

~~July 6~~ - Page 6



Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

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DEPT. OF GEOLOGY
MINERAL INDUS

GEOLOGICAL SURVEY BRANCH

MINERAL RESOURCES DIVISION

The Ministry of Energy, Mines and Petroleum Resources is pleased to announce the release of the following publications:

PRELIMINARY MAP 63

**GEOLOGICAL SETTING OF THE SOUTH HALF OF THE ELK VALLEY COALFIELD
SOUTHEASTERN BRITISH COLUMBIA**

By D.A. Grieve and R.A. Price
Price: \$3.00

This 1:50 000-scale compilation depicts the geology of the Lewis thrust sheet within NTS 82G/15 and 82J/2. The boundaries of the map are the traces of the Lewis thrust fault on the east, the Bourgeau thrust fault on the west, and latitudes 50°15' N and 49°45' N on the north and south. The map area includes three operating coal mines in the Elk Valley Coalfield (Line Creek, Fording and Greenhills) and part of the Balmer mine in the Crowsnest Coalfield.

Geology has been derived from: published mapping by the British Columbia Geological Survey Branch; published and unpublished regional mapping by the Geological Survey of Canada; and unpublished mapping by coal mine and oil exploration company geologists.

The map area lies within the Front Ranges of the Rocky Mountains and is underlain by carbonate and clastic sedimentary rocks of Devonian to Cretaceous age. In addition to world-scale coal resources, the area contains phosphorite units and is currently being explored for its petroleum potential.

OPEN FILE 1987-14

GEOCHEMISTRY WEST OF CHILKO LAKE

(92N/1, 8)

Scale: 1:50 000

By G.P. McLaren
Price: \$20.00

Open File 1987-14 presents the analytical results of a stream sediment survey conducted over approximately 600 square kilometres at an average sample density of one sample per 3 square kilometres. Sediment

samples were analysed for Au, Al, Ag, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Ti, Tl, U, V, W, and Zn.

Analyses of 144 rock chip samples taken during prospecting of alteration or mineralization zones are also tabulated. Lithochemical data include analyses for Au, Ag, Hg, As, Sb, Bi, Cu, Pb, Zn, Mo, Fe, Ni, Co, Cd, and Mn. Brief sample descriptions are also provided.

The Open File consists of a lithochemical sample location map, a stream sediment sample location map, and 15 sediment geochemical data maps, plus a complete tabulation of analytical results. The data maps display basic statistical information.

The survey complements Open File 1987-12 released in January 1987 displaying the geology of the area. A paper on this project was previously published by the author in Geological Fieldwork, 1986 (Paper 1987-1).

This project is a contribution to the Canada/British Columbia Mineral Development Agreement.

OPEN FILE 1987-19

TERTIARY STRATIGRAPHY AND INDUSTRIAL MINERALS
PRINCETON AND TULAMEEN BASINS
BRITISH COLUMBIA
(92H/2, 7, 8, 9, 10)

By P.B. Read
Price: \$3.00

Open File 1987-19 comprises three 1:25 000-scale geological maps detailing the Tertiary stratigraphy, lithology and industrial mineral occurrences in the Princeton and Tulameen basins, compiled on a single sheet. The accompanying notes provide detailed descriptions of zeolite and bentonite occurrences of potential economic significance.

Zeolites occur in five distinct tephra layers, replacing glass shards in waterlain tuffs and volcanic breccias within the Eocene sedimentary sequence. Individual tephra layers range from 7 metres to greater than 22 metres in thickness. The geology of four sampled localities in the Princeton basin is illustrated by sketch maps of the mineralized outcrops.

Bentonite is widespread throughout the north half of Princeton basin, usually occurring in shale and coal-rich sections of the stratigraphy, in layers up to 2 metres thick.

Two tables provide locational details of ten bentonite and nine zeolite occurrences and exchangeable cation analyses on selected samples.

This open file presents current data from an ongoing investigation of industrial minerals in Tertiary basins funded by the Canada/British Columbia Mineral Development Agreement.

For copies of the preceding publications please contact:

Publications Distribution,
Finance and Administration Division,
Ministry of Energy, Mines and Petroleum Resources,
Parliament Buildings,
Victoria, B.C.
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Copies are also available **OVER THE COUNTER** at the:

Geological Survey and Mineral Titles Office,
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Ministry of Energy, Mines and Petroleum Resources,
Room 159, 800 Hornby Street,
Vancouver, B.C.

Cheques should be made payable to the Minister of Finance.

July 7, 1987

Specialties NewsFront

ISP to Yield Flat 3rd Quarter Earnings

Merrill Lynch & Co. projects virtually no increase in sales for the upcoming quarter for International Specialties Products Inc. (formerly GAF Corporation). Total third quarter sales are estimated at \$135 million, while sales last quarter were \$136.2 million. Despite the slight decline, the projected sales are still 4.3 percent higher than the corresponding period of last year.

The main weak spot, according to Merrill Lynch, continues to be chemical intermediates and solvents, the more commodity-like and lower value-added portion of the product line. These products end up in plastics for autos and in textiles, and sales to those markets are showing an even steeper decline in the third quarter than the recession-induced drop seen in the first half of the year.

Geographically, the weakest area appears to be Europe, which may be lagging the US in the recessionary cycle. Also, Germany is ISP's largest foreign country, and it has been hurt by weak sales to Eastern Europe due to the lack of hard currencies and the political upheaval in that part of the world. Adding to the weakness in European sales is the fact that currency translation has turned negative owing to the strong dollar.

Relatively strong sales appear to be continuing for polymers, vinyl ethers and specialty preservatives, the higher priced and the higher end of the product line aimed at the personal care, cosmetics, drug and food and beverage markets.

Sales of these products in the first two months of this quarter advanced at double digit rates, although that did mark a slowdown compared to the remarkably strong 20 percent plus gains posted in the first six months of the year.

Atochem Launches 'Penncoat' Linings

Atochem has introduced a new line of polymer-based products which are designed to protect concrete and steel from a wide variety of acids, oxidizing agents, alkalis and solvents. The new "Penncoat" linings offer high performance, cost effective protection for primary and secondary chemical equipment, the company says.

According to Charlie MacAdams, a product manager, the polymers are formulated to allow facilities engineers and their staffs an alternative to the more costly traditional methods of corrosion protection. Ideal for repair and maintenance applications, they are equally well-suited for use on new construction projects since the application can be accomplished by brush, roller or spray.

The line includes: glass and flake filled polyamine and "Novolac" epoxy linings ("Penncoat" 201 and 221); flake filled polyester and vinyl ester systems ("Penncoat" 301 and 331); and two silicon polymer-based products ("Penncoat" 401 and 441).

Other applications include ducts, stacks and associated vessels and pollution control equipment, as well as floors, trenches, pits and containment areas for corrosive chemical environments.

Increasing Demand for Bentonite in Drilling Muds

Recent trends in world production of bentonite and allied clays have been dictated by demand from the main end-use markets: drilling muds, iron ore pelletising and foundry sands, according to a new report from Roskill Information Services Ltd.

Demand for bentonite in drilling muds, which was dramatically reduced by the collapse of oil prices in 1986, is dominated by drilling in the US. It made only a slow recovery in the late 1980's despite increased drilling activity in the North Sea and some other areas, the study says.

US consumption of bentonite and allied clays in this end-use fell to its lowest level in 12 years at 873,000 metric tons in 1988 (it consumed 2 million tons in 1981), the report says.

Although US consumption increased slightly in 1989, the first signs of real recovery in the US drilling industry came in 1990, when oil prices averaged almost \$20 per barrel and the count of active drilling rigs reached an estimated 1,010 rigs, according to the London-based market research firm.

The report estimates that consumption of bentonite in drilling muds last year was 960,000 tons. Given the higher oil prices seen during the Gulf War and an expected rise in the rig count to 1,160, Roskill forecasts a 1991 figure of 985,000 tons.

Although the oil supply/demand balance remains weak, several factors favor a relatively stable market for bentonite in drilling muds in the early 1990's. Environmental legislation is prompting a return to bentonitic water-based muds in many areas, the use of horizontal drilling techniques is growing rapidly, and there is a need to undertake the exploration for new reserves that was deferred in the 1980's.

Dow Corning Cuts Down Metal-to-Metal Friction

Dow Corning's "D" general purpose white paste has helped a Connecticut-based machine tool manufacturer reduce metal-to-metal friction and subsequent tool wear. Ready Tool Company, Stratford, Conn., a division of United Tool & Die Co. uses the lubricant on both live and dead centers in the production of machine tools.

The centers, typically made of high-speed steel or carbide, support the metal workpiece in a cylindrical grinder or lathe. A center fits into a hole at the end of the work, holding it steady as it rotates at high speeds.

The workpiece often revolves for long periods of time, so a lubricant that will hold up to continuous use is required to reduce the resulting friction and to protect both the center and the work from excessive wear.

The lubricant is a light-colored paste made up of white solid lubricants and other additives in a mineral oil base. The paste forms an almost invisible lubricating film that sticks to metal surfaces and provides long-term, high-performance lubrication.

D-Paste is a non-staining lubricant that does not contain any molybdenum disulfide. It is noted for its long-term effectiveness and extreme high-pressure resistance, and is well suited for metal-to-metal applications where dark pastes, such as those containing graphite or molybdenum disulfide, are undesirable.

Specialty Briefs

NATIONAL STARCH & CHEMICAL CO. has introduced a low molecular weight variant of the "Amphomer" line. According to the company, LV-17 hairspray polymer provides very fine atomization in anhydrous and aqueous alcoholic hairsprays. Formulas containing LV-17 display "superior holding properties, along with excellent gloss, adhesion to hair and shampoo removability," the company says.

PEA RIDGE IRON ORE COMPANY has begun production of a new high purity red iron oxide for use as a raw material for flexible and rigid ceramic magnet applications. The "H-25" iron oxide is produced from a high magnetite (Fe₃O₄) resulting in a 99.5 percent Fe₂O₃ purity level.

—D.J.C.

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HAMISH BENTONITES

F7993
F7994
F7995
F7999
F8000

These materials vary as to physical properties. Two, F7993 and F7995 are almost non-swelling and have the best drying qualities and lowest water of plasticity. These work more like clays. All the others, F7994, F7999 and F8000 are of the swelling type and are gummy and sticky and show a great deal of warpage and rather high shrinkage. These are much too plastic to be used alone as a raw material for any ceramic product at the present time.

In samples F7993 and F7995 the shrinkage between C/04 and C/02 is rather high on a percentage basis. While in the other samples the shrinkage is not so great in this temperature range.

These samples were put through a standard test for clay for the ceramic industry as set up by the A.S.T.M. and the comparisons are therefore against a somewhat different material.

The only recommendation that could be made for these materials is for samples F7994, F7999 and F8000. These could be used in the ceramic industry as a floative for enamel and glaze slips in percentages of $\frac{1}{2}$ - 1% and as a plasticizer or binder for plastic bodies in the amounts of 1 - 2 $\frac{1}{2}$ %.



While You Were Out

To Jerry G
Date 6/3 Time 10:19

Jim Morris called
of John Day Ore-Ntl Park
Phone 575-0721

- | | |
|---|---|
| <input checked="" type="checkbox"/> Telephoned | <input type="checkbox"/> In person |
| <input checked="" type="checkbox"/> Please call | <input type="checkbox"/> Wants to see you |
| <input type="checkbox"/> Will call again | <input type="checkbox"/> Returned your call |

Message
John Day Beds

Taken by _____





United States Department of the Interior

NATIONAL PARK SERVICE

John Day Fossil Beds National Monument

420 West Main

John Day, Oregon 97845

IN REPLY REFER TO:

L2423

June 9, 1987

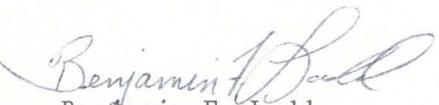
Jerry Gray
Oregon Department of Geology
and Mineral Industries
910 State Office Building
Portland, Oregon 97201

Dear Mr. Gray:

Enclosed is a copy of the Land Protection Plan for John Day Fossil Beds National Monument. Page 17 of the plan lists the privately owned tracts within the Sheep Rock Unit of the National Monument and the minimum interests the National Park Service has in protecting the scenery and fossil resources. Also enclosed is a map which more clearly shows the monument boundaries and the federally owned versus privately owned lands.

We would appreciate being kept informed of your findings. Obviously the potential exists for development within the boundaries of the National Monument which could have an impact upon the resources which caused Congress to designate this area as part of the National Park System. Visitor enjoyment of these values and the scenery of the area could also be impacted.

Sincerely,


Benjamin F. Ladd
Superintendent

Enclosures

ADDENDUM TO
LAND PROTECTION PLAN FOR
JOHN DAY FOSSIL BEDS NATIONAL MONUMENT, OREGON
1986

This addendum updates the unit's Land Protection Plan which was initially approved on February 28, 1984.

Plan Implementation

Discussions are on-going with landowners regarding proposed exchanges, but no agreements have been reached to date.

Changes to Plan

Minor textual revisions (including some tract numbers) have been made and are incorporated in the attached copy. Revised tract maps are on file in the Washington, D.C., Office and the Pacific Northwest Regional Office.

Clarification of Plan

We have reviewed the recommendations of the General Accounting Office report on Land Protection Plans (GAO/RCED-86-16, October 31, 1985) and find that no major changes to or additional clarifications of the plan are necessary.

Recommended:

Benjamin F. Hall
Superintendent

10/16/86
Date

Approved:

W. J. Boggs
Acting Regional Director

10/23/86
Date

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT, OREGON

LAND PROTECTION PLAN

February 1984

Recommended:

Benjamin F. Hall
Superintendent

2/21/84
Date

Approved:

David P. Fung
Regional Director

2/28/84
Date

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT, OREGON

Land Protection Plan Summary

1. Current ownership	Acres
Federal	10,739.28
State and County	172.28
Private	3,099.56
Total	<u>14,011.12</u>
2. Number of tracts remaining to be protected:	15
3. Methods of protection proposed	Acres
Fee acquisition by National Park Service	1,029.25
Less-than-fee acquisition (scenic easements and deed restrictions)	2,109.50
Areas suitable for sellback or leaseback	-----
Zoning	-----
Cooperative Agreement	-----
Regulation	-----
Adequately protected	0.81
4. Statutory acreage ceiling:	None
5. Funding status as of July 1, 1983	
Authorized acquisition ceiling:	\$3,900,000
Appropriated to date:	\$ 845,997
Obligated to date:	\$ 687,622(R)
Unobligated balance:	\$ 158,375(R)
6. Top priorities	Acres
Protect significant fossil beds, provide for public access and public use areas in Sheep Rock and Clarno units	2,197.65
Protect visual qualities of existing landscape in Sheep Rock and Clarno units	891.10
Complete Federal ownership in Painted Hills unit through public/private donation	50.00

Revised 8/8/86

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Revised 8/8/86

LAND PROTECTION PLAN

John Day Fossil Beds National Monument, Oregon

I. INTRODUCTION

In April, 1982, the Department of the Interior issued a policy statement for use of the Federal portion of the Land and Water Conservation Fund which requires that, in carrying out its responsibility for land protection in federally administered areas, each agency using the fund will:

- Identify what land or interests in land need to be in Federal ownership to achieve management unit purposes consistent with public objectives in the unit.
- Use to the maximum extent practical cost-effective alternatives to direct Federal purchase of private lands and, when acquisition is necessary, acquire or retain only the minimum interests necessary to meet management objectives.
- Cooperate with landowners, other Federal agencies, State, and local governments, and the private sector to manage land for public use or protect it for resource conservation.
- Formulate, or revise as necessary, plans for land acquisition and resource use or protection to assure that sociocultural impacts are considered and that the most outstanding areas are adequately managed.

In response to this policy, the National Park Service requires that a land protection plan be prepared for each unit in the National Park System which contains private or other non-Federal land or interest in land within its authorized boundary.

The guiding principle of each land protection plan is to ensure the protection of that unit of the National Park System consistent with the stated purposes for which it was created and administered. Land protection plans are prepared to:

1. Determine what land or interest in land need to be in public ownership and what means of protection other than fee acquisition are available to achieve unit purpose as established by Congress.
2. Inform landowners about National Park Service intentions for buying or protecting land through other means within the unit.

9082A-0220A

3. Help managers identify priorities for making budget requests and allocating available funds to protect land and unit resources.
4. Find opportunities to help protect the unit by cooperating with State or local governments, landowners, and the private sector.

The major issues to be addressed by this plan include (1) the identification of private lands within the monument's boundaries that need to be protected; (2) the minimum interest in those lands that the Park Service must acquire; and (3) the recommended means of acquiring the land or interest in land.

This plan does not constitute an offer to purchase land or interest in land; neither does it diminish the rights of non-Federal landowners. The plan is intended to guide subsequent land-protection activities subject to the availability of funds and other constraints.

Because the plan proposes no Federal action at this time, and because the human environment will not be changed or altered by the plan, no compliance is required with the National Environmental Policy Act.

II. PURPOSE OF THE MONUMENT AND RESOURCES TO BE PROTECTED

A. Significance and Purpose of Monument

The national significance of the monument lies in the geological and paleontological resources of the John Day Basin. Its sedimentary strata, representing four major geological formations of the Columbia River Plateau, span the last 70 million years and five consecutive geologic epochs. These strata contain one of North America's longest continuous records of plant and animal fossils, which traces the evolution of life forms from the subtropical climate of the Eocene Epoch through the subarctic climate of the Ice Age.

Dr. J. D. Merriam, who studied the area intensively as early as 1899, stated, "Although there are other geological sections, particularly in the Western United States, which furnish as remarkable history...there are probably none in which the relations of the various chapters to each other are more evident than they are in the record inscribed on the walls of the John Day canyon."

Another noted paleontologist, R. W. Chaney, has stated, "No region in the world shows more complete sequence of tertiary land populations, both plant and animal, than the John Day Basin."

Contributing to the significance of the monument are scenic, natural, and cultural resources.

In 1967, the Advisory Board on national parks, historic sites, buildings, and monuments, in its report on the National Park Service study of John Day Fossil Beds, determined that "...it is eminently suitable for geological and paleontological exhibit and interpretive purposes as a John Day Fossil Beds National Monument."

The Department of the Interior report to the Congress dated December 10, 1973, stated that "...establishment of the monument is intended to preserve, protect, and interpret the extensive Tertiary fossils found in the geologic formations of these areas."

John Day Fossil Beds National Monument was authorized October 26, 1974, and established October 8, 1975, under the authority of Public Law 93-486, 88 Stat. 1461. (See Appendix for copy of authorizing legislation.)

Based on these cited provisions and the more general provisions of the National Park Service's 1916 Organic Act, the purpose of the monument is:

To identify, interpret, and protect the geologic, paleontological, natural, and cultural resources along the central and upper John Day River and to provide facilities that will promote and assist visitor recreational enjoyment and understanding of the same.

The most important paleontological feature of the John Day area is the presence of great numbers of fossils. Fossil deposits are found in much of eastern Oregon but are usually under an overburden of at least 30 feet. In the area of John Day Fossil Beds National Monument, the overburden has been eroded away. The fossil bearing formation is also highly erodible--after each storm, additional fossils are exposed. The Clarno and John Day beds in this basin are world famous and have international significance, having yielded thousands of petrified bones, fossil leaf imprints, and occasional pieces of petrified wood that were buried and preserved by the volcanic ash. During the approximately 100 years of fossil collecting and research in this area, more than 120 fossil mammals have been identified. They range in size from very small mice to huge rhinoceros and oreodonts.

