slope of the

Salmon River Mountains, about 13 km (8 mi) north-northwest of Salmon, Idaho. Veins of the Diamond Creek district are found across an area of only 4 km (2.5 mi) long by 0.8 km (0.5 mi) wide (Anderson, 1958; Staatz and others, 1979). The veins are hosted by Proterozoic quartzite and siltite and by Mesoproterozoic granite (Evans and Zartman, 1990; Evans and Green, 2003). Similar in general appearance to the veins of Lemhi Pass, the Diamond Creek veins are mineral fillings in fractured and sheared bedrock; the veins are as much as 7.6 m (25 ft) thick in the metasedimentary rocks (quartzite and siltite), but rarely more than 0.6 m (2 ft) thick in the granite (Staatz and others, 1979).

In the Diamond Creek area, the larger veins were explored in the latest 1940s into the early 1950s by use of bulldozed trenches, short adits, and hand-dug pits (Anderson, 1958). Most of the Diamond Creek area is soil covered, and thus the veins are exposed only by workings and road cuts. Only eight veins have been identified in the district, traced along strike for 33.5 to 780 m (110 to 2,560 ft) (Anderson, 1958; Staatz and others, 1979). The eight veins vary from 0.15 to 7.6 m (0.5 to 25 ft) in thickness (Staatz and others, 1979). They contain considerable amounts of hydrous iron oxide minerals, accompanied by disseminated thorium-REE minerals.

In the Diamond Creek district, the vein deposits with copious amounts of yellow to brown iron oxides (limonite and goethite) appear to contain the highest thorium and REE concentrations (Anderson, 1958). Quartz, limonite, and goethite form the bulk of the veins, with locally abundant fluorite, potassium feldspar, hematite, and biotite (Anderson, 1958; Staatz and others, 1979). The primary thorium and REE mineral is monazite (Staatz and others, 1979). Thorium also occurs in minor amounts in brockite and thorite, and xenotime and bastnasite have been identified in trace amounts (Staatz and others, 1979).

Sampling of the veins of the Diamond Creek district by Staatz and others (1979, eight samples) found total REE oxide contents of 0.59 to 5.51 percent and thorium oxide contents of 0.04 to 1.71 percent (only one sample had more than 1 percent ThO₂). Most of the samples were more greatly enriched in the light REE than in the heavy REE. Staatz and others (1979) estimated total reserves for the district of 2,870 tons (2,600 metric tons) of total rare-earth oxides and total probable potential resources of 75,500 tons (68,500 metric tons) of total REE oxides, using an average grade of 1.22 percent total REE oxides.

Recent exploration and sample analysis by Thorium Energy Inc. supports the previous data reported by the USGS and the Atomic Energy Commission., including average total REE content of 0.80 percent and thorium content of 0.12 percent. Hedrick (2010) reports, “A preliminary estimate of the amounts of REE in the deposit are 22,400 t (metric tons) of cerium, 17,125 of neodymium, 8,220 t of lanthanum, 5,480 t of samarium, 4,795 t of yttrium, 3,425 t of praseodymium, 3,425 t of gadolinium, 1,370 t of dysprosium and europium each, and a total of 685 t of the remaining heavy rare earths.” (One ton (2,000 lb) is equal to 0.9072 metric tons.)

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Idaho—Hall Mountain

Location: Veins crop out in an area of about 2.6 km² (½ mi²)—1,830 m (6,000 ft) by 305 m (1,000 ft) wide—on Hall Mountain in northernmost Idaho. Hall Mountain lies 1.6 km (1 mi) south of the United States–Canada border and 4.8 km (3 mi) east of the border station of Porthill, Idaho. Latitude: 48.98584 N., Longitude: 116.41887 W.; datum: WGS84

Deposit type and basic geology: The veins of Hall Mountain cut Precambrian quartzite and quartz diorite. They range in exposed length from 1.8 m (6 ft) to 213 m (700 ft) and in width from 0.18 m (0.6 ft) to 4 m (13 ft). Thorite is the primary thorium- and rare earth elements-bearing mineral; quartz and calcite are the most abundant gangue minerals, associated with chlorite magnetite, limonite, pyrite, and biotite, along with numerous minor and trace minerals. A total of 30 minerals were identified by Staatz (1972).

Status: No active exploration has been reported in this district.

Production: No mineral resources have been produced from this district.

Estimated resources: The U.S. Geological Survey (Staatz and others, 1979) determined that the possible reserves in this district are limited to thorium resources in only a few large veins. They estimate that the thorium reserves are 104,300 metric tons (115,000 tons) of vein material averaging 4.0 percent thorium oxide. They suggest that the rare earth elements are probably not economical in this district because of their low overall concentrations (average about 0.05 percent rare earth elements oxides).

Detailed Discussion

Thorium and REE-rich veins crop out in an area of about 2.6 km² (½ mi²)—1,830 m (6,000 ft) by 305 m wide (1,000 ft)—on Hall Mountain in northernmost Idaho. Hall Mountain lies 1.6 km (1 mi) south of the United States–Canada border and 4.8 km (3 mi) east of the border station of Porthill, Idaho. Veins in this area can contain considerable thorium content, locally with as much as 21 percent ThO₂ (Staatz, 1972); however, their rare earth elements content is usually much less than their thorium content. As reported by Staatz and others (1974, p. 677), “Total rare-earth content of these veins ranges from 0.00111 to 0.197 percent in 12 samples from 10 veins; the thoria (ThO₂) content, from 0.011 to 5.84 percent.” Staatz (1972, p. 240) reported, “The thorium content of 23 samples from 11 veins ranged from 0.0095 to 21 percent. Twelve samples had a thorium content greater than 1 percent.”

The veins of Hall Mountain cut Precambrian quartzite and quartz diorite. They range in exposed length from 1.8 to 213 m (6 to 700 ft) and vary in width from 0.18 to 4 m (0.6 to 13 ft). Thorite is the primary thorium- and rare earth

elements-bearing mineral; quartz and calcite are the most abundant gangue minerals, associated with chlorite magnetite, limonite, pyrite, and biotite, along with numerous minor and trace minerals. A total of 30 minerals were identified by Staatz (1972).

According to the analyses of Staatz and others (1979), the possible reserves in this district are limited to thorium resources in only a few large veins. They estimate that the thorium reserves are 104,300 metric tons (115,000 tons) of vein material averaging 4.0 percent ThO₂. They suggest that the rare earths are probably not economical in this district because of their low overall concentrations (average about 0.05 percent rare earth elements oxides). The distribution of rare earth elements in the Hall Mountain veins, on the basis of the average concentrations of 10 vein samples reported by Staatz and others (1974), is summarized in table 18.

Table 18. Mean concentrations of rare earth elements measured in 10 vein samples, Hall Mountain, Idaho.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. wt percent, weight percent. Data averaged from analyses reported by Staatz and others (1974, table 1)]

Oxide	Average wt percent
La ₂ O ₃	0.0013
Ce ₂ O ₃	0.0053
Pr ₂ O ₃	<0.0006
Nd ₂ O ₃	0.0016
Sm ₂ O ₃	0.0011
Eu ₂ O ₃	<0.0018
Gd ₂ O ₃	0.0041
Tb ₂ O ₃	<0.0018
Dy ₂ O ₃	0.0034
Ho ₂ O ₃	<0.0012
Er ₂ O ₃	0.0024
Tm ₂ O ₃	<0.0017
Yb ₂ O ₃	0.0025
Lu ₂ O ₃	<0.0014
Y ₂ O ₃	0.0315
Total	0.0512

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Idaho—Lemhi Pass District, Idaho-Montana

Location: The Lemhi Pass district contains numerous vein deposits enriched in thorium and rare earth elements (REE) within a 140 km² (54 square mi) core of a larger 400 km² (154 mi²) area in the central Beaverhead Mountains; the district straddles the Continental Divide on the Montana-Idaho border. Latitude: 44.93728 N., Longitude: 113.46451 W.; datum: WGS84

Deposit type and basic geology: Within the Lemhi Pass district, Staatz (1972; Staatz and others, 1979) mapped 219 veins enriched in thorium and rare earth elements (REE). Most of these veins are quartz-hematite-thorite veins that fill fractures, shears, and brecciated zones in Mesoproterozoic quartzite and siltite host rocks. Thorium and REE also appear in monazite-thorite-apatite shears and in replacements with specularite, biotite, and alkali feldspar. The thorium-REE veins of the district range from 1 m (3.3 ft) to at least 1,325 m (4,347 ft) in length and from a few centimeters (1 in.) to as much as 12 m (39 ft) in width. The Last Chance vein—1,325 m (4,348 ft) long and 3–8 m (10–26 ft) wide for most of its length—is the longest and widest vein in the district.

Status: During the last decade (prior to 2010), Thorium Energy Inc. has evaluated the thorium and REE resources in the vein systems of the district.

Production: No thorium or REE have been produced from this district. Past exploration and development in these vein deposits focused on their thorium content; earlier development trenched several veins and produced modest underground workings in the Last Chance vein.

Estimated resources: This district is thought to represent the largest concentration of thorium resources in the United States (Van Gosen and others, 2009). On average, the thorium veins of the district have roughly equal concentrations of thorium and total rare earth elements. Thus, the REE resources of the vein deposits of the Lemhi Pass district are approximately equal to its thorium resource. Earlier studies by the USGS estimated that the Lemhi Pass district contains total reserves of 64,000 metric tons (70,500 tons) of thorium oxide (ThO₂) and probable potential resources of an additional 121,000 metric tons (133,000 tons) (Staatz and others, 1979). The 10 largest veins, with an average grade of 0.43 percent ThO₂, represent 95 percent of the district's identified thorium resources. Using a compilation of surface, underground, and drilling assays, the Idaho Energy Resource Company reported a "quantitative proven" reserve of 176 metric tons (194 tons) of ThO₂ within the Last Chance vein and a possible resource of 2,000 metric tons (2,200 tons) of additional ThO₂ (Idaho Energy Resource Company, written commun., 2008).

Detailed Discussion

The Lemhi Pass district contains numerous vein deposits enriched in thorium and rare earth elements (REE) within a 140 km² (54 mi²) core of a larger 400 km² (154 mi²) area in the central Beaverhead Mountains; the district straddles the Continental Divide on the Montana-Idaho border (fig. 13). This district is thought to represent the largest concentration of thorium resources in the United States (Van Gosen and others, 2009). Earlier studies by the USGS estimated that the Lemhi Pass district contains total reserves of 64,000 metric tons (70,550 tons) of thorium oxide (ThO₂) and probable potential resources of an additional 121,000 metric tons (133,400 tons) (Staatz and others, 1979). The 10 largest veins, with an average grade of 0.43 percent ThO₂, represent 95 percent of the district's identified thorium resources. Using a compilation of surface, underground, and drilling assays, the Idaho Energy Resource Company reported a "quantitative proven" reserve of 176 metric tons (194 tons) of ThO₂ within the Last Chance vein and a possible resource of 2,000 metric tons (2,200) of additional ThO₂ (Idaho Energy Resource Company, written commun., 2008). On average, the thorium veins of the district have roughly equal concentrations of thorium and total rare earth elements. Thus, the REE resources of the vein deposits of the Lemhi Pass district are approximately equal to its thorium resource. The Last Chance vein and the Wonder vein (fig. 14) are the only deposits in the district that have been sampled by underground or drill-hole access. Much exploration potential exists in the district.

Within the Lemhi Pass district, Staatz (1972) and Staatz and others (1979) mapped 219 veins enriched in thorium and REE. Most of these veins are quartz-hematite-thorite veins, which fill fractures, shears, and brecciated zones in Mesoproterozoic quartzite and siltite host rocks. Thorium and REE also are present in monazite-thorite-apatite shears and replacements with specularite, biotite, and alkali feldspar. The thorium-REE veins of the district range from 1 m (3.3 ft) to at least 1,325 m (4,347 ft) in length and from a few centimeters (1 in.) to as much as 12 m (39 ft) in width. The Last Chance vein—1,325 m (4,348 ft) long and 3–8 m (10–26 ft) wide for most of its length—is the longest and widest vein in the district; this vein also represents the largest individual thorium and REE resource in the district. Fifteen thorium veins in the district exceed 300 m (984 ft) in length. Some of the veins contain carbonate minerals, such as calcite, siderite, and ankerite, and local fluorite. Rare earth elements- and thorium-bearing allanite and monazite are locally abundant. Other reported ore minerals include brockite, xenotime, and thorite. The primary gangue minerals are quartz, hematite, limonite, apatite, potassium feldspar, biotite, albite, and barite. Most of the veins are extensively weathered and have abundant iron-oxide staining. The district also hosts small quartz-copper-gold (and rare molybdenum) veins, and some of the thorium veins contain very small amounts of base metals, such as copper, iron, manganese, lead, and zinc.



Figure 13. View to west of Lemhi Pass, Idaho-Montana. The ridge, a part of Beaverhead Mountains, forms a segment of the Continental Divide and the Idaho-Montana border; Montana is in foreground and Idaho is in the distance. More than 200 rare earth elements- and thorium-rich veins in this area form the Lemhi Pass district.



Figure 14. Outcrop of Wonder vein (between red lines), Lemhi Pass district, Idaho-Montana, exposed in a mined bench. Vein is heavily oxidized and consists mainly of silica, likely some carbonate, and iron oxide minerals with thorite and altered thorite. Host rock is Precambrian quartzite and siltite.

The thorite veins of the Lemhi Pass district are approximately equally enriched in thorium and REE; the ratio of thorium to REE concentrations in the veins averages around 1:1. Staatz (1972) reported the REE analyses of 31 vein samples, which showed total REE-oxide contents ranging from 0.073 to 2.20 percent, with an average value of 0.428 percent (very similar to the average thorium oxide content of 0.43 percent found in the 10 largest veins in the district). Table 19 lists the average distribution of the rare earth elements reported by Staatz (1972, table 5) from the analyses of nine samples of the Last Chance vein. The district's thorium veins are most commonly enriched in the middle REE (especially neodymium), with some veins apparently enriched more in the heavy REE (Staatz, 1972, p. 76–77). Using modern techniques in recent analytical work, the Idaho Geological Survey and industry (Idaho Energy Resource Company in 1991; Thorium Energy in 2008) has confirmed the overall thorium and REE concentrations and the unusual

enrichments in middle REE-group minerals. Hedrick (2010) reported, “Based on average percentages of individual REE by recent sampling and previous analyses by Idaho Energy Reserves Co. (a subsidiary of Idaho Power Co.), the Lemhi Pass District had resources, in order of increasing atomic number, 77,345 t of yttrium; 25,780 t of lanthanum; 69,980 t of cerium; 11,050 t of praseodymium; 66,296 t of neodymium; 40,515 t of samarium; 14,735 t of europium; 40,515 t of gadolinium; 1,840 of terbium; 14,730 t of dysprosium; 1,840 t each of holmium and ytterbium; and about 929 t or less each of erbium, thulium, and lutetium.”

Table 19. Mean concentrations of rare earth elements measured in samples of Last Chance vein, Idaho-Montana.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. wt percent, weight percent. Last Chance is the largest vein in the Lemhi Pass district, Idaho-Montana. Data averaged from nine samples of the vein reported by Staatz (1972, table 5)]

Oxide	Average wt percent
La ₂ O ₃	0.033
Ce ₂ O ₃	0.082
Pr ₂ O ₃	0.014
Nd ₂ O ₃	0.127
Sm ₂ O ₃	0.087
Eu ₂ O ₃	0.027
Gd ₂ O ₃	0.056
Tb ₂ O ₃	0.003
Dy ₂ O ₃	0.008
Ho ₂ O ₃	<0.003
Er ₂ O ₃	0.002
Tm ₂ O ₃	<0.003
Yb ₂ O ₃	<0.003
Lu ₂ O ₃	<0.003
Y ₂ O ₃	0.015
Total	0.454

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Illinois—Hicks Dome

Location: Hicks Dome is located in Hardin County, southernmost Illinois. Latitude: 37.53131 N., Longitude: 88.36873 W.; datum: WGS84

Deposit type and basic geology: The dome-shaped structure, approximately 14.5 km (9 mi) in diameter, was formed by the displacement of sedimentary rocks at least 1,200 m (3,940 ft) upward above an alkaline intrusion at depth. More than 600 m (1,970 ft) of sedimentary rocks, mostly limestone, were pushed up by the explosive intrusion of magmatic fluids. A hole drilled near the apex of the dome (Brown and others, 1954) intersected a mineralized breccia at a depth of 490 m (1,607 ft), which continues to the bottom of the hole at 897 m (2,944 ft). Mineralization in the breccia contains thorium and rare earth elements, tentatively identified as residing in monazite, and is found in association with florencite, a cerium-aluminum phosphate; gangue minerals are fluor spar, calcite, quartz, minor pyrite, and traces of sphalerite and galena.

Status: Currently (2010), no exploration appears to be active at this feature.

Production: No mineral resources have been produced from this intrusive complex.

Estimated resources: Resources have not been estimated. Eight samples of drill core, each 7.6–9.1 m (25–30 ft) long, contained thorium concentrations of 0.007–0.18 percent thorium oxide (Brown and others, 1954). Rare earth elements content in the eight drill-core samples was 0.1–0.99 weight percent yttrium; 0.01–0.099 weight percent lanthanum, cerium, neodymium, and dysprosium; and 0.001–0.0099 weight percent ytterbium (Trace, 1960). These samples represent only 64 m (210 ft) of a breccia zone enriched in thorium and rare earth elements; this zone could extend throughout a large area across the roof of Hicks Dome.

Detailed Discussion

Hicks Dome, in Hardin County of southernmost Illinois, overlies a potentially wide area of rare earth elements (REE) and thorium (Th) mineralization at depth. The dome-shaped structure, approximately 14.5 km (9 mi) in diameter, was formed by the displacement of sedimentary rocks at least 1,200 m (3,940 ft) upward above an alkaline intrusion at depth. More than 600 m (1,970 ft) of sedimentary rocks, mostly limestone, were pushed up by the explosive intrusion of magmatic fluids (Heyl and others, 1965). A hole drilled near the apex of the dome (Brown and others, 1954) intersected a mineralized breccia at a depth of 490 m (1,607 ft), which continues to the bottom of the hole at 897 m (2,944 ft). Mineralization in the breccia includes fluor spar, calcite, quartz, minor pyrite, and traces of sphalerite and galena. Eight samples of

this drill core, each 7.6–9.1 m (25–30 ft) long, contained 0.007 to 0.18 percent ThO₂ (Brown and others, 1954). REE content in the eight drill-core samples was 0.1–0.99 weight percent Y; 0.01–0.099 weight percent for La, Ce, Nd, and dysprosium (Dy); and 0.001–0.0099 weight percent ytterbium (Yb) (Trace, 1960). These samples represent only 64 m (210 ft) of a breccia zone enriched in Th-REE; this zone could extend throughout a large area across the roof of Hicks Dome.

Shallow diamond drilling and trenching sampled an area of radioactive breccia atop Hicks Dome in which the radioactive mineral was tentatively identified as monazite, and found, in association with florencite, a cerium-aluminum phosphate (Trace, 1960). A surface sample from a trench contained 0.1–0.5 weight percent Th plus REE, including 0.5–1 weight percent Ce and La, 0.1–0.5 weight percent Nd, 0.05–0.1 weight percent praseodymium (Pr), 0.01–0.05 weight percent terbium (Tb), and 0.005–0.01 weight percent Yb (Trace, 1960).

Using airborne gamma-ray data, Pitkin (1974) delineated the large extent of the radioactivity anomaly at Hicks Dome, which arises because of its thorium content. However, the apparent depth of this REE-thorium deposit may limit its resource potential. Much more surface and subsurface exploration is necessary to evaluate the extent and grade of this deposit.

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Missouri—Pea Ridge Iron Deposit and Mine

Location: The Pea Ridge iron orebody and mine site is located in Washington County, Missouri, about 97 km (60 mi) southwest of St. Louis. Latitude: 38.12621 N., Longitude: 91.04766 W.; datum: WGS84

Deposit type and basic geology: Rare earth elements (REE)-bearing breccia pipes cut through the Pea Ridge massive magnetite-iron orebody. The Pea Ridge deposit is hosted by Precambrian volcanic rocks of the St. Francois terrane of southeastern Missouri. The magnetite-rich orebody is interpreted as a high-temperature, magmatic-hydrothermal deposit (Sidder and others, 1993) in ash-flow tuffs and lavas, which may have formed in the root of a volcanic caldera (Nuelle and others, 1991). Four mapped REE-bearing breccia pipes steeply crosscut the magnetite-hematite orebody and its altered rhyolite host rock. Exposed portions of the breccia pipes are as much as 60 m (197 ft) in horizontal length and as much as 15 m (49 ft) in width; the pipes extend below the mined levels to an undetermined depth (Seeger and others, 2001). Rare earth elements-bearing minerals in the breccia pipes include monazite, xenotime, and minor bastnasite and britholite. The REE concentrations reported in the breccia pipes are consistently high but variable. Nuelle and others (1992, p. A1) state, “Total REE oxide content of samples of the groundmass material, which are not diluted with lithic fragments, average about 20 weight percent.” Seeger and others (2001, p. 2) state, “Total REE oxide concentrations of grab samples range from about 2.5 to 19 weight percent.” Bulk sampling by the U.S. Bureau of Mines found REE oxides concentrations ranging from 7 to 25 weight percent and an average of 12 weight percent (Vierrether and Cornell, 1993).

Status: Currently (2010), there is no active development in this deposit. In 2005, Upland Wings formed Wings Enterprises, with the intent to reclaim iron ore at the site and produce iron from its large surface reserves (<http://www.wingsironore.com/>).

Production: In 1957, the deposit was first developed by the Bethlehem Steel and St. Joseph Lead Company, under the name Meramec Mining Company. In 1964, iron production began from this deposit. The mine operated from 1964 to 2001 with three interruptions, producing more than 30 million tons (27 million metric tons) of pellets, fines, heavy media, and other iron products. In 1990, the mine lost its last iron-ore-pellet customer and began to produce specialty products. The Pea Ridge mine continued to operate while iron ore prices fell during the 1990s, but in 2001 the mine went into bankruptcy. In 2001, Upland Wings, Inc., purchased the Pea Ridge Iron Ore mine properties and all of its mineral rights.

Estimated resources: A U.S. Bureau of Mines report by Whitten and Yancey (1990) estimated that the breccia pipes contain about 600,000 metric tons (660,000 tons) of REE reserves with an average grade of 12 percent REE oxides. The report does not indicate the data used to calculate this estimate. However, a similar value of 600,000 short tons is mentioned as a note on another internal company memo (provided by Jim Kennedy, electronic communication, October 2008); that memo is dated 10-25-89 and signed by Larry J. Tucker (retired Pea Ridge mine superintendent); supporting calculations for this value are missing. A copy of another internal company memo (provided by Jim Kennedy, electronic communication, October 2008 and dated 11-22-88 and signed by Larry J. Tucker) indicates that there is a combined, probable reserve in two of the breccia pipes of approximately 250,000 metric tons (276,000 tons) of mineralized rock, grading about 13 percent REE (note: weight percent, not oxide equivalent). The surface tailings contain additional lanthanide resources primarily in fine-grained, REE-bearing minerals, chiefly monazite and xenotime, that form inclusions within apatite. The apatite also contains minor amounts of REE in its structure; apatite is found in variable concentrations throughout the iron orebody (Vierrether and Cornell, 1993).

Detailed Discussion

Rare earth elements (REE)-bearing breccia pipes cut through the Pea Ridge massive magnetite iron-orebody in Washington County, Missouri, about 97 km (60 mi) southwest of St. Louis. The iron deposit as a whole contains concentrations of REE that may be economically recoverable as a primary product or as a byproduct of iron ore production.

The Pea Ridge massive magnetite deposit is hosted by Precambrian volcanic rocks of the St. Francois terrane of southeastern Missouri; this volcanic-plutonic province is composed of Mesoproterozoic rhyolitic ash-flow tuffs, lava flows, and granitic plutons (Kisvarsanyi, 1980). The St. Francois terrane contains eight known Mesoproterozoic magnetite-hematite deposits and forms an iron metallogenic province (Kisvarsanyi and Proctor, 1967) that hosts nearly 1 billion metric tons of identified ore (Arundale and Martin, 1970). The Pea Ridge massive magnetite orebody has been interpreted as a high-temperature, magmatic-hydrothermal deposit (Sidder and others, 1993) in ash-flow tuffs and lavas, which may have formed in the root of a volcanic caldera (Nuelle and others, 1991).

The Pea Ridge deposit is covered by Cambrian and Ordovician sedimentary rocks that unconformably overlie the deposit and the underlying Precambrian rocks. The orebody lies discordant to the host volcanic rocks, striking N. 60° E. with a nearly vertical dip, whereas the host volcanic rocks strike N. 80° W. and dip 75° NE. (Emery, 1968). The primary host for the iron orebody is altered rhyolite tuff (Nuelle and others, 1992). This massive iron deposit is estimated to contain more than 100 million short tons of ore (Arndt, 1981).

The deposit area contains nine mappable rock units: amphibole-quartz rock; heterolithic breccia; pseudobreccia; magnetite; hematite; silicified rock; REE mineral-bearing breccia pipes; mafic dikes; and aplite dikes (Nuelle and others, 1992; Seeger and others, 2001). Four mapped lanthanide-bearing breccia pipes (X11, V12, X13, V14) steeply crosscut the magnetite-hematite orebody and its altered rhyolite host rock (fig. 15); the pipes are situated along the footwall and eastern edge of the iron orebody (Seeger and others, 2001). Exposed portions of the breccia pipes are as much as 60 m (197 ft) in horizontal length and as much as 15 m (49 ft) in width; the pipes extend below the mined levels to an undetermined depth (Seeger and others, 2001). One of the pipes is exposed for 120 m (394 ft) vertically. As described by Seeger and others (2001, p. 2), the four breccia pipes of the Pea Ridge deposit consist of the following:

“Fragments of rhyolite, iron oxide, and silicified rock in a groundmass of rock flour, feldspar, chlorite, barite, apatite, monazite, xenotime, quartz, and calcite. Volcanic rock fragments range from less than 1 mm to about 0.5 m in diameter, are subrounded to angular with moderate to high sphericity, and have undergone potassium metasomatism. Specularite [iron oxide] fragments are angular, are as long as several meters, and have low to moderate sphericity.”

The REE-bearing minerals in the breccia pipes include monazite, xenotime, and minor bastnasite and britholite. Nuelle and others (1992) describe the monazite and xenotime as forming radial crystal aggregates and granular crystals 0.5–1.9 mm (0.02–0.75 in.) across; these minerals also replace microfragments in the wall rock and within the groundmass fill fractures in barite and potassium feldspar crystals. The mineralogy of Pea Ridge is summarized by Nuelle (1998), and its mineral paragenesis and alteration zones are described by Sidder and others (1993). Gold, tin, and silver are unevenly distributed in the breccia pipes and in both the hematite and silicified zones (Husman, 1989). Nuelle and others (1992) report localized gold concentrations as much as 371 parts per million.

The REE oxide concentrations are relatively high within the breccia pipes of the Pea Ridge deposit. The REE abundances reported in the breccia pipes are consistently high but variable. Nuelle and others (1992, p. A1) state, “Total REE oxide content of samples of the groundmass material, which are not diluted with lithic fragments, average about 20 weight percent.” Seeger and others (2001, p. 2) state, “Total REE oxide concentrations of grab samples range from about 2.5 to 19 weight percent.” Bulk sampling by the U.S. Bureau of Mines found REE oxides concentrations ranging from 7 to 25 weight percent and an average of 12 weight percent (Vierrether and Cornell, 1993). The size of the REE resource in the four breccia pipes has not been determined and these pipes are open downward. A copy of an internal company memo (provided by Jim Kennedy, electronic communication, October 2008, dated 11-22-88 and signed by Larry J. Tucker,

retired Pea Ridge mine superintendent) indicates that there is a combined, probable reserve for pipes X11 and X13 of approximately 250,000 metric tons of mineralized rock, grading about 13 percent REE (note: weight percent, not oxide equivalent). The reserves were calculated for the volume between levels 2275 and 2675 by using a density of 2,000 lb per 9 cubic foot (ft³) (approximately 3.56 gram per cubic centimeter (g/cm³)). (Working levels in the mine, now flooded, are named for their depth below the collar of the shaft; the uppermost level was at 1,375 ft and the deepest level was at 2,675 ft.)

A U.S. Bureau of Mines report by Whitten and Yancey (1990) estimated that the breccia pipes contain about 600,000 metric tons of REE reserves with an average grade of 12 percent REE oxides. The report does not indicate the data used to calculate the 600,000 metric ton resource estimate. However, a similar value of 600,000 short tons is mentioned as a note on another internal company memo (provided by Jim Kennedy, electronic communication, October 2008) that is dated 10-25-89 and signed by Larry J. Tucker; supporting calculations for this value are missing. The surface tailings contain additional lanthanide resources, primarily in fine-grained, REE-bearing minerals, chiefly monazite and xenotime, that form inclusions within apatite. The apatite also contains minor amounts of REE in its structure; apatite is found in variable concentrations throughout the iron orebody (Vierrether and Cornell, 1993).

The rare earth elements in the breccia pipes of the Pea Ridge are dominated by the light REE lanthanum (La) and cerium (Ce), but the pipes are also relatively enriched in heavy REE, including dysprosium (Dy), holmium (Ho), erbium (Er), ytterbium (Yb), lutetium (Lu), and yttrium (Y) (table 20). The REE (lanthanide) resources of Pea Ridge are proportionally more concentrated in these heavy REE than is true of most other U.S. deposits (table 21). The REE distribution in the Pea Ridge deposit was generally confirmed by a recent USGS study, which collected limited samples of tailings and drill core at the site (Grauch and others, 2010). Although the total REE oxide resource at Pea Ridge (72,000 metric tons) is very small in comparison with the Mountain Pass deposit (2.58 million metric tons), the Pea Ridge deposit may be viewed as a potential source of heavy REE as a byproduct of iron ore production.

