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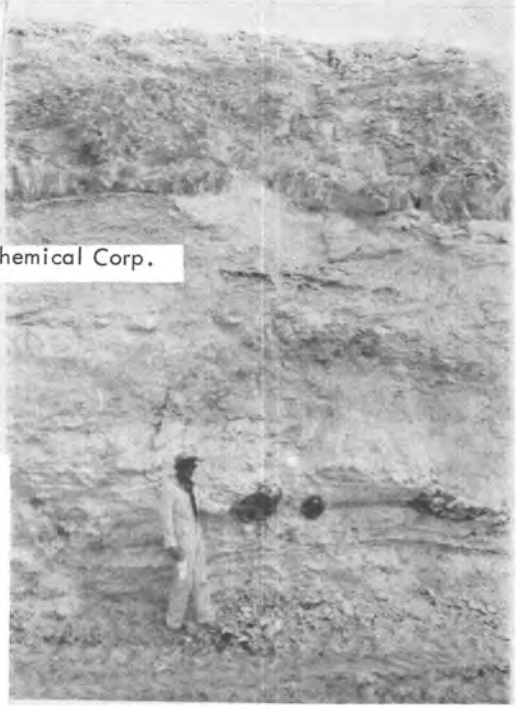
A PUBLICATION OF THE DEPARTMENT OF NATURAL RESOURCES

WASHINGTON GEOLOGIC NEWSLETTER

Gold Placers, Inc.



Witco Chemical Corp.

METALLIC AND NONMETALLIC MINERAL EXPLORATION AND MINING HIGHLIGHTS, 1978

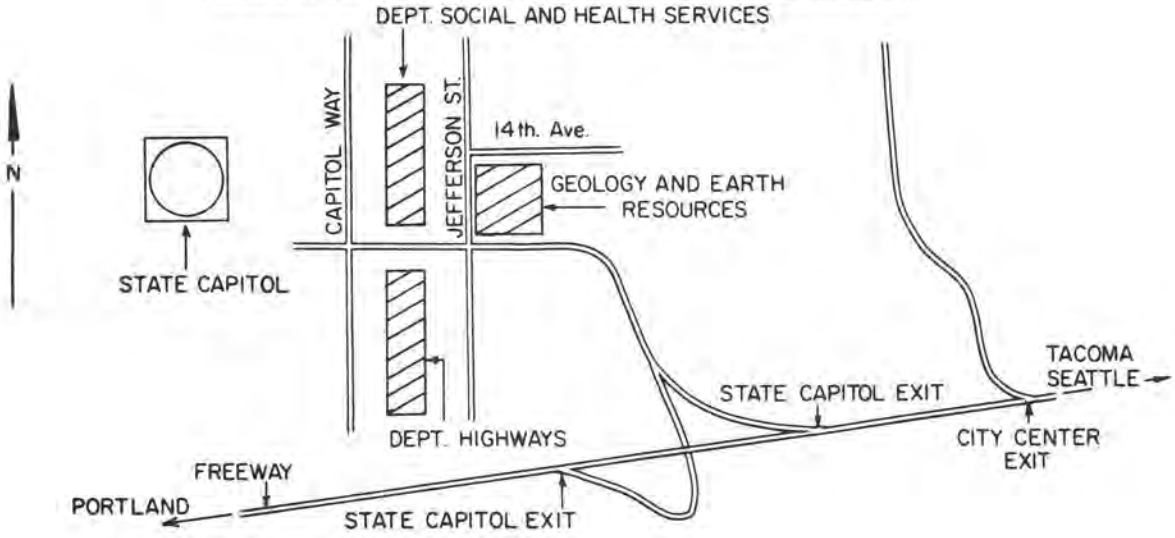
BERT L. COLE
COMMISSIONER OF PUBLIC LANDS