B. Resource Description

John Day Fossil Beds National Monument contains three units totaling 14,011 acres (Sheep Rock, 8,913 acres; Painted Hills, 3,129 acres; and Clarno, 1,969 acres) and is located in central Oregon's Grant and Wheeler Counties. Portions of each of these units were formerly Oregon state parks. Access is via U. S. Highway 26 from points east and west of the monument, U. S. Highway 395, and State Highway 19 from the north and south. (See map 1.) The three units are widely separated. The Sheep Rock unit, the largest and receiving the most visitor use, is 35 miles from the monument's headquarters, which is located in John Day. The Painted Hills and Clarno units are located 80 miles and 125 miles, respectively, from

John Day. Existing development within the monument is for day use. There are parking areas with spaces for 15-20 vehicles, picnic tables, and pit toilets at Clarno, Painted Hills, and at the Blue Basin and Foree sites within the Sheep Rock unit. There are also short trails at the Blue Basin, Painted Hills and Clarno sites. The Cant Ranch, which is located within the Sheep Rock unit, was acquired by the National Park Service in 1975 and is used as an interpretive facility. An overlook with a parking area and interpretive signs is also located near the Cant Ranch. Monument headquarters is located in the town of John Day. It is the only year-round visitor service facility. The facility provides administrative offices, a reception/information area, interpretive exhibits, storage facilities, and rest rooms.

The John Day River is essentially a free-flowing stream, with the only obstructions present being small diversion dams constructed and operated by local ranchers for irrigation of pasture and limited but highly important feed crops. A portion of the river from the Clarno unit downstream to Tumwater Falls has been designated a scenic waterway through the State Scenic Waterways Act. The John Day River exhibits flow characteristics typical of rivers in semiarid regions. Extreme differences in both seasonal flows and annual yields occur. Flows are usually highest in April and May and then drop rapidly. Severe summer cloudbursts may, however, cause flashflooding.

Cool, relatively damp winters and warm, dry summers with large daily temperature variation characterize the climate.

The soils found within the monument are characteristic of this semiarid region of Oregon. Typically, the soils are well drained, with a high shrink-swell potential.

Steppe and shrub-steppe plant communities are common in Oregon and are the dominant native plant communities found within the monument.

According to current information obtained from the U.S. Fish and Wildlife Service's Endangered Species Program, there are no listed or proposed threatened or endangered species within the monument. However, two "candidate" species of plants have been identified. These include Castilleja xanthotricha (yellow hairy paintbrush) and Chaenactis nevii (John Day chaenactis). The State list of rare, threatened, and endangered plants includes four species found within the monument. These are: Astragalus diaphanus Dougl. (transparent milk vetch), Allium pleianthum Wats. (many-flowered onion), Penstemon eriantherus Pursh var. argillosus M. E. Jones (John Day penstemon), and Pediocactus simpsonii (Engelm.) Britt. & Rose var. robustior Coult. (hedgenog cactus). The monument contains no animal species of concern identified in the State list.

Topography of the John Day River Basin is comprised of steep mountains and narrow valleys. The Sheep Rock unit exhibits the greatest amount of relief in that the elevation gain from the John Day River to the tops of the mountains on either side of the river is between 1,000 and 1,700 feet. Terrain in the Clarno and Painted Hills units has been weathered

extensively, resulting in the rounding of most hilltops. The exception here is the Palisades in the Clarno unit, which is a small area that is steeply sloped.

The most prominent wildlife species within the monument is mule deer. There is the usual rodent population and associated predators, such as coyotes, in this semiarid grassland. Bird life is abundant in the region around the monument.

The specific resources to be protected on private lands include the highly significant fossil-bearing formations and the existing scenic landscapes.

C. Legislative Constraints

Constraints written into the Act of October 26, 1974 (P.L. 93-486, 88 Stat. 146), which authorized John Day Fossil Beds National Monument, and the act of November 10, 1978 (P.L. 95-625, 92 Stat. 3467), that amended portions of the enabling legislation are as follows:

Lands: Public Law 95-625 revised the boundaries by adding 1,411 acres to the monument and deleting 1,620 acres from the monument as established by Public Law 93-486. Some \$3,500,000 is authorized for acquisition of the new acreage. NOTE: Reversionary provisions in deeds transmitting state-owned lands within the boundaries of the monument to the United States stipulate that if any of those lands should cease to be used for park purposes, ownership would then revert to the state of Oregon.

Exclusion of Camp Hancock: Map No. 177-30,000-B, referenced in the enabling act, identifies a 10-acre lease that the Oregon Museum of Science and Industry holds from the Bureau of Land Management. This leased land is an exclusion from the Clarno unit of the monument and is utilized primarily as an overnight outdoor classroom and research center for students of all ages. As such, the presence of this installation and the personnel using it have some influences upon adjacent resources and visitors. In 1985, title was transferred to the Oregon Museum of Science and Industry.

See the Appendix for copies of the monument's authorizing legislation and boundary revision legislation.

D. Resource Management and Visitor Use Objectives

Although the General Management Plan (approved July, 1979) defines several management zones/subzones for the monument, the following are the ones that contain private lands and hence are the focus of this plan.

Outstanding Natural Feature Subzone of the Natural Zone

This subzone consists of lands with natural features whose intrinsic value or uniqueness is preserved for public appreciation and interpretation. Included on private lands within this subzone are some of the most significant paleontological and scenic geologic resources of the monument. These resources include the mammal quarry, fossil trees, and nut beds of the Clarno unit and the Mascall formation of the Sheep Rock unit.

Management Objectives Within the Natural Zone

Lands in this zone are managed for the conservation of natural resources and the continuation of natural processes. Other uses are allowed only if they do not adversely affect these resources and processes.

Paleontological features and the formations in which they occur will be managed so as to prevent unauthorized disturbance. Scientific research conducted by qualified persons will be encouraged to expose representative fossils. The establishment of collections should be properly housed in locations where they will be available to paleontologists for scientific study. All research will be based upon a research proposal approved by the National Park Service. An Antiquities Act permit must accompany all non-National Park Service sponsored paleontological collecting. Methods of interpreting fossil remains and paleontological techniques at excavation sites and in display areas will also be developed. Access to paleontological sites should be provided only in areas that can be reached without adversely affecting buried or exposed fossils and that can be sufficiently controlled to prevent unauthorized access.

Park Development Zone

The park development zone includes lands used for the provision and maintenance of park developments which serve the needs of park visitors and management. The zone includes areas where park development and/or intensive use may substantially alter the natural environment. Every effort shall be made to prevent compromising historically significant resources. Developed areas include the Cant Ranch complex, existing and proposed roads, trails, waysides, picnic areas, and overlooks.

Management Objectives Within the Park Development Zone

The scene should be a pleasing mixture of natural and pastoral landscapes. Highways and roads should be the minimum needed to provide thoroughfare and limited access to destinations with natural and scenic values. Alteration of existing roads should be undertaken only to enhance the scene and provide legitimate accessibility. Trails should provide for specific, complementary purposes or be obliterated. Off-road vehicle use should not be permitted except on lands cultivated for agricultural purposes. Restrictive measures for preventing unauthorized off-road use should not detract from the scene.

Visitor Use Objectives

Visitor use objectives are dependent on preserving the paleontological resources and scenic qualities of the monument as well as providing for visitor safety and adequate interpretation of the natural and cultural scene.

These objectives would be carried out within the above-mentioned management zones.

III. LAND OWNERSHIP AND USES

A. Description

Nearly a quarter of the land within the monument is in non-Federal ownership (see Appendix Table 1). Of that land, 95 percent is privately owned. The remainder is comprised of State land in the Painted Hills unit and highway rights-of-way that are entirely within the Sheep Rock unit. That unit also contains about 68 percent of the private lands; the Clarno unit has nearly 32 percent; the balance of less than one percent is in the Painted Hills unit. Cattle and sheep grazing and crop production are the predominant uses of private lands. Three residences are on private lands within the monument.

B. Compatibility of Land Uses

In general, all existing land uses are compatible with management objectives of the monument. The only exceptions to this are when the presence of (1) cattle in an area needed for public access represents a potential threat to visitor safety and (2) unsightly structures detract from the scenic qualities of the landscape.

Aside from these two exceptions, the current agricultural uses of grazing and crop production do not constitute threats to the paleontological and scenic resources of the monument. Rather, these uses enhance the visitors' appreciation of the rural landscape and their understanding of ranching as a secondary theme of the monument.

Any land use which would adversely affect the fossil resources or detract from the existing natural/agricultural landscape would be incompatible. Examples could include mining or other large-scale earthmoving projects, the placement of pipelines or high voltage transmission lines, and commercial, industrial, and residential development.

C. External Conditions Affecting Land Protection

The National Park Service cannot acquire interests in lands outside the monument, yet the use of lands adjacent to it and along its highway approaches can contribute to or detract from a visitor's appreciation of the monument's landscape. The maintenance of the existing landscape in these areas is desirable.

The "first line of defense" in perpetuating the present landscape should be the counties' land use plans, since local governments have authority to provide protection for these lands. It is important, therefore, for the monument staff to work with the local planning commissions to secure whatever protection they can supply.

In addition, monument staff should attempt to identify donors and recipients of sufficient interests in visually important lands outside the monument to prevent incompatible developments there. One such area includes the lands east of the Bridge Creek county road as it approaches the Painted Hills unit.

D. Past Acquisition Activities and Current Protection Program

Number of acres acquired: 5,759.51

Number of improvements acquired: Two (O'Rourke and Cant Estate)

Number and types of interest retained by sellers: 1-7 year rights for ranching purposes, expired December 31, 1982.

Number of acres and tracts of land and interest acquired by Federal purchase, donation, or exchange: See Appendix Table 3.

Present acquisition ceiling, including dates and amount of previous ceilings:

\$ 400,000	(October 26, 1974)
3,500,000	(November 10, 1978)
<u>\$3,900,000</u>	(present ceiling)

Amount of money in the authorized ceiling expended as of July 1, 1983: \$687,622.

Amount of money appropriated and available for expenditure as of July 1, 1983: \$158,375.

Total appropriations as of July 1, 1983: \$845,997.

Number of properties acquired through condemnation, declaration of taking, and number of properties presently in condemnation: None.

E. Sociocultural Characteristics

There are 13 tracts of private land in the monument. (See Map 2 and Appendix Table 2.) Nine tracts are in the Sheep Rock unit, three in Clarno, and one in Painted Hills.

The 13 tracts are under a total of nine ownerships. Six of these owners operate large ranches; their real property within the monument represents a small portion of their total land holdings, and they reside outside the monument. Of these six owners, two are agri-business corporations, and the remaining four are individuals who own large ranches that have been worked as family enterprises for many decades. Of the remaining three owners, two own and reside on relatively small holdings that are entirely within the monument. The major use of these lands is agricultural production. The remaining private owner purchased a tract for investment purposes; this contains a rental homestead and lands rented for grazing and crop production.

As mentioned previously, the only other non-Federal land in the monument is State land in the Painted Hills unit and State and County highway rights-of-way in the Sheep Rock unit.

IV. PROTECTION ALTERNATIVES

A. Existing Land Protection Laws and Authorities

Federal:

The Antiquities Act of 1906 provides legislative reinforcement for the protection of paleontological resources on Federal lands.

P.L. 94-429 regulates mining activity within areas of the National Park System.

Executive Order 11593 (Protection and Enhancement of the Cultural Environment, May 13, 1971) and Section 110, P.L. 96-515 (National Historic Preservation Act, as amended, December 12, 1980). These authorities establish affirmative responsibilities for Federal agencies in the preservation of cultural resources.

Agencies are to identify, consider, preserve, and positively use historic properties under these authorities in order to achieve the basic purposes of the Act, which are:

1. Use measures, including financial and technical assistance, to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations;
2. Provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations;
3. Administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations;

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4. Contribute to the preservation of non-federally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private means;
5. Encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment; and
6. Assist State and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

Section 106 of the Historic Preservation Act of 1966. Section 106 requires Federal agencies to take into account the effects of Federal or federally assisted undertakings on National Register eligible or listed properties and to give the Advisory Council on Historic Preservation an opportunity to comment on such undertakings. Documentation is being submitted for listing the Cant Ranch in the National Register in 1984.

Section 2124 of P.L. 94-455, the Tax Reform Act of 1976; Section 701(f) of P.L. 95-600, the Revenue Act, 1978; P.L. 97-34, the Economic Recovery Tax Act, 1981. These laws contain a variety of incentives to encourage capital investment in historic buildings and to spur revitalization of historic neighborhoods. These preservation tax incentives apply only to commercial or income-producing structures. Rehabilitation must be done according to the Secretary of the Interior's historic preservation standards. The tax incentives are available for any project which the Secretary designates as a certified rehabilitation of a certified historic structure.

Archeological and Historic Preservation Act of 1974; Public Law 93-291; 16 U.S.C. 460. This act calls for the preservation of historic and archeological materials and data that otherwise would be lost as a result of Federal construction or federally licensed or aided activities. Data recovery or in situ preservation is available to the Secretary.

Archeological Resources Protection Act of 1979; Public Law 96-95; 16 USC 470aa. This act further protects historic, prehistoric, and archeological properties on Federal and Indian lands by providing criminal and civil penalties against unauthorized use and destruction of those properties.

State and Local:

State law requires Oregon cities and counties to develop and implement land use plans that are consistent with statewide goals and guidelines. Grant County has complied with the State Land Conservation and Development Commission (LCDC) enforcement order by submitting its revised plan, but the plan has not been acknowledged by the State. A revision probably will be ready for review by the LCDC in the fall of 1986. The Grant County plan includes the monument within the Significant Resource Land Combining Zone. Most of the land adjacent to the monument is zoned EFU (Exclusive Farm Use)

with minimum parcel sizes varying between 20 and 160 acres. Wheeler County's plan was acknowledged by the State on June 14, 1984.

B. Alternative Methods of Land Protection

The following alternatives are ones that, if implemented, would offer some degree of protection to the paleontological/scenic resources located on non-Federal land. Each alternative is analyzed with respect to its application, sociocultural impacts and its potential effectiveness in protecting key land resources. The alternatives considered include:

1. Cooperative agreements.
2. Zoning.
3. Less-than-fee acquisitions (easements).
4. Fee simple acquisition.
5. Combinations of the above.

Alternative 1: Cooperative Agreements. These agreements are legal instruments defining administrative arrangements between two or more parties.

Application: Agreements can provide for exchange of services or other benefits; they are flexible and may include provision for access, facility development and maintenance, and interpretive services. As an example, the National Park Service has agreements with the Forest Service and the Bureau of Land Management to provide fire protection at the monument.

Sociocultural impacts: Specific impacts would be defined by the terms of the agreement. Since all parties would have to agree to its terms, it is unlikely there would be any negative or adverse impacts. Because there would be no transfer of land ownership, private land would remain on local tax rolls.

Effectiveness: Agreements are likely to be most effective for land owned by entities other than individuals. These include State or local governments, private nonprofit organizations, Federal agencies, and corporations. Agreements are more likely to be workable with these groups than with individuals because organizations often have the necessary resources (staff, equipment, money) to (1) make an agreement worth considering in the first place and (2) carry out the terms of the agreement over a long period of time. Agreements can be useful with individuals who have sufficient resources and interest in supporting park objectives in those areas where such agreements are authorized by law. Because most of the monument's private land is owned by individuals, the use of agreements is limited in its usefulness as a land protection alternative.

Alternative 2: Zoning. Zoning is based on the power of State and local governments to protect public health, safety, and welfare by regulating land use.

Application: Within units of the National Park System, local zoning regulations can be used to limit the density, type, location, and the character of private development. Zoning should be considered when:

- local government has a zoning ordinance in place or appears to be willing to adopt one.
- there is evidence of State and local support for the protection of park objectives.
- some reasonable private use of the land is consistent with park purposes.
- private land use needs to be controlled and managed rather than prohibited to meet park objectives.

Sociocultural impacts: With the adoption (generally through broad-based public participation) and enforcement of zoning regulations, individual landowners may be prevented from using their land in some manner, but this restriction on individual freedom is imposed for the benefit of the community as a whole. The impact can be regarded as beneficial to the public at large.

Effectiveness: Local zoning has been criticized as a long-term protection tool because of the potential for changes in local governing bodies, political pressures on decisions, and problems in enforcement of regulations. Oregon has perhaps the most progressive and comprehensive planning approach in the country with its legal requirement that local governments produce land use plans consistent with statewide goals. Despite this framework for land use planning, the potential exists for local zoning changes and lack of enforcement. The success of the program depends on the local government that administers it. Zoning, while useful, is inadequate to provide a full level of permanent protection for the scenically/scientifically important lands of the monument.

Alternative 3: Easement Acquisition. Easements may be used to convey a variety of property rights without conveying actual ownership of the property. Easements may be positive, such as giving a right of access, or they may be negative, such as restricting specific activities on the land. See Appendix Attachment 1 for a sample easement.

Application: Easements are most likely to be useful where:

- some, but not all, existing or potential private uses are compatible with park purposes.

--current owners desire to continue current uses of use and occupancy of the land under conditions conveyed to the National Park Service.

--scenic values and protection or access by the public or the Park Service is needed only over a portion of the land. Easements should be acquired in various areas of the monument to ensure the preservation of scenic values and to maintain existing land uses. In rare instances, easements might be acquired to provide for public access.

Sociocultural impacts: Individual and collective impacts will vary depending on the rights acquired. Overall, the impacts would be judged beneficial inasmuch as the acquired easements would contribute to the fulfillment of the monument's objectives as defined by Congress. Land would remain on the local tax rolls. The potential exists for a lowered tax base because, in theory, the land encumbered with an easement would not be assessed at full value. However, in the case of most, if not all, of the potential easements identified in this plan, the land is already taxed on the basis of agricultural use. Since a scenic easement would probably not change the existing use of the land, the acquisition of a scenic easement on agricultural land would have little, if any, effect on the tax base.

Effectiveness: Easements are extremely flexible and can be drafted to fit the specific characteristics of the land as well as the concerns of the owner. They are very effective in controlling key elements of scenic landscapes or meeting specific access needs while still allowing for the continuation of traditional uses. Easements applied to private lands within the monument boundaries will depend upon the degree of protection or access desired, and upon the willingness of the landowner to negotiate for the conveyance of such interests.

Alternative 4: Fee Acquisition. When all of the interests in land are acquired, it is owned in fee simple.

Application: Fee acquisition may be recommended when other methods of protection have been found to be inadequate, inefficient, or ineffective to meet management needs. Fee acquisition is most often appropriate where the land:

--is needed for development of park facilities or heavy public use.

--must be maintained in pristine natural condition which precludes reasonable private use.

--is owned by individuals who do not wish to sell less-than-fee interests.

--cannot be protected in accord with park purposes by other methods, or alternatives would not be cost effective.

Fee acquisition is appropriate in the monument to preserve those extremely significant fossil resources now in private ownership and to provide areas to be developed for the public's appreciation and understanding of the natural history of the John Day Fossil Beds.