The Pea Ridge magnetite deposit was identified in 1950 from a prominent magnetic anomaly. In 1957, the deposit was first developed by the Bethlehem Steel and St. Joseph Lead Company, under the name Meramec Mining Company. In 1964, production began from this deposit. The mine operated from 1964 to 2001, with three interruptions, and produced more than 30 million tons (27 million metric tons) of pellets, fines, heavy media, and other iron products. In 1990, the mine lost its last iron-ore-pellet customer and began to produce specialty products (information from the Wing Enterprises Web site, <http://www.wingsironore.com/>). In contrast, Nuelle (1998) reported a much higher historic production and stated, “to date [March 1998], Pea Ridge has produced 50.7 million metric tons of iron ore.”

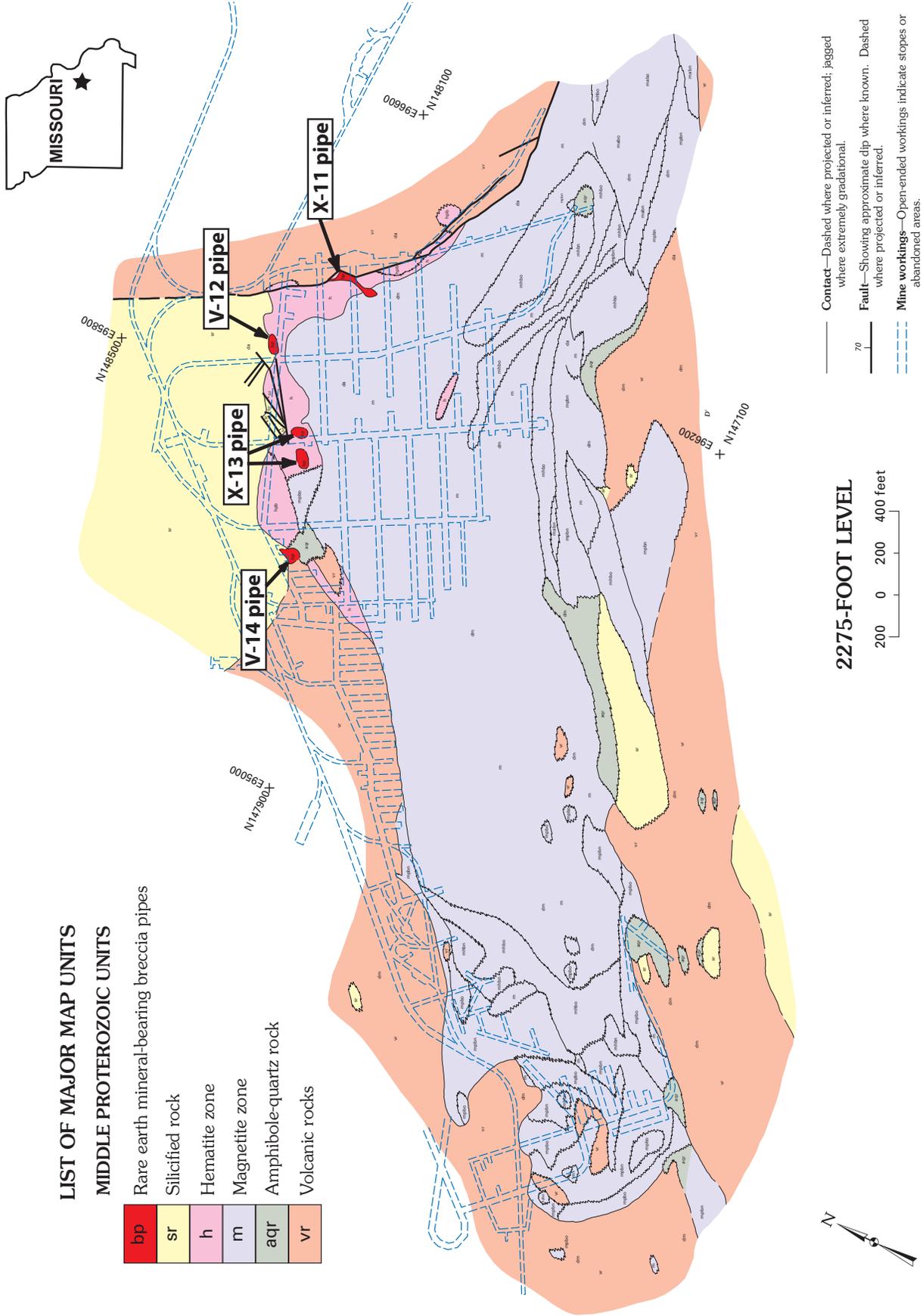


Figure 15. Generalized geologic map of the 2275 level of the Pea Ridge iron mine, Washington County, Missouri. Map from Grauch and others (2010), who adapted it from Seeger and others (2001).

Table 20. Rare earth elements and thorium concentrations in four breccia pipes, Pea Ridge deposit, Missouri.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. --, not available. Data from internal company memo by Larry J. Tucker, dated 10-25-89 (Jim Kennedy, electronic communication, October, 2008)]

Element	Breccia pipe			
	X-11 (percent)	V-12 (percent)	X-13 (percent)	V-14 (percent)
La	4.45	2.70	2.95	2.05
Ce	8.00	4.50	4.95	4.05
Pr	0.68	--	0.41	0.34
Nd	2.15	--	1.50	1.10
Sm	0.42	--	0.33	0.24
Eu	0.03	--	0.03	0.02
Gd	0.15	--	0.18	0.08
Tb	--	--	--	--
Dy	0.19	--	0.18	0.09
Ho	0.03	--	0.03	0.01
Er	0.09	--	0.09	0.04
Tm	--	--	--	--
Yb	0.16	--	0.12	0.06
Lu	0.02	--	0.01	--
Y	0.70	0.69	0.67	0.36
Th	0.63	--	0.23	0.41

The Pea Ridge mine continued to operate while iron ore prices fell during the 1990s, but in 2001 the mine went into bankruptcy. Later that year, Upland Wings, Inc. purchased the Pea Ridge Iron Ore mine properties and all of its mineral rights. In 2005, Upland Wings formed Wings Enterprises, with the intent to reclaim iron ore at the site and produce iron from its large surface reserves. Wings Enterprises suggests that its reclamation production facility can produce more than 30 short tons per hour of 70 percent Fe (95 percent magnetite) ore material from its estimated 300,000 short tons of surface reserve.

The Pea Ridge mine site, currently inactive (2010), contains an iron mine, mill, iron-pellet-making facility, and large piles of milled iron-ore tailings resulting from its earlier operation. The property now has two large tailings lakes flanked by extensive waste and tailings piles; most have vegetation cover, and several contain smaller ponds and wetlands. There are also several small, dry tailings ponds and a variety of ore stockpiles. Tailings underlie approximately 180 acres in total. The entire property is currently owned by Jim Kennedy, the president of Wings Enterprises, Inc., in Saint Louis, Missouri (<http://www.wingsironore.com/>).

Table 21. Rare earth elements oxide concentrations of two world-class Chinese rare earth elements deposits compared with concentrations in major United States rare earth elements deposits.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. --, not available. Values listed below were calculated by combining data from sources providing either tonnage or rare earth elements distribution]

Rare earth oxide	Bayan Obo deposit ¹ (metric tons)	China Clay deposits ² (metric tons)	Mountain Pass deposit ³ (metric tons)	Iron Hill carbonatite ⁴ (metric tons)	Pea Ridge deposit ⁵ (metric tons)	Lemhi Pass district ⁶ (metric tons)
La ₂ O ₃	15,267,052	193,001	872,120	264,469	18,275	4,672
Ce ₂ O ₃	23,720,328	311,762	1,279,918	522,907	32,298	11,584
Pr ₂ O ₃	1,734,339	40,529	106,337	68,838	2,862	1,984
Nd ₂ O ₃	6,083,552	135,197	288,040	257,716	9,474	17,903
Sm ₂ O ₃	616,088	38,165	21,939	36,340	1,963	12,264
Eu ₂ O ₃	99,822	3,430	2,710	8,352	158	3,776
Gd ₂ O ₃	247,460	29,699	5,420	25,464	808	7,872
Tb ₂ O ₃	23,884	4,282	413	2,806	--	448
Dy ₂ O ₃	56,584	22,994	878	6,051	903	1,128
Ho ₂ O ₃	12,594	4,918	103	826	137	--
Er ₂ O ₃	14,270	14,401	155	1,973	430	256
Tm ₂ O ₃	3,376	2,059	52	216	--	--
Yb ₂ O ₃	2,364	10,755	52	1,195	662	--
Lu ₂ O ₃	490	1,627	--	125	88	--
Y ₂ O ₃	117,798	187,181	3,355	23,228	3,942	2,113
Total	48,000,000	1,000,000	2,581,490	1,220,506	72,000	64,000

¹Bayan Obo deposit, Inner Mongolia, China: Berger and others (2009) indicate that Bayan Obo has 800 million metric tons of ore at 6 percent REE oxide content. Rare earth elements distribution is based on the average of three analyses of mineralized material from the East Ore Deposit; data from Yang and others (2009).

²China Clay deposits, southern China: Clark and Zheng (1991) indicate that the combined rare earth elements oxide content of all the China Clay deposits is at least 1 million metric tons. Rare earth elements distribution is based on a single ore concentrate (Grauch and others, 2010, table 4).

³Mountain Pass deposit, California: Castor and Nason (2004) indicate that Mountain Pass contains estimated reserves of 29 million metric tons of ore at 8.9 wt. percent rare earth elements oxides (by using a 5 percent cutoff). Rare earth elements distribution calculated from data in Castor (2008) from rare earth elements oxide contents in concentrate.

⁴Iron Hill carbonatite, Colorado: Staatz and others (1979) estimated that the carbonatite stock of Iron Hill consists of 655.6 million metric tons of carbonatite. Rare earth elements oxide resources were calculated from median concentrations measured by Van Gosen (2008) in 13 samples of the Iron Hill stock.

⁵Pea Ridge deposit, Missouri: Whitten and Yancey (1990) indicate that Pea Ridge contains 600,000 metric tons of ore with an average tenor of 12 percent rare earth elements oxides. Rare earth elements distribution is based on the average of composite assays of samples from four breccia pipes (Grauch and others, 2010).

⁶Lemhi Pass district, Idaho-Montana: Rare earth elements distribution is based on the average of analyses of nine samples of the Last Chance vein, reported by Staatz (1972).

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Nebraska—Elk Creek Carbonatite

Location: Located near the small town of Elk Creek in southeastern Nebraska. Latitude: 40.26861 N., Longitude: 96.18333 W.; datum: WGS84

Deposit type and basic geology: A buried, rare earth elements (REE)- and niobium (Nb)-rich carbonatite mass, referred to as the Elk Creek carbonatite, lies in the subsurface about 1.6 km (1 mi) southwest of the small town of Elk Creek in southeastern Nebraska. On the basis of exploration drilling and the extent of magnetic and gravity anomalies, the carbonatite mass at depth appears to have its center beneath section 33, township 4 north, range 11 east. The entire oval-shaped, subsurface body, which is recognized by a geophysical anomaly caused by the carbonatite and associated intrusive rocks, is about 7 km (4.3 mi) in diameter. Analyses of drill core showed the intrusion at depth comprised mostly massive to brecciated, apatite- and pyrochlore-bearing dolomitic carbonatite (89 percent), along with fenitized basalt, lamprophyre, and syenite (totaling 11 percent). Major-element analyses suggest that the carbonate mass is a magnesian carbonatite (dolomitic), generally similar in gross chemical composition to the Iron Hill (Powderhorn) carbonatite stock in southwestern Colorado. The REE are hosted principally by the minerals bastnasite, parisite, and synchisite and by smaller amounts of monazite (Xu, 1996). Niobium was deposited in pyrochlore. The U.S. Geological Survey obtained a potassium-argon age on biotite in the carbonatite of 544 ± 7 million years old (Xu, 1996).

Status: On May 4, 2010, Quantum Rare Earth Developments Corp. announced that it had acquired the Elk Creek carbonatite properties (<http://www.quantumrareearth.com/>).

Production: No mineral resources have been produced from this intrusion.

Estimated resources: It has been reported that the Elk Creek carbonatite may represent the largest niobium (Nb) resource in the United States. Quantum Rare Earth Developments Corporation reported several assay results from Molycorp's earlier drilling program. Reportedly, drilling within the core zone found high-grade niobium contents, estimated at "39.4 million tons of 0.82 percent Nb_2O_5 and is open to the north, west and at depth (Molycorp, Inc., internal memorandum, Feb 05/1986)." In the widely spaced drilling surrounding the core zone, "at least 18 of the surrounding holes intersected greater than 6.1 m (20 ft) of greater than 1.0 percent REO (total rare earth oxides), while at least 17 of the surrounding holes intersected greater than 3.05 m (10 ft) of greater than 0.6 percent Nb_2O_5 ." Quantum reports assay intervals that range from 1.02 to 3.12 percent total rare earth elements oxide. They also note, "Most of the historic drill core, sample rejects, and pulps from Molycorp's exploration are available for review and sampling."

Detailed Discussion

A buried, rare earth elements (REE)- and niobium-rich carbonatite mass, referred to as the Elk Creek carbonatite, lies in the subsurface about 1.6 km (1 mi) southwest of the small town of Elk Creek in southeastern Nebraska. On the basis of exploration drilling results and the extent of magnetic and gravity anomalies, the carbonatite mass at depth appears to have its center beneath section 33, township 4 north, range 11 east. The entire oval-shaped, subsurface body, which is recognized by a geophysical anomaly caused by the carbonatite and associated intrusive rocks, is about 7 km (4.3 mi) in diameter; it straddles the boundary between Johnson County and Pawnee County (Carlson and Treves, 2005).

In 1970, a regional geophysical program detected a nearly circular, concurrent magnetic and gravity anomaly in this area. This area of Nebraska is blanketed by loess and glacial till that overlies Pennsylvanian marine carbonates and shale. Exploratory drilling in this area had previously encountered Precambrian granitic and metamorphic rocks at depths of 600 ft (183 m) (Carlson and Treves, 2005). Modeling by Burfeind and others (1971) of the geophysical data collected over the anomaly suggested a cylindrical body with an indefinite length and a radius of 5,500 ft (1,676 m), which was beveled on the basement surface at a depth of about 600 ft (183 m). A test hole was drilled into the anomaly, which found 45 ft (13.7 m) of unconsolidated cover of Quaternary loess and glacial till overlying 583 ft (178 m) of Upper and Middle Pennsylvanian carbonates and shale. At a depth of 630 ft (192 m), the drilling hit an iron-rich, silicate-bearing carbonate rock. This discovery prompted a drill-coring program, which recovered carbonate rocks from depths of 665 ft (203 m) to 1,000 ft (305 m) (Carlson and Treves, 2005). Core drilling into the geophysical anomaly during the 1970s and 1980s by the State of Nebraska, Cominco American, and Molycorp, Inc. resulted in at least 113 core holes. Molycorp completed 106 of the test holes, recovering about 80,000 ft (24,384 m) of cores and rotary samples (Carlson and Treves, 2005). The deepest hole reached a depth of 3,406 ft (1,038 m) and bottomed in carbonatite.

As part of his doctoral dissertation project, Xu (1996) examined 5,927 ft (1,807 m) of core obtained from the carbonatite complex. He reported that the core studied comprised mostly massive to brecciated, apatite- and pyrochlore-bearing dolomitic carbonatite (89 percent), along with fenitized basalt, lamprophyre, and syenite (totaling 11 percent). Major-element analyses suggest that the carbonate mass is a magnesiocarbonatite, generally similar in major chemical composition to the Iron Hill (Powderhorn) carbonatite stock in southwestern Colorado. The REE are hosted principally by the minerals bastnasite, parisite, and synchisite and by smaller amounts of monazite (Xu, 1996). Niobium resides in pyrochlore. The U.S. Geological Survey obtained a potassium-argon age on biotite in the carbonatite of 544 ± 7 million years old (Xu, 1996).

On May 4, 2010, Quantum Rare Earth Developments Corp. announced that it had acquired the Elk Creek carbonatite properties (<http://www.quantumrareearth.com/>). In its press

release, Quantum reported several assay results from Molycorp's earlier drilling program, which included: detailed drilling of 25 holes within a core (central) zone of the 7-km (4.3-mi) diameter geophysical anomaly and holes spaced about 610 m (2,000 ft) apart surrounding the core zone. Reportedly, the drilling within the core zone found high-grade niobium contents, estimated at "39.4 million tons of 0.82 percent Nb_2O_5 and is open to the north, west and at depth (Molycorp, Inc. internal memorandum, Feb 05/1986)." In the widely spaced drilling surrounding the core zone, "least 18 of the surrounding holes intersected greater than 20 feet (6.1 metres) of greater than 1.0% REO [total rare earth oxides], while at least 17 of the surrounding holes intersected greater than 10 feet (3.05 metres) of greater than 0.6% Nb_2O_5 ." Quantum reports assays intervals that range from 1.02 to 3.12 percent total rare earth oxide. They also note, "Most of the historic drill core, sample rejects, and pulps from Molycorp's exploration are available for review and sampling."

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New Mexico—Capitan Mountains

Location: Thin veins containing thorium and rare earth elements crop out on the south flank of the Capitan Mountains in Lincoln County, south-central New Mexico.

Latitude: 33.61059 N., Longitude: 105.45051 W.; datum: WGS84

Deposit type and basic geology: The radioactive deposits in this district are veins composed of angular fragments of alaskite cemented by quartz. Staatz (1974) identified 12 breccia veins in the district, ranging from 10 to 150 ft (3 to 46 m) in length and ¼ in. to 8 ft (6 mm to 2.4 m) in thickness. The principal thorium-bearing mineral in these veins is thought to be allanite, accompanied by considerable quantities of quartz, purple fluorite, limonite, and possibly tourmaline (Griswold, 1959).

Status: Currently (2010), there appears to be no active exploration in this district. The deposits were apparently discovered in the early 1950s during the era of extensive prospecting for radioactivity anomalies. Radioactive veins in the Capitan Mountains were prospected in the middle to late 1950s by numerous bulldozer cuts but never further developed (Griswold, 1959). The primary focus of the late 1950s exploration of the veins of this district was its thorium potential. A thorium mill was constructed by New Mexico Thorium Company, but it never processed ore (McLemore, 1983). The ruins of the mill were subsequently removed by the U.S. Forest Service.

Production: No mineral resources have been produced from these vein deposits.

Estimated resources: Thorium and REE resources in the district have not been estimated. Staatz (1974) analyzed 17 samples of these veins and found thorium contents of less than 0.01 to as much as 1.12 percent. Reportedly, some assays of vein material showed as much as 1.7 percent thorium (Griswold, 1959). Thorium was assayed as the target commodity in the breccia veins of the southern Capitan Mountains, but REE concentrations are likely to coexist in these deposits. McLemore and others (1988, p. 4) noted that a “select sample assayed 2,500 ppm La, 4,350 ppm Ce, and 330 ppm Y.”

Detailed Discussion

Thin veins containing thorium and rare earth elements (REE) crop out on the south flank of the Capitan Mountains in Lincoln County, south-central New Mexico. The deposits were apparently discovered in the early 1950s during the era of extensive prospecting for radioactivity anomalies. Radioactive veins in the Capitan Mountains were prospected in the middle to late 1950s by numerous bulldozer cuts but never further developed (Griswold, 1959). The radioactivity in the veins originates primarily in thorium and in much lesser amounts of uranium.

The radioactive deposits in this district are veins composed of angular fragments of alaskite cemented by quartz. Staatz (1974) identified 12 breccia veins in the district, ranging from 10 to 150 ft (3 to 46 m) in length and ¼ in. to 8 ft (6 mm to 2.4 m) in thickness. He analyzed 17 samples of these veins and found thorium contents of less than 0.01 to 1.12 percent. Reportedly some assays of vein material showed as much as 1.7 percent thorium (Griswold, 1959). The principal thorium-bearing mineral in these veins is thought to be allanite, which is accompanied by considerable quantities of quartz, purple fluorite, limonite, and possibly tourmaline (Griswold, 1959).

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New Mexico—El Porvenir District

Location: The El Porvenir or Hermit Mountain district lies about 24 km (15 mi) northwest of Las Vegas and 4.8 km (3 mi) north of Porvenir, on the eastern edge of the Las Vegas Range, San Miguel County, north-central New Mexico. Latitude: 35.74237 N., Longitude: 105.42377 W.; datum: WGS84

Deposit type and basic geology: The bulk of Hermit Mountain is formed by a pink, coarse-grained Precambrian granite that is cut by pegmatite dikes and quartz veins (Robertson, 1976). Some of the pegmatites reportedly contain monazite and rare earth elements mineralization. Little published information is available on the chemistry of these pegmatites, but the data that are available suggest that anomalous rare earth elements concentrations are present.

Status: Currently (2010), there appears to be no active exploration in this district.

Production: No mineral resources have been produced from these occurrences.

Estimated resources: Thorium and rare earth elements resources in the district have not been estimated. McLemore and others (1988) report that samples of “quartzite” contain 546 parts per million (ppm) thorium (Th), 582 ppm lanthanum (La), and 1,160 ppm yttrium (Y). These data presumably refer to a quartz-rich pegmatite.

Detailed Discussion

The El Porvenir or Hermit Mountain district lies about 24 km (15 mi) northwest of Las Vegas and 4.8 km (3 mi) north of Porvenir, on the eastern edge of the Las Vegas Range, San Miguel County, north-central New Mexico. The bulk of Hermit Mountain is formed by a pink, coarse-grained Precambrian granite, which is cut by pegmatite dikes and quartz veins (Robertson, 1976). Some of the pegmatites reportedly contain monazite and rare earth elements mineralization. Little published information is available on the chemistry of these pegmatites, but the data that are available suggest that anomalously high rare earth elements concentrations are present. For example, McLemore and others (1988) report that samples of “quartzite” contain 546 parts per million (ppm) Th, 582 ppm La, and 1,160 ppm Y. These data presumably refer to a quartz-rich pegmatite.

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New Mexico—Gallinas Mountains

Location: Gallinas mining district lies in the Gallinas Mountains, about 16 km (10 mi) west of the town of Corona in Lincoln County, central New Mexico. Latitude: 34.19368 N., Longitude: 105.73744 W.; datum: WGS84

Deposit type and basic geology: The cerium-rich mineral bastnasite precipitated in fluorite-copper sulfide deposits in the Gallinas Mountains. The fluorite-copper-bastnasite deposits form veins and fill brecciated zones in sandstones and siltstones of the Permian Yeso Formation. Only two fluorspar deposits were found in porphyritic trachyte; all other fluorspar deposits in the district are hosted by sandstone and siltstones of the Yeso Formation. The porphyritic character of the trachyte and the character of the mineral deposits (low-temperature mineral assemblage, brecciation, infilling of open spaces) suggest that the intrusions and mineralizing events were shallow (hypabyssal). The fluorite-copper-bastnasite deposits of the Gallinas district are found in two settings within the sandstones and siltstones of the Yeso Formation: as veins that fill thin fissures (1–3 in. (2.5–7.6 cm) wide) in highly fractured zones, and as mineral-rich masses that fill open spaces and veinlets in breccia zones. The brecciated zones were formed by faulting and are therefore regarded as fault breccias. In both settings, fluorite is the most abundant mineral.

Status: Currently (2010), there appears to be no active exploration in this district.

Production: In 1953–54, the Gallinas mining district produced small amounts of fluorspar-rich ore (for fluorine); output is estimated to have been less than 2,000 tons (1,800 metric tons) (Griswold, 1959). During 1954–55, the Conqueror No. 9 claim produced approximately 60 tons (54 metric tons) of bastnasite (a cerium-rich mineral) concentrate from these same fluorspar deposits, which was processed nearby in Gallinas at a small mill owned by the United States Rare Earths, Inc. (Griswold, 1959). In 1956, the New Mexico Copper Corp. produced about 300 tons (270 metric tons) of copper-lead-fluorspar ore from its Conqueror claim in the Gallinas district, of which about 11 tons (10 metric tons) of bastnasite ore concentrate from the Conqueror No. 10 claim.

Estimated resources: Soule (1946) estimated that bastnasite forms about 5 percent of the breccia deposits. Soule (1946) analyzed hand-picked grains of bastnasite from the Gallinas district and found that the bastnasite contained 74.39 percent total rare earth elements oxides: 25.61 percent cerium oxide and 48.78 percent other rare earth elements oxides. No resource estimate of the potential fluorspar and bastnasite tonnage within the Gallinas district has been published.

Detailed Discussion

The cerium-rich mineral bastnasite formed within fluorite-copper sulfide deposits in the Gallinas Mountains, about 16 km (10 mi) west of the town of Corona in Lincoln County, central New Mexico. In 1953–54, the Gallinas mining district produced small amounts of fluorspar-rich ore (for fluorine); output is estimated to have been less than 2,000 tons (1,800 metric tons) (Griswold, 1959). During 1954–55, the Conqueror No. 9 claim produced approximately 60 tons (54 metric tons) of bastnasite concentrate from these same fluorspar deposits, which was processed nearby in Gallinas at a small mill owned by the United States Rare Earths, Inc. (Griswold, 1959). In 1956, the New Mexico Copper Corp. produced about 300 tons (270 metric tons) of copper-lead-fluorspar ore from its Conqueror claim in the Gallinas district, of which about 11 tons (10 metric tons) was bastnasite ore concentrate from the Conqueror No. 10 claim.

The Gallinas Mountains consist of Lower Permian sedimentary rocks that were domed, uplifted, faulted, and fractured during the emplacement of middle(?) Tertiary laccoliths composed mainly of alkaline trachyte and rhyolite (Perhac, 1970). The fluorite-copper-bastnasite deposits form veins and fill brecciated zones in sandstones and siltstones of the Permian Yeso Formation. Only two fluorspar deposits were found in porphyritic trachyte; all other fluorspar deposits in the district are hosted by sandstone and siltstones of the Yeso Formation. The district's fluorite-copper-bastnasite deposits are interpreted to result from epithermal (relatively low temperature) mineralization related to the intrusion of the alkaline trachyte (Perhac and Heinrich, 1964; Perhac, 1970). The porphyritic character of the trachyte and the character of the mineral deposits (low-temperature mineral assemblage, brecciation, and infilling of open spaces) suggest that the intrusions and mineralizing events occurred at shallow depths (hypabyssal).

The fluorite-copper-bastnasite ore of the Gallinas district was deposited in two settings within the sandstones and siltstones of the Yeso Formation: as veins that fill thin fissures (1–3 inches (2.5–7.6 cm) wide) in highly fractured zones, and as mineral-rich masses that fill open spaces and veinlets in breccia zones. The brecciated zones were formed by faulting and are therefore regarded as fault breccias. In both settings, fluorite is the most abundant mineral. Fluorite content in the breccia deposits averages about 60 percent (Soule, 1946). Barite, calcite, and quartz are next in abundance (Soule, 1946; Perhac, 1970). Other associated minerals are pyrite, galena, chalcopyrite, mimetite, sphalerite, conichalcite, chalcocite, wulfenite, malachite, azurite, vanadinite, mottramite, cerussite, chrysocolla, agardite (yttrium-bearing mineral), and bastnasite (Glass and Smalley, 1945; Griswold, 1959; Perhac, 1970; DeMark, 1980).

The bastnasite ore forms thin, tabular, waxy yellow, transparent to translucent crystals 1 to 10 mm in length, usually about 4 mm (0.16 in.) in width and embedded in fluorite

(Glass and Smalley, 1945; Soule, 1946; DeMark, 1980). Soule (1946) estimated that bastnasite forms about 5 percent of the breccia deposits. Soule (1946) analyzed hand-picked grains of bastnasite from the Gallinas district and found that the bastnasite contained 74.39 percent total rare earth elements oxides: 25.61 percent cerium oxide and 48.78 percent other rare earth elements oxides. No resource estimate of the potential fluor spar and bastnasite tonnage within the Gallinas district has been published.

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New Mexico—Gold Hill Area and White Signal District

Location: The White Signal district is located in Grant County, southwestern New Mexico. The adjacent Gold Hill area lies near the crest of the Burro Mountains. Latitude: 32.45400 N., Longitude: 108.50603 W.; datum: WGS84

Deposit type and basic geology: Rare earth elements (REE)—thorium-bearing minerals form pods and lenses within pegmatites hosted by the Proterozoic Burro Mountain granite in the western part of the White Signal district. Quartz, muscovite, and microcline are the primary minerals of these pegmatites. Large euhedral crystals of euxenite $[Y,Ca,Ce,U,Th](Nb,Ta,Ti)_2O_6]$ are found locally, and some crystals are several inches long (Gillerman, 1964). Other REE-bearing minerals reported in the pegmatites are allanite and samarskite (Richter and others, 1986). In the Gold Hill area, near the crest of the Burro Mountains, the same REE-bearing minerals are hosted in similar but larger pegmatites that also cut the Burro Mountain granite (Hedlund, 1978). The primary pegmatite minerals are milky quartz, microcline, albite, and muscovite with accessory biotite, magnetite, garnet, fluorite, and REE-bearing minerals such as allanite, euxenite, and samarskite.

Status: Currently (2010), there appears to be no active exploration in this district.

Production: Shallow prospect pits were dug into the pegmatites in order to explore their radioactivity, presumably during the 1950s, but no further development is reported.

Estimated resources: No report of the REE concentrations in these pegmatites has been published, but thorium concentrations can reach as high as 0.72 percent (Staatz, 1974).

Detailed Discussion

Rare earth elements (REE)—thorium-bearing minerals form pods and lenses within pegmatites hosted by the Proterozoic Burro Mountain granite in the western part of the White Signal district, which lies in Grant County, southwestern New Mexico (Gillerman, 1964; Richter and Lawrence, 1983; Richter and others, 1986). Shallow prospect pits were dug into the pegmatites in order to explore their radioactivity, presumably during the 1950s, but no further development is reported.

Quartz, muscovite, and microcline are the primary minerals of these pegmatites. Large euhedral crystals of euxenite $[Y,Ca,Ce,U,Th](Nb,Ta,Ti)_2O_6]$ are found locally, and some crystals are several inches long (Gillerman, 1964). Other REE-bearing minerals reported in the pegmatites are allanite and samarskite (Richter and others, 1986). No analyses of the REE concentrations in these pegmatites have been reported.

In the Gold Hill area, near the crest of the Burro Mountains, the same REE-bearing minerals are hosted in similar but larger pegmatites that also cut the Burro Mountain granite (Hedlund, 1978). These pegmatites were prospected by small pits between 1952 and 1955. However, “the amount and concentration of rare-earth minerals was so small that work was soon stopped” (Gillerman, 1964, p. 127). The primary pegmatite minerals are milky quartz, microcline, albite, and muscovite with accessory biotite, magnetite, garnet, fluorite, and the REE-bearing minerals, such as allanite, euxenite, and samarskite. No report of the REE concentrations in these pegmatites has been published, but Th concentrations can reach as high as 0.72 percent (Staatz, 1974).