RALPH A. BESWICK, Supervisor
DEPARTMENT OF NATURAL RESOURCES

VAUGHN E. LIVINGSTON, JR., State Geologist
DIVISION OF GEOLOGY AND EARTH RESOURCES

DEPARTMENT OF NATURAL RESOURCES,
DIVISION OF GEOLOGY AND EARTH RESOURCES, OLYMPIA, WASHINGTON, 98504

LOCATION MAP: DIVISION OF GEOLOGY AND EARTH RESOURCES



Mailing address: Department of Natural Resources
Division of Geology and Earth Resources
Olympia, WA 98504
(206) 753-6183

Vaughn E. (Ted) Livingston, Jr., Supervisor

J. Eric Schuster, Assistant Supervisor

Donald M. Ford, Assistant Supervisor

Minerals and energy geologists	Publications	Land use geologists	Librarian	Regulatory functions
Wayne S. Moen	Laura Bray	Gerald W. Thorsen	Connie Manson	Surface Mined Land Reclamation Act
Weldon W. Rau	Keith Ikerd	Kurt L. Othberg	Secretaries	
Carl McFarland	Gibb Johnson	Allen J. Fiksdal	Pamela Whitlock	Oil and Gas Conservation Act
Ellis R. Vonheeder	Wanda Walker	James G. Rigby	Patricia Ames	
Charles W. Walker	Laboratory	Glennda B. Tucker	Kim Summers	Geothermal Resources Act
Clint Milne	Arnold W. Bowman	Pamela Palmer	Ayuni Wimpee	
Mike Korosec		Keith L. Stoffel		

COVER PHOTOS

Upper pictures: Gold Placers, Inc., Liberty, Washington. Nuggets recovered up to 2 ounces on Williams Creek.

Lower pictures: Witco Chemical's diatomite operation, one of two pits near George, Washington. Picture on right shows partial section of 30-foot thick diatomite bed beneath basalt flow.

METALLIC MINERAL EXPLORATION IN WASHINGTON, 1978

By
Clint Milne

During the 1978 field season over 45 companies conducted exploration and mining investigations in Washington. Activity has been approximately the same as last year except for perhaps a slight increase in precious metal exploration. This increase is attributed to the record values of gold and silver.

Uranium and base metal exploration has remained relatively stable over the past 2 years. Companies that located properties last year are now generally in drilling stages. Figures computed by the U.S. Department of Energy indicate that uranium exploration drilling increased this year over 1977 in Washington, as it has in the entire Pacific Northwest.

In 1978, metals explored for were uranium, gold, silver, copper-molybdenum, lead-zinc, and tungsten. The intensity of exploration was greatest in the northeastern part of the state (see figure 1), particularly in Ferry, Stevens, and Pend Oreille