Sociocultural impacts: This alternative has great potential for significant change in the life of an individual or community. Unless tenancy is granted, residential relocations could occur. Unless sellback is involved, land is removed from local tax rolls. Unless sellback and leaseback provisions are used, former land uses may be prohibited; certainly some restrictions in land use will occur.

From a positive standpoint, fee simple acquisition is often justified for the greater public good. Fair compensation is paid to landowners, and payment in lieu of taxes may be made for a short term to local governments. Park visitor demands for local services adjacent to the park could help offset the income lost from once-private lands now in public ownership. Nationally significant natural/cultural resources are in the public trust preserved for all citizens in perpetuity.

Effectiveness: Fee-simple acquisition is the most effective and secure land protection alternative. Generally, it is also the most expensive form of land protection.

Alternative 5: Combination of the previously discussed alternatives.
The monument contains an array of natural and cultural resources with varying degrees of significance. Some of the resources are so important to the fossil beds story that they must be owned in fee by the Federal government. Much of the private land constitutes valuable scenic resources within which traditional ranching activities occur. The landscape and its present use should be preserved, but that may be accomplished by means other than fee acquisition. The attitudes, wishes, and objectives of private landowners within the monument also vary regarding National Park Service management of the monument. Given this mix of physical, cultural, and socioeconomic resources and values, it is understandable that no single land protection device is best for all non-Federal land in the monument. Land protection will require a combination of some of the alternatives discussed previously.

Application: The major consideration in selecting appropriate land protection methods is the need to comply with the intent of Congress in establishing the monument "to preserve, protect, and interpret" the fossils of the area. Are significant fossils located on the tract under consideration? Do these resources need public protection? Is public access needed for interpretation? Affirmative answers to these questions probably indicate a need for fee acquisition. Secondary, but very important, concerns are related to preserving the scenic qualities of the monument and the adjacent landscapes as seen from the monument and highway approaches to it. Less-than-fee acquisition, support of suitable zoning requirements, and efforts to match donors and recipients of land interests for visually critical lands outside the monument would be appropriate choices to maintain the beauty of the area. In all cases, the recommended land protection approach will represent the minimum public control needed to implement the authorizing legislation and to provide an attractive setting for the enjoyment of park visitors.

Sociocultural impacts: If the actions recommended in the following section are successfully carried out, it is expected that there will be minimal impacts on the private landowners. The goal of the land protection program at John Day Fossil Beds is to protect essential paleontological resources and provide for public access and understanding of those resources while maintaining most of the private uses of the land.

Effectiveness: The recommended plan, if implemented, will be effective in complying with congressional intent for the preservation of the fossil resource, improving and preserving the scenic qualities of the landscape, and minimizing the degree of public acquisition of private real property rights.

V. RECOMMENDATIONS

The recommended land protection approaches for each tract of private land are listed below in descending order of priority for each unit of the monument. Acreages to be protected, minimum interest needed for protection, justification, and proposed method of acquisition are also shown.

Fee and less-than-fee acquisition are recommended due to the significance of the fossil resource, the need to provide for public access, and the need to preserve the scenic qualities of the landscape. Additional cooperative agreements are not deemed suitable or practicable for the level of protection needed. While local zoning can be of considerable assistance, complete reliance on it as a land protection device is not recommended, because it cannot ensure in perpetuity the degree of protection needed within an established area of national significance. National Park Service staff should, however, continue to support zoning measures that are compatible with NPS management objectives for lands within, and adjacent to, the monument. Should State and County land use regulations fail to provide sufficient protection to non-Federal monument lands, appropriate regulations will be proposed by the National Park Service.

The rationale for fee acquisition is dependent on the outstanding value of the fossil resource and the need to provide for public access. The acquisition proposals related to fossil values reflect presently known conditions. If later paleontological surveys reveal additional fossil resources of major importance within the monument, this plan may have to be revised to provide for the acquisition of sufficient interests to ensure their protection. Less-than-fee acquisition is justified to preserve the scenic integrity of the landscape; it will serve to prevent visual intrusions and to maintain existing land uses.

While the actual means of acquisition of land or interest in land will not be known until negotiations are initiated, land exchange is the recommended means because that approach keeps land available for production and on the tax rolls. Past alterations of the monument's

boundaries to exclude non-essential public lands have resulted in the availability of 720 acres of Federal land that can be used as "trading stock" for land exchanges. In addition, the National Park Service is working with the Bureau of Land Management to make selected public domain lands in the area available to exchange for private interests within the monument. A donation of land in the Painted Hills unit is anticipated; a donation also will be sought to acquire a small tract in the Sheep Rock unit. Should these recommended approaches fail, others will be considered. Purchase with appropriated or donated funds, bargain sales, and leaseback/sellback are other possibilities. Condemnation is not recommended, although it could be used in emergencies to prevent land uses that would seriously compromise the integrity of the monument. At this time, no adverse land uses are anticipated.

SHEEP ROCK UNIT

<u>Prior-ity</u>	<u>Tract*</u>	<u>Acres</u>	<u>Minimum Interest Needed</u>	<u>Justification</u>	<u>Recommended Method of Acquisition</u>
1	Mascall 101-37	10.0	Fee	Public access and develop. of overlook.	Exchange
2	Mascall. 101-36 & 38 101-06 101-34 & 35	225.81) 234.49) 757.76)	Fossil rights, scenic easement	(Provide for protec- (tion and scientific (study of fossil (resources; preserve (scenic landscape.	Exchange Exchange Exchange
3	Immenschuch 101-07	159.0	Scenic easement	Preserve sce- nic landscape.	Exchange
4	Humphreys 101-19	293.24	Scenic easement	Preserve sce- nic landscape.	Exchange
5	Southworth 101-33	412.14	Scenic easement	Preserve sce- nic landscape.	Exchange
-	McGraw 101-18	0.81	None	No interest is needed because the small size of the tract precludes intensive development and present use is acceptable.	None

*Revised tract maps in large format are on file in the National Park Service's Washington, D.C. office and Pacific Northwest Regional Office; page-size revised maps not available.

Tract 101-11 is now State land and part of the highway rights-of-way.

Revised 8/8/86

CLARNO UNIT

<u>Priority</u>	<u>Tract*</u>	<u>Acres</u>	<u>Minimum Interest Needed</u>	<u>Justification</u>	<u>Recommended Method of Acquisition</u>
1	Maurer 104-04	960.0	Fee	The fossil resources found here (the nut beds and mammal quarry) are among the most significant of the monument. In their present unprotected state, they are endangered from unauthorized collecting. Fee interest is needed to carry out the congressional mandate of preserving, protecting, and interpreting these outstanding fossil deposits. Public access will be developed here to enhance the visitors' appreciation and understanding of these highly important fossil deposits.	Exchange
2	Bowerman 104-07	20.0	Scenic Easement**	Acquisition of development rights on this tract will improve and maintain the scenic quality of an area seen by many visitors at the eastern approach to the Clarno unit. This will eliminate visual intrusions and prevent future incompatible developments.	Exchange

*See Map 2 for tract location.

**Although an easement is the minimum interest needed to improve and maintain the scenic quality of this tract, fee interest may be acquired if it is more cost-effective to do so.

<u>Priority</u>	<u>Tract*</u>	<u>Acres</u>	<u>Minimum Interest Needed</u>	<u>Justification</u>	<u>Recommended Method of Acquisition</u>
3	Agri-Empire 104-01	9.25	Fee	This tract separates the park from an adjacent highway in an area that offers the easiest access to the western portion of the Clarno unit. Improved public access is desirable because it increases the visitors' opportunities for experiencing the monument's scenic diversity. Acquisition in fee would allow for unimpeded public access to the unit's western park lands and also would prevent any incompatible developments that might be proposed for this area in the future.	Exchange

*See Map 2 for tract location.

PAINTED HILLS UNIT

<u>Prior- ity</u>	<u>Tract*</u>	<u>Acres</u>	<u>Minimum Interest Needed</u>	<u>Justification</u>	<u>Recommended Method of Acquisition</u>
1	Brooks Re- sources Corp 103-09	10.0	Fee	Proposed donation by owner will help consolidate the unit's lands completely under National Park Service management.	Donation
2	State 103-02	40.0	Fee	Proposed donation will help consolidate the unit's lands completely under National Park Service management. This tract was apparently omitted inadvertently from the original State donation.	Donation

*See Map 2 for tract location.

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

Tract Acquisition Priorities

PRIORITY ONE

<u>Tract</u>	<u>Owners</u>	<u>Acres</u>
101-36, 37, & 38	Mascall	235.81
101-06	Mascall	234.49
101-07	Immenschuch	159.00
101-34, 35	Mascall	757.76
104-04	Maurer	960.00

PRIORITY TWO

101-19	Humphreys	293.24
101-33	Southworth	412.14
104-01	Agri-Empire	9.25
104-07	Bowerman	20.00
103-09	Brooks Resources Corp.	10.00

PRIORITY THREE

101-18	McGraw	0.81
103-02	State	40.00

Added 8/8/86

APPENDIX



Public Law 93-486
93rd Congress, H. R. 13157
October 26, 1974

An Act

88 STAT. 1461

To provide for the establishment of the Clara Barton National Historic Site, Maryland; John Day Fossil Beds National Monument, Oregon; Knife River Indian Villages National Historic Site, North Dakota; Springfield Armory National Historic Site, Massachusetts; Tuskegee Institute National Historic Site, Alabama; Martin Van Buren National Historic Site, New York; and Sewall-Beimont House National Historic Site, Washington, District of Columbia; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Historic sites
and national
monument.
Establishment.

TITLE I

SEC. 101. (a) Unless otherwise provided hereafter, the Secretary of the Interior (hereinafter referred to as the "Secretary") is authorized to acquire by purchase with donated or appropriated funds, donation, exchange, or by transfer from another Federal agency such lands and interests in lands as hereafter provided for establishment as units of the national park system, as follows:

Land acquisition.

(1) for establishment as the Clara Barton National Historic Site, Maryland, those lands depicted on the map entitled "Boundary Map, Clara Barton National Historic Site, Maryland", numbered NHS-CLBA 90,001 and dated February 1974, which shall include the land and improvements occupied by Clara Barton, founder of the American Red Cross located at 5801 Oxford Road, Glen Echo, Maryland: *Provided*, That the above-mentioned land and improvements may be acquired only by donation: *And provided further*, That the donation of any privately owned lands within the historic site may not be accepted unless and until the property is vacant;

Clara Barton
National His-
toric Site,
Md.
16 USC 461
note.

(2) for establishment as the John Day Fossil Beds National Monument, Oregon, those lands depicted on the map entitled "Boundary Map, John Day Fossil Beds National Monument", numbered NM-JDFB-20,014-A and dated June 1971: *Provided*, That the national monument shall not be established unless and until the State of Oregon donates or agrees to donate the Thomas Condon-John Day Fossil Beds, Clarno, and Painted Hills State Parks: *Provided further*, That the Secretary shall not acquire a fee title interest to more than one thousand acres of privately owned lands except by donation or exchange: *Provided further*, That the Secretary shall designate the principal visitor center as the "Thomas Condon Visitor Center";

John Day Fossil
Beds National
Monument, Oreg.
16 USC 431
note.

(3) for establishment as the Knife River Indian Villages National Historic Site, North Dakota, those lands depicted on the map entitled "Boundary Map, Knife River Indian Villages National Historic Site, North Dakota", numbered 468-20,012 and dated July 1970;

Thomas Condon
Visitor Center,
designation.
Knife River
Indian Villages
National His-
toric Site,
N. Dak.

(4) for establishment as the Springfield Armory National Historic Site, Massachusetts, those lands depicted on the map entitled "Boundary Map, Springfield Armory National Historic Site, Massachusetts", numbered NHS-SPAR-91,003 and dated January 1974, the oldest manufacturing arsenal in the United States: *Provided*, That the historic site shall not be established unless an agreement is executed which will assure the historical integrity of the site and until such lands as are needed for the historic site are donated for this purpose;

16 USC 461
note.
Springfield
Armory Nation-
al Historic
Site, Mass.
16 USC 461
note.

88 STAT. 1462

Tuskegee Institute National Historic Site, Ala.
16 USC 461
note.

Martin Van Buren National Historic Site, N. Y.
16 USC 461
note.

Personal property acquisition.

Notice to congressional committees.

Publication in Federal Register.

Administration.

16 USC 1.
16 USC 461.

Tuskegee Institute National Historic Site, road construction.

Appropriation.

(5) for establishment as the Tuskegee Institute National Historic Site, Alabama, those lands depicted on the map entitled "Boundary Map, Tuskegee Institute National Historic Site, Alabama", numbered NHS-TI 20,000-C and dated September 1973, which shall include the home of Booker T. Washington, the Carver Museum, and an antebellum property adjacent to the campus of Tuskegee Institute, known as Grey Columns; and

(6) for establishment as the Martin Van Buren National Historic Site, New York, those lands depicted on the map entitled "Boundary Map, Martin Van Buren National Historic Site, New York", numbered NHS-MAVA-91,001 and dated January 1974, which shall include the home of Martin Van Buren, eighth President of the United States.

(b) The Secretary may also acquire personal property associated with the areas referred to in subsection (a) of this section. Lands and interests therein owned by a State or any political subdivision thereof which are acquired for the purposes of subsection (a) of this section may be acquired only by donation.

Sec. 102. (a) When the Secretary determines that an adequate interest in lands has been acquired to constitute an administrable unit for each of the areas described in section 1 of this Act, he may, after notifying the Committees on Interior and Insular Affairs of the United States Congress of his intention to do so at least fourteen days in advance, declare the establishment of such unit by publication of a notice to that effect in the Federal Register. Such notice shall contain a map or other description of the boundaries of the unit, together with an explanation of the interests acquired and the costs incident thereto. The Secretary may refrain from acquiring property for establishment of any unit authorized by this Act where, in his judgment, satisfactory agreements or donations with respect to properties which are needed for the protection and administration of a particular unit have not been consummated with the owners of such properties.

(b) Pending the establishment of each unit and, thereafter, the Secretary shall administer the property acquired pursuant to this Act in accordance with the provisions of the Act of August 25, 1918 (39 Stat. 535), as amended and supplemented, and, to the extent applicable, the provisions of the Act of August 21, 1933 (49 Stat. 666), as amended.

Sec. 103. Notwithstanding any other provision of law, the Secretary is authorized to construct roads on real property in non-Federal ownership within the boundaries of the Tuskegee Institute National Historic Site. Any roads so constructed shall be controlled and maintained by the owners of the real property.

Sec. 104. There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act, not to exceed, however, the following:

- (a) Clara Barton National Historic Site, \$812,000 for acquisition of lands and interests in lands and for development;
- (b) John Day Fossil Beds National Monument, \$400,000 for the acquisition of lands and interests in lands and \$4,435,200 for development;
- (c) Knife River Indian Villages National Historic Site, \$800,000 for the acquisition of lands and interests in lands and \$2,258,000 for development;
- (d) Springfield Armory National Historic Site, \$5,300,000 for development;

October 26, 1974

- 3 -

Pub. Law 93-486

88 STAT. 1463

(e) Tuskegee Institute National Historic Site, \$185,000 for the acquisition of lands and interests in lands and \$2,722,000 for development; and

(f) Martin Van Buren National Historic Site, \$213,000 for acquisition of lands and interests in lands and \$2,737,000 for development.

TITLE II

Sec. 201. In order to preserve for the benefit and inspiration of the people of the United States as a national historic site, the Sewall-
Belmont House within the District of Columbia, the Secretary of the Interior is authorized to enter into a cooperative agreement to assist in the preservation and interpretation of such house. Sewall-Belmont House National Historic Site, D. C.

Sec. 202. The property subject to cooperative agreement pursuant to section 101 of this Act is hereby designated as the "Sewall-Belmont House National Historic Site". 16 USC 461 note.

Sec. 203. The cooperative agreement shall contain, but shall not be limited to, provisions that the Secretary, through the National Park Service, shall have right of access at all reasonable times to all public portions of the property covered by such agreement for the purpose of conducting visitors through such property and interpreting it to the public, that no changes or alterations shall be made in such property except by mutual agreement between the Secretary and the other parties to such agreement. The agreement may contain specific provisions which outline in detail the extent of the participation by the Secretary in the restoration, preservation, and maintenance of the historic site. Cooperative agreement.

Sec. 204. There are hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of this Act, but not to exceed \$500,000. Appropriation.

Approved October 26, 1974.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-1285 (Comm. on Interior and Insular Affairs)
SENATE REPORT No. 93-1233 (Comm. on Interior and Insular Affairs)
CONGRESSIONAL RECORD, Vol. 120 (1974):

Aug. 19, considered and passed House.
Oct. 8, considered and passed Senate, amended.
Oct. 16, House concurred in Senate amendments.

County, Pennsylvania", numbered 448-40,001B, and dated April 1978: \$166,000.

(6) Fort Caroline National Memorial, Florida: To add approximately ten acres as generally depicted on the map entitled "Boundary Map, Fort Caroline National Memorial, Florida", numbered 5310/80,000-A, and dated April 1978: \$170,000.

(7) George Washington Birthplace National Monument, Virginia: To add approximately eighty-two and twenty-five one-hundredths acres as generally depicted on the map entitled "Boundary Map, George Washington Birthplace National Memorial, Virginia", numbered 332-30,000-B and dated September 1978: \$450,000.

(8) Great Sand Dunes National Monument, Colorado: To add approximately one thousand one hundred and nine acres as generally depicted on the map entitled "Boundary Map, Great Sand Dunes National Monument, Colorado", numbered 140-80,001-A, and dated November 1974: \$166,000.

(9) Gulf Islands National Seashore, Mississippi-Florida: To add approximately six hundred acres as generally depicted on the map entitled "Boundary Map, Gulf Islands National Seashore, Mississippi-Florida", numbered 20,006, and dated April 1978: \$300,000.

(10) Hawaii Volcanoes National Park, Hawaii: To add approximately two hundred sixty-nine acres as generally depicted on the map entitled "Boundary Map, Hawaii Volcanoes National Park, Hawaii", numbered 80,000, and dated August 1975: \$562,000.

(11) John Day Fossil Beds National Monument, Oregon: To add approximately one thousand four hundred and eleven acres, and to delete approximately one thousand six hundred and twenty acres as generally depicted on the map entitled "Boundary Map, John Day Fossil Beds National Monument, Oregon", numbered 177-30,000-B, and dated May 1978: \$3,500,000. The Act of October 26, 1974 (88 Stat. 1461), which designates the John Day Fossil Beds National Monument is amended by deleting the second proviso of section 101(a)(2). Furthermore, notwithstanding any other provision of law to the contrary, the Secretary may, if he determines that to do so will not have a substantial adverse effect on the preservation of the fossil and other resources within the remainder of the monument, convey approximately sixty acres acquired by the United States for purposes of the monument in exchange for non-Federal lands within the boundaries of the monument, and, effective upon such conveyance, the boundaries of the monument are hereby revised to exclude the lands conveyed.

(12) Monocacy National Battlefield, Maryland: To add approximately five hundred and eighty-seven acres as generally depicted on the map entitled, "Boundary Map, Monocacy National Battlefield", numbered 894-40,001, and dated May 1978: \$3,500,000.

(13) Montezuma Castle National Monument, Arizona: To add approximately thirteen acres, and to delete approximately five acres as generally depicted on the map entitled "Montezuma Castle National Monument, Arizona", numbered 20,006, and dated April 1978.