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New Mexico—Laughlin Peak Area

Location: Thorium (Th)- and rare earth elements-rich veins are intruded throughout an area of about 12 km² (4.6 mi²) near Laughlin Peak, about 38 km (24 mi) southeast of Raton in Colfax County, northeastern New Mexico. Latitude: 36.58156 N., Longitude: 104.22953 W.; datum: WGS84

Deposit type and basic geology: In this area, Staatz (1985) mapped 29 veins ranging from 0.5 to 550 m (1.6 to 1,800 ft) in length and 0.2 to 70 cm (0.08 to 28 in.) in thickness. Thorium- and REE-bearing minerals in the veins include brockite, xenotime, and crandallite. The brockite and xenotime are mainly enriched in the yttrium-group (heavy) rare earths, whereas the crandallite contains mostly cerium-group (light) rare earth elements. The veins are steeply dipping and lie along fracture zones, cutting mostly trachyte and Dakota Sandstone but also intrusive breccia and trachyandesite. The gangue minerals are mostly potassium feldspar, quartz, or calcite, and lesser amounts of goethite, magnetite, barite, zircon, rutile, and a manganese oxide. One small carbonatite dike was found 2.7 km (1.7 mi) south of the mapped area.

Status: Currently (2010), there appears to be no active exploration in this district.

Production: Prospecting for radioactive deposits began in the Laughlin Peak area in the early 1950s; small pits and trenches were dug along the veins. These prospects were subsequently sampled by Staatz (1985).

Estimated resources: Thorium and REE resources in the district have not been estimated. Staatz (1985) found that most of the veins contain higher concentrations of the yttrium-group REE than the cerium group, and veins with high yttrium-group concentrations usually also have a high thorium content. Sampling by Staatz (1985, p. 1) found, “Thorium content of 30 samples ranges from 30 to 24,200 ppm (parts per million), and the total rare-earth content from 147 to 19,030 ppm.” These amounts equate to REE concentrations of about 0.018 to 2.34 percent total REE oxide.

Detailed Discussion

Thorium (Th)- and rare earth elements (REE)-rich veins crop out throughout an area of about 12 km² (4.6 mi²) near Laughlin Peak, about 38 km (24 mi) southeast of Raton in Colfax County of northeastern New Mexico. Staatz (1985) mapped 29 veins in this area, ranging from 0.5 to 550 m (1.6 to 1,800 ft) in length and 0.2 to 70 cm (0.08 to 28 in.) in thickness. Thorium- and REE-bearing minerals in the veins include brockite, xenotime, and crandallite. Thorite and monazite are absent. The brockite and xenotime are mainly enriched in the yttrium-group (heavy) rare earths, whereas the crandallite

contains mostly cerium-group (light) rare earth elements. Staatz (1985) found that most of the veins contain higher concentrations of yttrium-group REE than cerium-group REE, and veins with high yttrium-group values usually have a high Th content. Sampling by Staatz (1985, p. 1) found, “Thorium content of 30 samples ranges from 30 to 24,200 ppm (parts per million), and the total rare-earth content from 147 to 19,030 ppm.” These amounts equate to REE concentrations of about 0.018 to 2.34 percent total REE oxide.

The veins are steeply dipping and lie along fracture zones, cutting mostly trachyte and Dakota Sandstone but also intrusive breccia and trachyandesite. The gangue minerals are mostly potassium feldspar, quartz, or calcite, and lesser amounts of goethite, magnetite, barite, zircon, rutile, and a manganese oxide. One small carbonatite dike was found 2.7 km (1.7 mi) south of the mapped area (Staatz, 1985). The igneous rocks that are spatially associated with the veins have alkaline compositions of phonolite, trachyte, trachyandesite, and basalt. These rocks are also anomalous in REE, especially light REE, and show total REE contents of 173–807 ppm. The veins do not cut phonolite or basalt, but Staatz (1985) suggested that the source of the Th and REE in the veins was the magma that formed the phonolite during the Oligocene, because samples of the phonolite showed Th and REE contents much higher than samples of other associated igneous rocks.

Prospecting for radioactivity began in the Laughlin Peak area in the early 1950s; small pits and trenches were dug along the veins. These prospects were subsequently sampled by Staatz (1985). Additional exploration is necessary to evaluate the full REE resource potential of this area, but the geologic mapping and descriptions by Staatz (1985, 1986, 1987) provide a solid framework for further work here.

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New Mexico—Lemitar and Chupadera Mountains

Location: Carbonatite dikes and veins occur in the Lemitar Mountains in west-central New Mexico, and more than a dozen similar carbonatite dikes are known to be located to the south within the adjacent Chupadera Mountains. These mountain ranges lie west of San Antonio, Socorro, and Lemitar in Socorro County, New Mexico. Latitude: 34.15398 N., Longitude: 106.98623 W.; datum: WGS84, and Latitude: 33.85285 N., Longitude: 106.95781 W.; datum: WGS84

Deposit type and basic geology: More than 100 carbonatite dikes and veins that contain rare earth elements (REE) cut Precambrian metamorphic and granitic terrane in the Lemitar Mountains, and more than a dozen similar carbonatite dikes intruded Precambrian metamorphic rocks to the south within the adjacent Chupadera Mountains (McLemore, 1983, 1987; Van Allen and others, 1986). The carbonatite intrusions range from less than 1 cm (0.4 in.) thick—veins—to more than 1 m (3.3 ft) thick—dikes (McLemore, 1983, 1987). A few of the dikes can be traced in outcrop for as much as 600 m (1,970 ft). Subparallel sets of carbonatites locally form dike swarms. Alkaline igneous rocks are lacking in these mountain ranges, so their igneous source presumably lies at depth (McLemore, 1987). Age determinations by the potassium-argon method suggest that the carbonatites are Ordovician (449 ± 16 million years old, McLemore, 1987) and thus represent a part of widespread Cambrian-Ordovician igneous activity in New Mexico.

Status: Currently (2010), there appears to be no active exploration in this district.

Production: No mineral resources have been produced from these vein deposits. Because uranium and thorium in the carbonatite dikes make the dikes radioactive, they were identified in 1954 during a uranium exploration program conducted by United Geophysical Corp. (Van Allen and others, 1986).

Estimated resources: Thorium and REE resources in the district have not been estimated. McLemore and others (1988) reported a maximum concentration from selected samples of 1,950 parts per million (ppm) thorium (0.195 percent) and 0.25 weight percent uranium oxide. Van Allen and others (1986) and McLemore and others (1988) report maximum concentrations from select carbonatite samples as 0.19 weight percent total REE; 700 ppm Y; 4,900 ppm cerium (Ce); and 1,700 ppm lanthanum (La).

Detailed Discussion

More than 100 carbonatite dikes and veins that contain rare earth elements (REE) cut Precambrian metamorphic and granitic terrane in the Lemitar Mountains in west-central New Mexico, and more than a dozen similar carbonatite dikes

intruded Precambrian metamorphic rocks to the south within the adjacent Chupadera Mountains (McLemore, 1983, 1987; Van Allen and others, 1986). These north-south-trending mountain ranges lie west of San Antonio, Socorro, and Lemitar in Socorro County, New Mexico. The carbonatite intrusions range from less than 1 cm (0.4 in.) thick—veins—to more than 1 m (3.3 ft) thick—dikes (McLemore, 1983, 1987). A few of the dikes can be traced in outcrop for as much as 600 m (1,970 ft). Subparallel sets of carbonatites locally form dike swarms.

The carbonatite dikes occupy sets of fractures apparently related to rifting of the adjacent Rio Grande Rift. Alkaline igneous rocks are lacking in these mountain ranges, so the dikes' igneous source presumably lies at depth (McLemore, 1987). Age determinations by the potassium-argon method suggest that the carbonatites are Ordovician (449 ± 16 million years old, McLemore, 1987) and thus represent a part of widespread Cambrian-Ordovician igneous activity in New Mexico.

Because uranium and thorium in the carbonatite dikes make the dikes radioactive, they were identified in 1954 during a uranium exploration program conducted by United Geophysical Corp. (Van Allen and others, 1986). Although they were described at that time as “radioactive-calcite veins” they were later classified as carbonatites in 1978 by Tenneco geologists. McLemore and others (1988) reported a maximum concentration from selected samples of 1,950 ppm thorium (0.195 percent) and 0.25 weight percent U_3O_8 . Although the uranium correlates with yttrium in carbonatites of the Chupadera Mountains, no specific uranium or yttrium mineral was identified (McLemore, 1983; Van Allen and others, 1986). The gangue mineralogy of these carbonatites is detailed by McLemore (1983, 1987).

Overall, the REE concentrations found in the carbonatite dikes in both mountain ranges were quite variable. Van Allen and others (1986) and McLemore and others (1988) report maximum concentrations from select carbonatite samples as 0.19 weight percent total REE; 700 ppm Y; 4,900 ppm cerium (Ce); and 1,700 ppm lanthanum (La).

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New Mexico—Petaca District

Location: The Petaca district is located between Ojo Caliente and Tres Piedras, in Rio Arriba County, north-central New Mexico. Latitude: 36.58835 N., Longitude: 106.07170 W.; datum: WGS84

Deposit type and basic geology: Thorium- and rare earth elements (REE)-bearing pegmatites crop out in Precambrian rocks in the southeastern Tusas Mountains (Bingler, 1968). The pegmatites of the Petaca district take a variety of shapes, such as dikes, sills, pipes, pods, troughs, and irregular forms. The pegmatites crop out for 75 to 1,430 ft (23 to 436 m) in length (an average outcrop length is 410 ft (125 m)), and they have an average width of 30 to 35 ft (9 to 11 m) (Bingler, 1968). Elevated REE concentrations in Petaca district pegmatites mainly reflect the mineral samarskite, a REE-iron-uranium-thorium-niobium-tantalum-titanium-bearing oxide.

Status: Currently (2010), there appears to be no active exploration in this district.

Production: A number of pegmatites in the district were mined for their large books of muscovite mica crystals, beginning in 1870 and continuing intermittently until 1944 (Bingler, 1968).

Estimated resources: Thorium and REE resources in the district have not been estimated. McLemore and others (1988) reported an average niobium content of 0.04 percent in 87 pegmatites of the district. Monazite accounts for the pegmatites' high thorium content. An analysis of the Globe pegmatite in the district found 10,332 ppm thorium (McLemore and others, 1988). McLemore and others (1988, p. 4) reported the following REE analysis of a sample of the Globe pegmatite: "600 ppm Y, 660 ppm Yb, 396 ppm Er, 186 ppm Gd, 3,117 ppm [total] REE + Y." Otherwise, the REE content of the pegmatites of the Petaca district has not been published.

Detailed Discussion

Thorium- and rare earth elements (REE)-bearing pegmatites are exposed in the Petaca district, located between Ojo Caliente and Tres Piedras, in Rio Arriba County, north-central New Mexico. The pegmatites crop out in Precambrian rocks in the southeastern Tusas Mountains (Bingler, 1968). The pegmatites of the Petaca district take a variety of shapes, such as dikes, sills, pipes, pods, troughs, and irregular forms. The pegmatite forms and their characteristics are described in detail by Jahns (1946). They crop out for 75 to 1,430 ft (23 to 436 m) in length (an average outcrop length is 410 ft (125 m)), and they have an average width of 30 to 35 ft (9 to 11 m) (Bingler, 1968).

The primary minerals of the Petaca district pegmatites are microcline, quartz, plagioclase, and muscovite. A number

of pegmatites in the district were mined for their large books of muscovite mica crystals beginning in 1870 and continuing intermittently until 1944 (Bingler, 1968). Almost 50 accessory minerals have been identified; the most common is spessartite (now called spessartine) garnet, columbite-tantalite $[(\text{Fe},\text{Mn})(\text{Nb},\text{Ta})_2\text{O}_6]$, fluorite, beryl, monazite, samarskite, and ilmenite-magnetite (Wright, 1948; Redmon, 1961; Bingler, 1968). (Columbite and tantalite are obsolete names for a mineral series; columbite is now named ferrocolumbite $(\text{Fe}^{2+}\text{Nb}_2\text{O}_6)$, which forms two mineral series, with ferrotantalite $(\text{Fe}^{2+}\text{Ta}_2\text{O}_6)$ and with manganocolumbite $[(\text{Mn}^{2+},\text{Fe}^{2+})(\text{Nb},\text{Ta})_2\text{O}_6]$).

The elevated concentrations of niobium (Nb) and tantalum (Ta) in the pegmatites arise from Nb- and Ta-bearing minerals. For example, McLemore and others (1988) reported an average of Nb content of 0.04 percent in 87 pegmatites of the district. Similarly, monazite accounts for the pegmatites' high Th content. Specifically, analysis of the Globe pegmatite in the district found 10,332 ppm Th (McLemore and others, 1988).

Elevated REE concentrations in Petaca district pegmatites mainly reflect the mineral samarskite, an REE-iron-uranium-thorium-niobium-tantalum-titanium-bearing oxide. The REE are reportedly restricted to albite-rich zones in the pegmatites. McLemore and others (1988, p. 4) reported this REE analysis of a sample of the Globe pegmatite: "600 ppm Y, 660 ppm Yb, 396 ppm Er, 186 ppm Gd, 3,117 ppm [total] REE + Y." Otherwise, the REE content of the pegmatites of the Petaca district has not been published.

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New Mexico—Red Hills Area

Location: Dike-like and tabular bodies containing thorium and rare earth elements are exposed in the Red Hills area of the southern Caballo Mountains, Sierra County, New Mexico. They crop out across an area of about 7.8 square km (3 mi²), which is centered about 4 km (2.5 mi) southeast of Caballo dam. Latitude: 32.86293 N., Longitude: 107.25655 W.; datum: WGS84

Deposit type and basic geology: At least 45 radioactive, dike-like and tabular, deep-red bodies of syenite that crop out in the Red Hills area are modestly enriched in heavy rare earth elements (HREE). These coarse-grained, microcline-rich syenites range from 1 to 100 m (3.3 to 328 ft) in length and several centimeters to 10 m (1 in. to 33 ft) in width (McLemore, 1986). The syenite bodies are composed mainly of microcline and contain lesser amounts of quartz, muscovite, hematite, goethite, chlorite, and plagioclase and accessory apatite, zircon, calcite, fluorite, limonite, magnetite, and barite. The radioactivity originates in uranium and thorium residing in with spinel, rutile, anatase, thorite, thorogummite, and possibly uraninite (Staatz and others, 1965; McLemore, 1986).

Status: Currently (2010), there appears to be no active exploration in this district.

Production: No mineral resources have been produced from these vein deposits.

Estimated resources: Thorium or REE resources in the district have not been estimated. Subsurface sampling is necessary in this area to determine if a larger syenite mass exists at depth, and if such a mass is consistently enriched in the heavy REE. Samples of the microcline-rich (syenite) bodies in the Red Hills by Staatz and others (1965) contained thorium concentrations as much as 0.44 weight percent and modest to undetectable concentrations of the light REE. However, the proportion of heavy REE was higher. In particular, yttrium concentrations were as much as 0.19 weight percent (Staatz and others, 1965; McLemore, 1986).

Detailed Discussion

At least 45 radioactive, dike-like and tabular, deep-red bodies of syenite that are modestly enriched in heavy rare earth elements (REE) are exposed in the Red Hills area of the southern Caballo Mountains, Sierra County, New Mexico (Staatz and others, 1965; McLemore, 1983, 1986). These coarse-grained, microcline-rich syenites range from 1 to 100 m (3.3 to 328 ft) in length and several centimeters to 10 m (1 in. to 33 ft) in width (McLemore, 1986). They crop out across an area of about 7.8 square km (3 mi²), which is centered about 4 km (2.5 mi) southeast of Caballo dam. The syenite bodies are composed mainly of microcline, with lesser amounts of

quartz, muscovite, hematite, goethite, chlorite, and plagioclase, and accessory apatite, zircon, calcite, fluorite, limonite, magnetite, and barite. The radioactivity originates in uranium and thorium that resides in with spinel, rutile, anatase, thorite, thorogummite, and possibly uraninite (Staatz and others, 1965; McLemore, 1986).

Samples of the microcline-rich (syenite) bodies in the Red Hills by Staatz and others (1965) contained thorium concentrations as much as 0.44 weight percent and modest to undetectable concentrations of the light REE. However, the proportion of heavy REE was higher. In particular, yttrium concentrations were as much as 0.19 weight percent (Staatz and others, 1965; McLemore, 1986). Subsurface sampling is necessary in this area to determine if a larger syenite mass exists at depth, and if such a mass is consistently enriched in the heavy REE.

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New Mexico—Wind Mountain, Cornudas Mountains

Location: Wind Mountain is located in Otero County, New Mexico, and is one of the largest uplifted areas of the Cornudas Mountains. Wind Mountain stands about 80 km (50 mi) east of El Paso, just north of the New Mexico–Texas boundary. Latitude: 32.02382 N., Longitude: 105.50162 W.; datum: WGS84

Deposit type and basic geology: Wind Mountain was formed by a laccolith of porphyritic nepheline syenite that rises about 2,500 ft (762 m) above the surrounding Diablo Plateau (Holser, 1959). Dikes and sills of nepheline syenite and syenite cut the main mass of the laccolith. At least some of these dikes and sills contain thorium, uranium, and rare earth elements (REE) mineralization (McLemore, 1983). The alkaline dikes and sills reportedly also contain anomalous concentrations of beryllium (Be), niobium (Nb), lithium (Li), nickel (Ni), tin (Sn), zirconium (Zr), and fluorine (F, in fluorite).

Status: Currently (2010), there appears to be no active exploration in this district.

Production: No mineral resources have been produced from these dikes and sills.

Estimated resources: Thorium and REE resources in the district have not been estimated. McLemore and others (1988) analyzed a dike sample collected from Wind Mountain and reported 700 parts per million (ppm) lanthanum (La), 270 ppm neodymium (Nd), and 242 ppm yttrium (Y). However, a full rare earth elements resource evaluation of the Wind Mountain uplift would require much more sampling than has been conducted thus far.

Detailed Discussion

Wind Mountain, in Otero County, New Mexico, is one of the largest uplifted areas of the Cornudas Mountains, a mountain range that straddles the New Mexico–Texas border east of El Paso, Texas. The Cornudas Mountains, the northern end of an alkaline magmatic belt that was emplaced about 35 million years ago, extends from southern New Mexico, across Texas, and into Mexico. Wind Mountain itself lies about 80 km (50 mi) east of El Paso, just north of the New Mexico–Texas boundary.

Wind Mountain was formed by a large alkaline intrusion, a laccolith of porphyritic nepheline syenite that rises about 2,500 ft (762 m) above the surrounding Diablo Plateau (Holser, 1959). Dikes and sills of nepheline syenite and syenite cut the main mass of the laccolith. At least some of these dikes and sills contain Th, U, and rare earth elements mineralization (McLemore, 1983). The alkaline dikes and sills reportedly also contain anomalously high concentrations of beryllium (Be), niobium (Nb), lithium (Li), nickel (Ni), tin (Sn), zirconium

(Zr), and fluorine (F, in fluorite). McLemore and others (1988) analyzed a dike sample collected from Wind Mountain and reported concentrations of 700 ppm lanthanum (La), 270 ppm neodymium (Nd), and 242 ppm yttrium (Y). However, a full rare earth elements resource evaluation of the Wind Mountain uplift would require much more sampling than has been completed thus far.

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New York—Mineville Iron District

Location: The Mineville iron district includes the iron ores once mined in the Mineville, New York, area, located in the northeastern part of the Adirondack Mountains, on the west side of Lake Champlain. Most of the former iron mines are near the towns of Mineville and Port Henry in Essex County, New York. This district of iron deposits extends for approximately 78 km² (30 mi²). Latitude: 44.06403 N., Longitude: 73.49239 W.; datum: WGS84

Deposit type and basic geology: Thorium and rare earth elements (REE) reside within apatite in iron ores once mined in the Mineville, New York, area. The primary apatite-rich iron deposits are the Old Bed, Cheever, and Smith bodies; the Cheever and Smith orebodies have been mined out. The orebodies are magnetite deposits that are intricately folded and faulted within a complex suite of Precambrian metamorphic and igneous rocks. The host rocks have both mafic and felsic compositions that include augite syenites, granite, gabbro and diorite (Kemp, 1908; Staatz and others, 1980). The iron deposits are mainly magnetite, martite, and apatite, with gangue minerals of augite, hornblende, albite, quartz, pyrite, and tourmaline (McKeown and Klemic, 1956). The iron deposits in the Mineville–Port Henry area that are high in apatite are also enriched in phosphorous, thorium, and REE, because these elements are concentrated within the apatite grains. In addition, the ore mineral magnetite is intergrown with 1–3 mm (0.04–0.12 in.) long, rice-shaped grains of apatite.

Status: Currently (2010), there is no reported exploration or development in this district.

Production: Iron ore was mined from the district intermittently from 1804 until the last operation closed in 1971. A detailed mining history of the district is summarized by Staatz and others (1980).

Estimated resources: Currently, large tailings piles and unmined parts of magnetite orebodies in the Mineville district contain REE-bearing apatite-rich rock. Staatz and others (1980) estimated that about two-thirds of the tailings piles were derived from apatite-rich ores, which would represent about 9 million metric tons (10 million tons) of the tailings. Using an average grade of about 8 percent apatite content, approximately 720,000 metric tons (790,000 tons) of apatite could be present in the tailings dumps in the district. McKeown and Klemic (1956) reported an average rare earth oxide content of 11.14 percent in 14 samples of apatite separated from the Old Bed, Joker, and Smith orebodies. Thus, the tailings dump piles could contain approximately 80,200 metric tons (88,400 tons) of rare earth oxides.

Detailed Discussion

Thorium and rare earth elements (REE) are incorporated within apatite in iron ores once mined in the Mineville, New York, area, located in the northeastern part of the Adirondack Mountains, on the west side of Lake Champlain (fig. 16). Most of the former iron mines are near the towns of Mineville and Port Henry in Essex County, New York. This district of iron deposits extends for approximately 78 km² (30 mi²). The primary apatite-rich iron deposits are the Old Bed, Cheever, and Smith bodies; the Cheever and Smith orebodies have been mined out. Iron ore was mined from the district intermittently from 1804 until the last operation closed in 1971. A more detailed mining history of the district is summarized by Staatz and others (1980).

The orebodies are magnetite deposits that are intricately folded and faulted within a complex suite of Precambrian metamorphic and igneous rocks. The host rocks have both mafic and felsic compositions that include augite syenites, granite, gabbro, and diorite (Kemp, 1908; Staatz and others, 1980). The granite has felsic Na- and K-rich compositions that alternate with more basic, amphibole-, pyroxene-, and phlogopite-bearing rocks. Overlying the igneous sequence rests a metasedimentary series that contains Proterozoic marbles, calc-silicates and gneisses. The iron deposits are mainly magnetite, martite, and apatite, with gangue minerals of augite, hornblende, albite, quartz, pyrite, and tourmaline (McKeown and Klemic, 1956). Pegmatites crosscut the magnetite ore and consist of quartz, feldspar ± magnetite ± allanite, and minor scapolite, titanite, epidote, and zircon.

The iron deposits in the Mineville–Port Henry area that are high in apatite content are also enriched in phosphorous, thorium, and REE, because these elements are concentrated within the apatite grains. In addition, the ore mineral magnetite is intergrown with 1–3 mm (0.04–0.12 in.) long, rice-shaped grains of apatite. The apatites can take several colors, such as reddish brown, green, white, or transparent. The reddish-brown variety is the most common. The reddish-brown color of the apatite, also referred to as fluorapatite, is most likely generated by infiltration or inclusions of hematite along fractures or within the crystal structure.

According to Staatz and others (1980, p. 29), “The reddish-brown apatite contains between 5.8 and 20.6 percent total rare earths, the green variety between 0.5 and 2.0 percent, and the white and transparent varieties only trace amounts.” Monazite, bastnasite, and hematite fill microfractures in the apatites and also form coatings on the apatites as well. In addition, microscopic phases of secondary thorite, allanite, and parisite have been noted in some apatite crystals. Monazite, thorite, allanite, and bastnasite are enriched in thorium and REE. Kainosite has also been observed in edenite under a polarizing microscope and scanning electron microscope (Lupulescu and Pyle, 2008).

Allanite located in the pegmatite bodies, host gneiss, or pyroxene-rich rocks is rich in cerium. The allanite crystals with a pegmatitic origin are very large, 20 to 25 cm (7.9 to 9.8 in.)

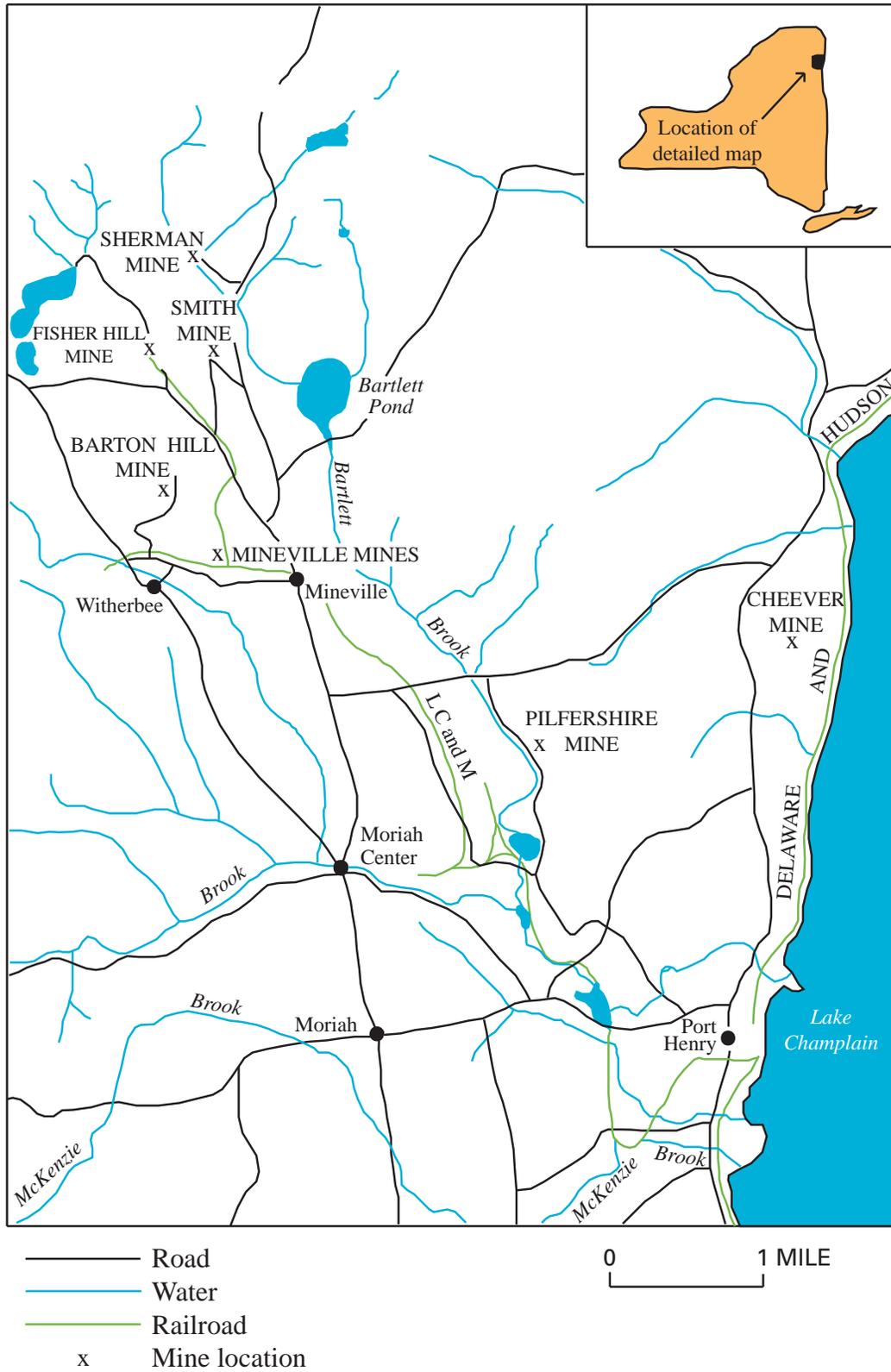


Figure 16. Mineville district in Essex County, New York. Modified from McKeown and Klemic (1956).

long, 6 to 20 cm (2.4 to 7.9 in.) wide, and 2.5 to 5 cm (1 to 2 in.) thick, with smooth surfaces and conchoidal fractures (Blake, 1858). Allanite crystals associated with quartz and monazite (Ce) are large, smooth-faced, and metamict (Lupulescu and Pyle, 2008). In the pyroxene rocks, the metamict allanite has decomposed to monazite (Ce), which contains a rim of Y-dominant allanite that is dark brown and strongly pleochroic.

In the iron ores of the Mineville–Port Henry area, two generations of monazite can be distinguished largely on the basis of their relationships with other minerals. Within the pegmatites, monazite (Ce) ranges from 1–3 mm (0.04–0.12 in.) to almost 1 cm (0.39 in.) and appears to be associated with or inclusions in allanite, both of which are embedded in quartz (Lupulescu and Pyle, 2008). Monazite also formed as a minute, secondary mineral because of the breakdown of allanite in the pyroxene-rich rocks.

Currently, large tailings piles and unmined parts of magnetite orebodies in the Mineville district contain REE-bearing apatite-rich rock. Staatz and others (1980) estimated that about two-thirds of the tailings piles were derived from apatite-rich ores, which would represent about 9 million metric tons of the tailings. Using an average grade of about 8 percent apatite, approximately 720,000 metric tons of apatite could be present in the tailings dumps in the district. McKeown and Klemic (1956) reported an average rare earth elements–oxide content of 11.14 percent in 14 samples of apatite separated from the Old Bed, Joker, and Smith orebodies. Thus, the tailings dump piles could contain approximately 80,200 metric tons of rare earth oxides. Uranium and thorium contents average 0.032 percent and 0.15 percent, respectively. Spectrographic analyses also reveal that yttrium is one of the main REE contained in apatite, making the tailings a potential source for the yttrium-group REE (McKeown and Klemic, 1956).