(14) Oregon Caves National Monument, Oregon: To add approximately eight acres as generally depicted on the map entitled "Oregon Cave, Oregon", numbered 20,000, and dated April 1978: \$107,000.

Land conveyance.

Appendix
Table 1

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT, OREGON

Current Acreage by Unit, Ownership (as of July 1, 1983)

<u>Unit</u>	<u>-----Federal-----</u>			<u>-----Non-Federal-----</u>			<u>Grand Total</u>
	<u>Fee</u>	<u>Less- Than- Fee</u>	<u>Total</u>	<u>State & County</u>	<u>Private</u>	<u>Total</u>	
Sheep Rock	6,640.28	40.00	6,680.28	139.00	2,093.59	2,232.59	8,912.87
Clarno	980.00	---	980.00	----	989.25	989.25	1,969.25
Painted Hills	<u>2,878.80</u>	<u>200.20</u>	<u>3,079.00</u>	<u>40.00</u>	<u>10.00</u>	<u>50.00</u>	<u>3,129.00</u>
TOTAL	10,499.08	240.20	10,739.28	179.00	3,092.84	3,271.84	14,011.12

Appendix
Table 2

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

Current Non-Federal Land Ownership (as of July 1, 1983)

<u>Unit</u>	<u>Tract</u>	<u>Owner</u>	<u>Acres</u>
Sheep Rock	101-36, 37, & 38	Mascall	235.81
	101-05	County	2.49*
	101-06	Mascall	234.49
	101-07	Immenschuch	159.00
	101-34 & 35	Mascall	757.76
	101-11	State	0.34*
	101-18	McGraw	0.81
	101-19	Humphreys	293.24
	101-26	State	119.17*
	101-28	State	14.38*
	101-33	Southworth	412.14
	102-04	State	0.91*
	102-05	State	2.05*

*Highway rights-of-way (no acquisition)

Clarno	104-01	Agri-Empire	9.25
	104-04	Maurer	960.00
	104-07	Bowerman	20.00
Painted Hills	103-02	State	40.00
	103-09	Brooks Resources Corp.	10.00

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT, OREGON

Federal Land Acquisition, by Method, Tract, Size, Estate
(As of July 1, 1983)

<u>(a)</u> <u>Purchase</u>			<u>(b)</u> <u>Donation</u>			<u>(c)</u> <u>Exchange</u>		
<u>Tr. No.</u>	<u>Acres</u>	<u>Estate</u>	<u>Tr. No.</u>	<u>Acres</u>	<u>Estate</u>	<u>Tr. No.</u>	<u>Acres.</u>	<u>Estate</u>
101-32	54.94	Fee	101-04	1.70	Fee	103-04	40.93	Fee
101-29	0.00	Easement	101-10	623.20	Fee	103-05	19.67	Fee
101-30	0.00	Easement	101-15	3.14	Fee	103-06	23.00	Fee
101-14	849.44	Fee	101-20	85.95	Fee	<u>103-07</u>	<u>200.20</u>	Easement
<u>102-03</u>	<u>673.77</u>	Fee	101-21	40.00	Fee	4	283.80	
5	1,578.15		101-23	1.58	Fee			
			101-24	20.00	Fee			
			101-27	159.86	Fee			
			102-02	66.93	Fee			
			103-01	2,833.20	Fee			
			104-05	60.00	Fee			
			<u>101-12</u>	<u>40.00</u>	Easement			
			12	3,935.56				

(d)
Disposal/Exchange

103-08 38.00 Fee
(Taken from 103-01)

Total acreage acquired

(a + b + c - d): 5,759.51

SCENIC EASEMENT DEED

KNOW ALL MEN BY THESE PRESENTS:

THAT

GRANTOR for and in consideration of exchange of lands with the UNITED STATES OF AMERICA, GRANTEE, does hereby grant, bargain, sell and convey unto the said GRANTEE and unto its assigns forever, an estate, interest, and scenic easement, the following lands lying in _____ County, Oregon, to wit:

The restrictions and covenants imposed upon the land described herein, and the acts which the Grantor and its successors and assigns covenant to do and refrain from doing on the land described herein are as follows:

1) The land may be used only for farming and grazing purposes in conformance with the provisions hereof. No structures or improvements of any kind or nature except fences, irrigation and livestock watering-related improvements may be constructed on said land. The fence and color of fencing materials shall be the same as that used within the Park unless otherwise mutually agreed to. The land shall not be used for any other industrial or commercial activities including, but not limited to, mining, quarrying, or sand or gravel or soil removal operations except field leveling.

2) Farming or grazing use shall not include feeder pig operations, hog finishing operations, cattle feed lot operations, the raising of poultry in confined spaces, or other similar operations whereby livestock, poultry, or other animals are raised in a confined or controlled environment.

3) Mobile homes, travel trailers, tent trailers, tents, self-propelled recreational vehicles, and like structures or vehicles shall not be located or used on the land for residential, camping, storage, or other purposes.

4) The display of advertising signs and/or billboards on the land is prohibited.

5) The dumping of trash or other unsightly materials on the land or the keeping thereon of junked or wrecked vehicles, junked farm equipment, or similar items is prohibited.

6) Controlled burning for agricultural purposes is permitted if done under proper safeguards in conformance with state laws and notification is first given to the superintendent at the headquarters of the John Day National Monument. No other burning on the land is permitted. Grantor shall at all times exercise reasonable care to prevent the spread of fire to other lands within the boundaries of the Monument.

7) The surface of the land shall be maintained in its present configuration, except for field leveling for irrigation purposes and for acts of God.

8) The land shall be maintained in its present acreage and not be subdivided into any smaller parcels.

9) The National Park Service, its agents, employees, and assigns, shall have the right to enter upon and cross the land for the purpose of enforcing the provisions of this deed, and together with such right may cause to be removed from such land any unauthorized signs or other devices or structures, accumulations of trash or debris or dead, dying or diseased vegetation or animals. Existing field roads or other normally traveled routes shall be utilized for such ingress and egress where practical and shall be done at reasonable hours and after prior arrangement with the owner wherever possible.

10) This easement shall not be construed to grant the public any right to enter or use the land for any purpose.

The above-listed provisions are intended to and should be construed to perpetuate the pastoral scene that existed on these lands on the date of enactment of Public Laws 95-625 and 93-486, it being the objective of the National Park Service to maintain and preserve the existing pastoral, cultural concept in the general area.

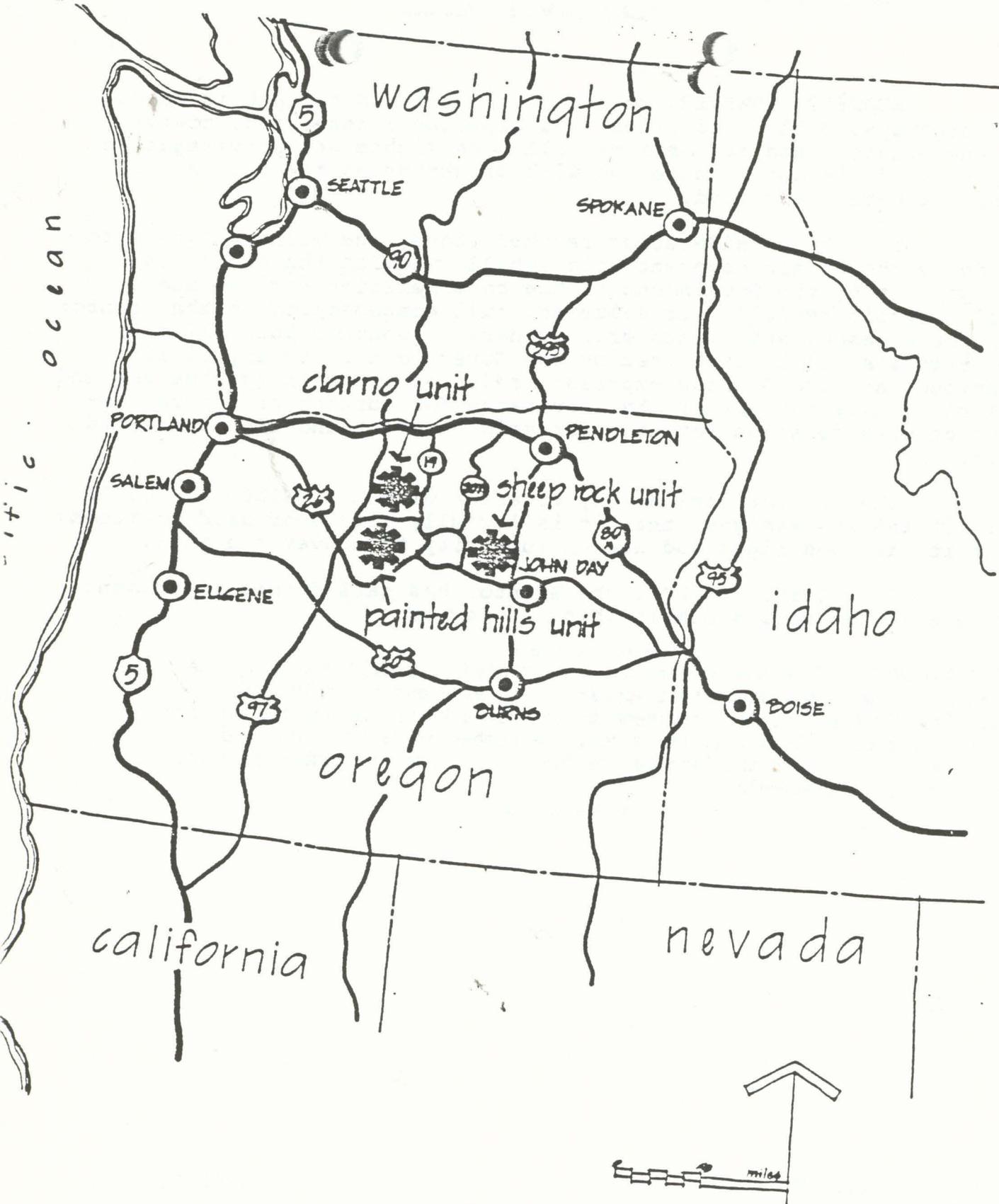
SUBJECT, HOWEVER, to existing easements for public roads and highways, public utilities, and pipelines; reserving, however, to the Grantor, and its assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired.

For the consideration recited above, the Grantor agrees to abide by the herein covenant which shall run with the land: That the payment by the Government of the consideration recited above shall constitute full fair value and full compensation to the Grantor for the easement and rights granted herein, whether such easement and rights shall be exercised by the Government or by any of its Grantees, and the Grantor expressly releases and relinquishes any and all claims against any of the aforementioned for further or future payment of consideration for the aforesaid easement and rights granted herein.

The Grantor does hereby covenant with the UNITED STATES OF AMERICA and its assigns, that it is lawfully seized of said premises; that it has good right and lawful authority to convey the same.

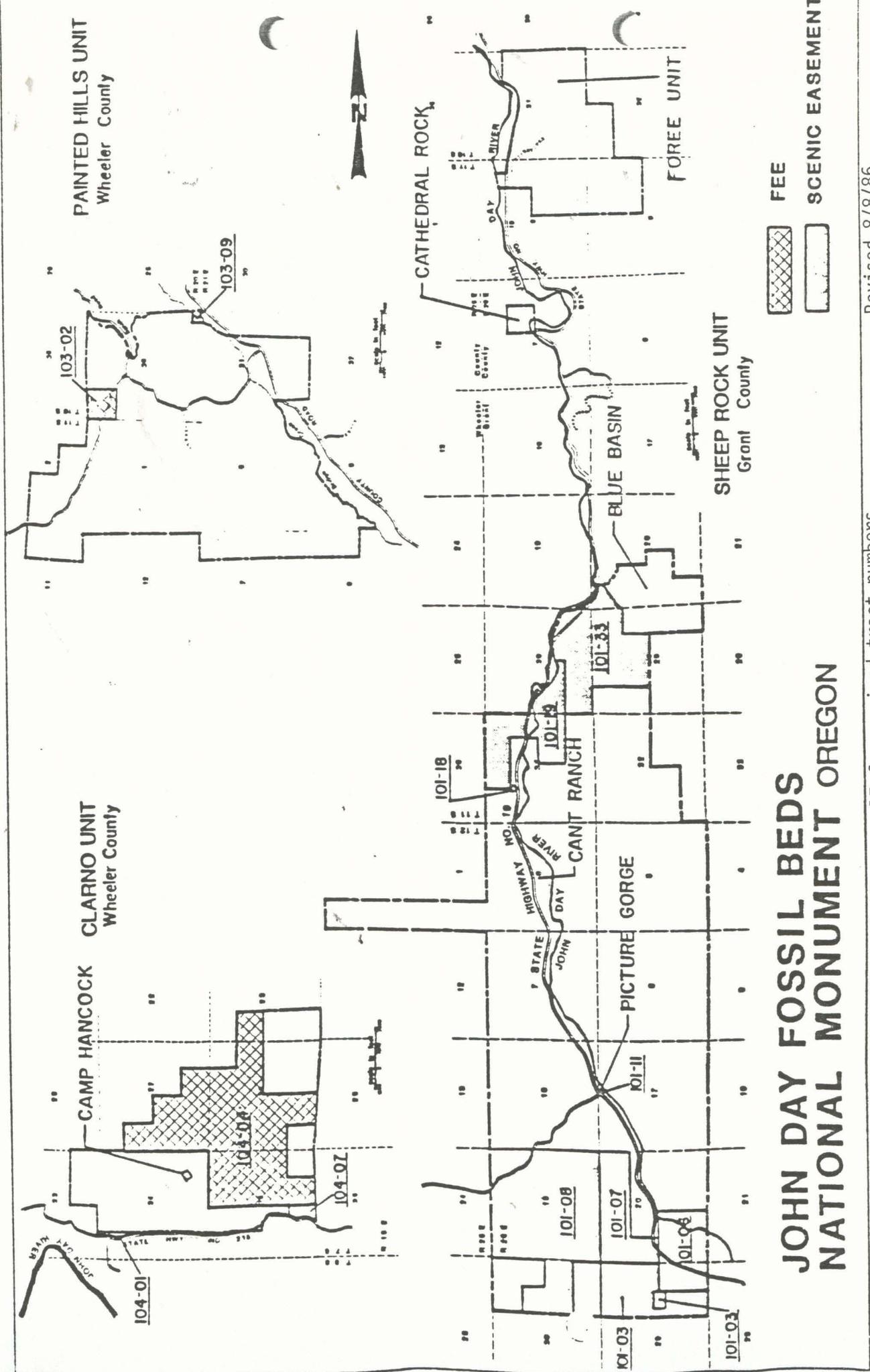
IN WITNESS WHEREOF, the Grantor has caused this instrument to be executed on its behalf this day of

IMPORTANT NOTE: This sample scenic easement deed is provided as only one example of how such a deed might appear. Each easement is individually molded to fit the specific requirements of the Park Service and the concerns of the landowner. In actual instances, the number of restrictions and covenants imposed upon the land may be fewer or greater in number than those described in this example.



JOHN DAY FOSSIL BEDS NATIONAL MONUMENT
OREGON

RECOMMENDED LAND PROTECTION MEASURES



JOHN DAY FOSSIL BEDS NATIONAL MONUMENT OREGON

FEE
 SCENIC EASEMENT

See p. 17 for revised tract numbers in Sheep Rock Unit.

Revised 8/8/86

AUG 24 1989

Allen's P. C. B Est. 1888

Planners to study bentonite mining

5018

By David Braly

Bulletin Correspondent

PRINEVILLE — A \$13 million land and bentonite-mining deal has been put on hold while members of the Crook County Planning Commission study the complicated issues surrounding it.

If the commission eventually approves a conditional use application by Clayton Sandstrom, a real estate broker from Vancouver, Wash., representing the Alaska Pacific Ranch Partnership, the partnership will buy the Alaska Pacific Ranch for upwards of \$7 million and then invest about \$6 million more to build a plant near Prineville to process bentonite off the 20,000-acre ranch.

The Alaska Pacific Ranch is located 10 miles east of Post on the north side of the Post-Paulina Highway. A bentonite-mining operation for the same site was approved for All Poly Inc. three years ago, but the firm never secured financing to develop a mine. Sandstrom, who represented All Poly, took over the deal with new partners and says he has the funds to develop the project through Bankers Trust of New York. Sandstrom said the funds will be released to him 10 days after the commission grants him a

conditional use permit.

Bentonite is a clay that has been mined in Crook County for years. It is used for everything from industrial steel belts to kitty litter and from Tums and Milk of Magnesia.

Sandstrom says that the Alaska Pacific clay would be ideal as a sealant in everything from alfalfa pellets to atomic waste dumps. Garbage dumps also would benefit from its sealant capabilities, according to Sandstrom.

Sandstrom said that more tests were needed, but that there might be enough bentonite on the Alaska Pacific Ranch to mine for 40 years.

During its first year the firm hopes to employ seven workers at the mine, 12 truck drivers, 10 mill laborers, and executive personnel. In five years, said Sandstrom, that could increase threefold.

The bentonite will be mined in areas of 10 to 40 acres at a time, with reclamation to follow. The mined bentonite will be sun-dried

on the ranch, possibly heated to remove moisture, then trucked to the processing plant near Prineville. It'll be shipped out by rail, with primary shipping points being Portland or Stockton, Calif. Overseas shipments will include 1,500-pound superbags.

Vancouver, Wash., geologist John Hook, hired by Sandstrom, presented a slide show showing other bentonite mines and the area where Alaska Pacific would mine — the Painted Desert, Lakeside and Badlands regions. Hook said that 260,000 tons of bentonite are being outloaded annually at the Port of Portland.

Sandstrom said that the demand would far exceed Alaska Pacific's ability to supply.

Sandstrom said several properties in the Prineville Industrial Zone were being examined for the plant site, which must cover 50 to 100 acres. Twelve trucks will run from the ranch to the plant in 20-hour shifts. A railroad spur will

have to be constructed to the plant. Sandstrom stated that the firm's plans called for work on the plant site to begin within 30 days and the plant to be built in three stages. In its first stage, it will be able to process a maximum of 12 tons of bentonite a day.

Sandstrom said the mine will operate only in the summer, but the plant would operate year-round off a stockpile built up in the summer.

Commission member Lawrence Weberg asked if the mining would damage the view of the Painted Desert hills from the highway, to which Sandstrom replied, "Well, if you look real hard you might be able to see it (the mining operation)." Greg Concannon, the district wildlife biologist for the Oregon Department of Fish and Wildlife, expressed concern that the mining and trucking would disturb deer and elk populations. He also wondered about the types of sediment

that would enter Lost Creek, which runs through the property.

Steven K. Chappell, a lawyer representing the Tweet and Bennett families who live near the ranch, warned the commission of problems the mine would create through dust, runoff and its effect on wildlife.

"We would ask that Crook County not be known as the 'Bad Bentonite Capital of Oregon,'" said Chappell.

Chappell urged that the commission reject the application, but that if it did approve the application, that it recommend tough restrictions on the operation to the state Department of Geology and Mineral Industries.

Commission member George McCart expressed concerns about the runoff into Lost Creek and other creeks and the dust problem.

McCart also expressed concern that neighbors would get only four hours' sleep because of the 20-hour shifts of truck traffic.

"Trucks are trucks and I've never met a quiet truck yet," said McCart.