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Wyoming—Bear Lodge Mountains

Location: Rare earth elements (REE)–thorium deposits are exposed in the southern Bear Lodge Mountains, about 8 km (5 mi) northwest of Sundance, Crook County, Wyoming. Latitude: 44.49215 N., Longitude: 104.44133 W.; datum: WGS84

Deposit type and basic geology: The REE–thorium deposits and nearby gold mineralization of the southern Bear Lodge Mountains are hosted by middle Tertiary alkaline intrusions. These intrusions are Eocene (38.3–50 million years old) and consist primarily of phonolite and trachyte (Staatz, 1983). They intruded Paleozoic and Mesozoic sedimentary rocks, forming a dome about 13 km (8 mi) long by 10 km (6 mi) wide. Breccia bodies are associated with the igneous intrusions, such as a heterolithic diatreme breccia near Bull Hill. Rare earth elements–bearing carbonatite dikes intruded near the Bull Hill diatreme; the dikes are surrounded by a large zone of low-grade REE mineralization that fills thin, narrow stockwork fractures within the large alkaline intrusions. These thorium and REE deposits crop out throughout an area of about 16 km² (6 mi²) (Staatz, 1983). The igneous core of the dome is microfractured and altered, thereby forming disseminated deposits. The REE and thorium mineralization precipitated within thin fractures as coatings and veinlets as much as 6 mm thick. The coatings and veinlets consist predominantly of iron and manganese oxide minerals, along with potassium feldspar and quartz. The REE and thorium are incorporated into the minerals monazite, thorite, and brockite.

Status: During the last few field seasons, Rare Element Resources, Ltd., has explored for REE (<http://www.rareelementresources.com/s/Home.asp>), focused primarily on Bull Mountain (near the center of the dome) and areas just to the west and southeast of Bull Mountain, where numerous carbonatite dikes are exposed. The company drilled again in the summer months of 2010.

Production: No mineral resources have been produced from these vein deposits thus far (2010).

Estimated resources: Rare Element Resources, Ltd., has delineated three mineralogical zones in the Bear Lodge Mountain deposits dependent on depth of weathering—oxide, transitional, and unoxidized. As of 2010, they estimate that the oxide zone—the near-surface part of the “Bull Hill deposit”—hosts 4.5 million tons at 4.3 percent REE oxides. They suggest that the total inferred resource of the deposit is 9.8 million tons averaging 4.1 percent REE oxides. During 2009, the company drilled five holes just northwest of Bull Mountain through a total of 5,141 vertical feet of veins and dikes; there, total REE oxide concentrations ranged from 2.08 to 9.12 percent.

Detailed Discussion

Disseminated and vein rare earth elements (REE)–thorium deposits are located in the southern Bear Lodge Mountains, about 8 km (5 mi) northwest of Sundance, Crook County, Wyoming. These REE deposits have been the focus of recent exploration and resource evaluation by Rare Element Resources, Ltd. (<http://www.rareelementresources.com/s/Home.asp>). Three decades ago, the geology and thorium–REE resources of this district were studied by the USGS (Staatz, 1983).

The REE–thorium deposits and nearby gold (Au) mineralization of the southern Bear Lodge Mountains are hosted by middle Tertiary alkaline intrusions. These intrusions are Eocene (38.3–50 million years old) and consist primarily of phonolite and trachyte (Staatz, 1983). They intruded Paleozoic and Mesozoic sedimentary rocks, forming a dome about 13 km (8 mi) long by 10 km (6 mi) wide. The flanks of the central intrusive mass (phonolite and trachyte) are cut by small plugs, dikes, and sills that are also of alkaline affinity (high potassium and low silica content), which include lamprophyre, syenite, nepheline syenite, and latite. These alkaline igneous rocks crop out in a northwest-trending, oval-shaped area 9 km (5.6 mi) long by 4 km (2.5 mi) wide (Staatz and others, 1979; Staatz, 1983, his plate 1). Breccia bodies are associated with the igneous intrusions, such as a heterolithic diatreme breccia near Bull Hill. Rare earth elements–bearing carbonatite dikes also intruded near the Bull Hill diatreme; these dikes are surrounded by a large zone of low-grade REE mineralization that fills thin, narrow stockwork fractures within the large alkaline intrusions. These thorium and REE deposits crop out throughout an area of about 16 km² (6 mi²) in the southern Bear Lodge Mountains (Staatz, 1983).

The igneous core of the dome is microfractured and altered, thereby forming the disseminated deposits. REE and Th mineralization precipitated within thin fractures as coatings and veinlets as much as 6 mm thick. The coatings and veinlets consist predominantly of iron and manganese oxide minerals, along with potassium feldspar and quartz. The REE and thorium occupy sites in the minerals monazite, thorite, and brockite. On the basis of 52 samples collected within an area of 2.4 by 1.6 km (1.5 by 1 mi), where the alkaline rock has numerous small veinlets, Staatz and others (1979, p. 27) delineated three subareas:

“(1) The northern area has an average grade of 0.023 percent ThO₂ and 0.75 percent combined rare-earth oxides, (2) the central area has an average grade of 0.042 percent ThO₂ and 1.71 percent combined rare-earth oxides, and (3) the southern area has an average grade of 0.035 percent ThO₂ and 1.35 percent combined rare-earth oxides.”

They also noted that drilling “indicates that the veining extends at least 1,200 ft (365 m) below the surface.”

In a broader sampling survey, Staatz (1983) collected a total of 341 samples throughout an area of 10.6 km² (4.1 mi²) across the exposed core of the Bear Lodge dome (centered along Taylor Divide and Bull Hill). He found that the REE content of the disseminated deposits was about 27 times greater than their Th content. Staatz (1983, p. 1) reported, “Total rare-earth content of these samples ranged from 47 to 27,145 ppm, and the thorium content from 9.3 to 990 ppm. The amount of total rare earths of individual samples shows little correlation with that of thorium.” Staatz (1983, p. 1) also stated,

“These deposits could be mined by open pit. The Bear Lodge disseminated deposits have one of the largest resources of both total rare earths and thorium in the United States, and although the grade of both commodities is lower than some other deposits, their large size and relative cheapness of mining make them an important future resource.”

Vein deposits in the southern Bear Lodge Mountains were defined by Staatz (1983) as all tabular bodies at least 5 cm (2 in.) in thickness. Staatz (1983) mapped 26 veins in the core of the Bear Lodge uplift and described them all as thin and short—the longest vein is exposed for 137 m (450 ft). Gangue minerals are mostly potassium feldspar and quartz, with limonite, hematite, and manganese oxides. The REE and thorium in these veins is observed in monazite, brockite, and bastnasite. Staatz (1983, p. 1) reported, “Thorium content of 35 [vein] samples ranged from 0.01 to 1.2 percent, and the total rare-earth content of 21 samples from 0.23 to 9.8 percent.”

Rare Element Resources, Ltd., has focused its recent REE exploration efforts (<http://www.rareelementresources.com/s/Home.asp>) on Bull Mountain (near the center of the dome) and areas just to the west and southeast of Bull Mountain, where numerous carbonatite dikes are exposed. It has delineated three mineralogical zones in these deposits dependent on depth of weathering—oxide, transitional, and unoxidized (Ranta and Clark, 2010). As of 2010, they estimate that the oxide zone (the near-surface part of the “Bull Hill deposit”) hosts 4.5 million tons at 4.3 percent REE oxides. They suggest that the total inferred resource of the deposit is 9.8 million tons averaging 4.1 percent REE oxides. During 2009, the company drilled five holes just to the northwest of Bull Mountain through a total of 5,141 vertical feet of veins and dikes; there, total REE oxide concentrations ranged from 2.08 to 9.12 percent. The company drilled again in the summer of 2010, which will further update and refine its REE resource estimates for this district. The rare earth elements distribution in these deposits is apparently weighted toward light REE, as shown in table 22.

Rare Element Resources has focused on the oxide portions of the Bull Hill deposit because this material has displayed favorable recovery in its metallurgical testing (Ranta and Clark, 2010). The loose, friable character of this material and fine-grained nature of the REE minerals have reportedly shown a 90 percent recovery of REE with a 13 percent REE oxide grade in the less-than-25-mm (1-in.) fraction by employing a process using simple crushing to less than ¼ in., scrubbing, and screening (Ranta and Clark, 2010).

Table 22. Typical rare earth elements distribution in the Bear Lodge Mountains deposit, Wyoming.

[Rare earth elements listed in order of increasing atomic number; yttrium (Y) is included with these elements because it shares chemical and physical similarities with the lanthanides. Elements listed in order of increasing atomic number. Each sample is a composite metallurgical sample. The most abundant rare earth elements in this deposit (in bold) are light rare earths elements. Source: Rare Element Resources, Ltd. (<http://www.rareelementresources.com/s/Home.asp>)]

Rare earth element	Oxide sample (percent)	Unoxidized sample (percent)
Lanthanum	29.3	32.5
Cerium	45.0	46.4
Praseodymium	4.8	4.3
Neodymium	16.8	13.7
Samarium	2.0	1.4
Europium	0.4	0.3
Gadolinium	0.8	0.6
Terbium	0.1	0.0
Dysprosium	0.2	0.2
Yttrium	0.5	0.5
Total	99.9	99.9

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Phosphorite Deposits in the Southeastern United States

Location: Phosphorite deposits are found in the southeastern United States along the Atlantic Coastal Plain from North Carolina to the center of the Florida peninsula, forming a large phosphogenic province that has been subdivided into the Carolina Phosphogenic Province and the Florida Phosphogenic Province (Riggs, 1984). Phosphate deposits are also found in Virginia and Tennessee. Latitude: 27.58021 N., Longitude: 81.94569 W.; datum: WGS84

Deposit type and basic geology: Cathcart (1949) identified three main types of phosphatic rock in Florida: land-pebble phosphate, hard-rock phosphate, and river-pebble phosphate. Only the land-pebble deposits contain a substantial amount of uranium and, in some places, also contain rare earth elements. The most productive area of the land-pebble district is in Polk and Hillsborough Counties, which are located in the west-central part of the Florida peninsula and include the upper Tertiary Hawthorn Group and Bone Valley Formation. As such, mining of phosphate in Florida has been concentrated in this area (Cathcart and others, 1952). This region has been referred to more recently as the central Florida phosphate district (Van Kauwenberg and McClellan, 1990).

Status: Mining for phosphate in Florida dates back to 1883 in hard-rock deposits located near Hawthorne in Alachua County; the bulk of phosphorite is used for fertilizer. In 2009, 27.2 million metric tons (30 million tons) of phosphate rock were mined (Jasinski, 2010), compared with 38.2 million metric tons (42.1 million tons) in 1973 (Stowasser, 1975). According to Jasinski (2010, p. 118): “In 2009, U.S. phosphate rock production and reported usage were at their lowest point since the mid-1960s, and consumption was at its lowest level since the early 1970s.” The sharp decline is partly the result of a global economic crisis that started in 2008 when phosphate fertilizer producers were left with high inventories of both phosphate rock and fertilizer as farmers held out for lower prices (Jasinski, 2010). The Atlantic Coastal Plain deposits in Florida and North Carolina account for about 85 percent of production; the majority of phosphate comes from Florida.

Production: Rare earth elements have not been extracted as a byproduct from the phosphate deposits of the southeastern United States.

Estimated resources: No one has estimated the potential resource of rare earth elements in phosphate deposits in the southeastern United States. Analyses of phosphate rock from the Bone Valley Formation indicate that the rare earth elements yttrium (Y) and lanthanum (La) are present (McKelvey and others, 1951). Samples from the Noralyn mine ranged from 0.01 to 0.1 percent Y, while those from

the Bonny Lake mine varied from 0.001 to 0.01 percent Y. Although only one of the Bonny Lake mine samples contained La, all of the samples from the Noralyn mine contained 0.001 to 0.01 percent La.

Detailed Discussion

Phosphorite deposits are found in the southeastern United States along the Atlantic Coastal Plain from North Carolina to the center of the Florida peninsula, forming a large phosphogenic province that has been subdivided into the Carolina Phosphogenic Province and the Florida Phosphogenic Province (Riggs, 1984). Phosphate deposits are also found in Virginia and Tennessee. Mining for phosphate in Florida dates back to 1883 in hard-rock deposits located near Hawthorne in Alachua County (Florida Institute of Phosphate Research (FIPR), 2010); the bulk of phosphorite is used for fertilizer. In 2009, 27.2 million metric tons (30 million tons) of phosphate rock were mined (Jasinski, 2010), compared with 38.2 million metric tons (42.1 million tons) in 1973 (Stowasser, 1975). According to Jasinski (2010, p. 118): “In 2009, U.S. phosphate rock production and reported usage were at their lowest point since the mid-1960s, and consumption was at its lowest level since the early 1970s.” The sharp decline is partly the result of a global economic crisis that started in 2008 when phosphate fertilizer producers were left with high inventories of both phosphate rock and fertilizer as farmers held out for lower prices (Jasinski, 2010). In addition, the richest orebodies in Florida have been depleted, resulting in massive consolidation of phosphate mining companies in the State. The Atlantic Coastal Plain deposits in Florida and North Carolina account for about 85 percent of production, and the majority of phosphate comes from Florida.

Cathcart (1949) identified three main types of phosphatic rock in Florida: land-pebble phosphate, hard-rock phosphate, and river-pebble phosphate. Only the land-pebble deposits contain a substantial amount of uranium and, in some places, also contain rare earth elements (REE). Historically, the most productive area of the land-pebble district occurs in Polk and Hillsborough Counties, which are located in the west-central part of the Florida peninsula, and which contain the Hawthorn Group and Bone Valley Formation. As such, mining of phosphate in Florida, which began in 1888, has been concentrated in this area (Cathcart and others, 1952). This region has been referred to more recently as the central Florida phosphate district (Van Kauwenberg and McClellan, 1990). As time passed, the mining became more concentrated in the Four Corners Area (southwest of Orlando), as operations moved down dip to the south and west.

The central Florida platform, or phosphate district, is a shield-shaped area (fig. 17) that is about 7,252 km² (2,800 mi²) and includes Polk, Hillsborough, Hardee, Manatee, Sarasota, DeSoto, and Highland Counties (Cathcart, 1949). The middle Miocene Hawthorn Group is found throughout the entire Florida peninsula, except within the Ocala High (or “Ocala Upland”) and the Sanford High. The Hawthorn Group

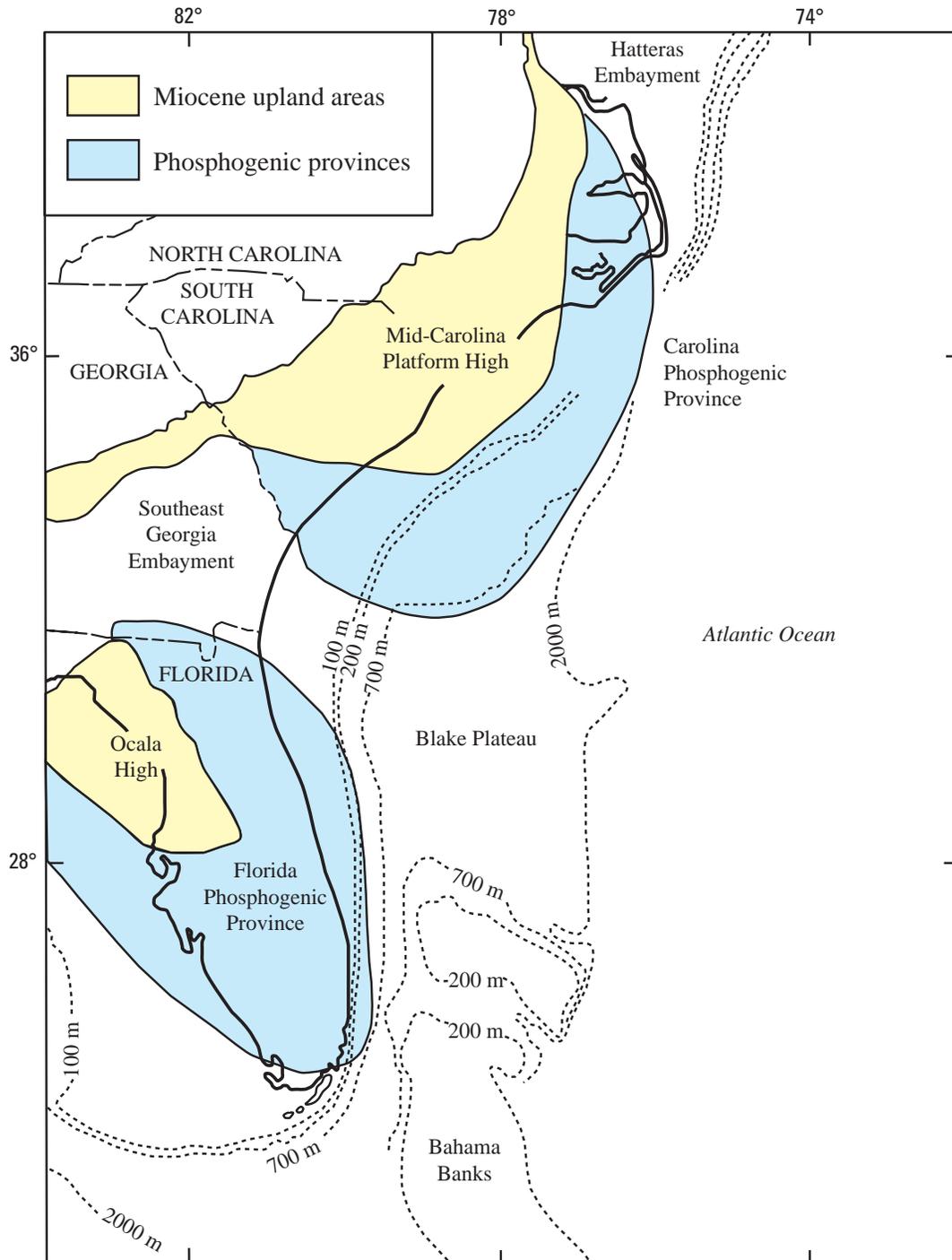


Figure 17. Phosphogenic provinces of the southeastern United States. Modified from Van Kauwenbergh and McClellan (1990).

contains considerable phosphorite (Riggs, 1980). A preliminary investigation report by Cathcart and others (1952) divides the Hawthorn Group into three lithologic units: a lowermost unit containing dolomite, phosphatic marls, limestone, and clay and quartz sands; a middle series of interbedded phosphatic sands, clays, and sandy clays; and an uppermost unit consisting of dolomites and dolomitic limestone. In general, the phosphorite grains range in size from less than 0.1 mm to 10 cm (0.0039 to 3.937 in.) in diameter.

Unconformably overlying the Hawthorn Group, the Bone Valley Formation contains phosphate that is typically a higher grade, most likely the result of mechanical reworking and subsequent precipitation during the Pliocene (Cathcart, 1949). As a result, the Bone Valley Formation is a lithochemical sequence in which the phosphorite appears sporadically in irregular concentration and distribution (Riggs, 1980). The formation consists of a lower zone of poorly sorted clay, silt, sand, and gravel (Cathcart and others, 1952). Nearly all the gravel in this unit, as well as a large part of the sand and clay, is phosphate, specifically carbonate-fluorapatite (Cathcart and others, 1952; Altschuler and others, 1952). The rest of the sand consists of quartz, with minor amounts of feldspar and trace amounts of ilmenite, zircon, tourmaline, staurolite, and other minerals. The clay minerals include palygorskite, montmorillonite, and kaolinite. The minerals in the upper zone of the Bone Valley Formation are quartz sand, wavellite and pseudowavellite (aluminum phosphates), crandallite, and kaolinite.

Uranium (U) in the Bone Valley Formation has a maximum concentration of 0.02 percent uranium in the basal section and an average concentration of about 0.01 percent uranium (Cathcart, 1949). In the Hawthorn Group, there is a low content of uranium in fresh, unweathered material. However, after leaching, the phosphate-rich rocks of the Hawthorn Group yield a maximum of 0.01 percent U. In Manatee and Hardee Counties, which are south of the high-grade district, only minor amounts of uranium occur in the Bone Valley, Hawthorn, and overlying Pleistocene sand formations.

In addition to uranium, semiquantitative spectrographic analyses on phosphate rock from the Bone Valley Formation indicate that the rare earth elements yttrium (Y) and lanthanum (La) are present (McKelvey and others, 1951). Samples from the decommissioned Noralyn mine range from 0.01 to 0.1 percent Y while those from the decommissioned Bonny Lake mine range from 0.001 to 0.01 percent Y. Although only one of the Bonny Lake mine samples contains La, all of the samples from the Noralyn mine contain 0.001 to 0.01 percent La.

Several metals are also present in nearly all samples from the Bone Valley Formation such as vanadium, manganese, chromium, barium, strontium, and titanium, with concentrations that range from 0.01 to 0.1 percent (McKelvey and others, 1951). Nickel, copper, zirconium, and lead are also present in amounts greater than 0.001 percent. The Bonny Lake mine samples contain 0.001 to 0.01 percent tin whereas those from the Noralyn mine contain 0.0001 to 0.001 percent.

McKelvey and others (1951) also report gallium in all samples from the two mines.

Although the distribution of the metals is unknown, the REE, U, Ba, and Sr are most likely located in the carbonate-fluorapatite (francolite) lattice or absorbed on its surface (Cathcart and others, 1952; Clarke and Altschuler, 1958). In addition, because of the small quantities of the various elements, recovery may be possible only when ore is taken into acid solution. More recent research regarding the rare earth geochemistry of phosphorites suggests that the two main factors influencing REE concentrations in marine sedimentary phosphates are primary compositional differences and postdepositional processes such as diagenesis, the removal of mineral species, and reworking of deposits by winnowing action (Van Kauwenbergh and McClellan, 1990). While the North Carolina phosphorites appear to be unaltered, the Florida phosphorites have undergone postdepositional alteration through the removal of carbonate mineral species, systematic decarbonatization of francolite, deposition of iron and aluminum phosphates and of clay minerals in alteration profiles.

MacArthur and Walsh (1984) determined that the abundance of REE in francolite reflects the REE source and mechanism of incorporation. Zanin and Zamirailova (2009) suggested that the REE concentrations of supergene phosphorites are the result of weathering, the physicochemical conditions of phosphorite formation, presence of a biogenic component, and structural type of the phosphorites. In particular, phosphorite from the weathering zone of sedimentary rocks, such as those that are found in Florida and Tennessee, yield an average total REE content of 27 ppm (Zanin and Zamirailova, 2009).

Further research on the REE and trace metal contents of Florida phosphorites is critical to more fully assessing its viability as an economic resource. Additional REE and trace metal work on the North Carolina phosphorites is also warranted, as little has been reported at this point.

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Placer Rare Earth Elements Deposits

Placer deposits are sand, silt, and cobble-size sediments deposited in streams, rivers, and beaches, also referred to as “alluvial” deposits. Globally and in the United States, alluvial accumulations of monazite are a valuable type of rare earth elements (REE)–thorium (Th) deposit. For example, the alluvial monazite deposits of the Coastal Belt of southernmost India are thought to represent one of the largest thorium resources in the world. The monazite deposits of southern India contain detrital heavy minerals and are found in piedmont lakes, shallow seas, parts of the beaches (fig. 18), sand bars across the mouth of rivers, deltas, and sand dunes behind the beaches (Bhola and others, 1958). A study by Mahadevan and others (1958) estimated that the beach sands of the southwestern coast of India alone contain estimated reserves of 446,400 metric tons (492,200 tons) of monazite, in which the ThO_2 content of the monazite ranges from 7.5 to 9 percent.

Monazite’s resistance to chemical weathering and high specific gravity account for its association in alluvial (placer) deposits with other resistant heavy minerals such as ilmenite, magnetite, rutile, and zircon. Monazite weathers from alkaline crystalline rocks of the surrounding region and is transported downstream and deposited by alluvial processes.

In the United States, alluvial deposits of monazite are known in the Carolina Piedmont of North and South Carolina, the beach deposits of northeastern Florida through

southeastern Georgia, and the intermontane valleys of Idaho. In the past, these unconsolidated stream deposits were mined by small-scale sluices (Idaho and North and South Carolina) and dredges (Idaho); beach sands were mined by large shovels (Florida and Georgia). Sluicing instantly produces a heavy-mineral separate, but even in the case of the dredge or shovel operations, the heavy-mineral separation was still performed at the site. Thus, the mining of REE and thorium from alluvial deposits has the advantages of relative ease of mining and rapid mineral separation, in contrast to hard-rock mining. Another benefit of placer deposits is the potential for coproducts. Coproducts can include REE and thorium obtained from monazite; titanium from ilmenite and rutile; iron from magnetite; zirconium and hafnium from zircon; and industrial-grade garnet, staurolite, tourmaline, kyanite, and sillimanite, which are used as abrasives and refractory minerals.

The three monazite placer districts highlighted in this report—North and South Carolina stream deposits, Florida-Georgia beaches, and Idaho stream deposits—are the largest volume alluvial REE-thorium deposits known in the United States. The geology and estimated monazite resources of these districts have been well described by Staatz and others (1979, the North and South Carolina placer deposits, p. 33–39) and Staatz and others (1980, the Idaho stream placers, p. 9–18, and the Florida beach deposits, p. 3–9); numerous references cited therein provide more detailed information on these deposits. Thus, here we only briefly summarize the findings of these earlier studies.



Figure 18. Heavy-mineral layers (“black sand”) in a quartz beach sand, Chennai, India. A penny provides a scale. (Photograph by Mark A. Wilson, Department of Geology, The College of Wooster, Wooster, Ohio; used with permission.)

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Idaho—Placer Deposits

Location: At least 11 monazite-bearing placer districts exist in the valleys of a region extending north of Boise, Idaho, and along the western flank of the Idaho batholith. Latitude: 44.40416 N., Longitude: 115.35356 W.; datum: WGS84

Deposit type and basic geology: Monazite-bearing alluvial stream deposits (placers) exist in the valleys of a region that extends north of Boise, Idaho along the western flank of the Idaho batholith. The primary source of the resistant rare earth elements (REE)—thorium-bearing minerals in the Idaho placers is thought to be the Idaho batholith, in particular the quartz monzonite and pegmatite phases of the batholith (Mackin and Schmidt, 1957). The most common heavy minerals in the alluvial deposits (in generally decreasing amounts) are ilmenite, magnetite, sphene, garnet, monazite, euxenite, zircon, and uranothorite (uranium-rich thorite). In addition to REE and thorium from monazite and euxenite, the Idaho placer deposits (and the abandoned historic dredge waste piles) contain coproducts of titanium (in ilmenite), and niobium and tantalum (in euxenite).

Status: Currently (2010), there is no active exploration in this district.

Production: In the 1950s, two areas of west-central Idaho were mined by dredges for monazite, Long Valley and Bear Valley. Beginning in September 1950, Long Valley was worked by three dredges that had earlier been used to recover gold but later were converted (with assistance from the U.S. Bureau of Mines under the sponsorship of the U.S. Atomic Energy Commission) to recover monazite. The history of these dredging operations is described by Argall (1954) and Staatz and others (1980, p. 9–16, and references cited therein). During this 5-year period, Staatz and others (1980) estimated that the three dredges recovered 6,430 metric tons (7,085 tons) of monazite containing 269 metric tons (297 tons) of thorium oxide. Dredging ended here in mid-1955, when the government stockpile order was fulfilled. The Bear Valley placers were worked by first one dredge in 1955, then a second in 1956, with the intent to recover Nb and Ta for another Federal government contract. According to Staatz and others (1980, p. 10), “from alluvium of Bear Valley, 2,049 short tons [1,858 metric tons] of euxenite, 83.5 tons [75.7 metric tons] of columbite, and 54,862 tons [49,760 metric tons] of ilmenite were recovered.” No records of monazite recovery were kept.

Estimated resources: U.S. Geological Survey geologists (Staatz and others, 1980) extensively reviewed results of the 1950s government dredging program in central Idaho. They determined that the five most important monazite districts are Long Valley, Bear Valley, the Boise Basin, the Burgdorf-Warren area, and the Elk City–Newsome

area. The reported thorium oxide contents of monazite in the Idaho placer deposits range from 2.2 to 6.24 percent. The few analyses of REE in monazites from Idaho placers indicate that these monazites contain 63 percent total REE oxides Staatz and others (1980). Staatz and others (1980) calculated thorium reserves for each of the five major placer districts individually; in total, the five districts have total reserves of about 9,130 metric tons (10,060 tons) of thorium oxide. The REE resources of the five placer districts would presumably be at least ten times the thorium resource, because the typical monazite contains about 63 percent total REE oxides and 2.2–6.24 percent thorium oxide.

Detailed Discussion

At least 11 monazite-bearing placer districts exist in the valleys of a region extending north of Boise, Idaho, and along the western flank of the Idaho batholith (fig. 19). Monazite was first recognized here in 1896 as the heavy, yellow to brownish-yellow mineral that collected with other heavy minerals and gold within the sluice boxes of gold placer operations in the Boise Basin near Idaho City, Centerville, and Placerville (Lindgren, 1897). In 1909, a mill designed to capture the monazite was built by the Centerville Mining and Milling Co. Only a small amount of monazite concentrate was produced for its thorium content before the mill burned down in a forest fire in 1910.

In the 1950s, two areas of west-central Idaho were mined by dredges for monazite recovery, Long Valley and Bear Valley (figs. 19 and 20). Beginning in September 1950, Long Valley was worked by three dredges that were earlier used to recover gold but later were converted (with assistance from the U.S. Bureau of Mines under the sponsorship of the U.S. Atomic Energy Commission) to recover monazite. The history of these dredging operations is described by Argall (1954) and Staatz and others (1980, p. 9–16, and references cited therein). The heavy minerals recovered in the Long Valley district were dominated by ilmenite (84 percent of heavy minerals), followed by monazite (8 percent), garnet (5 percent), and zircon (3 percent). During this 5-year period, Staatz and others (1980) estimated that the three dredges recovered 6,430 metric tons (7,085 tons) of monazite containing 269 metric tons (297 tons) of thorium oxide. The dredging ended here in mid-1955, when the government stockpile order was fulfilled.