The commission passed 3-2 a motion by Terry Pridemore to table the application for two weeks to give commission members time to evaluate all the information.

 MILES INDUSTRIAL MINERAL RESEARCH

12940 West 16th Drive
Golden, Colorado 80401

(303) 233-4794
TWX 910 320 0766

December 2, 1985

Mr. Kevin Jones
Mining Enterprises
327 Main Street
Placerville, CA 95667

Dear Mr. Jones:

The bentonite sample that you sent for evaluation of mineralogy and physical properties has been completed with the exception of trace element analysis for animal feed markets. The trace element results will be forwarded to you as soon as they are available from the analytical laboratory.

In summary, the ore is composed of about 84% bentonite, 14% quartz and a carbonate mineral that is probably cementing some of the bentonite. In order to meet API drilling fluid specifications for bentonite, it was necessary to extrude the ore with 60 lb/ton (1.5%) soda ash additive. Subsequent addition of 1.5 lb/ton CYPAN polymer brought all of the bentonite properties within API specifications.

Extrusion of the bentonite with 60 lb/ton Soda Ash increased the swelling property of the clay to 22 cc. Although more extensive testing is required, the improved swell indicates that the material will be useful for pond sealing applications.

The bentonite ore may not require either extrusion or soda ash addition for animal feed pelletizing applications. This market requires that toxic elements are below FDA specifications. These results are being generated by an analytical laboratory and will be sent as soon as received.

Since the bentonite differs from calcium bentonites used for acid activation, this market is probably not a possibility for this bentonite. Although it would be useful for pelletizing iron ore, this market may not be competitive with Wyoming producers.

Best regards,



Dr. William J. Miles

MILES INDUSTRIAL MINERAL RESEARCH

12940 West 16th Drive
Golden, Colorado 80401

(303) 233-4794
TWX 910 320 0766

December 2, 1985

EVALUATION OF MINING ENTERPRISES BENTONITE

MINERALOGY AND CHEMISTRY

The bentonite ore was crushed to less than 1/4 inch and split several times to get a representative sample for X-ray diffraction analysis and whole rock chemistry. The bentonite was then pulverized to less than 100 mesh for the analyses.

The material was prepared for X-ray diffraction as a powder mount and as an oriented slide. After the powder patterns and oriented slide patterns indicated that a dioctahedral smectite was present, the oriented slide was glycolated to confirm that the clay was of the swelling variety. Results indicate that the ore is composed of dioctahedral smectite or bentonite and 14% quartz. The clay swells readily with glycol treatment.

The whole rock chemistry was carried out for all of the elements present in quantities over 0.5%. When problems were observed with dispersion of the clay, carbon dioxide analysis was carried out for possible carbonate minerals that could be cementing the bentonite. The carbon dioxide analysis indicated that a carbonate mineral was present at a concentration of about 2%.

As a final check of the whole rock chemistry and the X-ray diffraction results, the structure of the clay was calculated by the method of Ross and Hendricks. After subtraction of the free silica found in the quartz, the calculated structure confirms the clay is a dioctahedral smectite of typical composition and layer charge.

PHYSICAL PROPERTIES

A portion of the bentonite ore was pulverized to less than 100 mesh and the rheological properties were evaluated by American Petroleum Institute procedures. The bentonite was slurried at 22.5 g/350 cc and hydrated overnight, followed by viscosity and filtration measurement.

When the viscosities were too low for drilling fluid use, additional slurries were prepared with several

addition concentrations of soda ash. This is standard practice in the Wyoming bentonite industry. Addition of soda ash was not adequate to increase the viscosity of these slurries to meet specification.

A portion of the ore was then pugged with water and soda ash, followed by extrusion processing. After drying and pulverizing, the bentonite was retested. Although the bentonite did not meet the viscosity specifications, it showed significant reduction of filtration.

Polymer addition to the bentonite slurries was then tested. CYPAN polymer, manufactured by American Cyanamid for extension of bentonite in oil field applications, was added to the extruded bentonite slurry and one blend of bentonite and soda ash. In both cases, the slurries exceeded minimum viscosity parameters for an API bentonite. The extruded material continued to meet the filtration specification, but the second slurry just exceeded the filtration maximum allowed.

Commercial products can be made from the Mining Enterprises bentonite. Additional work is required to determine if a significant portion of the deposit is acceptable grade. Additional work is also required to optimize formulations and processing for the drilling fluid market and pond sealing.

A market study is required to determine if sales of sufficient magnitude can be generated in a freight advantaged area at a reasonable price to justify additional work and development of the property.

Best regards,



Dr. William J. Miles

MILES INDUSTRIAL MINERAL RESEARCH

12940 West 16th Drive
Golden, Colorado 80401

(303) 233-4794
TWX 910 320 0766

December 2, 1985

MINERALOGY AND CHEMISTRY
MINING ENTERPRISES BENTONITE

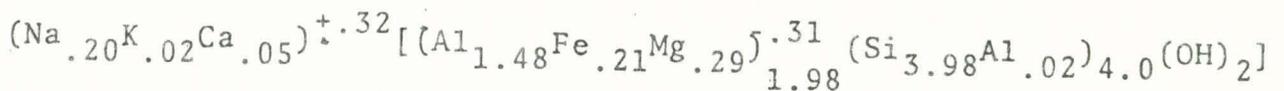
Chemistry:

SiO ₂	61.2%
Al ₂ O ₃	15.3%
Fe ₂ O ₃	2.54%
MgO	2.32%
Na ₂ O	1.25%
K ₂ O	0.19%
CaO	2.27%
TiO ₂	0.30%
% H ₂ O @ 105°C	9.9%
% loss on ignition @ 1000°C	4.1%
% CO ₂ (subtracted from LOI)	0.9%
	100.3%

X-ray Diffraction Mineralogy:

Diocahedral smectite (bentonite)	84%
Quartz	14%
Carbonates as Calcite	2%

Bentonite Structure:



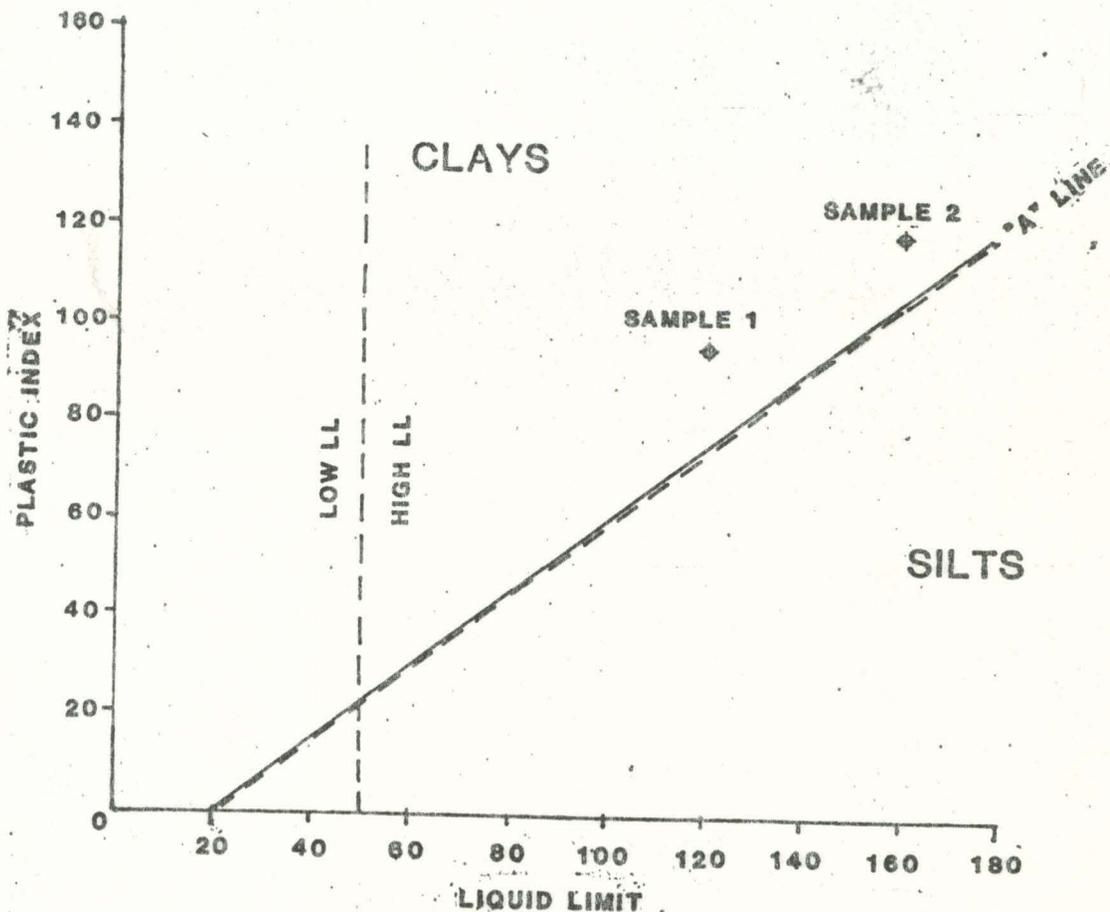
EVALUATION OF MINING ENTERPRISES BENTONITE

API DRILLING FLUID TESTS

	20	40	80	60 EX	60 EX	40	API Specifications
ppt Soda ash	0	0	0	0	0	40	
ppt CYPAN	0	0	0	0	0	1.3	1.3
pH	8.6	8.9	9.3	9.7	9.7	9.2	9.2
Apparent Visc.	4	5	6	9	9	18.5	15 min
Plastic Visc.	3.5	4	4.5	6	6	13	11
Yield Point	1	2	3	6	6	25	25
Gel Strengths	1-2	1-7	1-11	3-25	3-25	12-22	12-22
API Filtrate	15.8	15.4	14.8	16.0	10.4	10.4	15.4
Swell (2 gram)	13 cc			22 cc			15 max

Soda ash was dry blended with 22.5 g of pulverized bentonite for these tests. The sample labeled 60 EX was milled and then extruded with 60 pound per ton soda ash. CYPAN polymer, a general purpose oil field bentonite extender produced by American Cyanamid was added as a 1% aqueous solution to all of the slurries.

Representation of Results



The Unified Soil Classification System
U.S. Corps of Engineers

This figure is called the plasticity chart and the "A" line. The "A" line represents the division of clays from silts. Silts are below the line and clays are above the line. The vertical line through LL=50 separates silts and clays with low LL from those with high LL (liquid limit). The LL and PI of a given soil found in the laboratory determine the position of that soil on the chart. The two (2) samples from the Alaska Pacific Ranch as noted indicate a clay with a very high liquid limit and plasticity index. In the Unified Soil Classification System Subdivisions chart, these samples are considered CH/ inorganic clays.

Bentonite

Jerry,

This gentleman would like to talk to you very much. Concerning the possibility of his opening a bentonite plant in Prineville.

If he is out-he said you could contact his partner Gerald Simpson at 397-0260.

Rhonda

 **BRINKS**



Gene Berry
Sales Consultant

Brink's Home Security, Inc.
10110 S.W. Nimbus Avenue, B-8
Portland, OR 97223
503-684-1233

11. 253-6723

Prineville, OR
(Crook Co.)
Central Oregonian
(Cir. 2xW. 4,107)

JUL 8 1986

Jan 6 → Ran 6

Allen's P. C. B Est. 1888

County hears mining request

5018
The Crook County Planning Commission will consider an application from a California based company to operate a mining

operation in Crook County.

All-Poly Inc., is negotiating the purchase of the Alaska Pacific Ranch, ten miles east of Post, north of the Post/Paulina Highway. The company is seeking a conditional use permit to mine bentonite to be used in landfills, reservoir and canal lining projects.

A public hearing on the request will be held at 8 p.m. July 9 in council chambers at City Hall.

Surveyors have located three bentonite deposits on the ranch and a feasibility prepared by All-Poly Inc., estimates being able to mine over 10,000 tons per month for at least 28 years, possibly 49 years.

The company intends to ship the raw bentonite by truck to a plant located in Prineville. A site for the plant has not been selected. The advantage of producing usable bentonite in Prineville is the central location to West Coast markets, the study says.

Currently, bentonite suppliers are located in Wyoming, South Dakota and Montana and a West Coast operation would have an advantage in lower transportation costs.

The property is currently zoned for exclusive farm use and

mining is a conditional use in this zone. The commission will be considering whether or not a mining operation fits into the county's comprehensive plan. The request covers one of three sites.

The area is a winter range area for deer which requires that the commission consider the effects road construction and development would have on habitat of deer, elk and antelope, as well as habitat of all endangered, threatened or vulnerable species. The area is a winter roosting site for bald eagles, although it is not a nesting area. All-Poly will also need a permit from the State Mining and Reclamation Department, a State Highway access permit and a soil evaluation.

Improvements at the site will include an all-weather haul road, an area to wash trucks so that a minimum of soils will be dropped on the highway on the way to Prineville and a company office and scales. A well and septic tank drainfield will also be located on the property. All manufacturing will have to take place in their proposed Prineville plant.

6/3

Jerry G,

Gebby Davidson called re
his ranch on Crooked R.

For access call the ranch

manager - Mike Munson - 477-3515

Don

Bentonite mine on hold

5018
A businessman in Vancouver, Wash. said Monday he is still waiting for funding approval to establish a bentonite mining and refining operation in Crook County.

Clayton Sandstrom, general manager for All Poly Inc., said his financial backers were supposed to have approved or denied funding the first of this month, but have kept delaying their decision week by week.

"It was supposed to happen Friday, but they put us off another week," Sandstrom said Monday.

On July 1, the Crook County Planning Commission approved a one-year continuance of a conditional use permit for the proposed mining operation after Sandstrom said in a letter that funds first allocated for the project had been canceled, but he had secured "preliminary assurance" that other funds would be available.

Once money is available, the mine will be located on the Alaska Pacific Ranch, 10 miles east of Post. A refining plant site has not been purchased yet Sandstrom said.

Bentonite mine still possible

5018

A proposed bentonite mining and refining operation in Crook County is still in the works and should be starting up within the next six months, according to correspondence given to the Crook County Planning Department.

During a meeting Wednesday night, the county planning commission approved a one-year continuance of a conditional use permit for the bentonite operation, which first received approval July 9, 1986.

Clayton Sandstrom, general manager for All Poly Inc. of Vancouver, Wa., requested the continuance, explaining in a letter that allocated funds for the project were cancelled in October 1986, but the company has received preliminary assurance that new funds will be secured.

Sandstrom said during a telephone interview this morning that he will know whether or not the funds are approved by the first of August.

The bentonite will be mined on the Alaska Pacific Ranch, 10 miles east of Post on the Post-Paulina Highway. A refining plant site has not been purchased, but Sandstrom said he has several sites in mind.

Once the money has been secured and a refining plant site purchased, Sandstrom said All Poly Inc. will have a booming business.

"The demand is so great...we've got all the orders we can fill in the next three years," Sandstrom said.

The mining and refining operation will handle about 600 tons of bentonite daily, maybe more, and utilize about 27 trucks to transport the material, Sandstrom said.

BLACK HILLS BENTONITE CO.

Manufacturers of Tower-Gel-Tower-Bond

HIGH GRADE WYOMING BENTONITE

KAYCEE BENTONITE CORPORATION
MANAGER FOR

KAYCEE BENTONITE PARTNERSHIP
BOX 9 — MILLS, WYOMING 82644
TELEPHONE 307 265 3740

HARRY T. THORSON
ALBERT C. HARDING
FOUNDERS

March 7, 1986

THOMAS A. THORSON
PRESIDENT & GENERAL MANAGER
G. DURAND
ASST. GEN. MGR.
PATRICIA WILSON
OFFICE MANAGER

Mr. Fred Carr
139 W. 2nd
Casper, WY 82601

Dear Fred:

I am enclosing our test data on the bentonite that you brought to us from Oregon. This material can be peptized to meet the viscosity requirement for oil field use, but barely fails to meet fluid loss test. The water absorption test approximates a lot of Wyoming bentonite, but is lower than currently accepted for taconite pelletizing.

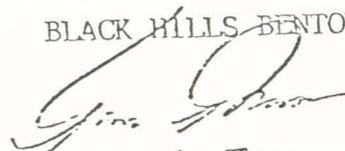
It would appear that this material would be satisfactory for any civil engineering applications as well as feed pelletizing. It may also be used for oilwell drilling, but would have trouble competing with Wyoming bentonite if economics were the same.

Another question would be consistency. Do these samples represent large consistent deposits, or are they localized?

If I can help you further, let me know.

Very truly yours,

BLACK HILLS BENTONITE COMPANY



Thomas A. Thorson
President/General Manager

TAT/pbw

Enc.

2/19/86

Sample From : Fred Carr (Oregon Bentonite)

API Results:	Init. Fann 600-300	Aged Fann 600-300	Fluid Loss*	(As Mos
Control	10-6	11-6	15.0	8.2
Treated 1/2#/Ton/M-25	26-19	22-15	16.0	
Treated 1#/Ton/M-25	38-30	35-26	15.2	
Treated 1#/Ton/M-25 & 1#/Ton/AWD-H	39-30	36-26	14.2	
Water Absorbtion (ASTM Method)	682			
Meth. Blue	94 Meq/100 Grams			
Ca	26 Meq/100 Grams			
Mg	15 Meq/100 Grams			
Color	yellow			

* Filtrates above ran on Baroid Press

Treated sample above with AWD-H polymer to bring fluid loss down. AWD-H is a modified type of CMC polymer.

CONSTRUCTION INSPECTION
 MATERIALS INSPECTION
 CHEMICAL ANALYSIS
 PHYSICAL TESTING

5405 N. Lagoon Avenue
 P.O. Box 17126
 Portland, Oregon 97217-0126
 Phone: (503) 289-1778

NON-DESTRUCTIVE TESTS
 WELDING CERTIFICATION
 SOIL TESTING
 ALL

August 30, 1985

Clayton Sandstrom
 6168 N.E. Highway 99
 Vancouver, WA 98665

Subject: Analysis on two (2) samples submitted on August 16, 1985.

Report:

	<u>Sample 1</u>	<u>Sample 2</u>
Color	Light yellow	Dark red
Chemical Analysis:		
Calcium (Ca)	1.25%	1.70%
Iron (Fe)	2.5%	6.7%
Magnesium (Mg)	0.85%	1.2%
Sodium (Na)	1.10%	1.2%
Atterberg Limits:		
Liquid Limit	120	160
Plastic Limit	27	42
Plastic Index	96	118
Expansion	Very expansive	Very expansive
Grain Size:		
Sand	Trace	Trace
Silt	37%	17%
Clay	63%	83%

Sincerely,


 Charles Lane, P.E.
 Vice President

Report Number 290987

ALASKA PACIFIC OREGON LTD.

519 SOUTHWEST PARK AVENUE, SUITE 410 / PORTLAND, OREGON 97205

TELEPHONE (503) 227-0401

October 21, 1987

Mr. Jerry Gray
Dept. Geology and Mineral Industries
910 State Office Building
Portland, OR 97201

Re: Analyses

Dear Jerry:

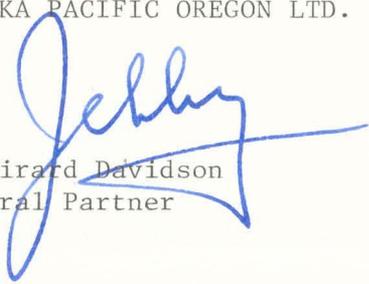
Enclosed are copies of the analyses of the samples
which Mike Munson sent to Chemex Labs Inc.