Rare earth elements (REE) and thorium were also unintentionally recovered within the minerals euxenite and monazite from the Bear Valley placers. The Bear Valley placers were worked by first one dredge in 1955, then a second in 1956, with the intent to recover Nb and Ta for another Federal government contract. According to Staatz and others (1980, p. 10), “from alluvium of Bear Valley, 2,049 short tons [1,858 metric tons] of euxenite, 83.5 tons [75.7 metric tons] of columbite, and 54,862 tons [49,760 metric tons] of ilmenite were recovered.” No records of the monazite recovery were kept.

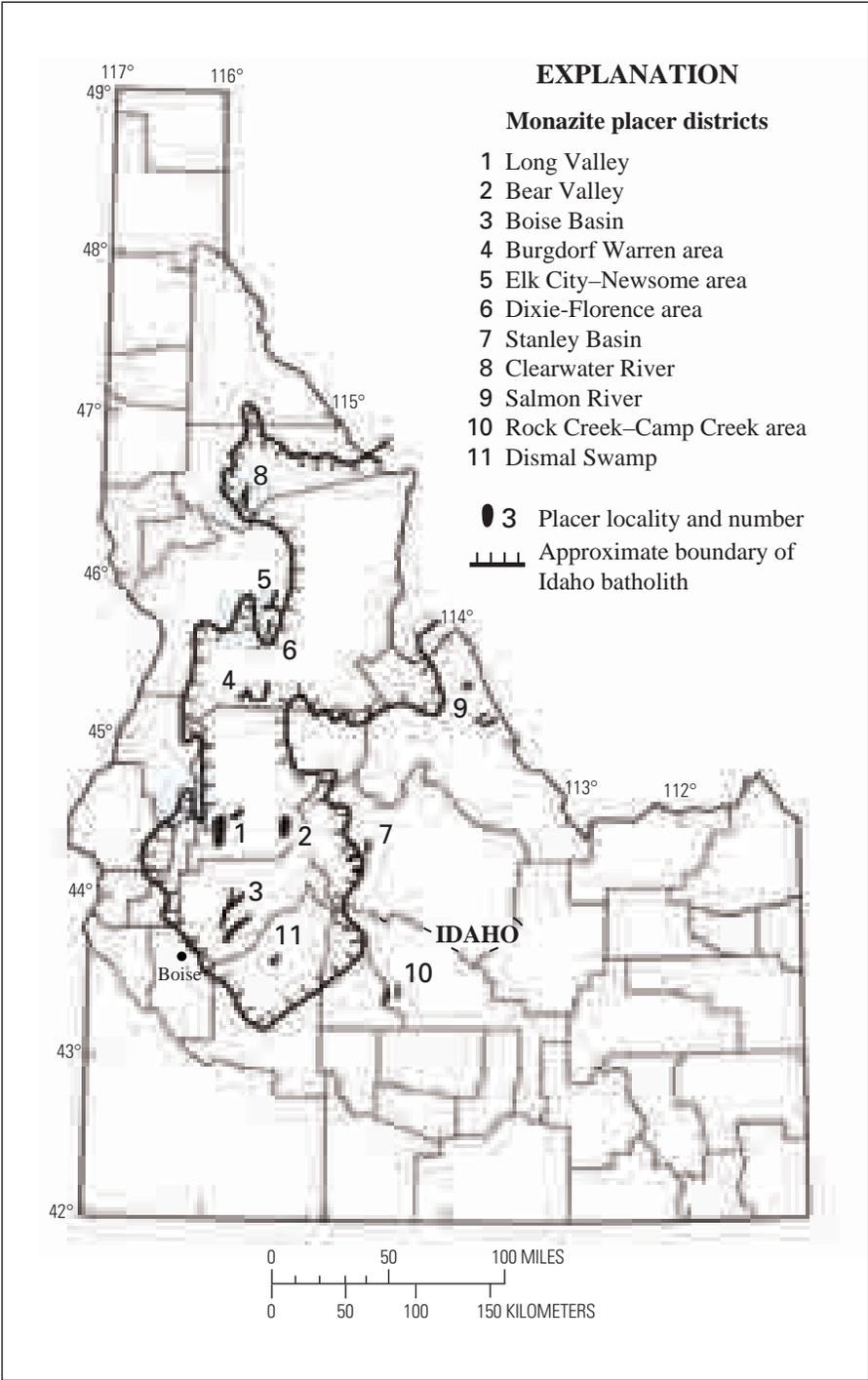


Figure 19. Generalized map of known monazite placer districts in Idaho. From Staatz and others (1980).



Figure 20. Porter Brothers dredge in Bear Valley, Idaho, worked columbium (now called niobium)-tantalum placer deposits. This dredge operated from 1955 to 1960; exact date of photograph is unknown. Monazite was produced as a byproduct from these placer deposits. (Photograph from Savage (1961, fig. 13); used with permission of Idaho Geological Survey.)

Most of the Idaho monazite resource data used by Staatz and others (1980) came from a 1950s program in which the U.S. Atomic Energy Commission funded the U.S. Bureau of Mines to identify new domestic monazite reserves (Storch and Holt, 1963). The USGS (Staatz and others, 1980) extensively reviewed results of this program, as attested by U.S. Bureau of Mines literature, interviews with former dredge companies, and field reconnaissance and sampling of the major monazite placer districts in Idaho. They determined that the five most important monazite districts are Long Valley, Bear Valley, the Boise Basin, the Burgdorf-Warren area, and the Elk City–Newsome area. The reported thorium oxide contents of monazite in the Idaho placer deposits range from 2.2 to 6.24 percent. The few analyses of REE in monazites from Idaho placers indicated that these monazites contain 63 percent total REE oxides Staatz and others (1980). Staatz and others (1980) calculated thorium reserves for each of the five major placer districts individually; in total, the five districts have total reserves of about 9,130 metric tons (10,060 tons) of thorium oxide. The REE resources of the five placer districts would presumably be at least 10 times the thorium resource, because the typical monazite contains about 63 percent total REE oxides and 2.2–6.24 percent thorium oxide.

The primary source of the resistant REE-thorium-bearing minerals in the Idaho placers is thought to be the Idaho batholith, in particular the quartz monzonite and pegmatite phases of the batholith (Mackin and Schmidt, 1957). The most common heavy minerals in the alluvial deposits (in generally decreasing amounts) are ilmenite, magnetite, sphene, garnet, monazite, euxenite, zircon, and uranothorite (uranium-rich thorite). In addition to REE and thorium from monazite and euxenite, the Idaho placer deposits (and the abandoned historic dredge waste piles) contain coproducts of titanium (in ilmenite), and niobium and tantalum (in euxenite).

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North and South Carolina—Placer Deposits

Location: The high-grade monazite placers of the Piedmont of North Carolina and South Carolina are deposited between the Catawba River in the northeast and the Savannah River in the southwest, along a belt that extends from east-central Virginia southwestward into Alabama. Latitude: 33.40277 N., Longitude: 81.79004 W.; datum: WGS84

Deposit type and basic geology: Monazite-bearing alluvial stream deposits (placers) exist in the valleys of the Piedmont of North Carolina and South Carolina. The stream-sediment deposits in this region are generally consistent in character; the heavy-mineral concentrations are greatest in the headwaters areas. The alluvium is deposited in flat valleys, forming well-bedded, poorly graded layers of unconsolidated sediment. Stacked layers contain gravel, sand, clay, and clayey silt, at an average total thickness of about 4.5 m (15 ft) (Staatz and others, 1979). Monazite typically is found in all units, but it is generally most abundant in the basal gravel layers and least abundant in the clay layers. According to Staatz and others (1979), the heavy-mineral content of the placer deposits of the Piedmont region ranges from 0.15 to 2.0 percent; monazite makes up about 3.5–13 percent of the heavy minerals. Other parts of the heavy-mineral fraction include ilmenite, 20–70 percent; garnet, 2–50 percent; rutile, 0.3–7 percent; zircon, trace to 14 percent; and sillimanite and kyanite together, trace to 20 percent. In some placers, additional heavy minerals include epidote, magnetite, xenotime, tourmaline, sphene, staurolite, andalusite, and an unidentified black radioactive mineral (Staatz and others, 1979). Analysis of 52 samples of alluvial monazite from this region (Mertie, 1975) found that the monazite contains 60–63 percent total rare earth elements (REE) oxides and 2.5–7.8 percent thorium oxide content, with a mean value of 5.67 percent thorium.

Status: Currently (2010), there is no reported exploration in this region.

Production: In 1887, a few short tons of monazite were produced from stream deposits in the Piedmont region of North and South Carolina, giving this region the distinction of being the world's first supplier of thorium (Olson and Overstreet, 1964). Monazite-bearing placers of this region were worked by small-scale sluice operations from 1887 to 1911 and 1915 to 1917; they produced a total of 4,973 metric tons (5,483 tons) of monazite (Overstreet and others, 1968). Monazite mining ended here in 1917 because beach deposits in India and Brazil were producing thorium at lower cost.

Estimated resources: For the 13 largest placer deposits of the Piedmont region of North and South Carolina, Staatz and others (1979) estimated total reserves of about 4,800

metric tons (5,300 tons) of thorium oxide and potential thorium resources seven times as high. Using mean concentrations of REE oxides (60–63 percent) and thorium oxide (5.67 percent) found in monazite from these placer deposits, a REE resource of roughly 53,000 metric tons (58,400 tons) of REE oxide is suggested.

Detailed Discussion

In 1887, a few short tons of monazite were produced from stream deposits in the Piedmont region of North and South Carolina, giving this region the distinction of being the world's first supplier of thorium (Olson and Overstreet, 1964). Monazite-bearing placers of this region were worked by small-scale sluice operations from 1887 to 1911 and 1915 to 1917; they produced a total of 4,973 metric tons (5,483 tons) of monazite (Overstreet and others, 1968). Monazite mining ended here in 1917, not because reserves had been exhausted but rather because the beach deposits of India and Brazil were producing thorium at lower cost.

The high-grade monazite placers of the Piedmont of North Carolina and South Carolina are deposited between the Catawba River in the northeast and the Savannah River in the southwest (fig. 21), along a belt that extends from east-central Virginia southwestward into Alabama (Mertie, 1975). The stream-sediment deposits in this region are generally consistent in character; the heavy-mineral concentrations are greatest in the headwaters areas. The alluvium is deposited in flat valleys, forming well-bedded, poorly graded layers of unconsolidated sediment. Stacked layers contain gravel, sand, clay, and clayey silt, at an average total thickness of about 4.5 m (15 ft) (Staatz and others, 1979). Monazite typically is found in all units, but it is generally most abundant in the basal gravel layers and least abundant in the clay layers.

The Piedmont region is underlain by crystalline, high-grade metamorphic rocks intruded by quartz monzonite and pegmatite. The monzonite and pegmatite intrusions may be monazite bearing or monazite free. Overstreet (1967) suggested that the primary source of the alluvial monazite was the high-grade metamorphic rocks, particularly sillimanite schist. Other metamorphic rocks in the area include mica and hornblende gneisses, amphibolites, and additional varieties of schist (Mertie, 1975). Other igneous country rocks include diorite, rhyolite with associated pyroclastic rocks, gabbro, diabase, ultrabasic rocks, and several kinds of granite, such as monzonite, quartz monzonite, and granodiorite.

Various rivers carried monazite and other heavy minerals eastward from the Piedmont region, such that all the regions in the Coastal Plain may have also received various amounts of heavy minerals (Staatz and others, 1979). In particular, the Late Cretaceous Tuscaloosa Formation received a large amount of monazite, albeit widely dispersed. Although this area has not been as well explored as the Piedmont, it is known that the Tuscaloosa directly overlaps the crystalline rocks of the Piedmont and that streams in the area have reworked the Tuscaloosa sand so that in places heavy-mineral

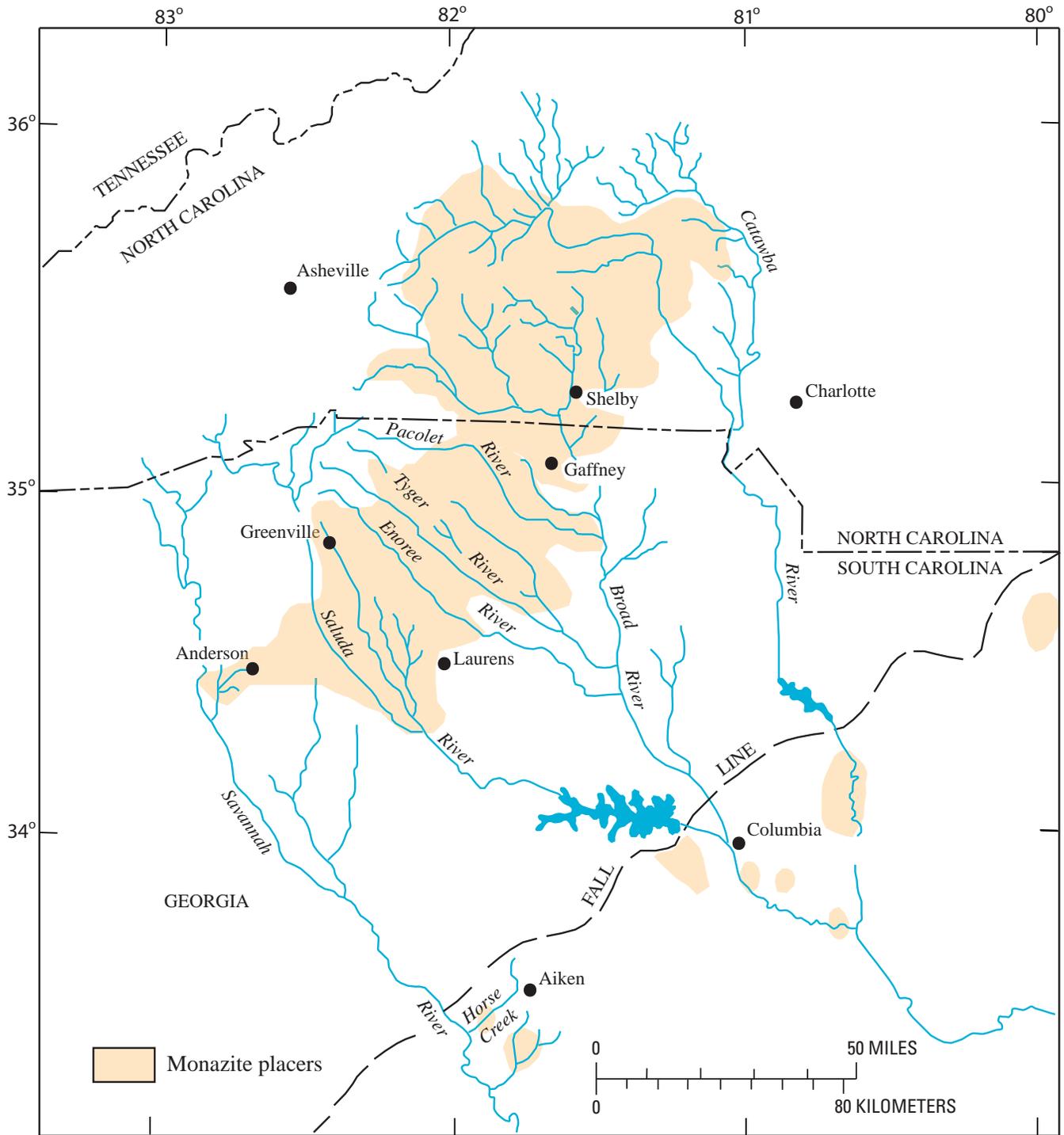


Figure 21. Map of monazite placers of North Carolina and South Carolina. Modified from Staatz and others (1979).

placers containing monazite have been identified (Staatz and others, 1979). The best-known placer is Horse Creek, which is southwest of Aiken, South Carolina, and was the site of the first large-scale mining of stream placers for monazite and other heavy minerals in the Carolinas. Dredging in this area between the summers of 1955 and 1958 (Williams, 1967) found heavy-mineral contents of about 1–1.5 percent, of which fraction monazite formed about 8 percent (Mertie, 1975). Overall, these dredging operations recovered monazite, ilmenite, rutile, zircon, and staurolite (Williams, 1967).

According to Staatz and others (1979), the heavy-mineral content of the placer deposits of the Piedmont region ranges from 0.15 to 2.0 percent, and monazite forms about 3.5–13 percent of the heavy minerals. Other parts of the heavy-mineral fraction contain ilmenite, 20–70 percent; garnet, 2–50 percent; rutile, 0.3–7 percent; zircon, trace to 14 percent; and sillimanite and kyanite together, trace to 20 percent. In some placers, additional heavy minerals include epidote, magnetite, xenotime, tourmaline, sphene, staurolite, andalusite, and an unidentified black radioactive mineral (Staatz and others, 1979). Analysis of 52 samples of alluvial monazite from this region (Mertie, 1975) found that the monazite contains 60–63 percent total REE oxides and 2.5–7.8 percent (mean, 5.67 percent) thorium oxide.

The Fall Line is the sharp topographic break that marks the boundary between the Piedmont and the Coastal Plain (fig. 21). East of the Fall Line, the heavy-mineral distribution in two deposits (the only ones for which data are available) shows several differences from that of the Piedmont. First, the abundance of staurolite increases to 7 and 38 percent of the two deposits (Kline and others, 1954, p. 27; Mertie, 1975, p. 27). Rutile and zircon are also more abundant in these deposits than in the Piedmont placers; rutile makes up 15 and 10 percent of the heavy-mineral content and zircon 19 and 11 percent. However, monazite concentrations are similar to those in placers in the Piedmont.

For the 13 largest placer deposits of the Piedmont region of North and South Carolina, Staatz and others (1979) estimated total reserves of about 4,800 metric tons (5,300 tons) of thorium oxide, with potential thorium resources seven times as high. However, using the mean concentrations of REE oxides (60–63 percent) and thorium oxide (5.67 percent) found in monazite from these placer deposits, a REE resource of roughly 53,000 metric tons (58,400 tons) of REE oxide is suggested. The estimate of Staatz and others (1979) was based on regional monazite resource studies by Overstreet and others (1959) and Overstreet (1967), and on studies of individual drainage basins by several others (see Staatz and others, 1979, p. 37). Future exploration for monazite placer deposits in the Mid-Atlantic region can be aided by regional stream-sediment geochemistry datasets assembled by the USGS (Grosz, 1993).

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Florida-Georgia—Beach Placer Deposits

Location: Monazite accumulations are situated in the modern and raised Pleistocene and Pliocene beach deposits of northeastern Florida and southeastern Georgia. Latitude: 29.85997 N., Longitude: 81.73711 W.; datum: WGS84

Deposit type and basic geology: The modern and raised Pleistocene and Pliocene beach deposits of northeastern Florida and southeastern Georgia host low-grade but persistent concentrations of monazite. Heavy minerals constitute a small part of the modern beach sands, and monazite forms a small part of the heavy minerals. However, because of the large tonnage of suitable beach-sand deposits and the ease of mining and processing this material, these beach deposits represent a potential rare earth elements (REE) and thorium resource. The most abundant heavy mineral in the southeastern United States shoreline deposits is ilmenite, which in many places forms more than 50 percent of the heavy-mineral fraction; monazite forms a minor part of the heavy-mineral fraction, usually less than 1 percent (Staatz and others, 1980). Monazite from the Florida beach placers contains about 50–60 percent total REE oxides (Kremers, 1958; Staatz and others, 1980) and 4–5 percent thorium oxide (Calver, 1957). Small amounts of uranium, averaging 0.55 percent, are also present in the monazite (Calver, 1957).

Status: Currently (2010), there is no reported exploration in this district.

Production: Some of the former heavy-mineral operations in the Pleistocene beach deposits of Florida were once domestic suppliers of monazite. Staatz and others (1980, p. 3) reported, “During 1978 monazite was produced from two of the three operating heavy-mineral deposits in Florida: Titanium Enterprises at Green Cove Springs and Humphrey Mining Corp. at Boulogne recovered monazite as a byproduct.” Trace amounts of monazite were also mined from the large Trail Ridge orebody south of Jacksonville in 1949 by E.I. du Pont de Nemours and Company. Overall, these deposits were mined primarily for titanium (in ilmenite and rutile), which was used by the pigment industry. Other minerals sold from the three deposits include kyanite, sillimanite, staurolite, garnet, zircon, and the host sand itself. Mining ceased in this area in late 1978 because of increasing environmental regulations that made mining operations more costly.

Estimated resources: Staatz and others (1980) estimated that the beach placer deposits of this region contain total reserves of about 198,000 metric tons (218,000 tons) of rare earth elements oxides, 14,700 metric tons (16,200 short tons) of thorium oxide, and 1,490 metric tons (1,640 tons) of uranium oxide, all of which are hosted in 330,000 metric tons (364,000 tons) of monazite.

Detailed Discussion

The modern and raised Pleistocene and Pliocene beach deposits of northeastern Florida and southeastern Georgia host low-grade but persistent concentrations of monazite (figs. 22 and 23). Heavy minerals constitute a small part of the modern beach sands, and monazite forms a small part of the heavy minerals. However, because of the large tonnage of suitable beach sand deposits and the ease of mining and processing this material, these beach deposits represent a potential rare earth elements (REE) and thorium resource. Staatz and others (1980) estimated that the beach placer deposits of this region contain total reserves of about 198,000 metric tons (218,000 tons) of REE oxides, 14,700 metric tons (16,200 short tons) of thorium oxide, and 1,490 metric tons (1,640 tons) of uranium oxide, all of which are hosted in 330,000 metric tons (364,000 tons) of monazite.

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Overall, these deposits were mined primarily for titanium (in ilmenite and rutile), which was used by the pigment industry. Other minerals sold from the three deposits include kyanite, sillimanite, staurolite, garnet, zircon, and the host sand itself. Mining ceased in this area in late 1978 because of increasing environmental regulations that made mining operations more costly. Steep increases in coastal real-estate values also influenced the situation, such that the heavy-mineral concentrations in the modern beaches became much less valuable than the real estate they occupy. Nonetheless, while the modern beaches hosted most of the early heavy-mineral operations, the older inland beaches are larger, have more uniform distribution of heavy minerals, and are not as vulnerable to severe storms, which made them favorable before the real estate market skyrocketed (Overstreet, 1967, p. 125). Staatz and others (1980, p. 3–4, and references cited therein) describe the mining history of the heavy-mineral beach placers of the northeastern Florida and southeastern Georgia area in greater detail.

In general, the monazite-bearing sands in the raised Pleistocene and Pliocene beach deposits lie as much as 80 km (50 mi) inland, making them deposits of former shorelines. These relict shorelines, which lie 3–33 m (10–108 ft) above the sea level, have been noted in the outer coastal plain region from Maryland to Florida. Once referred to as “marine terraces,” the relict shorelines were divided into different levels on the basis of elevation and tectonic stability and then

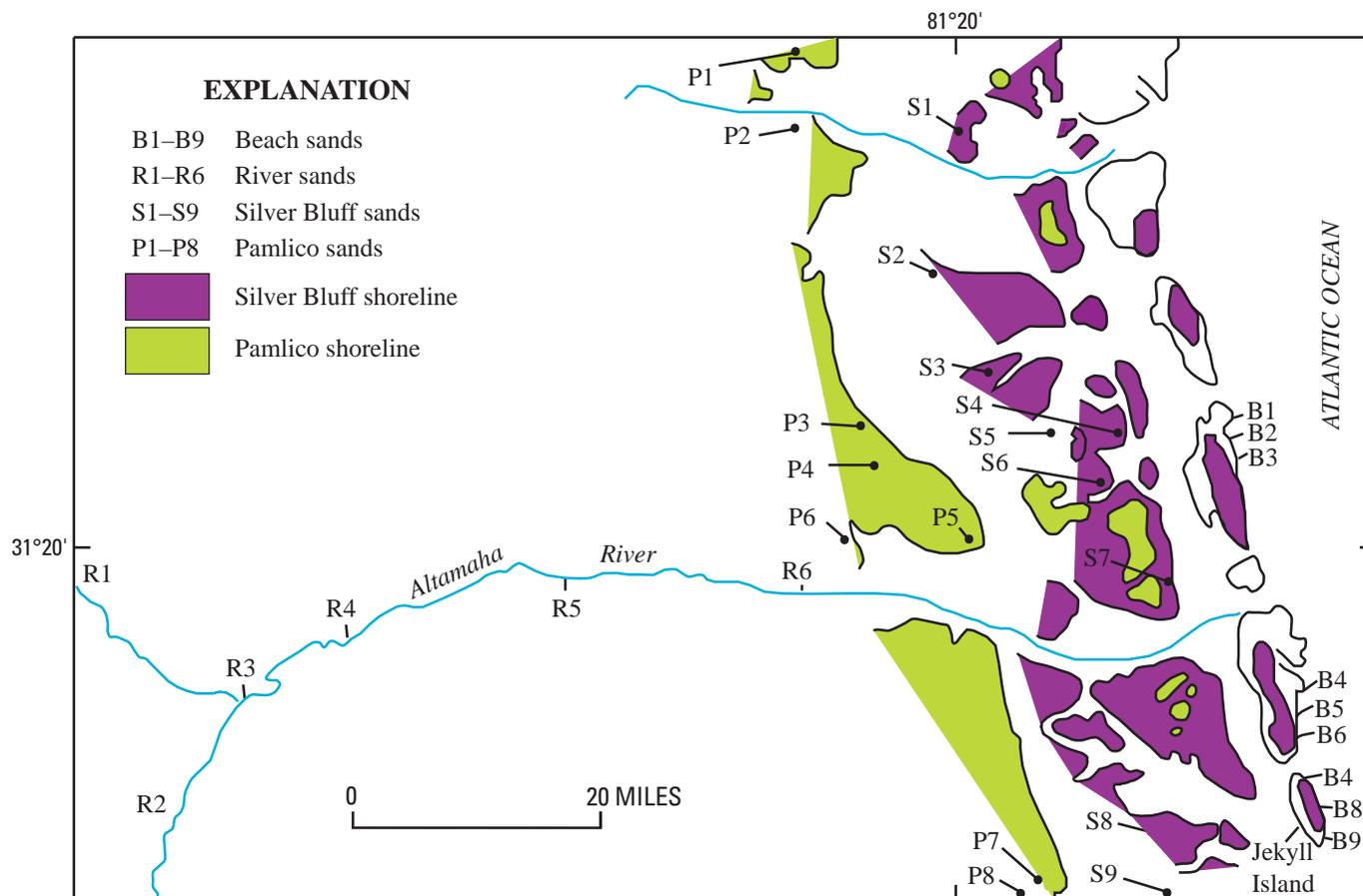


Figure 22. Map of Recent and Pleistocene sands of Georgia. Modified from Neiheisel (1962).

correlated with interglacial stages (MacNeil, 1950; Doering, 1960). Further investigation revealed that the relict shorelines more closely resembled barrier islands, suggesting that the coastal plain was warped during the Pleistocene (Winkler and Howard, 1977). Because monazite contains radioactive thorium, future monazite exploration in the eastern United States coastal plain areas can benefit from several aeroradiometric maps that were compiled and interpreted by the USGS (Force and others, 1982; Grosz, 1983; Grosz and others, 1989; Owens and others, 1989).

The monazite and associated heavy minerals in the relict shoreline deposits of the southeastern United States were eroded from crystalline rocks of the Piedmont province (Mertie, 1953), carried towards the Atlantic Ocean by streams and rivers, and eventually redeposited by coastal processes. The natural concentration of heavy minerals in the shoreline area is a multistage process that involves transport by longshore drift; gravity separation by specific gravity, particle size, and shape; differential chemical weathering (Neiheisel, 1962); wave action; and, in some parts of the coastal environment, the actions of tides. All of these forces rework the sediments in the shoreline environments through time and naturally concentrate the heavy minerals (see Force, 1991, p. 73–84).

Although the most abundant heavy mineral in the southeastern United States shoreline deposits is ilmenite, which in many places composes more than 50 percent of the heavy-mineral fraction, monazite usually forms less than 1 percent of the heavy-mineral fraction (Staatz and others, 1980). Zircon generally composes 10–20 percent of the heavy minerals. Monazite from the Florida beach placers contains about 50–60 percent total REE oxides (Kremers, 1958; Staatz and others, 1980) and 4–5 percent thorium oxide (Calver, 1957). Small amounts of uranium are also present in the monazite, averaging 0.55 percent (Calver, 1957).

Despite the low concentrations of monazite (and thus, REE and thorium) in the typical coastal placer deposit of the southeastern United States, these deposits have three distinct advantages as potential sources of REE and thorium: they are relatively easy to excavate; it is relatively easy to separate the heavy-mineral fraction onsite; and they contain several salable mineral products. Mining in both beach placers and on relict shorelines is possible using open-pit methods, and overburden is rarely greater than 4–5 m (13–16 ft) thick. In addition, groundwater in Florida and Georgia is shallow enough that monazite and other heavy minerals can be mined by a dredge floating on a pond (Staatz and others, 1980). However, at present the Boulders and Jacksonville deposits are essentially mined out.

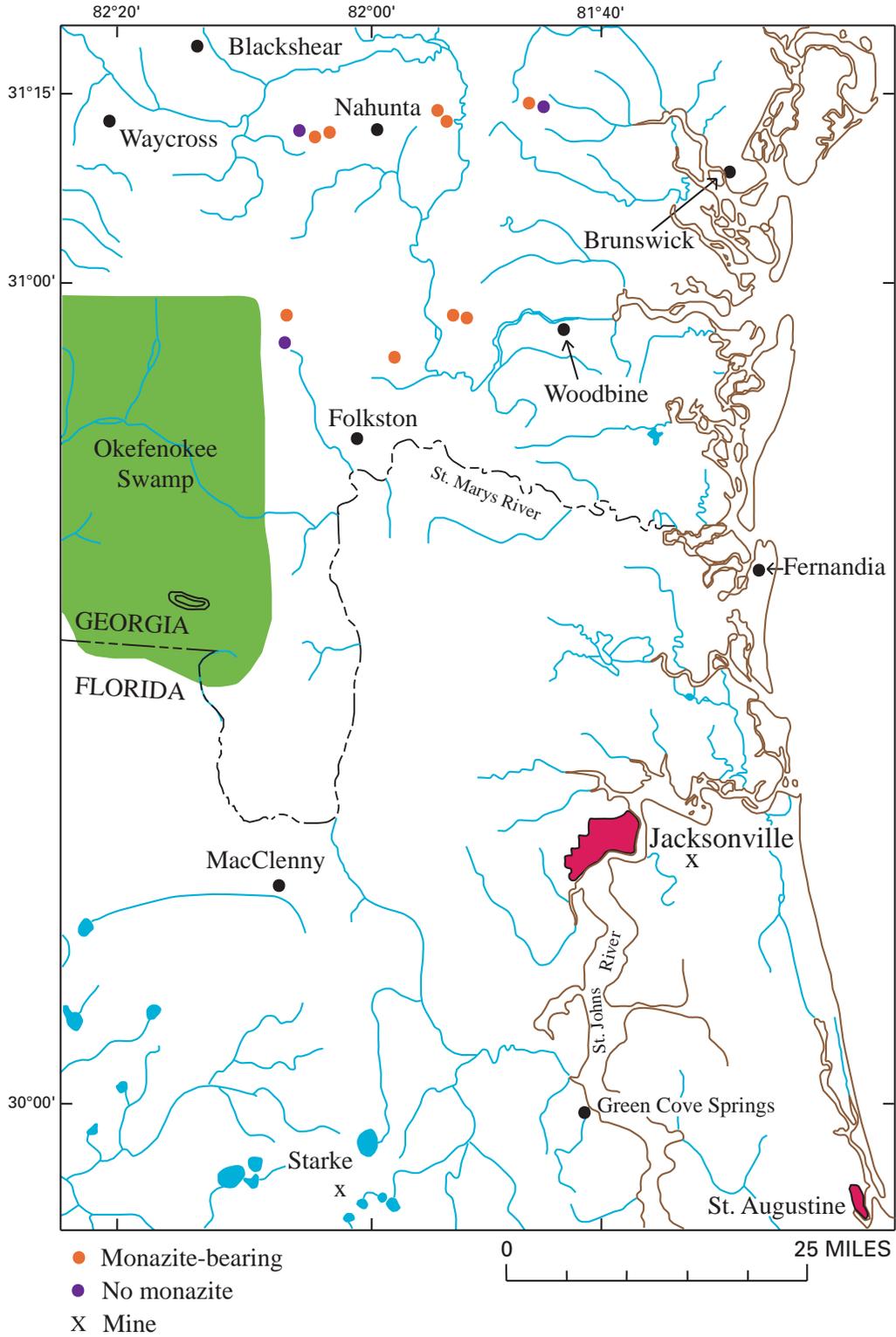


Figure 23. Sample and mine locations of monazite in southeastern Georgia and northeastern Florida. Modified from Mertie (1975).

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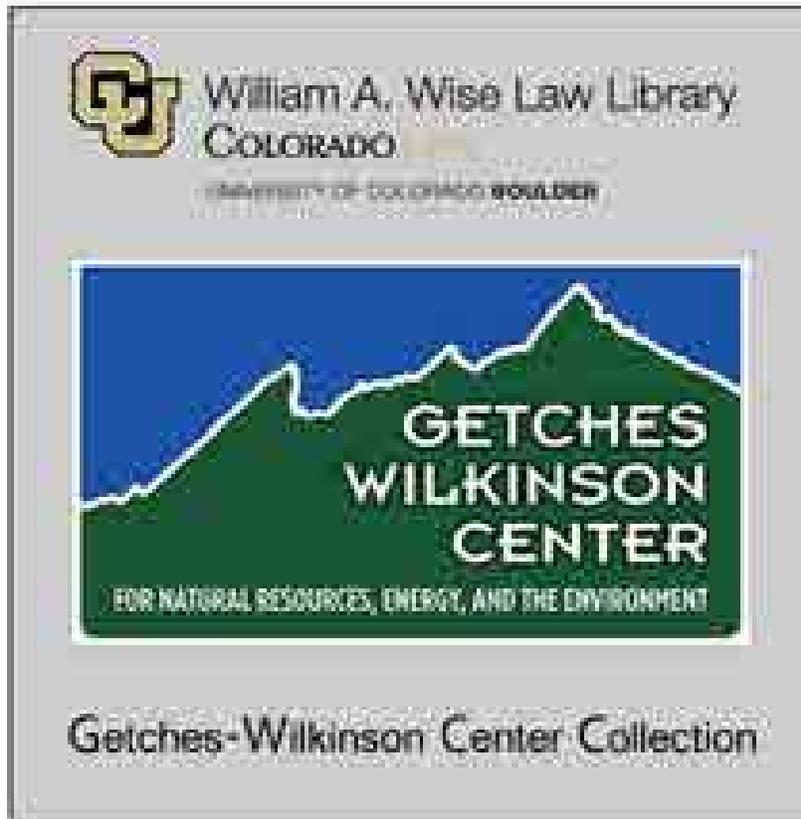
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OUTLINE

THE GENERAL MINING ACT OF 1872

BY

LOREN MALL

ROATH & BREGA
DENVER, COLORADO

FEDERAL LANDS, LAWS AND
POLICIES AND THE DEVELOPMENT
OF NATURAL RESOURCES

THE UNIVERSITY OF COLORADO SCHOOL OF LAW

PART III

HARD ROCK MINING ON THE PUBLIC LANDS; THE LOCATION SYSTEM

- I. The purpose of the Mining Laws of 1872 was to encourage mineral development in order to settle the West and establish the industrial base of the East.
 - A. After the Louisiana Purchase in 1803 and before the Civil War, explorers, trappers and miners roamed freely over the unsettled public domain. Where surface deposits of precious metals were found, miners took as many nuggets as they could carry.
 1. They were trespassers on land owned by the United States for the benefit of the nation because they were there without governmental authority taking property of the nation.
 2. Nevertheless, the miners were more concerned about hostile Indians and claim-jumping rivals than of prosecution by the U.S. government.
 3. With news of the discovery of gold in California at Sutter's Mill in 1848, the gold rush of 1849 was on. Thousands of adventurers from the East and all over the world flooded into California.
 4. Congress debated adoption of a federal mining law, starting in 1848, but could not agree whether to license small mineral tracts, reserving a royalty, to sell small tracts outright for cash, or to grant rights of free use in order to encourage mineral development.
 - B. In order to establish order and to protect their diggings, the miners organized mining districts and adopted regulations to govern mining claims.
 1. The mining district regulations governed requirements for making claim to minerals, notice, the size and markings of claims, the amount of work required to hold possession, and extralateral rights. Sometimes the mining districts conducted civil and criminal trials.
 2. The mining district regulations were based on concepts of equity, the rule of priority, and the practical needs of miners.

- C. With the Civil War causing a desperate need for revenue, Congress finally passed a federal mining law in 1866, granting miners rights of free access to minerals on the public lands.
1. The federal mining law was not intended to produce revenue directly, but through its economic spinoff, to enhance the value of federal land and to promote industrial production in the East.
 2. The federal mining law adopted the location system established by the mining districts. The first mining law was the Lode Law of 1866 confirming the right to locate claims on lodes. Lodes or veins are mineral-bearing rock in place between country rock with reasonably distinct boundaries on either side.
 3. Since the Lode Law of 1866 did not authorize the patenting of placer claims, Congress passed the Placer Act of 1870 to extend the location system to placers. Placers are any mineral deposits which are not lodes or veins of mineral in place between reasonably distinct boundaries on either side.
 4. Finally, Congress codified and expanded the Lode Law of 1866 and the Placer Act of 1870 into the Mining Law of 1872.
 5. The 1872 Mining Law, embellished by a host of judicial opinions, statutory exceptions, administrative regulations and decisions, and supplemented by state law, is the present location system.
 - (a) The location system is the chief means today for acquiring mining rights in the public lands.
 - (b) The leasing system established by the Mineral Leasing Act of 1920 is the major alternative. It provides an entirely different method for acquiring what can be called the fuel and fertilizer minerals. These leaseable minerals are oil, gas, coal, potassium, sodium, phosphate, oil shale, native asphalt, solid and semisolid bitumen and bituminous rock, including oil impregnated rock or sands, and sulphur in Louisiana and New Mexico.

(c) A third system is provided by the Materials Act of 1947, 30 U.S.C.A. §§ 601-604. The Materials Act provides that nonmetallic minerals of widespread occurrence, such as sand and gravel, peat moss, and others, are to be sold or granted under free-use permits.

6. The essence of the location system is the right of self-initiation. Unless mineral entry has been restricted, the prospector may enter the public domain at will, where he chooses, to search for minerals.

(a) Simply put, the mining law provides that the first locator who discovers a valuable mineral deposit and diligently pursues the find is protected against rivals, and is entitled to remove all minerals discovered even though the locator does not elect to purchase title in fee simple from the United States.

(b) It is the myriad refinements of these basic principals which constitute the mineral location system.

II. All valuable minerals are subject to location except those which have been specifically removed from the location system by Congress.

A. The Mining Law of 1872 expressly allows the location of mining claims upon "veins or lodes of quartz or other rock in place bearing gold, silver, cinnabar [mercury], lead, tin, copper or other valuable deposits." 30 U.S.C.A. § 23.

1. Note that the act expressly names only certain metals as locatable. However, diamonds were held locatable in 1872 as "valuable mineral deposits." 14 Atty. Gen. 115 (1872). After that, it was settled that nonmetalliferous minerals were locatable along with metalliferous minerals.

2. The Commissioner of the General Land Office held in 1872 that whatever is recognized as a mineral by the standard authorities is a valuable mineral deposit under the 1872 Act. Copp, Mineral Lands 50 (2d ed. 1882).

3. Chemical composition and crystalline structure are the principal distinguishing characteristics of minerals. While sand and gravel do not have definite chemical composition and crystalline structure, still, they are locatable if they are uncommon varieties.
4. Proof of mineral character, even for sand and gravel, is established if it is treated as a mineral in trade or commerce or has special or peculiar value in trade, commerce, manufacture, science or the arts. Stanislaus Electric Power Co., 41 L.D. 655 (1912).
5. Stone useful as building material and salt deposits were held to be valuable mineral deposits and thus locatable. Congress adopted these interpretations by the Building Stone Act of 1892, 30 U.S.C. § 161 and the Saline Placer Act of 1901, 29 Stat. 526 [repealed by the Mineral Leasing Act of 1920].
6. Ordinary deposits of clay and limestone were never held locatable even though they could be marketed at a profit. Holman v. Utah, 41 L.D. 314 (1912). Other decisions established that such minerals as decomposed rhyolite, blow sand, peat moss, and sand and gravel suitable only as fill material or other ordinary uses were not locatable. In fact, the Materials Act of 1947 was enacted to allow the disposal of such minerals and vegetative materials, including yucca and timber, by sale or free use permit to local municipalities. The Common Varieties Act of 1955, 30 U.S.C. § 611, amended the Materials Act of 1947 to legislatively prohibit any further location of sand, stone, gravel, pumice, pumicite, cinders, clay and other nonmetallic minerals of widespread occurrence, leaving them disposable only under the 1947 Act. The Common Varieties Act means that building stone must be an uncommon variety to remain locatable under the Building Stone Act.
7. Other mineral substances expressly held to be excluded from location before the Mineral Leasing Act of 1920 were fossils, meteorites, and crystalline deposits in caverns. The Act of September 28, 1962, 76 Stat. 652, removed petrified wood from the class of locatable minerals.

8. Petroleum was originally subject to the mining law and locatable through mining claims. Union Oil Co., 25 L.D. 351 (1897). The Oil Placer Act of 1897, 29 Stat. 526, confirmed this decision, making both oil and gas locatable. Oil shale was thus originally locatable under both the Oil Placer Act and the mining law.
9. Coal was considered a valuable mineral from the first, but it was never subject to mineral location. Instead, coal was sold at public auction and later leased. Coal Act of 1864, 13 Stat. 343; Coal Act of 1873, 17 Stat. 607; Mineral Leasing Act of 1920, 30 U.S.C. § 181 et seq., Federal Coal Leasing Amendments Act of 1975, 43 U.S.C. § 181 et seq.
10. Some mineral substances now subject to location were not known or considered valuable for many years after the mining laws were enacted. Other unknown or unrecognized minerals may yet become valuable mineral deposits and thus become subject to location.
11. Water was held not locatable in 1978 on the basis that the substance located must not only be a valuable mineral within the ordinary meaning but must also be the type of valuable mineral that the 1872 Congress intended to make the basis of a mining claim. Andrus v. Charlestone Stone Products Co., 436 U.S. 604 (1978).
12. 43 C.F.R. § 3812.1 summarizes the situation: "Whatever is recognized as a mineral by the standard authorities, whether metallic or other substance, when found in quantity and quality sufficient to render the lands valuable on account thereof, is treated as coming within the purview of the Mining laws." ". . . A 'mineral' is a substance that (1) is recognized as mineral, according to its chemical composition, by the "standard authorities on the subject;" or (2) is classified as mineral product in trade or commerce; or (3) possesses economic value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts." 43 C.F.R. § 2710.0-5e.

III. The United States reserved minerals from many agricultural homesteads in the West, and those minerals are subject to location of mining claims and leases by the United States.

- A. During the disposal of the public domain from 1800 to 1900, much mineral wealth of the country passed into private lands, free of charge.
1. The lands sold, and those granted under the preemption and homestead acts, as well as the state and railroad grants, were not to include mineral lands, but only agricultural lands. The settlement acts excluded known mineral lands.
 2. Conversely, the mining laws were the only legislative authority for acquiring mineral lands.
 3. Unfortunately, there were no adequate scientific means of classifying land as agricultural or mineral, so the settlement acts were applied to all lands from the Atlantic in the East to the Rocky Mountains in the West.
- B. Around 1900, the conservationists objected to further patenting of mineral lands under agricultural laws, especially to lands where coal deposits were visible along the surface and lands where oil seeped to the surface of water bodies. This prompted President Roosevelt to withdraw much of the public domain from further settlement for a better identification of coal and oil lands and for a better method of preventing their agricultural settlement.
1. Roosevelt first withdrew suspected coal lands from operation of the settlement acts. To reopen the westward flow of people and trade, Congress adopted the Coal Lands Acts of 1909 and 1910, 30 U.S.C. §§ 81, 85. These acts allowed agricultural entries and disposals, but reserved the coal to the U.S. for later disposition.
 2. By 1909, to save oil lands, Roosevelt and Taft had withdrawn most of the remaining public domain from all forms of entry. Congress stewed but passed the Pickett Act of 1910, 36 Stat. 847 [repealed], opening the lands to location of claims for metaliferous minerals, but leaving them closed to oil entries and agricultural entries.
 3. Congress then passed the Agricultural Entry Act of 1914, 39 U.S.C. § 121, to reopen the public domain to agricultural entries. The 1914 Act reserved deposits of phosphate, nitrate, potash, oil, gas

or asphaltic minerals to the U.S. Sodium and sulphur were added to the list of reservations in 1933.

4. In the arid West, large stock raising ranches were necessary; 160-acre farms could not succeed on the dry or mountainous lands. So, Congress enlarged the original 160-acre homestead to 640 acres by the Stockraising Homestead Act of 1916, 43 U.S.C. § 291 [repealed]. It authorized settlement on lands chiefly valuable for grazing and crops. It reserved all minerals to the U.S.
5. The oil lands remained open only to metalliferous mineral entry after the Pickett Act of 1910, 36 Stat. 874 [repealed]. The 1914 Agricultural Entry Act opened these lands only to agricultural entries while Congress argued. Finally, the deadlock was broken in favor of leasing oil, and the Mineral Leasing Act of 1920 was enacted. By it, an entirely different system for disposal of oil, gas and fertilizer minerals was established.
 - (a) The leasing system applies to the leasing minerals which were federally reserved and to leasing minerals on the public lands.
 - (b) The Mineral Leasing Act of 1920 therefore had the effect of legislatively withdrawing from mineral location all oil, gas and fertilizer lands of the U.S. and subjecting them to leasing.
 - (c) The Mineral Leasing Act provided for the sole means of acquiring coal reserved under the Coal Lands Act of 1909 and 1910 and of acquiring the fuel and fertilizer minerals reserved under the Agricultural Entry Act of 1914, and leaseable minerals reserved under the Stockraising Homestead Act of 1916.
 - (d) The only federally reserved minerals which are locatable are the non-leasing minerals under stockraising homesteads. The Stockraising Homestead Act gives prospectors the right to enter to prospect for locatable minerals and to locate mining claims. Thereafter, to reenter, the location must have the landowner's consent, or agree to pay damages, or file a bond with the BLM to assure such payment.

6. Altogether, some 63,000,000 acres were patented into private ownership subject to reservations of some minerals, or all minerals, to the U.S. Most of these reservations were made under the Stock-raising Homestead Act which reserved all minerals to the U.S. for the benefit of the public. BLM, Public Land Statistics (1977). These severed estates have proved to be troublesome; the ranchers who knew the limited estate they were homesteading now want to deny that the U.S. has the right to allow mineral development under their land even if the surface is restored. To gain their cooperation so mining claims can be located, most mineral operators give ranchers a royalty on the minerals which the ranchers clearly do not own. Likewise, the U.S. has legislated that consent of the rancher must be obtained before the public coal owned by the U.S. underlying private surface lands can be leased. Surface Mining Control & Reclamation Act of 1977, 30 U.S.C.A. §§ 1201-1328, § 1304. The price of such consent is usually payment. The provisions of § 1272 of SMCRA precluding private owners or lessees of coal from extracting them without surface owner consent have been held unconstitutional as a taking of property without the compensation required by the 5th Amendment. Virginia Surface Mining & Reclamation Ass'n v. Andrus, 483 F. Supp. 425 (W.D. Va. 1980), ruling stayed pending action on appeal, 100 Sup. Ct. 1306.

C. By 1934, many families of stockraising homesteaders had gone broke on 640-acre ranches. The range cattle industry, which had grown up on the open range where free grazing was allowed, had suffered the loss of those free grazing lands to homesteaders, and overgrazing and soil erosion became serious problems. For these reasons, both sides, namely the western cattlemen and the eastern conservationists sought an end to homesteading.

1. The result was the Taylor Grazing Act which established grazing districts of the remaining public domain to regulate and restore those grazing lands. The Taylor Act also precluded further settlement entries unless the land was thereafter classified as suitable for some settlement entry.

2. Since the administration quickly withdrew all the remaining public domain, except Alaska, from settlement entries, the Taylor Grazing Act of 1934 had the practical effect of repealing the homestead acts. FLPMA formally repealed the homestead acts in 1976 and dictated an end to Alaska homesteading as of 1986.
3. Sections 5 and 6 of the Taylor Grazing Act are still in effect. They still provide that the rights of the miner under applicable laws to enter, prospect, locate, develop, mine, lease, or patent mineral deposits on the public domain within grazing districts are not to be restricted, even though the lands are leased for grazing. 43 U.S.C. §§ 315d, 315e.
4. The Taylor Act allowed exchanges of public land for private to block up grazing districts and authorized the sale of isolated, disconnected and small tracts up to 160 acres. Exchanges and such sales are now made only under authority of FLPMA. In the Taylor Act conveyances, the Taylor Act required the reservation of all minerals to the U.S. Landowners who acquired surface estates under the Taylor Act hold their land subject to the superior right of lessees from the U.S. to remove the minerals. Carlin v. Cassriel, 50 L.D. 383 (1924); Transwestern Pipeline Co. v. Kerr-McGee Corp., 492 F.2d 878 (10th Cir. 1978).

IV. The location system applies to all valuable mineral deposits in the unreserved and unappropriated public domain.

- A. 30 U.S.C. § 22, Mining Law of 1872: "Except as otherwise provided, all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, shall be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners in the several mining districts, so far as the same are applicable and not inconsistent with the laws of the United States."
- B. 30 states were created out of the original public domain, so the mining law applied to these public land states at one time or another.

1. There are unreserved and unappropriated public lands left in only 19 states. These are Alaska, Arizona, Arkansas, California, Colorado, Florida, Idaho, Louisiana, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming.
2. The mining law for federal lands has little practical effect in the midwestern and eastern states.
3. The mining laws have the most importance in the 11 westernmost continental states, North and South Dakota, and Alaska. There the laws apply to the unreserved and unappropriated public domain, including federally reserved minerals under private lands subject to the Stockraising Homestead Act and the Taylor Grazing Act. The Dept. of Interior has never issued regulations making other federally reserved minerals subject to either location or leasing. Acquired lands, those purchased or acquired by the U.S. from a state or private party by purchase, gift, exchange or condemnation, are not subject to location.

V. During the settlement era of the public domain, from about 1800 to 1934, Congress was not prepared to adopt specific legislation on a regular basis to reserve specific lands of special value from operation of the general settlement laws.

A. While Congress did reserve special tracts, such as Yellowstone National Park in 1872, the great bulk of withdrawals have been made by the executive.

1. From the first, the presidents withdrew lands from entry to reserve them for Indian reservations, wildlife refuges, and other special uses. The president asserted an implied authority of the executive, as manager of the national assets and government, to withdraw, even though the Constitution specifically places all power to dispose of and regulate the public lands in the Congress. Art. IV, Section 3, Clause 2.
2. To control the large scale withdrawals of oil lands after 1900, Congress adopted the Pickett Act of 1910, 36 Stat. 841 [repealed by FLPMA of 1976]. The Pickett Act authorized the president to make temporary withdrawals from settlement and location for nonmetalliferous minerals, and to set aside

water power sites or lands to be classified for their best use. The Pickett Act expressly required such reservations to be left open for metalliferous mineral entry and location.

3. Even after the Pickett Act, the presidents continued to make reservations, frequently doing so under the implied authority because those withdrawals were permanent, at least until ordered otherwise by an executive. The Supreme Court held the presidents could make withdrawals under the implied authority since Congress had acquired and had not legislated otherwise. *U.S. v. Midwest Oil Co.*, 236 U.S. 459 (1914).

B. Finally, by Sections 704 and 204 of FLPMA of 1976, 43 U.S.C. §§ 704, 204, Congress reasserted its authority over reservations and mandated they could be made thereafter only under authority of FLPMA.

1. After FLPMA, the executive can only withdraw tracts of more than 5,000 acres for periods up to 20 years and only after reporting to Congress the effect, including alternative sites, and the geologic potential of the lands withdrawn. Congress retains the right to revoke such withdrawals.
2. Tracts of less than 5,000 acres can only be withdrawn by the executive for specific uses of known resources.
3. Nevertheless, the BLM is refusing to issue mineral leases on some Overthrust Belt areas, especially in wilderness study areas, without reporting withdrawals to Congress. The practice is being challenged in two cases in the District of Wyoming federal court.

C. No one, not even the BLM, knows how many acres of public lands were withdrawn from mineral entry before FLPMA, or even has a master list of those withdrawn. Under FLPMA, each state BLM office is compiling this data from the individual orders issued willy-nilly over the years. The total acreage withdrawn is thought to be some 70% to 80% of the remaining public domain. In addition to withdrawals for Indian reservations, national forests, national parks, national wildlife refuges, national trails, national wild and scenic rivers, wilderness and primitive areas, national his-

toric sites, national monuments, national cemeteries, and such better known withdrawals, there are reservations for Naval Oil Reserves Nos. 1 through 4, military reservations, powersite and reclamation withdrawals, public stockraising water holes and stock driveways, oil shale withdrawals and many other withdrawals for specific uses.

1. FLPMA ratified the bulk of the past withdrawals by confirming the set-asides made for Indian reservations, national forests, national parks, national wildlife refuges, and national trails.
2. FLPMA gives Interior until 1991 to prepare a review of all other withdrawals in the West, including mineral withdrawals on BLM and national forest lands. The report is to go to Congress, with recommendations, for its action.

D. Despite FLPMA, which barred executive reservations except through its procedures, President Carter withdrew 56 million acres in Alaska in 1978, citing the Antiquities Act of 1906 as authority. At the same time, Secretary of the Interior Andrus withdrew over 100,000 million acres in Alaska under his authority granted by FLPMA to make emergency withdrawals for up to 3 years. These withdrawals were intended to force Congress to adopt an Alaskan Lands Bill to set aside much of Alaska, but so far, no such legislation has been passed out of Congress.

E. Notwithstanding the overhaul of withdrawal procedures made by FLPMA in 1976, a mineral entryman still must determine the authority under which specific reservations or withdrawals were made. Do that by examining the master title (MT) plat and the historical index of public land transactions in the state BLM office. Only after such a land status check will you know if the land is available for location of mining claims.

1. The MT plat visually portrays lands patented with mineral reservations to the U.S., state land grants, state selection lists, acquired lands, patented mining claims, all types of withdrawals, and unreserved public domain lands.
2. The use plat shows temporary uses such as mineral leases and special use permits.

3. Segregation of the withdrawals from mineral entry used to occur when Interior approved an application for withdrawal. After FLPMA, segregation occurs when notice of the proposed withdrawal is published in the Federal Register.

VI. There are several types of mining locations, and the locator must choose the right type for the purpose or the location will be a nullity.

A. Mineral deposits may be located either as lode claims or placer claims. The 1872 mining laws allows location of a "vein or lode of quarts or other rock in place" bearing valuable minerals. 30 U.S.C. § 23. Placers are all other forms of deposit. 30 U.S.C. § 35. In many modern cases, the choice is difficult since many low grade deposits now mined are disseminated deposits which do not fall clearly into one or the other category.

1. A lode is a zone or belt of mineralized rock in place, whether loose and friable or very hard, with reasonable trend and continuity, separated from neighboring nonmineralized rock (country rock) by reasonably distinct boundaries on either side. See *McMullin v. Magnuson*, 102 Colo. 230, 78 P.2d 964 (1938).
2. Placers are all other forms of deposit, including the traditional superficial deposits of precious metals washed down from a vein or lode into the bed of an ancient river or settled among the alluvium in beds of active streams, as well as deposits fixed between rock in place but which lack reasonable trend and continuity, and reasonable segregation from the neighboring country rock. *Titanium Actynite Industries v. McLennon*, 272 F.2d 667 (10th Cir. 1959).
3. Uranium in beds of sandstone is epigenetic, that is, carried into the formation by some solution after the host rock was formed. Still, it is locatable as a lode because it meets the requirements defined for a lode. *Globe Mining Co. v. Anderson*, 318 P.2d 373 (Wyo. 1957).
4. To err between locating as lodes or placers is fatal for a lode deposit will not sustain a placer location and vice versa. *Bowen v. Chemi-Cote*, 432

P.2d 435, (Ariz. 1967); Cole v. Ralph, 252 U.S. 206 (1920).

- (a) The definitions emphasize the present form of the deposit more than its origin. The science of geology does not matter since the mining law was written for the practical miner, not the trained geologist.
- (b) If a deposit is bounded on either side by rock in place, it is likely to be considered a lode. If the ore is on top of the ground and has no cover except a thin veneer of soil, it is likely to be a placer.
- (c) In the case of a dispute, the courts tend to find in favor of the first locator.

B. Lodes in placers fit into the same definitions; the only difference is that the law gives lodes in placers special treatment so that placer claimants are constrained to identify and pay for lodes within the placer upon patenting. Otherwise, they would obtain title to both deposits by paying only for the placer deposit.

- 1. If there is a known lode within a placer claim, at the time of an application to patent to placer, the lode must be listed and paid for separately. 30 U.S.C. § 37. If not, the placer patentee is not entitled to possess it. Clipper Mining Co. v. Eli Mining & Land Co., 194 U.S. 220 (1904).
- 2. If a placer patent issues before a lode deposit is known to exist, the placer patentee gets it without additional payment.

C. The mining law of 1872 provides for tunnel sites where a horizontal excavation, called an adit, is dug in search of lodes or veins not appearing at the surface. 30 U.S.C. § 27. The tunnel site owner is entitled to possession of any previously unknown lodes discovered in the excavation for a distance of up to 3,000 feet along the excavation.

- 1. A monument must be placed at the portal of the adit, naming the locator and stating the proposed direction of the excavation, its height and width, and the course and distance from the portal to a

permanent object in the vicinity. The center line of the tunnel site must be staked on the surface to establish the surface area which is preempted from location by a junior locator.

2. The tunnel site locator is protected for a distance of 3,000 feet into the excavation, as to 1,500 feet in any direction of any blind lodes cut by the excavation which were not previously known. The tunnel site locator has priority even if the lode is located on the surface before it is intersected in the adit. *Enterprise Mining Co. v. Rico-Aspen Consol. Mining Co.*, 167 U.S. 108 (1897).
3. The tunnel site, as such, conveys no surface rights, and the locator who discovers a lode in the excavation must make a lode location of the lode on the surface.
4. Discontinuing work for over 6 months constitutes abandonment of the tunnel.
5. Tunnel sites are uncommon today. Most exploration for ores in mountains, or on flatlands, and whether at deep or shallow depths, is done with drilling rigs.

D. Mill sites of up to 5 acres may be located on nonmineral land to provide space for working claims or reducing ores. 42 C.F.R. § 3864.1-1. The mill site may be used either in association with a specific lode or placer claim or independently, as a custom mill site. 30 U.S.C. § 42.

1. Rights to a mill site attached and the mineral character is determined as of the time of location, if construction is diligently pursued, and subsequently improved mineral economics do not deprive the owner of his rights. *Cleary v. Skiffich*, 28 Colo. 362, 65 P.59 (1901).
2. It is difficult in some mining districts to find usable land which is sufficiently nonmineral, and it can be difficult and costly to prove the non-mineral character to the BLM.
3. Mill sites are not mining claims; they are usually considered mining locations, but they may be patented under the mining laws.

4. The right to exclusive possession of unpatented mill sites depends upon actual use and occupancy for a proper purpose; that is, for mining or milling purposes. An anticipated future use is not sufficient. E.g., U.S. v. S.M.P. Mining Co., 67 I.D. 144 (1960). See 1 American Law of Mining, § 5.34.

VII. Procedures for locating claims are well settled, but it is often difficult in the field to follow the requirements carefully.

- A. The Mining Law of 1872 allows the location of a mining claim by distinctly marking the location on the ground so that the boundaries can be readily traced, and making a record of the name or names of the locators, date of location, and a description of the claim by reference to some natural object or permanent monument which will identify the claim. 30 U.S.C. § 28.
 1. State law or mining district regulations (no longer maintained) are authorized to supplement these federal requirements by detailing the location, manner of recording, amount of annual assessment work or improvements (not less than \$100) necessary to hold possession of a claim.
 2. Only in Alaska does the federal mining law require that location notices and annual assessment affidavits be recorded in the local records. 30 U.S.C. §§ 49a-44f.
 3. State law in the western states requires the monumentation of claims (staking) by cornerposts, and, in some cases, side and end centerposts.
 4. State law in the western states requires posting of a copy of the location notice on the claim at the point of discovery and recording it with the local county recorder.
- B. For the first time, FLPMA of 1976 requires that claim location notices also be filed with the BLM state office.
 1. If state law, such as those of the Midwest and South, do not provide for recording, the FLPMA regs require recording directly with the state BLM office. 43 C.F.R. § 3833.1-2(a).