I would appreciate it if you would review these and
give me a ring.

Best wishes.

Sincerely,

ALASKA PACIFIC OREGON LTD.


C. Girard Davidson
General Partner

Enclosures



Chemex Labs Inc.

Analytical Chemists * Geochemists * Registered Assayers
994 WEST GLENDALE AVE., SUITE 7, SPARKS,
NEVADA, U.S.A. 89431

PHONE (702) 356-5395

To: ALASKA PACIFIC OREGON LTD.

519 SOUTHWEST PARK AVE., SUITE 410
PORTLAND, OREGON
97205

*** INVOICE NUMBER 18720325 ***

BILLING INFORMATION

Date : 29-AUG-87
Project :
P.O. # :
Account : FLY

Billing : For analysis performed on
Certificate A8720325

Terms : Net payment in 30 Days
1.5% per month (18% per annum)
charged on overdue accounts.

Please remit payments to:

CHEMEX LABS, INC.
994 West Glendale Ave.,
Suite 7, Sparks, Nevada,
U.S.A. 89431

CHEMEX CODE	ANALYSIS DESCRIPTION	SAMPLES ANALYZED	UNIT PRICE	AMOUNT
2	Cu ppm			
5	Zn ppm			
6	Ag ppm			
100	Au ppm	1	8.50	8.50
	FA+AA			
Sample preparation and other charges :				
205	Rock/Core - RING	1	2.30	2.30
Total Cost \$				10.80
TOTAL PAYABLE (U.S.) \$				10.80

*pd. 9/8/87
APO # 1721
\$10.80*



Chemex Labs Inc.
 Analytical Chemists * Geochemists * Registered Assayers
 994 WEST GLENDALE AVE., SUITE 7, SPARKS,
 NEVADA, U.S.A. 89431
 PHONE (702) 356-5195

CERTIFICATE A8720325

ALASKA PACIFIC OREGON LTD.

PROJECT :

P.O.# :

Samples submitted to our lab in Sparks, NV.
 This report was printed on 29-AUG-87.

To: ALASKA PACIFIC OREGON LTD.

519 SOUTHWEST PARK AVE., SUITE 410
 PORTLAND, OREGON
 97205

A8720325

Comments:

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2	1	Cu ppm: HNO ₃ -aqua regia digest	AAS	1	10000
5	1	Zn ppm: HNO ₃ -aqua regia digest	AAS	1	10000
6	1	Ag ppm: HNO ₃ -aqua regia digest	AAS-BKGD CORR	0.1	200
100	1	Au ppb: Fuse 10 g sample	FA-AAS	5	10000

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	1	Rock & core: Ring



Chemex Labs Inc.
 Analytical Chemists * Geochemists * Registered Assayers
 994 WEST GLENDALE AVE., SUITE 7, SPARKS,
 NEVADA, U.S.A. 89431
 PHONE (702) 356-5395

To: ALASKA PACIFIC OREGON LTD.

519 SOUTHWEST PARK AVE., SUITE 410
 PORTLAND, OREGON
 97205

Project:
 Comments:

CERTIFICATE OF ANALYSIS A8720325

*Page No. : 1
 Tot. Pages: 1
 Date : 29-AUG-87
 Invoice # : I-8720325
 P.O. # :

SAMPLE DESCRIPTION	PREP CODE	Cu ppm	Zn ppm	Ag ppm Aqua R	Au ppb FA+AA				
01	205 --	12	22	0.1	< 5				

Paul Buchler

CERTIFICATION :



Chemex Labs Inc.
 Analytical Chemists * Geochemists * Registered Assayers
 994 WEST GLENDALE AVE., SUITE 7, SPARKS,
 NEVADA, U.S.A. 89431
 PHONE (702) 356-5395

To: ALASKA PACIFIC OREGON LTD.

519 SOUTHWEST PARK AVE., SUITE 410
 PORTLAND, OREGON
 97205

*** INVOICE NUMBER 18721676 ***

BILLING INFORMATION

Date : 19-SEP-87
 Project :
 P.O. # :
 Account : FLY

Billing : For analysis performed on
 Certificate A8721676

Terms : Net payment in 30 Days
 1.5% per month (18% per annum)
 charged on overdue accounts.

Please remit payments to:

CHEMEX LABS, INC.
 994 West Glendale Ave.,
 Suite 7, Sparks, Nevada,
 U.S.A. 89431

CHEMEX CODE	ANALYSIS DESCRIPTION	SAMPLES ANALYZED	UNIT PRICE	AMOUNT
2	Cu ppm			
5	Zn ppm			
6	Ag ppm			
100	Au ppb	3	8.50	25.50
Sample preparation and other charges :				
205	Rock/Core - RING	3	2.30	6.90
Total Cost \$				32.40
TOTAL PAYABLE (U.S.) \$				32.40

pd. 9/30/87
APD # 1734
\$ 32.40



Chemex Labs Inc.
 Analytical Chemists * Geochemists * Registered Assayers
 994 WEST GLENDALE AVE., SUITE 7, SPARKS,
 NEVADA, U.S.A. 89431
 PHONE (702) 356-5395

CERTIFICATE A8721676

ALASKA PACIFIC OREGON LTD.
 PROJECT :
 P.O.# :
 Samples submitted to our lab in Sparks, NV.
 This report was printed on 19-SEP-87.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	3	Rock & core: Ring

To: ALASKA PACIFIC OREGON LTD.

519 SOUTHWEST PARK AVE., SUITE 410
 PORTLAND, OREGON
 97205

A8721676

Comments:

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2	3	Cu ppm: HNO ₃ -aqua regia digest	AAS	1	10000
5	3	Zn ppm: HNO ₃ -aqua regia digest	AAS	1	10000
6	3	Ag ppm: HNO ₃ -aqua regia digest	AAS-BKGD CORR	0.1	200
100	3	Au ppb: Fuse 10 g sample	FA-AAS	5	10000



Chemex Labs Inc.
 Analytical Chemists * Geochemists * Registered Assayers
 994 WEST GLENDALE AVE., SUITE 7, SPARKS,
 NEVADA, U.S.A. 89431
 PHONE (702) 356-5395

519 SOUTHWEST PARK AVE., SUITE 410
 PORTLAND, OREGON
 97205

Project :
 Comments :

Tot. Pages: 1
 Date : 19-SEP-87
 Invoice # : I-8721676
 P.O. # :

CERTIFICATE OF ANALYSIS A8721676

SAMPLE DESCRIPTION	PREP CODE	Cu ppm	Zn ppm	Ag ppm Aqua R	Au ppb FATAA					
SAMPLE 1	--									
SAMPLE 2	205	8	15	0.1	< 5					
SAMPLE 3	205	7	9	0.1	< 5					
	205	9	11	0.1	< 5					

CERTIFICATION :

Handwritten signature

Bentonite mine's use permit extended

5018
PRINEVILLE — The Crook County Planning Commission agreed Wednesday to extend the conditional-use permit of All-Poly Inc. to mine bentonite on the Alaska-Pacific Oregon Ltd. ranch, 10 miles east of Post.

The commission initially approved the operation last July. At that time real estate appraiser Clayton Sandstrom, representing All-Poly, told it that the firm expected to employ four people at the mine, eight to 10 truck drivers hauling bentonite from the mine to the mill, and 10 people per shift at

the mill in Prineville.

Sandstrom said then that All-Poly had two years of orders on its books and that shipments would have to start in six months. The bentonite would be purchased by California counties, which would use the bentonite to line landfills and farm waste sites. All-Poly planned to mine 600 tons a day.

In seeking the extension, All-Poly said that its financial commitment had fallen through but that new funds were on the way.

The commission unanimously

approved a motion by Lynn Lindquist to grant a one-year extension.

In other action, the commission:

—Approved an application by Thomas Rogers to build a boat and camper storage facility and mini-storage 12 miles south of Prineville on Juniper Canyon Road. Three buildings, each 40 by 100 feet, living quarters, a pump house and septic system will be installed on the 75 acres of juniper and sagebrush.

—Unanimously approved an

application by William Ascraft to construct a new building a quarter of a mile west of Prineville on U.S. Highway 26 near Richman Lane. Ascraft must remove a trailer house on the site before the new dwelling is occupied, hook up to the sewer system and build within 24 months.

—Unanimously approved Bernard W. Johnson's application to split his 200 acres of land 11 miles southwest of Prineville on Huston Lake Road into parcels of 80 acres and 120 acres.

Bentonite 5018 operation approved

By David Braly
Bulletin Correspondent

PRINEVILLE — The Crook County Planning Commission gave conditional approval Wednesday to the first phase of an industrial development that may soon employ two dozen people.

The commission voted unanimously to allow All-Poly Inc. to mine bentonite, a type of clay, on land 10 miles east of Post on the Alaska Pacific Oregon Ltd. ranch.

Real estate appraiser Clayton Sandstrom, representing All-Poly, told the commission that the firm expected to employ four people at the mine and eight to 10 truck drivers hauling material between the mine and the mill in Prineville.

The mill will employ 10 people per shift, Sandstrom said after the meeting, and would begin with one 10-hour shift.

Sandstrom said that All-Poly planned to hire local people wherever possible, contract with local truckers to haul the bentonite, and ship the processed bentonite out over the City of Prineville Railway.

Sandstrom told the commission that he had put earnest money down on a 43-acre heavy industrial site near Prineville Tuesday as the location for a limestone mill that will be shipped from Stockton, Calif.

He said that All-Poly had two years of orders on its books now, but that shipments must start within six months. The customers, Sandstrom said, are counties in California that are being fined \$40,000 a day for having substandard sanitary landfills. One use of bentonite is to seal landfills and farm waste sites.

Sandstrom said All-Poly intends to mine 600 tons a day and hopes that the local supply will last for at least five years. An all-weather road would be built into the area, where an office, loading facilities, drying area and wash-down area for vehicles will be placed.

Crook County Planning Director Bill Zelenka identified the mine site as rangeland and a winter range for deer immediately west of Painted Desert.

All-Poly did not indicate an interest in the Badlands, but Sandstrom said it might want to move into the Lakeside area if the Painted Desert mine is exhausted prematurely.

Zelenka expressed concern that archaeological and paleontological sites might be disturbed. One member of the large audience at the meeting remarked that college students often work the fossil sites.

Sandstrom said he believed that the fossil sites were beyond the mine location.

Donald McCullough and Milliard Tweedt, owners of adjoining land, said they were concerned about runoff from the mining operation. They said that even now water from the Alaska Pacific land runs over the road onto their property.

The commission approved a motion by Chuck Poarch that the mine be approved subject to its meeting all state and local requirements and addressing the possible runoff problem.

MEMO

DATE: November 19, 1987

TO: Don H.

FROM: Jerry J. Gray

SUBJECT: Oregon Bentonite Production

<u>Firm</u>	<u>Date Production Started</u>	<u>Production</u>	<u>Reserves</u>
Central Oregon Bentonite	12/57	35,347½	28,000,000
Evergreen Bentonite, Inc.	7/81	10,000	10,000,000
Teague Mineral Products	?/74	150,000	measured 2,500,000 part drilled 10,000,000 indicated 50,000,000

JJG:ab

Portland, OR
(Multnomah County)
Portland Business
Today
(Cir. D. 4,164)

Jerry G.

JUN 6 1986

Allen's P. C. B Est. 1888

Obsidian processor eyes K-Falls

5048 KLAMATH FALLS (UPI)—Pryfoam International Inc., a company that processes obsidian ore, will begin operations in Klamath Falls by this fall, company officials say.

Duane Peterson of Fargo, N.D., president of the company, says the plant will be involved in processing obsidian ore mined at a site near Glass Mountain south of the Lava Beds National Monument in California.

The initial operation will involve production of fire retardant coating.

Pryfoam has a purchase agreement with the Greater Klamath Development Corp. for its 14.5 acres in Scholtes-Smith Industrial Park.

The plant will employ 18 people initially with 33 expected to be employed by 1991 in the paint coating operation alone. Company officials say further work is planned in fire retardant roof coating and insulation panels for use in the mobil home industry.

Prineville, OR
(Crook Co.)
Central Oregonian
(Cir. 2xW. 4,107)

MAY 27 1986

Allen's P. C. B Est. 1888

Kitty litter plant under fire

5018 Charge made against owner

The owner of a Prineville kitty litter plant is facing criminal charges, as well as a foreclosure suit brought by the Small Business Administration.

Charges of operating a surface mining operation without a bond or security deposit filed with the Oregon Department of Geology and Mineral Industries were filed against Leon Gritten, owner

of Oregon Sun Ranch, Inc.

The charges were filed May 6 in Albany at the request of the Department of Geology and Mineral Industries. The alleged incident occurred Feb. 12, 1986.

Gritten and his wife, Sharon, also face a foreclosure suit filed by the SBA, claiming the couple owe \$187,966.68 on a loan plus \$53,516.67 in interest. That

lawsuit was filed March 4 in U.S. District Court in Portland.

The loan was originally made through Deschutes Bank on Oct. 20, 1981. After that bank went out of business, the loan was assigned to the SBA by the Federal Deposit Insurance Corporation.

The plant makes kitty litter out of bentonite, which was mined on Bureau of Land Management property.

MARSHALL, O'TOOLE, GERSTEIN, MURRAY & BICKNELL

ATTORNEYS AT LAW

TWO FIRST NATIONAL PLAZA

20 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60603

(312) 346-5750

FAX: (312) 984-9740

TELEX: 25-3856

September 6, 1991

RICHARD H. ANDERSON
MICHAEL F. BORUN
DONALD J. BROTT
MADELINE HENRICKS DEVEREUX
ALLEN H. GERSTEIN
LEWIS S. GRUBER
DOUGLASS C. HOCHSTETLER
KEVIN D. HOGG
JEROME B. KLOSE
BASIL P. MANN
WILLIAM E. MCCrackEN
CARL E. MOORE, JR.
OWEN J. MURRAY
EDWARD M. O'TOOLE
NATE F. SCARPELLI
RICHARD A. SCHNURR
JEFFREY S. SHARP
ALVIN D. SHULMAN
TIMOTHY J. VEZEAU
JAMES P. ZELLER

PAUL W. BUSSE
STEPHEN J. CASSIN
CHRISTINE A. DUDZIK
HOWARD S. FUHRMAN
ROBERT M. GERSTEIN
MARTIN J. HIRSCH
RICHARD M. LA BARGE
MAUREEN C. MEINERT
JAMES J. NAPOLI
ANTHONY NIMMO
CYNTHIA L. SCHALLER
DOUGLAS H. SIEGEL
JEFFRY W. SMITH

COUNSEL

ALBERT W. BICKNELL
TREVOR B. JOIKE

* MISSOURI & KANSAS BARS

Mr. John Garrett
Morgan Manufacturing
631 South 31st Street
Richmond, California 94804

Re: United States Patent No. 5,000,115

Dear Mr. Garrett:

We wish to put you on notice of the issuance of United States Patent No. 5,000,115 to John Hughes, assigned to American Colloid Company, a copy of which is enclosed herewith. The '115 patent recently has been filed for Reissue to cancel claims 2, 19 and 22 and to remove from the specification the statement that Attapulgitic and Sepiolite are bentonite clays.

It is American Colloid Company's position that any clumping cat litter which includes bentonite clay in the particle size set forth in the claims of the '115 patent would infringe claims 11 and 24 of the '115 patent, and possibly claims 8-10, 21 and 23, depending upon the amount of bentonite, and sale of such a product for use as a cat litter would induce infringement of claims 1, 3, 4, 6, 7, 12-18, 20, and 25-27 of the '115 patent.

We would appreciate it if you would have your attorney contact the undersigned if a license is appropriate and required.

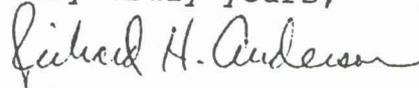
You should also be aware that American Colloid Company has three additional continuing applications pending in the U.S. Patent and Trademark Office and all three applications have been indicated to be allowable by the Examiner. At least two of these three pending applications include claims that are broader than those issued in the '115 patent.

MARSHALL, O'TOOLE, GERSTEIN, MURRAY & BICKNELL

Mr. John Garrett
September 6, 1991
Page 2

Please be advised that American Colloid Company will take appropriate action to protect and preserve its rights and to obtain compensation for any infringing conduct which may occur.

Very truly yours,



Richard H. Anderson

RHA:caf

Enclosure

- [54] ANIMAL DROSS ABSORBENT AND METHOD
[75] Inventor: John Hughes, Arlington Heights, Ill.
[73] Assignee: American Colloid Company, Arlington Heights, Ill.
[21] Appl. No.: 297,471
[22] Filed: Jan. 13, 1989
[51] Int. Cl.³ A01K 29/00
[52] U.S. Cl. 119/173
[58] Field of Search 119/1

[56] References Cited

U.S. PATENT DOCUMENTS

- 4,343,751 8/1982 Kunar 264/115
4,459,368 7/1984 Jaffee et al. 119/1
4,657,881 4/1987 Crampton et al. 119/1
4,685,420 8/1987 Stuart 119/1

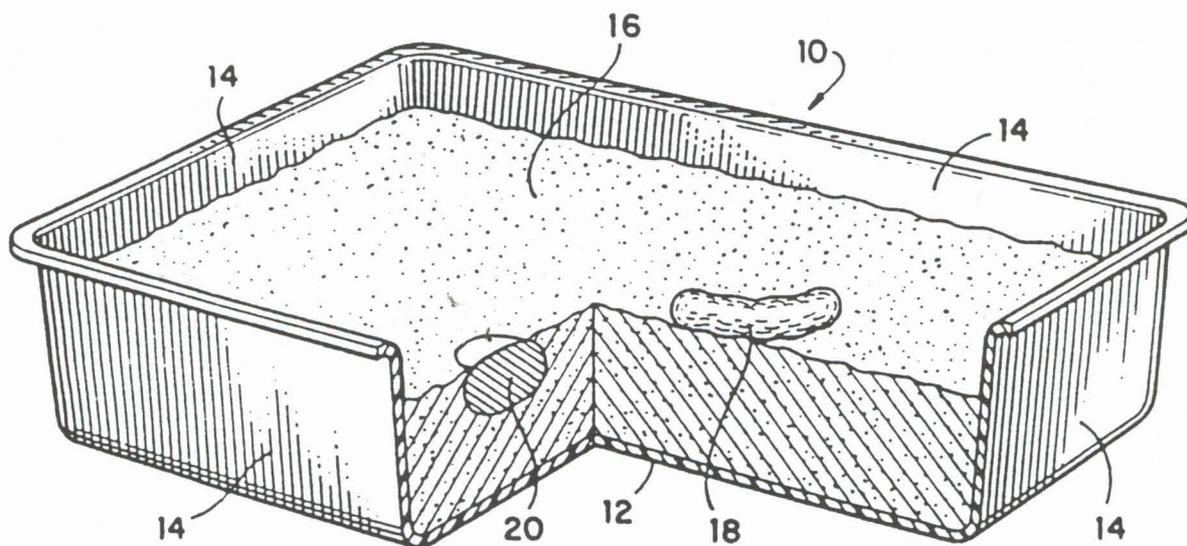
4,844,010 7/1989 Pucharue et al. 119/1

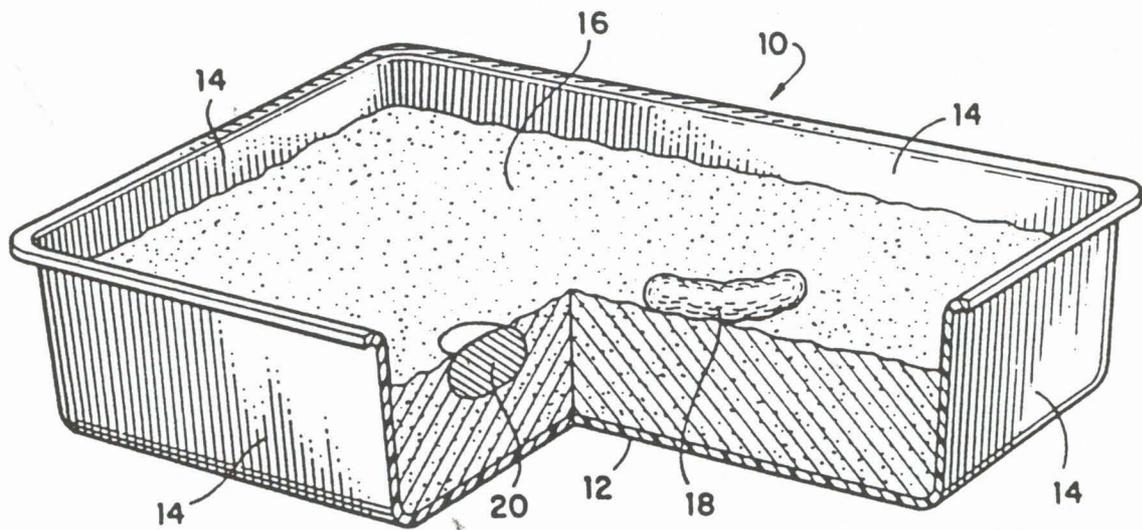
Primary Examiner—John Weiss
Attorney, Agent, or Firm—Marshall, O'Toole, Gerstein, Murray & Bicknell

[57] ABSTRACT

A composition and method of absorbing animal dross. Discrete particles of a composition comprising a water-swelling bentonite clay absorb animal dross and related liquids, and simultaneously agglomerate into a sufficiently large and stable mass therefore permitting physical separation and removal of the wetted mass of particles from unwetted particles of the composition. Removing the wetted and agglomerated composition particles from the remaining unwetted composition reduces or eliminates offensive odors produced by dross-soaked particles.

27 Claims, 1 Drawing Sheet





ANIMAL DROSS ABSORBENT AND METHOD

FIELD OF THE INVENTION

The present invention relates to an absorbent composition for animal dross and its method of use. More particularly, the present invention relates to a composition comprising a water-swella-
 bled bentonite clay, such as sodium bentonite or calcium bentonite. Discrete particles of the water-swella-
 bled bentonite clay effectively absorb animal dross and simultaneously agglomerate into a sufficiently large and stable mass, such that the wetted mass of absorbent composition can be separated from unwetted particles of the composition and removed from a litter box. Consequently, odors emanating from the litter box are reduced or eliminated, and cost savings are achieved because the contents of the litter box, including both the soiled and the unsoiled absorbent composition, do not have to be discarded on a periodic basis.

BACKGROUND OF THE INVENTION AND PRIOR ART

House-broken animals, such as cats, are trained into the habit of urinating and defecating in a specially provided litter box. Similarly, untrained and caged animals, such as guinea pigs, urinate and defecate on the floor of their cage, often in approximately the same floor area of the cage. Consequently, pet owners, homeowners, veterinarians and laboratory personnel have added absorbent materials to the litter box or cage to collect the urine and feces. After a relatively short period of time, the dross-soiled absorbent emits objectionable odors because of the presence of the urine and fecal matter.

In order to reduce or eliminate these objectionable odors, homeowners periodically remove the fecal matter from the litter absorbent physically. However, physical removal of the feces does not reduce or eliminate odors caused by the urine absorbed into the absorbent. Therefore, when the odors caused by the absorbed urine become intolerable, the homeowner discards the litter box absorbent material entirely. The homeowner then washes the litter box and refills the litter box with fresh litter box absorbent material. These activities are unpleasant, time-consuming and expensive. Consequently, the litter box absorbent material usually is a relatively inexpensive solid absorbent material, such that an individual cleaning of the litter box is not particularly economically burdensome. However, repeated litter box cleanings over a period of time accounts for relatively large expenditures.

The most commonly used litter box absorbent materials are inexpensive clays, such as calcined clays, that are safe and non-irritating to the animals, and that absorb relatively substantial amounts of liquids. Other porous, solid litter box absorbent materials, that are used alone or in combination, include straw, sawdust, wood chips, wood shavings, porous polymeric beads, shredded paper, sand, bark, cloth, ground corn husks, cellulose, and water-insoluble inorganic salts, such as calcium sulfate. Each of these absorbent materials has the advantage of low cost, but each suffers from the disadvantage of merely absorbing a liquid waste product and holding the product within its porous matrices, or, in the case of sand, adsorbing the liquid dross on its surface. For each absorbent material, offensive odors are eventually caused by the absorbed urine, and the entire contents of

the litter box, including soiled absorbent material and unsoiled absorbent material, has to be discarded.

One such litter box absorbent material is described in Lohman U.S. Pat. No. 4,570,573. The Lohman patent is directed to an animal litter composition comprising about 60-94% by weight paper, about 1-35% calcium sulfate and about 3-12% water. Such an absorbent is effective in collecting animal dross, but it does not reduce or eliminate the generation of objectionable odors and does not eliminate the disadvantage of periodically replacing the entire contents of the litter box. Larson et al in U.S. Pat. No. 4,315,761 describes the use of aerated or foaming concrete, of relatively large size, like up to 10 mm (millimeters), to absorb animal dross and facilitate removal of the excrement from a litter box. The aerated concrete merely absorbs the animal dross, and therefore suffers from the identical drawback of present day animal litter box compounds, i.e., an inability to easily separate the soiled absorbent particles from the unsoiled absorbent particles without having to clear and clean the entire litter box.

Stuart, in U.S. Pat. No. 4,685,420, disclosed an improved litter box absorbent composition comprising from 0.01% to 5.0% by weight of a water-absorbing polyacrylate in combination with a common litter box absorbent material. According to the method and composition of Stuart, the polyacrylate and absorbent material absorb the urine or similar waste material, and the polyacrylates act to gel the soiled litter box absorbent material into a gelled product. Stuart teaches that the gelled absorbent material then can be physically removed from the litter box to reduce the generation of offensive odors, and to avoid discarding the unsoiled portion of the absorbent material. However, the method and composition of Stuart suffers from the disadvantage of relative cost ineffectiveness. The commonly used litter box absorbent materials are very inexpensive materials, whereas the water-absorbent polymers of Stuart are relatively expensive products that can raise the initial cost of the litter box absorbent material to an unacceptable level in a very cost competitive market.

Other litter box absorbent materials are disclosed by Fisher in U.S. Pat. No. 3,765,371 describing a foamed plastic for absorbing and/or adsorbing animal dross; by Kramer et al in U.S. Pat. Nos. 4,275,684 and 4,395,357 describing calcium silicate as an animal litter box absorbent material and specifically teaching against the use of mineral products, such as clay-type minerals, because of the mineral product's tendency to swell upon liquid absorption; by Rodriguez et al in U.S. Pat. No. 4,494,481 describing the addition of a transition metal of Group Ib or IIb of the periodic table to present-day litter box absorbent materials to prevent the development of urine odors; and by Greenberg in U.S. Pat. No. 4,638,763 describing the addition of sodium sulfate to a litter box absorbent material to facilitate removal of soiled absorbent from the litter box.

Therefore, a need exists for a litter box absorbent material that effectively collects the urine or other dross material of house-broken pets and caged animals; that agglomerates when wetted to allow physical removal of the wetted litter box absorbent material from unwetted litter box absorbent material in order to reduce or eliminate dross-based odors and to reduce costs associated with animal litter box absorbent materials, and that is sufficiently economical for practical use in a highly competitive and cost conscious market. Surprisingly and unexpectedly, it has been found that water-swella-

ble bentonite clays effectively absorb animal dross; and during absorption of the animal dross, agglomerate into a sufficiently large and stable mass for physical separation of the soiled portion of the litter box absorbent material from the unused portion of the litter box absorbent material. The water-swellable bentonite clays, and their absorbent and agglomerating properties, effectively reduce or eliminate odors associated with animal dross; reduce costs associated with litter box absorbent material replacement; and are sufficiently economical to compete effectively in a highly competitive and cost conscious industry.

SUMMARY OF THE INVENTION

In brief, the present invention is directed to a composition and method of absorbing animal dross. The composition comprises discrete particles of a water-swellable bentonite clay that effectively absorbs animal dross and simultaneously agglomerates into a sufficiently large and stable mass, thereby permitting physical separation of the soiled and wetted water-swellable bentonite clay particles from discrete particles of the unsoiled and unwetted water-swellable bentonite clay.

Therefore, it is an object of the present invention to provide an improved absorbent composition for animal waste products and related waste products.

Another object of the present invention is to provide a composition that effectively absorbs animal dross and simultaneously agglomerates into a mass of sufficient size and cohesive strength for physical removal from unwetted litter box absorbent composition.

Another object of the present invention is to provide a composition that eliminates or reduces odors associated with animal dross deposited in a litter box.

Another object of the present invention is to provide a composition that economically eliminates or reduces odors associated with animal dross deposited in a litter box.

Another object of the present invention is to provide a composition that facilitates and reduces cleaning and maintenance of animal litter boxes and animal cages.

Still another object of the present invention is to provide a composition that overcomes the disadvantages of prior art animal litter box absorbent compositions and that is economically competitive with prior art litter box absorbents.

Another object of the present invention is to provide a composition for absorbing animal dross such that the physical removal of urine from an animal litter box is possible.

Another object of the present invention is to provide a method of effectively absorbing animal dross with a composition comprising a water-swellable bentonite clay that simultaneously agglomerates the into a sufficiently large mass of sufficient strength upon absorbing the animal dross to permit physical separation of soiled and wetted bentonite clay particles from the unsoiled and unwetted bentonite clay particles.

The above and other objects and advantages of the present invention will become apparent from the following detailed description of the invention.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a receptacle including the absorbent composition of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

In accordance with the method and composition of the present invention, water-swellable bentonite clays have been found useful as animal dross absorbents. The water-swellable bentonite clays of the present invention provide advantages over prior art animal litter box absorbent compositions in that the water-swellable bentonite clays are capable of absorbing several times their weight in liquid dross material and also are capable of simultaneously agglomerating to form a wetted mass of sufficient size and cohesive strength such that the soiled and wetted mass can be physically separated from the remaining unwetted water-swellable bentonite clay absorbent. These properties of the water-swellable bentonite clays serve to reduce or eliminate odors resulting from urine-saturated litter box absorbents; to reduce the cost of using a litter box absorbent material because only soiled absorbent material is discarded; and to reduce the number of times the litter box or animal cage must be completely cleaned. Furthermore, the water-swellable bentonite clays of the present invention provide these cost saving and work saving benefits without adding expensive supplementary compounds, such as water-absorbent polymers, that can prohibitively increase the cost of a product competing in a very cost-conscious market.

In accordance with an important feature of the present invention, the water-swellable bentonite clays provide an improved animal litter box absorbent composition. The water-swellable bentonite clays of the present invention absorb several times their own weight of an aqueous fluid, such as urine, and consequently swell. The wetted, swelled bentonite particle then interacts with nearby wetted and swelled bentonite particles and agglomerates through physical and chemical interactions, such as hydrogen bonding and entanglement, to form a wetted mass of sufficient stability and size such that the mass can be removed from the unwetted particles of the water-swellable bentonite clay. The chemical and physical interactions that cause the wetted bentonite clay particles to agglomerate are not present when the bentonite clay particles are dry, hence separation of the wetted, swelled bentonite clay particles from the unwetted and unswelled bentonite clay particles is facilitated.

In practice, when an animal urinates on the litter box absorbent of the present invention, the urine is absorbed by the water-swellable bentonite to form an agglomerated mass of water-swellable bentonite and urine. This agglomerated mass has sufficient physical integrity to be removed from a litter box, or an animal cage, by using the implements and methods normally used to remove feces from a litter box. Therefore, the litter box absorbent composition of the present invention permits the animal owner or caretaker to employ the same removal techniques used to remove feces from the litter box to remove urine from the litter box. Before the method and composition of the present invention, it was not possible to mechanically remove urine from a litter box utilizing only a clay as the absorbent because the urine-soaked particles could not be differentiated from the unsoiled absorbent in the litter box.

In accordance with an important feature of the present invention, the water-swellable bentonite clay absorbent remaining in the litter box after removal of the urine-soaked and agglomerated bentonite clay still is

available for future use. This portion of the litter box absorbent composition is still clean and useful, and does not contribute to the generation of noxious odors. In contrast, when using prior art litter box absorbents, such clean and useful absorbent material had to be discarded with the soiled absorbent material because no means existed to effectively separate the soiled absorbent from the fresh absorbent.

For example, FIG. 1 shows a litter box 10 comprising a water-impermeable floor member 12 having integral, water-impermeable upstanding walls 14. The unsoiled absorbent composition 16, comprising a water-swella-
 bentonite clay, is placed in the litter box 10. Solid animal dross 18, such as fecal matter, is of sufficient mass and of sufficient cohesive strength to be physically removed from the litter box for ultimate disposal. Liquid animal dross, such as urine, vomit or blood, contacts the absorbent, water-swella-
 bentonite composition 16, causing the water-swella-
 bentonite to agglomerate into a soiled solid mass 20 of sufficient size and sufficient cohesive strength to allow physical removal of the soiled solid mass 20 from the remaining unsoiled absorbent composition 16. The remaining unsoiled absorbent composition 16 does not contribute to the generation of noxious odors and can remain in litter box 10 for future use. Soiled solid mass 20 is discarded in an appropriate manner without the need of cleaning the entire litter box 10 and discarding its entire contents.

Therefore, and in accordance with another important feature of the present invention, the water-swella-
 bentonite clays provide a cost savings over the prior art litter box absorbents. First, cost savings are realized because unsoiled and unused absorbent composition is not discarded with the soiled absorbent composition. Secondly, and most surprisingly and unexpectedly, the water-swella-
 bentonite clays provide these cost-saving benefits without the addition of expensive polymeric compounds that force the absorbent particles to gel into a removable physical mass. Therefore, utilizing the water-swella-
 bentonite clays of the present invention minimizes the raw material cost of the litter box absorbent composition in a cost competitive market.

The litter box absorbent composition of the present invention comprises a water-swella-
 bentonite clay. The use of bentonite clays in a variety of applications, such as a component in drilling muds, is well known. Bentonites are economical, readily available clays, with certain forms capable of hydrating and swelling in the presence of water. The swelling properties of bentonite are related to the exchangeable cations present in a particular bentonite ore. The water-swella-
 bentonite clays contain various exchangeable cations, including sodium, potassium, lithium, ammonium, calcium and magnesium. Although any of these cations can be the predominant exchangeable cation of the bentonite clay of the present invention, bentonite clays often include a variety of exchangeable cations.

The water-swella-
 bentonite clays useful in the animal dross absorbent compositions of the present invention include any water-swella-
 bentonite clay that hydrate in the presence of water, e.g., swell in the presence of water. The water-soluble bentonite clay can be selected from the group consisting of sodium bentonite, potassium bentonite, lithium bentonite, calcium bentonite and magnesium bentonite; or combination thereof. The bentonite clay can be any member of the dioctahedral or trioctahedral smectite group, or a mixture thereof. Examples include Montmorillonite, Bei-

dellite, Nontronite, Hectorite and Saponite; or combinations thereof. The bentonite clay of the present invention also can be Attapulgite or Sepiolite.

In order to achieve the full advantage of the present invention, regardless of the water-swella-
 bentonite that is used in the litter box absorbent composition, it is preferred that the bentonite clay is not calcined. Calcination results a loss of a portion of the hydroxyl groups from the bentonite clay, and such hydroxyl groups are related to the water-absorption and water-swelling properties of the bentonite clay. Consequently, a calcined bentonite clay, while still able to absorb many times its weight of a liquid, may not swell and agglomerate with nearby wetted and calcined bentonite particles as effectively as uncalcined bentonite particles.

In accordance with another important feature of the present invention, a water-swella-
 bentonite clay useful in a litter box absorbent composition is present in a particle size ranging from about 50 μ (microns) to about 3350 μ in diameter, and more preferably in a particle size ranging from about 600 μ to about 3350 μ in diameter; or, in other words, in a particle size of from about a 6 mesh to about 100 mesh. It has been found that water-swella-
 bentonite particles appreciably greater than about 3350 μ in diameter do not sufficiently cohesively agglomerate to allow facile physical separation of the wetted, agglomerated mass from the litter box. Furthermore, it has been found that water-swella-
 bentonite particles appreciably smaller than about 50 μ in diameter produce a litter box absorbent composition that is too dusty. However, in order to achieve the full advantage of the present invention, the water-swella-
 bentonite clay should be present in the composition in particle sizes across the entire range of about 600 μ to about 3350 μ because the smaller diameter water-swella-
 bentonite particles, upon being wetted, swell and serve as "bridges" between larger, wetted bentonite particles. The overall effect is the production of a sufficiently large wetted mass with excellent physical cohesive strength.

The litter box absorbent composition of the present invention can consist only of a water-swella-
 bentonite clay, thereby avoiding any extra compounding process steps. In addition, the litter box absorbent composition of the present invention optionally can include perfumes, deodorants, odor absorbents, antimicrobial agents, disinfectants, colorants and pesticides, in an amount sufficient for perform their intended function. The litter box absorbent composition also can include other typically used litter box absorbents such as other clays, sand, or cellulose-based materials. However, any optionally added ingredient cannot be present in an amount that materially and adversely affects the ability of the water-swella-
 bentonite clay to absorb liquid dross products and simultaneously agglomerate into a monolithic mass of sufficient size and cohesive strength for physical removal of the soiled and wetted mass from the litter box. Any optional ingredients and additional absorbents are dry-blended into the water-swella-
 bentonite clay of the present invention and the water-swella-
 clay is present in an amount of at least 65% by weight of the composition, and to achieve the full advantage of the present invention the water-swella-
 clay is present in an amount of at least 90% by weight of the composition.

It should be noted that the animal dross absorbent of the present invention can be used in litter boxes or in cages of animals including, among others, household

pets such as cats, dogs, gerbils, guinea pigs, mice and hamsters; other pets such as rabbits, ferrets and skunks; or laboratory animals such as monkeys, mice, rats, goats, horses, cows and sheep. The animal litter absorbent of the present invention is especially useful for smaller animals, such as cats. Furthermore, the water-swella-
 5 ble bentonite clay of the present invention is suitable for other uses in addition to absorbing urine, such as absorbing vomit or absorbing waste liquids in appropriate areas of slaughter houses and meat packing plants.