2. Location certificates must be filed with the BLM for both mining claims and tunnel and mill sites as well.
3. The location certificate to be filed is an exact duplicate of that filed or transmitted for filing with the local county. 43 C.F.R. § 3833.0-5(i). If not appearing on that "official record", the BLM copy must contain other data, specifically the name or number of the claim, or both; the book and page of the local recording of the certificate of location, and amendments; the name and current mailing address of the owner, or owners, if known; the type of claim or site; the date of location; a legal description by township, range, section and quarter section; and, a map showing the location by reference to a quarter section. The filing fee is \$5.00 per claim or site.
 - (a) U.S. topographic maps are frequently used.
 - (b) Contiguous claims or sites and groups of them in the same general area may be depicted on one map if each individual claim or site is identified. 43 C.F.R. § 3833.1-2.
 - (c) Failure to file with the state BLM office within 90 days from location means the claim is null and void, and that the land reverts to the public domain, Solicitor's Opinion, GFS (MIN) S0-1 (1978). The land may be withdrawn in the interim or relocated by a rival locator, and at the least, the original claimant would have the expense of relocating it.
4. Transfers of nonpatented mining claims and tunnel and mill sites must be filed with the state BML office within 60 days of the transfer. Failure to file transfers does not invalidate the claim, but the transferee will not be given notice of any government contest of the location. 43 C.F.R. § 3833.3.
5. Location certificates for pre-FLMPA unpatented mining claims and sites, those located on or before October 21, 1976, had to be filed with the BLM state office within the 3 years following the Act, specifically, on or before October 21, 1979.

43 U.S.C. § 1744. The BLM extended the deadline to Monday, October 22, 1979.

- (a) There was a great land rush after October of 1979 to relocate claims which were deemed abandoned for failure to meet the filing deadline.
 - (b) The BLM expected that approximately 6 million claims would be registered, throughout the 11 Western States and Alaska, but only about 3 million were filed. The result was to eliminate many dormant claims which clouded title for later claims which are being actively developed.
- 6. Location certificates for post-FLPMA mining claims and sites, those located after October 21, 1976, must be filed with the BLM state offices within 90 days from the date of location. 43 U.S.C. § 1744(b).
 - 7. A document is not deemed filed with the BLM until stamped by that office as received. 43 C.F.R. § 3833.1-2(a).
 - 8. The FLPMA requirements of 1976 to file location certificates with the BLM for unpatented claims and sites is the first time a central registry of mining claims on federal lands has been established.
 - 9. Assessment work affidavits for claims, but not sites, must also be filed with the BLM, using the serial numbers assigned for the claim when first filed.
 - (a) Section 314 of FLPMA, 43 U.S.C. § 1744, required filing of an affidavit of performance of assessment work, or a notice of intention to hold the claim, with the State BLM office before December 31 of each calendar year following the calendar year of location of the claim. If not, the claim is conclusively deemed abandoned, and many claims have been so treated.
 - (b) Prior to December 31 is on or before December 30.

- (c) The time of location is determined by state law.
- (d) The Mining Law of 1872 fixes the first assessment period as the twelve months commencing at 12:00 o'clock noon on the September 1 following the date of location. 30 U.S.C. § 28. Note that this is not the same as assessment work for the calendar year. Therefore, as to claims located after noon on September 1 and before midnight on December 31, the first assessment work is not required during the next calendar year. Nevertheless, FLPMA requires that proof of assessment work or a notice of intention to hold the claims be filed during that next calendar year since it requires such proof be filed prior to year end of each year following the calendar year of location. A notice of intention to hold the claim should be filed in this situation.

10. The BLM manages information about the unpatented claims and sites filed with it by use of a computer. Serial numbers are assigned to claims as the location certificates are filed. Those numbers, the names of the claims, the names of the claimants, and the quarter sections where the claims are located are sent from a computer terminal in the state BLM offices to a computer in the Denver Federal Center where the information is stored. Thereafter, a computer printout in the foregoing four parts is returned weekly to the state offices.

(a) The computerized data enables the BLM, as well as public users, to determine from the printouts where mining claims and tunnel and mill sites are.

(b) The data also enables the BLM to identify claims, or parts of claims, which the BLM rules void if located on withdrawn, appropriated, patented or otherwise nonlocatable land. The computer also is used to eliminate claims which become dormant for lack of timely filings.

C. The location of a mining claim consists of distinctly marking its boundaries on the ground, as required by federal law, and doing the validation work required by

state law. These include establishing monuments on the corners and sometimes the side centers and end centers, posting a location notice at the point of discovery, and recording it in with the local county. Some physical "discovery work" is required such as a shaft, drilling or a survey map of the claim.

1. "The location must be distinctly marked on the ground so that its boundaries can be readily traced. All records of mining claims . . . shall contain . . . such a description of the claim or claims located by reference to some natural object or permanent monument as will identify the claim." 30 U.S.C. § 28. Absent a sufficient description in the location certificate to enable identification of the location with reasonable certainty, the claim is void. *U.S. v. Sherman*, 288 F. 497 (8th Cir. 1923).
 - (a) The state laws govern the details of the boundary markers.
 - (b) Once the claim is marked sufficiently, obliteration of the monuments does not divest the claimant of his possessory rights. *Eilers v. Boatman*, 3 Utah 159, 2 P. 66 (1881), affirmed, 111 U.S. 356 (1884). Only California, by statute, requires maintenance of the claim boundary markers. But, to fail to strictly maintain the boundary markers subjects the claims to oversteaking on the assertion it was not located properly or was not being maintained.
2. 30 U.S.C. § 23 provides no location shall be made until the discovery of the vein or lode, but it makes no difference whether the physical location or the mineral discovery occurs first. E.g., *Creede & Cripple Creek Mining & Milling Co. v. Uinta Tunnel Mining & Transportation Co.*, 196 U.S. 337 (1904); *Union Oil Co. v. Smith*, 249 U.S. 337 (1919). The location is unperfected until there is a mineral discovery.
3. Whenever the legal acts of location are established and discovery of a valuable mineral has occurred, a valid location exists, provided rights of third parties have not intervened discovery. Only then does the locator acquire a vested property right as against the U.S. and third parties. *Davis v. Nelson*, 329 F.2d 840 (9th Cir. 1964).

4. Prospectors have the right to explore and prospect the public domain, 30 U.S.C. § 22; they have the right to stake claims before making a discovery, 30 U.S.C. § 23; but their claim is not perfected against the U.S. or third parties until there is an actual discovery of a valuable mineral. *Davis v. Nelson*, supra.
5. The right of access to the open public domain to explore for locatable minerals is a statutory right. 30 U.S.C. § 22 makes such lands "free and open to exploration and purchase . . . under regulations prescribed by law . . ." See, e.g. *Davis v. Nelson*, supra.

VIII. The person who is actively and diligently exploring a prospect is protected on the land being explored against another locator of the same land. These rights prior to discovery are known as the doctrine of *pedis possessio*.

- A. Exploration typically proceeds now by aerial surveys for anomalies and scientific surveys for traces of minerals in air, water, vegetation and soil samples.
- B. Favorable results may be followed by deep drilling for potential host formations. The underground host formations are then systematically traced for mineral traces and finally narrowed to a mineral deposit.
 1. Drilling and other exploration is extremely expensive.
 2. Explorers seek to protect their investment by claiming all of the target area, thus insuring that any commercial deposit within the region will be under their claims. This is regional exploration.
- C. The doctrine of *pedis possessio* is set forth in *Union Oil Co. v. Smith*, 249 U.S. 337 (1919) and *Cole v. Ralph*, 252 U.S. 206 (1920): "In advance of discovery an explorer in actual occupation and diligently searching for mineral is treated as a licensee or tenant at will, and no right can be initiated or acquired through a forcible, fraudulent or clandestine intrusion upon his possession. But if his occupancy be relaxed, or be merely incidental to something other than a diligent search for mineral, and another enters peaceably, and not fraudently or clandestinely, and makes a mineral discovery and location, the location so made is valid and must be respected accordingly."

1. Other locators must be excluded by positive action. The rival locator can establish rights if he enters peaceably. *Cole v. Ralph*, supra. The claimant's possession must be exclusive. *Adams v. Benedict*, 64 N.M. 234, 327 P.2d 308 (1958).
 - (a) *Pedis* possession protects against forcible entry.
 - (b) Entry must be denied but the denial need not be successful or risk a dangerous confrontation. The first claimant should yield the ground, without consenting, and seek his legal remedy. In land rushes, the claim block should be patrolled to deny all others than authorized officials.
2. The claimant must be actively exploring for minerals by work reasonably directed toward discovery of a valuable mineral to qualify for *pedis possessio*.
 - (a) Acts of location such as posting monuments and recording notices do not qualify. *Adams v. Benedict*, 64 N.M. 234, 327 P.2d 308 (1958).
 - (b) Mere performance of assessment work is insufficient. *U.S. v. Stockton Midway Oil Co.*, 240 F. 1006 (S.D. Cal. 1917).
 - (c) Policing the claims, placing signs or fences does not qualify. *Ranchers Explor. & Develop. Co. v. Acaconda Co.*, 248 F.Supp. 708 (D. Utah 1965).
 - (d) Negotiations with others to do the work is not *pedis possessio* work. *McLemore v. Express Oil Co.*, 164 Cal. 650, 130 P. 417 (1913).
 - (e) Exploration plans, without more are insufficient. *Ranchers Explor.*, supra.
 - (f) Construction of drilling pads may qualify. *U.S. v. Grass Creek Oil & Gas Co.*, 236 F. 481 (8th Cir. 1916).
3. The traditional rule is that *pedis possessio* protects the prospector's right not only to the immediate vicinity of his workings but to the entire claim, if he has staked a claim. *Gemmel v.*

Swain, 28 Mont. 331, 72 P. 662 (1903). Pedis possessio rights do not extend beyond the claim or claims on which the work is being done. Geomet Explor., Ltd. v. Lucky Mc Uranium Corp., 601 P.2d 1339 (Ariz. 1979); Adams v. Benedict, 64 N.M. 234, 327 P.2d 308 (1958).

- (a) The federal courts in the Tenth Circuit have held, however, that pedis possessio rights can extend to a group of claims staked on an area even though the claimant is only actually in physical occupation of some of the claims. MacGuire v. Sturgis, 347 F.Supp. 580, (D. Wyo. 1971); Continental Oil Co. v. Natrona Services, Inc., 588 F.2d 792 (10th Cir. 1978).
- (b) The MacGuire v. Sturgis rule for pedis possessio holds that a locator is entitled to ". . . the exclusive possession [of claims] on a group or area basis, where, as here the following exists or was done for his benefit:
 - (a) the geology of the area claimed is similar and the size of the area claimed is reasonable;
 - (b) the discovery [validation] work referred to in the Wyoming Statute is completed;
 - (c) an "overall work program" is in effect for the area claimed;
 - (d) such work program is being diligently pursued, i.e., a significant number of exploratory holes have been systematically drilled; and
 - (e) the nature of the mineral claimed and the cost of development would make it economically impracticable to develop the mineral if the locator is awarded only those claims on which he is actually present and currently working."
- (c) In Continental Oil v. Natrona Service, the Tenth Circuit impliedly approved the MacGuire rule by applying it. The senior locator lost over half the 2,040 uranium claims to the

junior because Conoco had not keep drill hole logs of the validation drilling, i.e., the 50 feet of drilling done on each claim at the time of staking to comply with the Wyoming location law. Without such a drill log, the jury did not believe that 50 feet of hole had been drilled on each claim. Also, some claim monuments were found lying on the ground and had never been erected. Conoco lost 1,200 claims and kept 840 which had not been over-staked. The trial court awarded 19 of the 1,200 claims to Conoco, notwithstanding the jury verdict, because it had drilled 48 deep exploration holes on them.

- (d) The Arizona Supreme Court refused to follow the Tenth Circuit rule of pedis possessio on an area basis in Geomet Exploration, supra. Area pedis possessio is the law in Wyoming, however, and probably throughout the other Tenth Circuit states, at least in the federal courts where there is not state law to the contrary. The Tenth Circuit states are Wyoming, Utah [may have rejected area pedis possessio in Ranchers Explor. & Develop. Co. v. Anaconda Co., 248 F.Supp. 708 (D. Utah 1965)], Colorado, New Mexico [rejected area pedis possessio in Adams v. Benedict], Kansas and Oklahoma, both later states being without locatable public domain.
- (e) The Supreme Court has granted certiorari to the Geomet case, so the law of pedis possessio may be further defined in 1981. Case No. 79-1203. The Justice Department urges affirmative as well as strict application of the Coleman test of present marketability even to contests between rival locators.

IX. Discovery of a valuable mineral deposit is the sine qua non of a valid mining claim, but the term is not defined in the Mining Law of 1872. All the law requires is "discovery of a vein or lode within the limits of the claim" 30 U.S.C. § 23. And, the law provides for patents to "any land claimed and located for valuable deposits." 30 U.S.C. § 29. Without a definition in the Act, the courts have had to develop a judicial definition of discovery which has grown stricter since 1933 and especially since the environmental movement.

- A. The first test of discovery was set out in *Castle v. Womble*, 19 L.D. 455. "When minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing valuable mine, the requirements of the statute have been met."
1. The *Castle v. Womble* rule is known as the prudent man test. The test is not whether the individual claimant feels justified in expending his labor and means, but whether a reasonable person would be so justified.
 2. The prudent man test was adopted by the Supreme Court in *Chrisman v. Miller*, 197 U.S. 313 (1905).
 3. The test of mineral discovery has always been applied most strictly against the locator when the U.S. contests the claim that it has when a junior locator overstates a senior locator's claim. See *Chrisman*, supra. This is because the rival locators are both claiming the same values, whatever they may be. *Berto v. Wilson*, 324 P.2d 843 (Nev. 1958).
- B. The Mining Law of 1872 requires discovery of a valuable mineral deposit within the claim. The mineral must be exposed in discovery workings, brought to the surface in core drilling samples, or in some other reliable way, proved to exist.
1. The presence of uranium, or other fissionable source mineral, may be proved by radiometric readings from probe instruments deep down the drill hole, if corroborated by other evidence of the mineral. *Western Standard Uran. Co. v. Thurston*, 355 P.2d 377 (Wyo. 1960).
 2. The discovery of a valuable mineral deposit may be corroborated by the geology of the general area, other known ore bodies or discoveries in the area, assay samples, and any other reliable information which miners consider as bearing on the possibility of developing a paying mine. *Rummell v. Bailey*, 7 Utah 2d 137, 320 P.2d 653 (1958).
- C. In 1933, the Dept. of Interior formulated another, more stringent, test of discovery for nonmetallic minerals

of widespread occurrence such as sand and gravel. Interior succeeded in convincing the Supreme Court in 1968 to adopt this test, the present marketability test, a compliment and refinement of the prudent man test. U.S. v. Coleman, 390 U.S. 599 (1968).

1. The present marketability test requires the mineral claimant to show the deposit can be mined, removed and marketed, at present, at a profit after considering accessibility, development, proximity to market, existence of present demand, and other factors. Foster v. Seaton, 271 F.2d 836 (D.D.C. 1959).
2. The present marketability rule requires that all costs of mining, removing and marketing the mineral be calculated and considered. These costs even include a reasonable rate of return on the capital invested.
3. The present marketability test, as adopted by the Supreme Court, applies to all locatable minerals, not just to nonmetallic minerals of widespread occurrence. Converse v. Udall, 399 F.2d 616 (9th Cir. 1968).
4. Despite the Supreme Court's assertions, the two tests of discovery are not complimentary; they are diametrically opposed.
 - (a) The marketability test requires proof that the mineral can be extracted, removed and sold at a profit, at the present. The prudent man test requires proof that there is a reasonable prospect of success, in the future, of developing an economic mine. Thus, the marketability test requires proof of present profitability, and the prudent man test requires reasonable proof of future profitability.
 - (b) The marketability test delays the time rights vest in the locator, leaving the location vulnerable to government contest. The requirement to prove present marketability during the exploration stage, long before the cost details can be accumulated, assures the government of winning a contest. This defeats the statutory right of locators.

- (c) The prudent man rule recognizes the realities of mineral development. These include normal market cycles and other foreseeable future conditions which the present marketability test rules out.
 - (d) Since Interior convinced the Supreme Court the two opposing rules are complimentary, and the marketability rule only a refinement of the well-settled prudent man rule, Interior and the courts have had to reconcile the two and apply one new rule. Since reconciliation is logically impossible, the marketability rule is given lip service and then largely ignored except for nonmetallic minerals of widespread occurrence, claims in areas of special public interest, and applications for patents to claims. The result is unpredictability, and the rule of men, not of law.
5. The excess reserves rule of Interior which would void all locations of valuable minerals in excess of the reasonably anticipated market need is contrary to the mining law and the tests of discovery. *Baker v. U.S.*, 613 F.2d 224 (9th Cir. 1980).
- D. The effect of discovery of a valuable mineral deposit is to perfect the claim.
- 1. The claim is segregated and removed from the unappropriated public domain.
 - 2. The owner is entitled to exclusive possession of the surface, 30 U.S.C. § 26, and, as to claims perfected after the Surface Resources and Occupancy Act of 1955, subject to surface rights of government agents and licensees which may not materially interfere with mining operations, 30 U.S.C. § 612, and to all veins, throughout their depth, which apex within the claim. 30 U.S.C. § 26.
 - 3. When the location of a mining claim is perfected, by both acts of location and discovery, it has the effect of a grant by the U.S. of present possession. The claim is property in the fullest sense of that term; and may be sold, transferred, mortgaged, and inherited

without infringing any right or title of the U.S. The owner's right is taxable by the state; it is real property subject to judgment liens. The owner is not required to purchase the claim by securing a patent from the U.S., but so long as he complies with the mining laws, and performs assessment work of at least \$100.00 annually, is entitled to hold the claim and develop and market the minerals without payment of royalties. *Wilbur v. U.S. ex rel. Krushnic*, 280 U.S. 306 (1930).

- X. Extralateral rights, granted by the Mining Law of 1872, 30 U.S.C. § 26, give the locator exclusive right to all veins, lodes and ledges, throughout their entire depth, if the top or apex lies within the surface lines of the claim extended downward vertically, and may follow the veins in their downward course outside the vertical extension of the side lines, but within the vertical extension of the end lines.
- A. Extralateral rights mean that, once a claimant establishes the apex of a vein within the boundaries of the claim, he may follow the vein on its downward course outside the claim so long as he stays within the extension of the end lines.
1. The locator is presumed to own all ore within the boundaries extended downward vertically. *St. Louis Mining & Milling Co. v. Montana Mining Co.*, 194 U.S. 235 (1904).
 2. The one asserting extralateral rights under another's claim must have the apex within his claim boundaries. *Consol. Wyo. Gold Mining Co. v. Champion Mining Co.*, 63 F. 540 (N.D. Cal. 1894).
 3. Veins are more likely pursued now by vertical shafts and adits dug from the shaft than by following the vein downward. This presents difficult problems of proving continuity of the vein in the shaft with the vein whose apex is in the claim. See *Silver Surprise, Inc. v. Sunshine Mining Co.*, 15 Wash. App. 1, 547 P.2d 1240 (1976).
 4. Blind appexes are those which do not outcrop on the surface, but are somewhere below. The blind appex must be proved to be within the claim if extralateral rights for that claim are to be

recognized. *Flagstaff Silver Mining Co. v. Tarbet*,
98 U.S. 463 (1879).

- B. Extralateral rights are confined, by the statute, to such parts of the vein outside the claim as lie between vertical extensions of the end lines. Thus, the location of the apex in relation to the end lines fixes the sweep of extralateral rights.
1. This means, ideally, that the apex should cross both end lines, entitling the locator to exercise extralateral rights to the greatest extent allowable.
 2. If the apex crosses one end line and passes out a side line, the courts locate an imaginary end line where the apex goes outside the side line. This narrows the width of extralateral rights.
 3. If the apex crosses one end line and terminates within the claim, an imaginary end line is fixed where the vein terminates. This also limits extralateral rights.
 4. If the apex crosses both side lines, the end lines become the side lines, and vice versa, for fixing extralateral rights.
 5. 30 U.S.C. § 23 requires that claims be located with the side lines parallel to the course of the vein. "A mining claim . . . may equal, but shall not exceed, 1500 feet in length along the vein or lode. . . ." "No claim shall extend more than 300 feet on each side of the middle of the vein at the surface" Therefore, the strike of the vein, its course along the surface, must be determined to ascertain the orientation of the long axis of the claim with the strike. *Argentine Mining Co. v. Terrible Mining Co.*, 122 U.S. 478 (1887). This is the basis for changing the orientation of the claim, as previously described, in determining extralateral rights and in fixing the claim boundaries for patent, also. End lines may only be brought parallel or adjusted if done within a reasonable time and without including new ground. *Doe v. Sanger*, 83 Cal. 203, 23 P. 365 (1890).
 6. Floating claims are not allowed; that is, end lines may not be moved from time to time to take

advantage of subterranean developments. Otherwise uncertainty would result. *Iron Silver Mining Co. v. Elgin Mining Co.*, 118 U.S. 196 (1886).

- C. The purposes of recognizing extralateral rights are to encourage complete mining of a deposit by allocating ownership of the entire deposit.
1. Confining extralateral rights to end line extensions is intended to fairly allocate the deposits among locators according to the surface of the claims.
 2. If the end lines are not parallel, the sweep of extralateral rights could be ever-widening. Thus, 30 U.S.C. § 23 requires parallel end lines. End lines will be considered parallel if substantially so. *Grant v. Pilgrim*, 95 F.2d 562 (9th Cir. 1938).
 3. If the vein splits and dips, in both directions, the locator has the right to follow both.
 4. Extralateral rights do not extend into all lands.
 - (a) Extralateral rights extend into mining lands, whether patented or unpatented, and whether the other location is junior or senior.
 - (b) Extralateral rights do not extend into previously patented agricultural lands because a conclusive presumption arises, upon patenting, that these lands were nonmineral, else the patent would not have issued.
 - (c) Extralateral rights vest when a claim is perfected by location and discovery; therefore those vested extralateral rights do extend into subsequently patented agricultural lands.
 5. Extralateral rights do not attach to all mining claims, only those with a vein or lode which apexes within the limits of the claim.
 - (a) Extralateral rights do not attach to placer claims; they are not based on veins or lodes.

(b) Extralateral rights do not attach to disseminated ore bodies which are bedded and nearly horizontal because they have no apex.

6. If veins intersect underground, the prior location takes the mineral in the intersection, but the junior location is entitled to a right of way through the intersection.

7. If veins fork or split, leading in two directions, the senior locator has the right to both.

XI. Assessment work is required by the Mining Law in order for the locator to demonstrate that he was claiming possession in good faith, for mining purposes, and to give notice to rival locators of his claim. *Chambers v. Harrington*, 111 U.S. 350 (1884); *Udall v. The Oil Shale Corp.*, 406 F.2d 759 (1969), reversed on other grounds, 400 U.S. 48 (1970).

A. "On each claim located after the 10th day of May, 1972, and until a patent has been issued therefor, not less than \$100 worth of labor shall be performed or improvements made during each year." 30 U.S.C. § 28. The assessment year is the annual period commencing on 12:00 o'clock noon on the 1st of September succeeding the date of location.

B. If the work is not performed as and when required, the ground is then open to location by another claimant as if no prior claim had been staked. However, if the initial claimant or successors resumes assessment work, no relocation may be made. 30 U.S.C. § 28; *Belk v. Meagher*, 104 U.S. 279 (1881).

C. Until *Hickel v. The Oil Shale Corp.*, 400 U.S. 48 (1970) (the TOSCO case), only a rival locator could challenge a claim by relocating it for failure of assessment work. The TOSCO decision held that the validity of an unpatented claim depends on substantial compliance with the assessment work requirement. The TOSCO decision of 1970 recognized, for the first time, the right of the government to contest claims for failure to do assessment work as and when required, but it may not apply to any mining claims except pre-1920 oil shale claims.

1. The TOSCO case is a minority opinion, difficult to reconcile internally, and opposed to the Interior rule in effect up to its adoption that Interior had no authority to assert failure of assessment work as grounds for invalidating a claim.

2. The TOSCO case was based on special facts, namely oil shale claims located on ground which had been withdrawn from location and not subject to relocation by other private parties.
 3. Even though Interior amended its regs. to assert that its power to challenge claims applied to all minerals, it is doubtful that the U.S. can attack claims to other minerals on this basis, at least where the ground had been open at all times to mineral entry and location.
 4. The resolution to this question will determine whether the claimant should resume labor (to revive a dormant location which Interior may claim was void) or relocate (to initiate a new right).
 5. The Supreme Court held in 1980 that oil shale claims were not subject to the usual discovery test for a valuable mineral deposit requiring present marketability because Congress had implicitly ratified the application of the prudent man test to oil shale in hearings of 1918, 1930-31, and 1956, clearly recognizing oil shale as a valuable mineral subject to location and patent. *Andrus v. Shell Oil Co.*, 48 L.W. 4603 (June 3, 1980).
- D. The Mining Law of 1872 contemplates that assessment work be performed after discovery of a valuable mineral deposit and location of a claim. 30 U.S.C. § 28.
1. "Discovery is the source of title to a mining claim, and until a discovery of mineral is made within the claim, the location is not perfected. Accordingly, until a discovery is made, the question of the performance of assessment work is immaterial." 2 Am. Law of Mining § 7.7.
 2. Before discovery, locators do assessment work to comply with state law, and since 1976, with FLPMA, requiring the filing of assessment affidavits after location of a claim and to ward off rival locators.
 - (a) Before discovery, the locator has the pre-discovery rights of *pedis possessio*. *Pedis possessio* requires actual occupation of the claim in a diligent search for mineral.

(b) After discovery, the location is perfected and actual occupation is no longer required. Rather, rights are maintained by the construction possession given by the recorded location certificates and by the performance of annual assessment work.

3. Mere performance of assessment work before discovery does not necessarily constitute diligent exploration for *pedis possessio* purposes. 1 Am. Law of Mining § 4.8.

4. Since assessment work can only be done after a discovery, it must be done to develop the deposit.

E. The definition of assessment work is that it must directly tend to develop the deposit and facilitate the extraction of minerals. *Smelting Co. v. Kemp*, 104 U.S. 636 (1882); *Great Eastern Mines, Inc. v. Metals Corp. of America*, 86 N.M. 717, 537 P.2d 112 (1974). It is not the amount of the expenditure which counts, but the reasonable value of the labor or improvements toward development of the claim which is critical. *Smelting Co. v. Kemp*.

1. Exploration work to make a discovery does not qualify as assessment work.

2. Exploration work after discovery of a valuable deposit to further define the limits of the deposit and other characteristics such as its average grade would qualify as assessment work. Indeed, development drilling is usually essential to mine planning and development.

3. Development work is that which provides access to the mineral deposit for extraction of ore. Development work therefore qualifies as assessment work.

4. Of course, actual mining operations qualify as assessment work.

5. Construction of improvements such as buildings, shafts, the addition of machinery, and other structures for extraction of mineral qualify as assessment work.

6. Building a mill does not always count as assessment work because a mill does not facilitate extraction of ore from the ground.
 7. Construction of ore houses qualifies as assessment work but not residential cabins unless mining operations were actually conducted and housing on site was necessary to those operations.
 8. Construction of roads and bridges can be assessment work if it facilitates extraction of the mineral.
 9. No list of work or improvements can be drawn which always qualifies as assessment work. What qualifies depends on the particular discovery.
- F. By a 1958 amendment to the Mining Law, assessment labor was defined to include geological, geochemical, and geophysical surveys if conducted by a qualified expert and verified by a detailed report filed of record. 30 U.S.C. § 28-1.
1. These scientific surveys are the typical reconnaissance method used in regional exploration to find a deposit, but not to develop a known deposit.
 2. Scientific surveys are rarely filed as evidence of assessment work, especially since the law requires disclosure of the basic findings at specific points.
- G. A fundamental requirement of assessment work is that it must be performed in good faith for the proper purpose. E.g., *Sampson v. Page*, 129 Cal. App. 2d 356, 276 P.2d 871 (1954).
- H. Assessment work need not occur on the claims, or even on contiguous claims, despite the misunderstandings flowing from a loose dictum in *Chambers v. Harrington*, 111 U.S. 350 (1884), but can occur "at a distance from the claim itself." *Smelting Co. v. Kemp*, 104 U.S. 636 (1881).
1. In *Chambers*, the Supreme Court said assessment work performed off one claim can only qualify as work for that claim if it occurs on a contiguous claim. But *Chambers* involved a shaft which can only benefit specific claims if it is extended to them by drifts or tunnels.

2. Despite Chambers, courts do allow assessment work to qualify even if performed outside contiguous claims, at least if it tends to develop the claim and facilitate extraction of minerals. Thus, road, ditches to divert water to the site, regional drilling and other work in geologic basis have been accepted. See 2 Am. Law of Mining, Ch. III.
 - (a) The requirement of contiguity would be illogical.
 - (b) The important test is benefit; whether the work benefits the claims.
3. The Mining Law, 30 U.S.C. § 28, specifically allows the work done on any one claim to be apportioned among a group to hold all of them, if the claims are held in common.
 - (a) There must be a community of interest in the claims giving some common right in the assessment work. The owner whose possessory right depends on work done elsewhere must have a legal relationship to the work done if it is to inure to the benefit of his claims. *New Mercur Mining Co. v. South Mercur Mining Co.*, 102 Utah 131, 128 P.2d 269 (1942), cert. denied, 319 U.S. 753 (1943).
 - (b) If the work has a direct tendency to develop two sets of claims owned by different parties, the lessee of both sets of claims may apply the work to both sets, even without the consent of the owner where the work was done. *New Mercur*.

I. "Upon the failure of any one of several co-owners to contribute his proportion of the expenditures required [for assessment work], the co-owners who have performed the labor or made the improvements may, at the expiration of the year, give such delinquent co-owner personal notice in writing or notice by publication in the newspaper published nearest the claim, for at least one week for ninety days, and if at the expiration . . . such delinquent should fail or refuse to contribute his proportion . . ., his interest . . . shall become the property of his co-owners. . . ." 30 U.S.C. § 28.