To demonstrate the new and unexpected results of the present invention, 454 g. (one pound) of a water-swella-
 10 ble bentonite of the present invention was placed in a plastic litter box. The litter box then was used in a house that included 2 cats as household pets. The cats urinated in the litter box at regular intervals, causing the water-swella-
 15 ble bentonite of the present invention to agglomerate into sufficiently large and stable masses for at least daily physical removal, depending upon the quantity of urine and feces deposited in the litter box. The unsoiled water-swella-
 20 ble bentonite was allowed to remain in the litter box for subsequent use, and it was found that the litter box was free of offending odors for 14 days. After this time, the litter box was recharged with more of the water-swella-
 25 ble bentonite of the present invention. At the user's option, the litter box could be completely cleaned, or an additional amount of the water-swella-
 30 ble bentonite clay could be added to the small amount of remaining, unsoiled bentonite clay without cleaning the litter box because no offensive odors were being generated. In contrast, present day animal litter absorbents generate a sufficient amount of offensive odors such that the litter box must be cleaned
 35 at least weekly, and usually at least twice weekly.

Obviously, many modifications and variations of the invention as hereinbefore set forth can be made without departing from the spirit and scope thereof and therefore only such limitations should be imposed as are
 40 indicated by the appended claims.

What is claimed and sought to be secured by Letters Patent is:

1. A litter box comprising a water-impermeable receptacle having disposed therein an absorbent composition capable of agglomerating upon wetting into a mass
 45 of sufficient size and of sufficient cohesive strength for physical removal of the agglomerated mass from a litter box, said absorbent composition comprising particles of a water-swella-
 50 ble bentonite clay having a particle size ranging from about 50 microns to about 3350 microns, and having a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate.

2. The litter box of claim 1 wherein the water-swella-
 55 ble bentonite clay is selected from the group consisting of Montmorillonite, Beidellite, Nontronite, Hectorite, Saponite, Attapulgite and Sepiolite; or combinations thereof.

3. The litter box of claim 1 wherein the water-swella-
 60 ble bentonite clay is non-calcined water-swella-
 ble bentonite clay.

4. The litter box of claim 1 wherein the water-swella-
 ble bentonite clay fines have a particle size ranging from
 65 about 50 microns to about 600 microns.

5. The litter box of claim 1 wherein the absorbent composition comprises at least 90% by weight of the water-swella-
 ble bentonite clay.

6. The litter box of claim 1 wherein the absorbent composition comprises at least 65% by weight of the water-swella-
 ble bentonite clay.

7. The litter box of claim 1 wherein the absorbent composition further comprises sand, wood chips, wood shavings, shredded paper, a perfume, a deodorant, an odor absorbent, an antimicrobial agent, a disinfectant, a colorant or a pesticide; or combinations thereof.

8. A litter box absorbent composition consisting essentially of particles of a water-swella-
 10 ble bentonite clay capable of agglomerating upon wetting into a mass of sufficient size and cohesive strength for physical removal of the agglomerated mass from a litter box wherein the clay has a particle size ranging from about
 15 50 microns to about 3350 microns, and includes a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate.

9. The litter box absorbent composition of claim 8 wherein the water-swella-
 20 ble bentonite clay is non-calcined water-swella-
 ble bentonite clay.

10. The litter box absorbent composition of claim 8 wherein the water-swella-
 ble bentonite clay fines have a particle size ranging from about 50 microns to about 600
 25 microns.

11. A litter box absorbent composition having essentially no water-swella-
 ble organic polymeric material comprising particles of a water-swella-
 30 ble bentonite clay capable of agglomerating upon wetting into a mass of sufficient size and cohesive strength for physical removal of the agglomerated mass from a litter box wherein the bentonite clay has a particle size ranging from about 50 microns to about 3350 microns, and includes a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will
 35 agglomerate.

12. A method of agglomerating liquid animal dross to facilitate removal of the liquid animal dross from a litter box comprising contacting an absorbent composition in the litter box with the liquid animal dross, wherein the absorbent composition comprises particles of a water-swella-
 40 ble bentonite clay having a particle size ranging from about 50 microns to about 3350 microns, and having a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate.

13. A method of selectively removing liquid animal dross from a litter box comprising:

adding to a litter box an absorbent composition comprising particles of a water-absorbent bentonite clay having a particle size ranging from about 50 microns to about 3350 microns, and having a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate;

contacting the water-absorbent bentonite clay in the litter box with the liquid animal dross thereby producing an agglomerated mass comprising the absorbent composition and the liquid animal dross that is of sufficient size and of sufficient cohesive strength to be removed from the litter box, and removing the agglomerated mass from the litter box thereby removing the liquid animal dross from the litter box.

14. The method of claim 13 wherein the liquid animal dross includes urine, vomit or blood; or combinations thereof.

15. A method of agglomerating liquid animal dross to facilitate removal of the liquid animal dross comprising

contacting the liquid animal dross with an absorbent material consisting essentially of a water-swella-
ble bentonite clay having a particle size ranging from about 50 microns to about 3350 microns, and having a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate.

16. A method of cleaning an animal litter box and reducing litter box odors comprising:

adding to a litter box an absorbent composition comprising a water-swella-
ble bentonite clay that is capable of agglomerating upon contact with a liquid animal dross to form an agglomerated mass of sufficient size and of sufficient cohesive strength to allow physical removal of the agglomerated mass from the litter box, said clay having a particle size ranging from about 50 microns to about 3350 microns, and having a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate;

contacting the absorbent composition with the liquid animal dross to form the agglomerated mass of the absorbent composition; and
removing essentially only the agglomerated mass from the litter box.

17. A receptacle for receiving animal dross comprising a water-impermeable floor member having integral, water-impermeable upstanding wall means for retention of an absorbent composition above the floor member, wherein the composition comprises particles of a water-swella-
ble bentonite clay capable of agglomerating upon wetting into a mass of sufficient size and of sufficient cohesive strength for physical removal of the mass from the receptacle, said clay having a particle size ranging from about 50 microns to about 3350 microns, and having a sufficient amount of fine particles such that upon wetting, a substantial quantity of the clay will agglomerate.

18. A litter box comprising a water-impermeable receptacle having disposed therein an absorbent composition capable of agglomerating upon wetting into a mass of sufficient size and of sufficient cohesive strength for physical removal of the agglomerated mass from a litter box, said absorbent composition comprising particles of a water-swella-
ble bentonite clay having a particle size over essentially the entire range of from about 600 microns to about 3350 microns.

19. The litter box of claim 18 wherein the water-swella-
ble bentonite clay is selected from the group consisting of Montmorillonite, Beidellite, Nontronite, Hectorite, Saponite, Attapulgite and Sepiolite; or combinations thereof.

20. The litter box of claim 18 wherein the water-swella-
ble bentonite clay is a non-calcined water-swella-
ble bentonite clay.

21. A litter box absorbent composition consisting essentially of particles of a water-swella-
ble bentonite clay capable of agglomerating upon wetting into a mass of sufficient size and cohesive strength for physical removal of the agglomerated mass from a litter box wherein the clay has a particle size over essentially the entire range from about 600 microns to about 3350 microns.

22. The litter box of claim 21 wherein the water-swella-
ble bentonite clay is selected from the group consisting of Montmorillonite, Beidellite, Nontronite, Hectorite, Saponite, Attapulgite and Sepiolite; or combinations thereof.

23. The litter box of claim 21 wherein the water-swella-
ble bentonite clay is a non-calcined water-swella-
ble bentonite clay.

24. A litter box absorbent composition having essentially no water-swella-
ble organic polymeric material comprising particles of a water-swella-
ble bentonite clay capable of agglomerating upon wetting into a mass of sufficient size and cohesive strength for physical removal of the agglomerated mass from a litter box wherein the bentonite clay has a particle size over essentially the full range from about 600 microns to about 3350 microns such that upon wetting and partial drying, a substantial quantity of the clay is agglomerated and the agglomerated clay has sufficient strength for physical removal from a litter box as an agglomerated mass.

25. A method of agglomerating liquid animal dross to facilitate removal of the liquid animal dross from a litter box comprising contacting an absorbent composition in the litter box with the liquid animal dross, wherein the absorbent composition comprises particles of a water-swella-
ble bentonite clay having a particle size over essentially the full range from about 600 microns to about 3350 microns, such that upon wetting, a substantial quantity of the clay will agglomerate.

26. A method of selectively removing liquid animal dross from a litter box comprising:

adding to a litter box an absorbent composition comprising particles of a water-absorbent bentonite clay having a particle size over essentially the full range from about 600 microns to about 3350 microns.

contacting the water-absorbent bentonite clay in the litter box with the liquid animal dross thereby producing an agglomerated mass comprising the absorbent composition and the liquid animal dross that is of sufficient size and of sufficient cohesive strength to be removed from the litter box, and
removing the agglomerated mass from the litter box thereby removing the liquid animal dross from the litter box.

27. A method of cleaning an animal litter box and reducing litter box odors comprising

adding to a litter box an absorbent composition comprising a water-swella-
ble bentonite clay that is capable of agglomerating upon contact with a liquid animal dross to form an agglomerated mass of sufficient size and of sufficient cohesive strength to allow physical removal of the agglomerated mass from the litter box, said clay having a particle size over essentially the entire range from about 600 microns to about 3350 microns.

contacting the absorbent composition with the liquid animal dross to form the agglomerated mass of the absorbent composition, and
removing essentially only the agglomerated mass from the litter box

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USES OF BENTONITE

FILLER IN SOAP
MEDICAL DRESSINGS
GYPSON PLASTER RETARDER
PAPER FILLER
ADHESIVE PASTE
IN ASPIRIN
LINING FOR DITCHES & DAMS.

BENTONITE

Jacob Hauck, 1902 - 14th St., Oregon City, brought in a sample of bentonite (in museum) from North Fork of Clackamas River, 8 miles east from Estacada along road in E $\frac{1}{2}$ sec. 7, T. 4 S., R. 5 E., about 250 feet from top of hill. Microscopic examination shows it is montmorillonite (semi-swelling). For location see attached map.

F.W.L. and W.D.L.

1-3-47

July 6, 1970

Mr. Paul McCormick
County Extension Agent
344 South 7th Street
Redmond, Oregon 97756

Dear Mr. McCormick:

Thank you for sending me the letter and picture concerning a hole in the Hampton area of central Oregon.

It is indeed a peculiar feature but it is very difficult to give you any interpretation based on one color photograph.

If it does lie in an old river bed, it may have been caused by a natural rock boring. You may have seen other holes such as this in stream beds that apparently have been caused by a rock spinning around and grinding downward due to water turbulence. Most of these pot holes are only a few feet deep and it is certainly difficult to see how a hole as deep as the one you have pictured could have formed.

If I could visit the site personally, I probably could give a better explanation but many geologic phenomena are difficult to explain.

Sincerely yours,

Raymond E. Corcoran
State Geologist

REC:jr
Encl. photo



Phone: 548-3152

COOPERATIVE EXTENSION SERVICE

OREGON STATE UNIVERSITY
344 South 7th Street
REDMOND, OREGON 97756

June 29, 1970

RECEIVED
JUN 30 1970
STATE DEPT. OF GEOLOGY
& MINERAL INDS.

Mr. R. E. Corcoran
State Geologist
Dept. of Geology & Mineral Industries
1069 State Office Bldg.
Portland, Oregon 97201

Dear Mr. Corcoran:

Mr. Herb Meeks, Rt. 1, Box 78, Redmond, has contacted me recently regarding a possible geologic find in the high desert south of Hampton, Oregon.

Mr. Meeks has located a cavern approximately 26" in diameter which appears to have at one time carried water to the high desert area. This cavern is located in a box canyon with a riverbed apparently flowing away from it. This might have been a source of water for the high desert area in the past.

Mr. Cyrus W. Field, Associate Professor of Geology at Oregon State University, referred me to you, indicating that this might have been a large diameter diamond drill hole or boring. He encouraged me to contact you regarding this possibility or inquire about your knowledge of the area with the possible cause of this particular hole.

I am enclosing a picture furnished by Mr. Meeks of the hole. I would appreciate your returning this picture if possible. Any information that you may be able to furnish us on this particular item would be appreciated.

Sincerely,

Paul McCormick

Paul McCormick
County Extension Agent

PM:ejc
Encl Picture



MEMORANDUM TO GOVERNING BOARD
ON TRIP TO EASTERN OREGON
October 19-23 inclusive, 1949

November 19:

Wagner and I left Portland at about 9:00 a.m. and picked up in Portland Mr. Compton who was to guide us to the white clay deposit in the Upper Crooked River country. We arrived in Prineville about 1:00 p.m. and proceeded at once to the road up Crooked River. The distance proved somewhat greater than Mr. Compton had previously stated but the road was fairly good. The deposit was about 30 miles by road from Prineville. It occupies a small rounded hill alongside a logging road on Lost Creek. The principal geographic point near the deposit is called Sheep Rock Mountain. Someone interested in the property had bulldozed off the top of the hill making a bare place approximately 200 feet long by 70 feet wide in the widest place. We were disappointed to find that the white clay was only a small proportion of the total amount of clay. I estimated it to be about 10 percent. The bulk of the remainder as exposed was tan colored, with perhaps 20 to 25 percent ranging from dark tan to brown. We took three large samples of the white, tan, and brown respectively in order to have ceramic tests made. We shall attempt to leach out the color with acid but I am not hopeful of obtaining results that could be considered commercial.

November 20:

We proceeded to Spanish Gulch via Mitchell and Antone. As the Board may know, Spanish Gulch is a tributary of Rock Creek. The gravels were placered in the early days for a distance of about 3 miles. The upper mile and a half of the gulch is now owned by Mr. Everett Waterman who has leased his holdings to a company called the Spanish Gulch Mines, Inc., Sidney Zintner, president. Mr. Zintner is a wheat grower of Heppner. He has four or five men working on the property. They have set up about 150 feet of sluice box and a no. 2 giant. Water for the operation is stored in a pond which is located at the camp about 100 feet vertically above the gravels to be worked. The water in the pond is accumulated from a small ditch which heads back somewhere in the mountains. It is said to be in the Spanish Peak country. Mr. Zintner showed us the workings and we met and talked to Mr. Waterman. They showed us several ounces of coarse gold nuggets which they stated they had recovered from recent hydraulicking. We stayed at John Day that night.

November 21:

We drove up Dixie Creek and went underground at the old Standard mine where the Board will remember a small amount of radioactivity had been detected with the Geiger counter. Some of the ore found in the dump contained cobaltite besides a small amount of other minerals. The operators

of the mine were not there, although Wagner had notified them of the visit we planned. Wagner believes that only about half of the underground workings have been cleaned out and that it would be necessary to sink some shallow winzes in order to find out the characteristics of the ore. Dixie Creek had been dredged in the 30's and I was interested to see that a large part of the tailings had been levelled off, probably by floods. Sparse grass was growing in the levelled-off places. There were many large boulders ranging from 3 to 4 feet in diameter but we were told later by a man familiar with the area that the boulders existed on the surface of the creek bed before the area was dredged. From Dixie Creek we drove to Bates and then along the Middle Fork of the John Day River to get an idea of the extent and appearance of dredge tailings there. Most of the tailings are in two places, at Galena and the DeWitt Ranch. In all, about 400 acres have been dredged. A few acres at Galena have been levelled. No reseeding was observed and the piles both at Galena and the DeWitt Ranch are high and I should say would stand little chance of reseeding for a great many years. Some smaller acreage, perhaps about 30 or 40 acres, farther up the river near Vincent Creek stands a better chance of reseeding as the piles are not as high. Mr. DeWitt, who sold part of his land to Timms Bros. for dredging, told us that when he sold he figured that he could make more out of royalties from dredging in two years than he could in 20 years by farming the land. Of course, this argument would not appeal to conservationists. We drove to Baker that night.

November 22:

Mr. Hendryx and I called on Senator Austin Dunn and Representative Charles McColloch. Both appeared to be glad to see us. Senator Dunn is secretary of an interim committee which is studying the advisability of establishing a State department of conservation or natural resources. He discussed his studies on the subject and stated that the interim committee planned to meet with the Governor's Advisory Committee on Natural Resources at the next meeting December 21. Mr. Hendryx and Mr. McColloch discussed briefly activities of the Bureau of Land Management in its program for changing the mining laws. After our calls Wagner and I drove to Durkee to get a supply of travertine for our student mineral collections and then I drove to Pendleton in order to get over the Blue Mountains before an expected storm arrived.

I returned to Portland November 23.

November 30, 1949

DEPOSITS OF BENTONITE

Undeveloped deposit in Secs. 32-33, T 12 S, R 38 E, Lower Burnt River Dist.,
Baker County. - See Report in MRF.

BENTONITE NEAR VALE ALONG OWYHSE
RESERVOIR AQUEDUCT. SEE ECON. GEOLOGY
MAY, 1946.

BUREAU OF MINES
WESTERN FIELD OPERATION CENTER
DEC 10 1985
SPOKANE, WASH.

RECEIVED-PTLD
DEC 16 1985

DEPT. OF GEOLOGY
BUREAU OF MINES

BUREAU OF MINES WEDNESDAY REPORT
TO THE ASSISTANT SECRETARY--WATER AND SCIENCE
December 4, 1985

Eaugh
dup
[Signature]

INDUSTRY DEVELOPMENTS

No Prospect For Resumption Of Tin Council Loans. - The International Tin Council has made no progress towards refinancing its massive debt, 5 weeks after cessation of its price support operations. The major problem is the Council's inability to guarantee that its member nations will stand behind any new loans.

PROGRAM DEVELOPMENTS

Bureau Research Promises Reduced Costs For Domestic Iron Miners. - Research at the Bureau of Mines Twin Cities (Minn.) Research Center has shown that local glacial lake clays, supplemented with organic additives, can produce a superior binder for taconite pellets. The clay/organic mixture actually results in improved metallurgical properties compared with the more expensive bentonite from Montana and Wyoming that is now used. Such research helps to cut industry's material costs, an essential step if the domestic iron mining industry is to regain a competitive status with foreign producers.

New Edition Of The Popular "Mineral Facts And Problems" Published By Mines Bureau. - "Mineral Facts and Problems," one of the most popular and widely used references on nonfuel minerals, has just been published in a new edition by the Bureau of Mines. The 1985 edition of this perennial favorite covers 86 nonfuel minerals, giving a wide range of information on everything from production and consumption statistics to the structure of the producing industries, supply-demand patterns, strategic considerations, problems, and outlook. The encyclopaedic nature of "Mineral Facts and Problems" is probably responsible, in great measure, for its usefulness to an extremely large audience that ranges from high school and college students to industry executives, economists, government policymakers, and academics. Updated every five years, the volume can be purchased from the Government Printing Office in hardback form, and the individual chapters are available as preprints.

ACTIONS THAT IMPACT STATE AND LOCAL GOVERNMENTS

Bureau Helps Kentucky With Coal-Fire-Control Problem. - Officials from Kentucky's Division of Abandoned Mine Lands met recently with fire control specialists at the Bureau of Mines Pittsburgh (Pa.) Research Center to discuss a chronic abandoned-mine-fire-control problem in that State. The State currently is trying to design a classic isolation trench to keep the fire from spreading to adjacent coal measures, but the effort has been complicated by difficulties in interpreting temperature data obtained through boreholes in the fire zones. New Bureau of Mines methods for diagnosing abandoned mine fires were discussed and suggestions offered as to how the methods might help solve the State's problems.

Domestic Chromites Smelted Successfully. - Minnesota Governor Rudy Perpich and representatives of the steel and ferroalloys industries recently