1. This 1872 forfeiture provision does not comport with current concepts of due process notice holding

service by publication isn't adequate notice when the actual whereabouts of the party are known.

2. It may be that the 1872 procedure is adequate considering that Congress has the sole power over the public lands according to such rules and regs. as it deems necessary. Property clause.
3. To be safe, however, it is advisable to obtain personal service in forfeiture proceedings.

XII. Even a perfected mining location, if unpatented, does not entitle the claimant to unfettered and exclusive use of the surface.

A. As to all claims not located or not perfected by a discovery as of July 23, 1955, when the Surface Resources Act was adopted, the U.S. retains the right to manage and dispose of the vegetative resources, to manage other surface resources, and to use the surface, for itself, its permittees and licensees, for access to adjacent land. Surface Resources Act of 1955, 30 U.S.C. § 612.

1. The use of the mining claim surface may not endanger or materially interfere with mineral operations.
2. If the locator requires more timber than that left by the U.S., he is entitled to free timber from the U.S.
3. Except to the extent required to clear for mineral operations and the construction of mining structures, the locator may not cut timber or other vegetative resources.
4. Government permittees and licensees may go on unpatented mining claims to pursue that right or to gain access to other federal land for that purpose so long as there is no interference with ongoing mining operations. Examples, not exclusive, are hunting, fishing, camping. U.S. v. Curtis-Nevada Mines, Inc., 415 F.Supp. 1373 (E.D. Cal. 1976), affirmed, 611 F.2d 1277 (9th Cir. 1980) (defining government permittees and licensees as general members of the public who need not hold a written permit except as to an activity which is specifically regulated).

5. Guards may be employed to protect the claim, if they give proper persons access, but unmanned fences, barricades and no-trespass signs are not proper. U.S. v. Curtis-Nevada Mines, 415 F. Supp. 1373. The locators of active mining operations have the right to forbid trespass in their buildings, mine workings and mills.
- B. The regulations for surface management of mining claims which were proposed by the Dept. of the Interior on March 3, 1980, 45 FR 13956, would create a substantial new impediment to mineral operation on the public domain.
1. Interior says that the Mining Law of 1972, 30 U.S.C. § 22, provides that exploration, location and purchase of valuable mineral deposits on public lands shall be "under regulations prescribed by law." 43 C.F.R. § 3809.0-3(a) (proposed Mar. 3, 1980 at 45 Fed. Reg. 13956-13979).
 - (a) 30 U.S.C. § 22, the Mining Law of 1872, does not give the Secretary authority to make law concerning appropriation of mineral deposits. That power is reserved to Congress under the Article 4 property clause. Const., Art. IV, § 3, cl. 2.
 - (b) Neither does 30 U.S.C. § 22 grant authority to the Secretary to make regulations for appropriation of mineral deposits. Instead, the only authorization in the Mining Law of 1872 to promulgate such regulations is that in 30 U.S.C. § 38 which grants the power to "the miners of each mining district." *Butte City Water Co. v. Baker*, 196 U.S. 119 (1905) (holding the authority to prescribe the regulations is granted to the miners in the mining districts, but may also be exercised by the states, as successors); See D. Sherwood, *Mining-Claim Recordation and Prospecting under FLPMA*, 23 Rocky Mtn. Mineral L. Inst. 1, 9-10 (1977).
 - (c) True, FLPMA requires the Secretary of the Interior to take any action necessary to prevent unnecessary or undue degradation of the public lands, 43 U.S.C. § 1201; but the same section provides that neither this

section nor any other section of FLPMA "shall in any way amend the Mining Law of 1872 or impair the rights of any locators or claims under that Act, including but not limited to, rights of ingress and egress," except as FLPMA requires federal recordation of mining claims, provides for BLM wilderness study, or specifically allows regulation of all mining claims on public lands within the California Desert Conservation Area.

- (d) The most reasonable interpretation is that FLPMA does not authorize the proposed regs. insofar as they would "impair the rights of any locators or claims under [the 1872 Mining Law], including, but not limited to, rights of ingress and egress." It will remain for the courts to determine if the BLM surface management regs. can be sustained.
- (e) As opposed to BLM-managed lands, there is statutory authority for the Forest Service to control mining operations in national forests. 16 U.S.C. § 478 provides mineral development "must comply with the rules and regulations covering such national forests," but the Mining Law of 1872 has not been amended so much by this part of the Organic Act of 1897 as to allow the Forest Service surface management regs. to bar mining operations.
- (f) The Surface Resources Act of 1955, 30 U.S.C. § 612, states that "rights to any mining claim . . . shall be subject . . . to the right of the United States to manage . . . the surface resources." This authority to protect and sell vegetation and other resources should not be deemed a general authority to control mining operations, and it is not cited as authority by the Forest Service for its regs. or by the BLM for its proposed regs. It does authorize the Forest Service to bar use of a backhoe, bulldozer, and blasting, even on a valid, perfected mining claim, as unreasonable destruction of national forest lands. *Richardson v. Andrus*, 599 F.2d 290 (9th Cir. 1979), cert. denied, 100 S. Ct. 663 (1980).

- (g) The Forest Service has required miners to obtain approval of a plan of operations if the proposed mining activity may affect surface resources on land managed by the Forest Service. 36 CFR §§ 252.1-252.15.
 - (h) The proposed BLM regs. state "it is the policy of the regulation [sic] to encourage the development of Federal mineral resources. Under the 1872 Mining Law (30 U.S.C. 23 et seq.), a person has a statutory right, not a mere privilege, consistent with Departmental regulations, to go upon the open (unappropriated and unreserved) public lands for the purpose of mineral prospecting, exploration, development and extracting." 43 C.F.R. § 3809.0-6. It is hypocritical to say the regs. encourage mining.
2. The proposed BLM regs. would apply to all locatable public lands, including stockraising mineral reservations, but not to units within the National Parks or Forests. The Forest Service has its own regs. for these areas.
3. The main thrust of the proposed BLM regs., 43 C.F.R. § 3809.1-1, is to require a plan of operations be submitted to the BLM for approval prior to any mining operations involving:
- (a) Construction or improving roads, bridges, landing areas;
 - (b) Destroying trees of 2" or more at the base;
 - (c) Using tracked or mechanized earth moving equipment;
 - (d) Using motor vehicles off "open use areas and trails";
 - (e) Placing mobile or fixed structures for over 30 days;
 - (f) Using explosives;
 - (g) Operations which "may cause changes in a water course."

4. The plan of operations must include, 43 C.F.R. § 3809.1-3:
 - (a) The identity of the operator;
 - (b) A topo map or sketch of access roads and surface areas to be disturbed;
 - (c) The operation, means of performance, and structures and facilities. The operator may submit proposed reclamation measures;
 - (d) The serial number of any claims;
 - (e) For mining operation in wilderness areas, a statement of the manner and degree of operations before FLPMA was adopted on Oct. 21, 1976. Those cannot be exceeded because FLPMA precludes impairing potential BLM wilderness areas for inclusion in the Wilderness System.
5. The BLM district office has 30 days to approve or disapprove the plan or require changes, or may state 60 more days will be needed for review.
6. Even after a plan is approved, the BLM may require modifications.
7. The operator must file a bond in an amount determined by the BLM as assurance of reclamation.
8. The BLM may seek a court order to enjoin violations. 43 C.F.R. § 3809.3-2.
9. The regs. recognize that the operator is entitled to access to his mining operations under the mining laws, but authorizes the BLM to locate the access route, maintenance, and vehicles. 32 C.F.R. § 3809.3-3.
10. The general public does not have a right to appeal a BLM decision.
11. The regs. contemplate eventual adoption of federal-state programs for adoption.

XIII. There is no legal requirement that mining claims or sites be patented. If they were validly located and the possessory right maintained according to the federal and state laws and

regulations, the claims remain valid without a patent. *Clipper Mining Co. v. Eli Mining & Land Co.*, 194 U.S. 220 (1904).

- A. The mining claimant only has a possessory title, one dependant upon his maintaining possession and subject to the paramount title of the U.S.
- B. Nevertheless, the mineral deposits in unpatented mining claims may be entirely removed without obtaining a patent or payment to the U.S.
- C. The Dept. of the Interior is now the principal adversary of unpatented claim holders.
 - 1. The BLM may challenge claims for lack of discovery, failure of assessment work, or nonavailability of the land for location, or failure to file required notices.
 - 2. The new BLM surface regs. are another means for the BLM to impede mining.
- D. Rival locators may overstate unpatented claims.
- E. A patent conveys the fee simple title within the area patented and to the full extent of all veins or lodes which apex within the claim.
- F. The inherent insecurity of title and tenure which are posed to mining claimants virtually compels a patent application for any sizeable mining operation.
 - 1. Mining operations costs hundreds of millions for environmental studies and permits, water rights, mills, mining, hauling, treating, smelting, shipping and reclamation.
 - 2. Mining companies and lenders must have security of title.
- G. The Mining Law of 1872 extends the right to patent, that is, the right to purchase fee simple title from the U.S.
 - 1. At least \$500 worth of development work and a valuable mineral deposit are required on each claim.

2. The statute is still the same as in 1972, but the burden of proving entitlement to a patent has increased substantially.
- H. The applicant for patent bears the burden of proving entitlement to a patent. *Foster v. Seaton*, 271 F.2d 836 (D.D.Cir. 1959).
- I. There are three major steps to the patent process.
1. The mineral survey marks the legal boundaries of the claim or site.
 2. The patent application is then filed and adjudicated by the BLM to establish the applicant's eligibility, available of the land, and the publication of public notice to allow adverse claims by other locators.
 3. If a favorable office adjudication results, the most critical stage ensues, namely the mineral examination by a U.S. mineral examiner.
 4. If the mineral exam is favorable, the claims are clearlisted for patent, and the patent issues in due course.
 - (a) If a valuable mineral discovery is not proved, the U.S. automatically invalidates the location rather than just rejecting the patent. *U.S. v. Carlile*, 67 I.D. 417 (1960).
 - (b) The locator can relocate and continue development work, at least if the land hasn't been withdrawn by the U.S. or located by a rival locator in the interim.
- J. An environmental impact statement is not required by the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347, § 4332(C), prior to issuance of a mineral patent. Section 102(2)(C) of NEPA requires federal agencies to prepare an EIS for "major federal actions which significantly affect the quality of the human environment."
1. The EIS is intended to aid the federal agency in evaluating alternations to the proposed action, to aid in decision making.

2. The issuance of a mineral patent is a ministerial act which does not require the exercise of discretion by Interior. *Wilbur v. U.S. ex rel. Krushnic*, 28 U.S. 306, 318-19 (1929); *Cameron v. U.S.*, 252 U.S. 450, 454 (1920); *Roberts v. U.S.*, 176 U.S. 221, 231 (1920); *U.S. v. Kosanke Sand Corp.*, 12 IBLA 282, 290-91 (1973); *U.S. v. O'Leary*, 63 ID 341 (1956).
3. Upon satisfying the requirements of the Mining Law, the claimant has an absolute right to a patent from the U.S., and the actions by Interior to process the patent application are not discretionary; issuance of a patent can be compelled by court order. The patent can contain no conditions not authorized by law. Furthermore, the claimant need not apply for patent to preserve his property right in the claim but may extract all the minerals without ever acquiring full legal title. The patent, if issued, conveys fee simple title to the land, but does nothing to enlarge or diminish the claimant's right to its locatable minerals. *South Dakota v. Andrus*, 614 F.2d 1190 (8th Cir. 1980) (quoting the lower court with approval).
 - (a) The Eight Circuit concluded it is "at least doubtful" that mineral patent issuances are actions subject to NEPA. Also, the Eight Circuit doubted that an EIS is compatible with the Secretary's duties under the Mining Law. *South Dakota v. Andrus*, 614 F.2d 1190 (8th Cir. 1980) (petition for cert. pending). Cf. *Natural Resources Defense Council, Inc. v. Berklund*, 609 F.2d 553 (D.D.C. 1979).
 - (b) The Eight Circuit held that the issuance of a mineral patent is not a major federal action because it does not enable the patentee to begin mining operations. Instead, opening a mine on Forest Service lands will probably require discretionary actions in the future, e.g., Forest Service permits for roads, water pipelines and railroad rights of way. 43 U.S.C. § 1761(a)(1) and (a)(6). If these, or the plan of operations required by the Forest Service regs., 36 C.F.R. Part 252, are major federal actions, an EIS may be required then. *South Dakota v. Andrus*.

- (c) The same can be said of other public lands, namely, if any one of the various permits required for mineral operations is a major federal action, an EIS may be first required.

XIV. The hostility of government regulatory officials, encouraged by private conservation groups, has seriously hampered the mining industry and has caused a serious shortage of minerals.

- A. True, the mining laws need improvement to better promote mineral exploration.
1. The Mining Law of 1872 was enacted over a century ago for other conditions.
 2. Secure exploration rights to regional areas cannot be obtained. *Pedis possessio* affords only weak protection against rival locators and none against the withdrawal by the U.S.
 3. The acreage limits of roughly 20 acres per claim are insufficient for modern mining projects and techniques. Economic mining units which cover the deposit, however shaped, are needed.
 4. Tunnel sites are obsolete but the same type of protection is not afforded to the replacement, i.e., deep drill holes.
 5. Extralateral rights are obsolete since dips are rarely followed at length down dip. Instead, protection of access by shafts and adits is needed.
 6. The distinction between lodes and placer deposits and mill sites is confused and inapplicable to modern mining, but it remains critical to the validity of a claim or site.
 7. Mill sites do not provide adequate work space or tailings space for modern mining methods.
 8. Connecting access between discontinuous claims via adits is not possible under the present law.
 9. The test of discovery of a valuable mineral deposit can be applied arbitrarily and unreasonably, without certainty.

10. Governmental withdrawals and Forest Service and BLM wilderness studies, have removed the great bulk of public lands from mineral access and location.
 11. Government administration is bogged down in files over 100 years old without knowing in many cases its own ownership, mineral status, withdrawal areas, and so on. The multitude of studies and regs. for new programs required by FLPMA of 1976 are only slowly developing.
 12. Tenure and security of title on the public lands are highly uncertain, for these and other reasons.
- B. Since the first leasing law for leasing of lead mines from 1807 to 1846, and since the debates from 1900 to 1920 over adoption of the Mineral Leasing Act of 1920, leasing has been touted as the only cure. Leasing is supposed to give miners exploration areas and tenure, and to protect the public by requiring royalties, diligent exploration, diligent development and mining, with less environmental damage and more reclamation.
1. Nevertheless, leasing can be said to be a demonstrated failure under the Mineral Leasing Act of 1920. H.B. Mock, Mining Law Trends, 54 U. Denver L. Rev. 567, 577 (1977).
 - (a) The Secretary of the Interior has always declined to lease many lands and many types of minerals.
 - (b) The leasing act minerals are in shorter supply than locatable minerals.
 2. Administrative leasing policies, where the government leases, have failed to lease economic mining units which has halted production. The western coal industry is an example of an industry stymied by government agency even though the current and last two presidents and a multitude of public institutions consistently announce great increases in coal production are necessary in the public interest.
 3. Because of the failure of the leasing system, the GAO in 1979 recommended the retention of the location-patent system, albeit with changes to

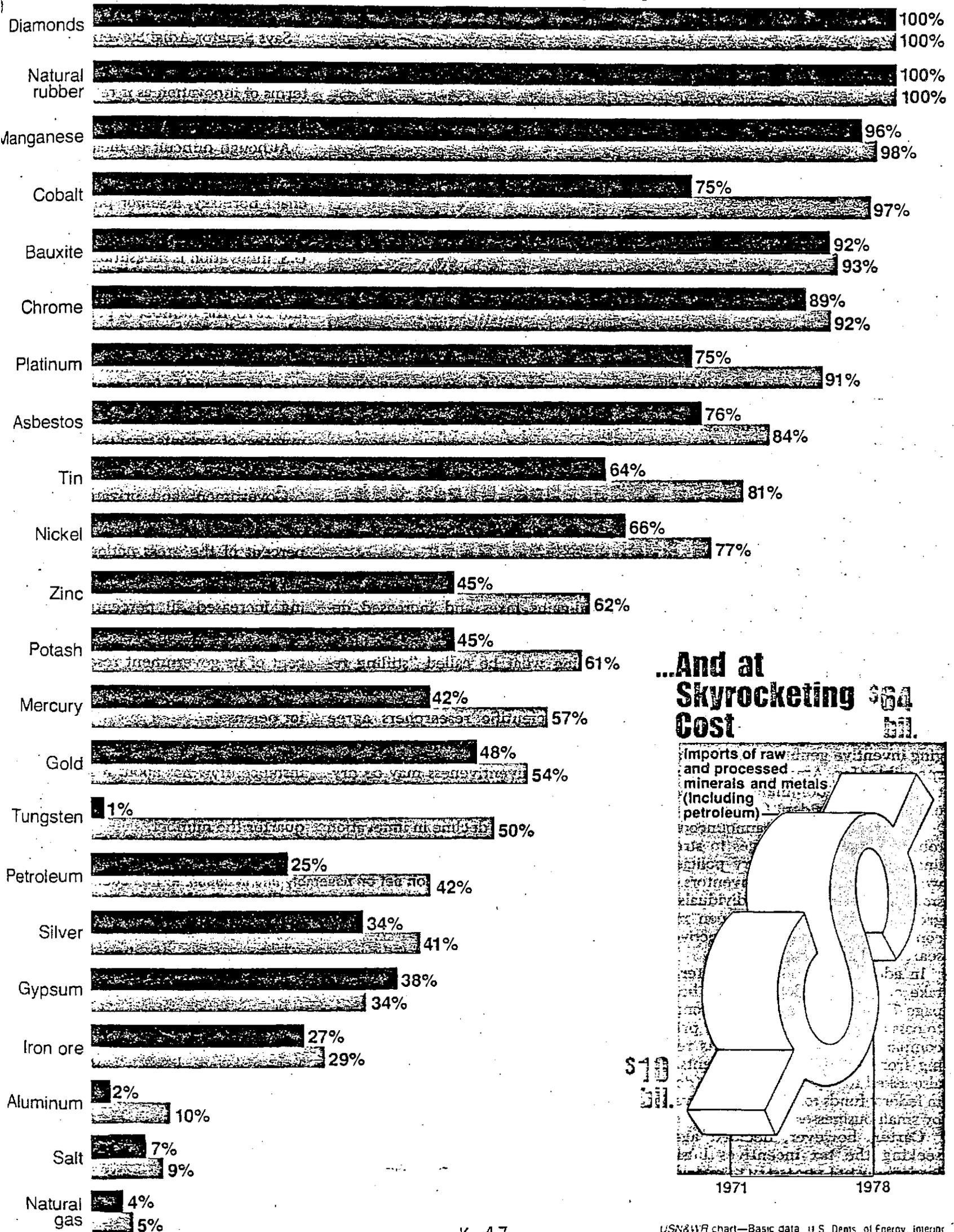
improve the tenure of the miner and reasonable environmental protection. GAO, "Mining Law Reform and Balanced Resource Management," Feb. 27, 1979.

- C. The right of self-initiation of the miner under the location system to seek and extract minerals where they occur on the public lands is essential to survival of the nation as a leading world power.
 - 1. The right of access and exploration may properly be made subject to environmental protection and careful reclamation. The mining industry can and will protect the land.
 - 2. Congress has not abandoned the location system, for the foregoing reasons, for 108 years. Despite the constant cries that it do so, Congress will not soon make the nation more dependent for minerals upon hostile government agencies.

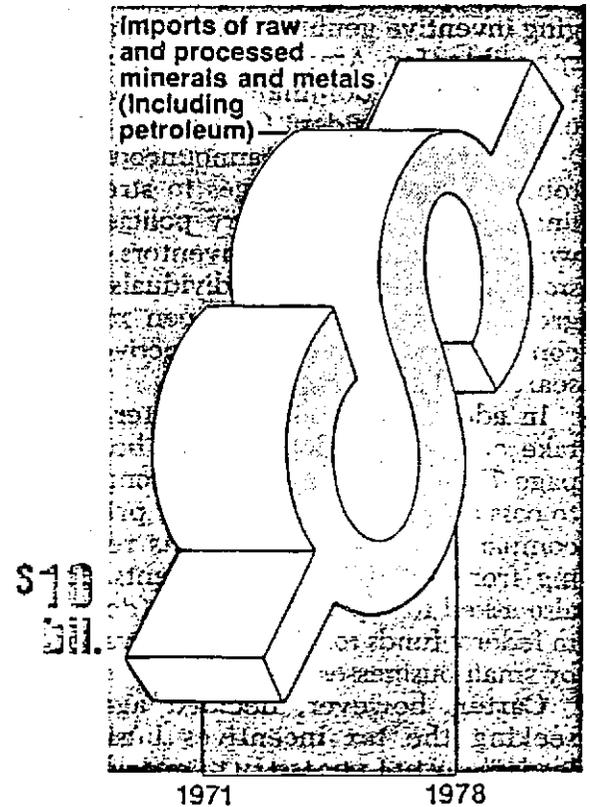
- D. A resolution of the conflicts over the dual threats of major environmental and social harm, on the one hand, and crippling mineral shortages, on the other, is imperative for the national well being.

Proportion of U.S. Consumption Met by Imports

■ 1971 ■ 1978



...And at Skyrocketing **\$64** Cost **bil.**



Submitted by David Everist



Executive Order 10997 ASSIGNING EMERGENCY PREPAREDNESS FUNCTIONS TO THE SECRETARY OF THE INTERIOR

[The Robert T. Stafford Disaster Assistance And Emergency Relief Act,](#)

[13CFR123.1 Chapter I--Small Business Administration Part 123-- Disaster Loan Program](#)

[US Code TITLE 50 - War and National Defence CHAPTER 34 - National Emergencies](#)

Executive Orders

[Executive Order 10995](#)
Telecommunications Management

Executive Order 10997 ASSIGNING EMERGENCY PREPAREDNESS FUNCTIONS TO THE SECRETARY OF THE INTERIOR

By virtue of the authority vested in me as President of the United States, including authority vested in me by Reorganization Plan No. 1 of 1958 (72 Stat. 1799), it is hereby ordered as follows:

SECTION 1. Scope. The Secretary of the Interior (hereinafter referred to as the Secretary) shall prepare national emergency plans and develop preparedness programs covering (1) electric power; (2) petroleum and gas; (3) solid fuels; and (4) minerals. These plans and programs shall be designed to provide a state of readiness in these resource areas with respect to all conditions

[Executive Order 10997](#) --
Electric power, petroleum and gas,
solid fuels, and minerals

[Executive Order 10998](#) --
Food resources, farms, fertilizer, and
facilities

[Executive Order 10999](#) --
Transportation, the production and
distribution of all materials

[Executive Order 11000](#) --
Manpower management

[Executive Order 11001](#) --
Health and welfare services, and
educational programs

[Executive Order 11002](#) --
National emergency registration
system

[Executive Order 11003](#) --
Air travel, airports, operating
facilities

[Executive Order 11004](#) --
Housing and community facilities

[Executive Order 11005](#) --
Interstate Commerce

[Executive Order 11051](#) --
Emergency Planning

[Executive Order 11490](#) --
Federal departments and agencies

[Executive Order 12472](#) --
Telecommunications functions

[Executive Order 12656](#) --
Continuity of Government

[Executive Order 12919](#) --

of national emergency, including attack upon
the United States.

SEC. 2. Definitions. As used in this order:

(a) The term "electric power" means all forms of electric power and energy, including the generation, transmission, distribution, and utilization thereof.

(b) The term "petroleum" means crude oil and synthetic liquid fuel, their products, and associated hydrocarbons, including pipelines for their movement and facilities specially designed for their storage.

(c) The term "gas" means natural gas (including helium) and manufactured gas, including pipelines for the movement and facilities specially designed for their storage.

(d) The term "solid fuels" means all forms of anthracite, bituminous, sub-bituminous, and lignitic coals, coke, and coal chemicals produced in the coke making process.

(e) The term "minerals" means all raw materials of mineral origin (except petroleum, gas, solid fuels, and source materials as defined in the Atomic Energy Act of 1954, as amended) obtained by mining and like operations and processed through the stages specified and at the facilities designated in an agreement between the Secretary of the Interior and the Secretary of Commerce as being within the emergency preparedness responsibilities of the Secretary of the Interior.

SEC. 3. Resource Functions. With respect to the resources defined above, the Secretary shall:

(a) Priorities and allocations. Develop systems for the emergency application of priorities and allocations to the production

National Defense
Industrial Preparedness

[Executive Order 12938](#) --
Weapons Of Mass Destruction

[Executive Order 13074](#) --
Noncombatant Evacuation
Operations

"The President has the power to seize property, organize and control the means of production, seize commodities, assign military forces abroad, call reserve forces amounting to 2 1/2 million men to duty, institute martial law, seize and control all means of transportation, regulate all private enterprise, restrict travel, and in a plethora of particular ways, control the lives of all Americans...

Most [of these laws] remain a potential source of virtually unlimited power for a President should he choose to activate them. It is possible that some future President could exercise this vast authority in an attempt to place the United States under authoritarian rule.

While the danger of a dictatorship arising through legal means may seem remote to us today, recent history records Hitler seizing control through the use of the emergency powers provisions contained in the laws of the Weimar Republic."

--Joint Statement, Sens. Frank Church (D-ID) and Charles McMathias (R-MD) September 30, 1973

and distribution of assigned resources.

(b) Requirements. Periodically assemble, develop as appropriate, and evaluate requirements for power, petroleum, gas and solid fuels, taking into account estimated needs for military, civilian, and foreign purposes. Such evaluation shall take into consideration geographical distribution of requirements under emergency conditions.

(c) Resources. Periodically assess assigned resources available from all sources in order to estimate availability under an emergency situation, analyze resource estimates in relation to estimated requirements in order to identify problem areas, and develop appropriate recommendations and programs including those necessary for the maintenance of an adequate mobilization base. Provide data and assistance before and after attack for national resource evaluation purposes of the Office of Emergency Planning.

(d) Claimancy. Prepare plans to claim materials, manpower, equipment, supplies and services needed in support of assigned responsibilities and other essential functions of the Department before the appropriate agency, and work with such agencies in developing programs to insure availability of such resources in an emergency.

(e) Minerals development. Develop programs and encourage the exploration, development and mining of strategic and critical minerals for emergency purposes.

(f) Production. Provide guidance and leadership to assigned industries in the development of plans and programs to insure the continuity of production in the event of an attack, and cooperate with the Department of Commerce in the identification and rating of essential

facilities.

(g) Stockpiles. Assist the Offices of Emergency Planning in formulating and carrying out plans and programs for the stockpiling of strategic and critical materials, and survival items.

(h) Salvage and rehabilitation. Develop plans for the salvage of stocks and rehabilitation of producing facilities for assigned products after attack.

(i) (Economic Stabilization. Cooperate with the Office of Emergency Planning in the development of economic stabilization policies as they might affect the power, fuels and assigned minerals supply, production, and marketing programs, and the conservation of essential commodities in an emergency, including rationing of power and fuel.

(j) Financial aid. Develop plans and procedures for financial and credit assistance to producers, processors, and distributors who might need such assistance in various mobilization conditions.

SEC. 4. Cooperation with the Department of Defense. In consonance national civil defense plans, programs and operations of the Department of Defense, under Executive Order No. 10952, the Secretary shall:

(a) Facilities protection. Provide protection industry protection guidance material adapted to needs of industries concerned with assigned products, and promote a national program to stimulate disaster preparedness and control in order to minimize the effects of overt or covert attack and maintain continuity of production and capacity to serve essential users in an emergency. Guidance shall include but not be limited to: organizing and training, facility

personnel, personnel shelters, evacuation plans, records protection, continuity of management, emergency repair, deconcentration or dispersal of facilities, and mutual aid associations for emergency.

(b) Chemical, biological and radiological warfare. Provide for the detection, identification, monitoring and reporting of chemical, biological and radiological agents at selected facilities operated or controlled by the Department of the Interior.

(c) Damage assessment. Maintain a capability to assess the effects of attack on assigned products, producing facilities, and department installations both at national and field levels, and provide data to the Department of Defense.

SEC. 5. Research. Within the framework of Federal research objectives, the Secretary shall supervise or conduct research directly concerned with carrying out emergency preparedness responsibilities, designate representatives for necessary ad hoc or task force groups, and provide advice and assistance to other agencies in planning for research in areas involving the Department's interest.

SEC. 6. Functional Guidance. The Secretary, in carrying out the functions assigned in this order, shall be guided by the following:

(a) Interagency cooperation. The Secretary shall assume the initiative in developing joint plans for the coordination of emergency fuel, energy, and assigned mineral programs of those departments and agencies which have the responsibility for any segment of such activities. He shall utilize to the maximum those capabilities of other agencies qualified to perform or assist in the performance of assigned functions by contractual or other agreements.

(b) Presidential coordination. The Director of the Office of Emergency Planning shall advise and assist the President in determining policy for, and assist him in coordinating the performance of functions under this order with the total national preparedness program.

(c) Emergency planning. Emergency plans and programs, and emergency organization structure required thereby, shall be developed as an integral part of the continuing activities of the Department of the Interior on the basis that it will have the responsibility for carrying out such programs during an emergency. The Secretary shall be prepared to implement all appropriate plans developed under this order. Modifications, and temporary organizational changes, based on emergency conditions, will be in accordance with policy determination by the President.

SEC. 7. Emergency Actions. Nothing in this order shall be construed as conferring authority under Title III of the Federal Civil Defense Act of 1950, as amended, or otherwise, to put into effect any emergency plan, procedure, policy, program, or course of action prepared or developed pursuant to this order. Such authority is reserved to the President.

SEC. 8. Redelelegation. The Secretary is hereby authorized to redelegate within the Department of the Interior the functions hereinabove assigned to him.

SEC. 9. Prior Actions. To the extent of any inconsistency between the provisions of any prior order and the provisions of this order, the latter shall control. Emergency Preparedness Order No. 7 (heretofore issued by the Director, Office of Civil and Defense Mobilization) (26 F.R. 669-660), is hereby

revoked.

**JOHN F. KENNEDY
THE WHITE HOUSE,**

February 16, 1962.