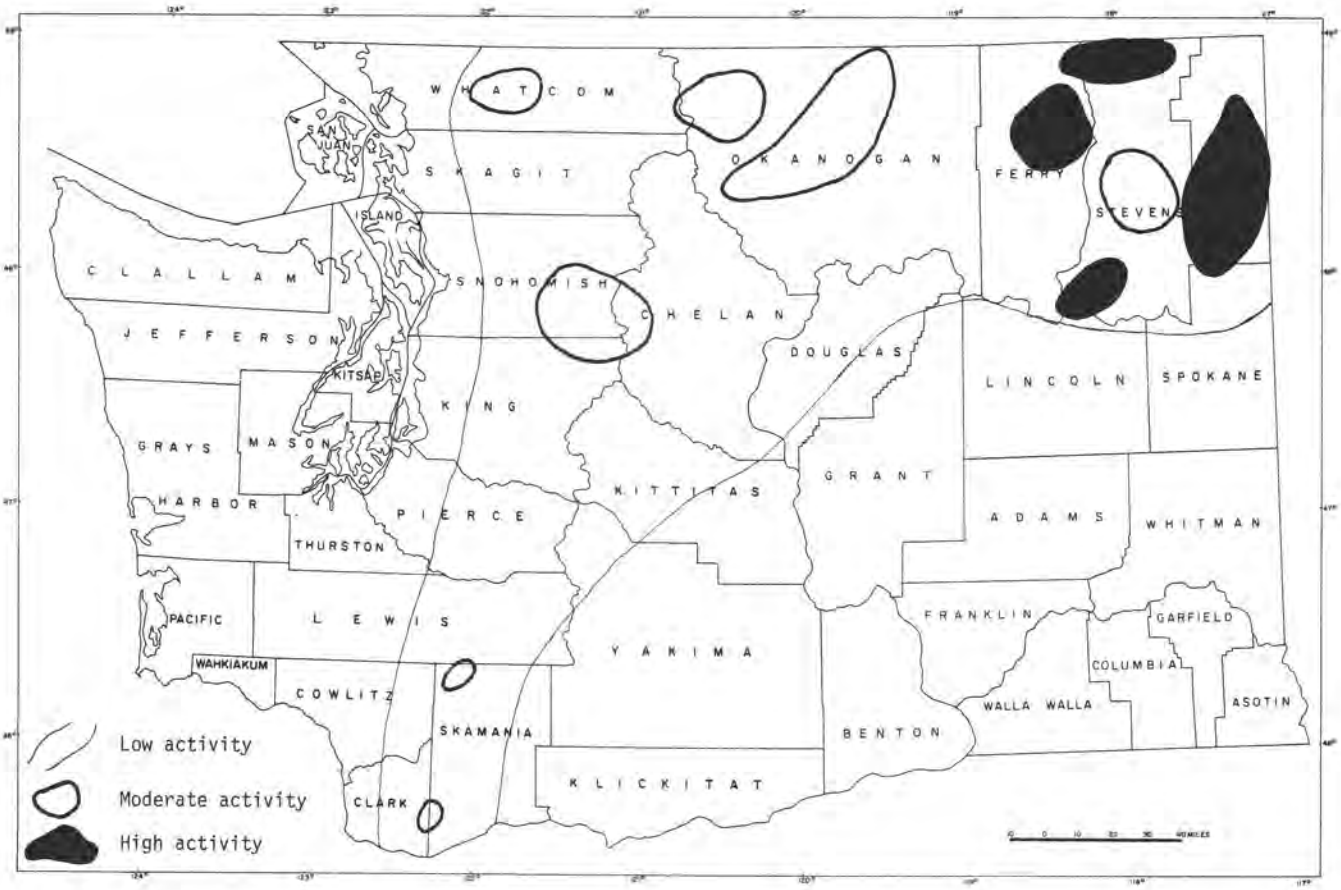


Figure 1.—Areas of exploration showing relative intensities of activity, 1978.

Counties. In this region, the most intense exploration was for uranium, followed by gold and silver. Okanogan County and the Cascade Mountains region underwent both reconnaissance exploration and property development for base and precious metals. Uranium exploration in Okanogan County and the Cascade Mountains was minor.

Uranium Exploration

Uranium was the most highly sought after metal this year following the trend of the last 2 years. Twenty-one of the companies active in Washington were involved in uranium exploration. Ferry, Stevens, northern Lincoln, and Pend Oreille Counties had most of the exploration activity (see figure 2). Including northern Spokane County, this region of northeastern Washington contains 80 percent of the known uranium occurrences in the state.

The focal point of uranium exploration was the Midnite and Sherwood uranium mine area of southwestern Stevens County and north-central Lincoln County. Companies, including Dawn Mining, Western Nuclear, Denison, Rexcon, Lucky Mc Uranium, Anaconda, and Alliance Nuclear, have been intensely prospecting this area for Sherwood (basal conglomerate) and Midnite-type (hard rock) deposits. A newcomer to the region this year is Anaconda, who has reportedly drilled the Sand Flat area south of the Spokane Indian Reservation.

The Pend Oreille Valley of Pend Oreille County was still the site of heavy uranium exploration

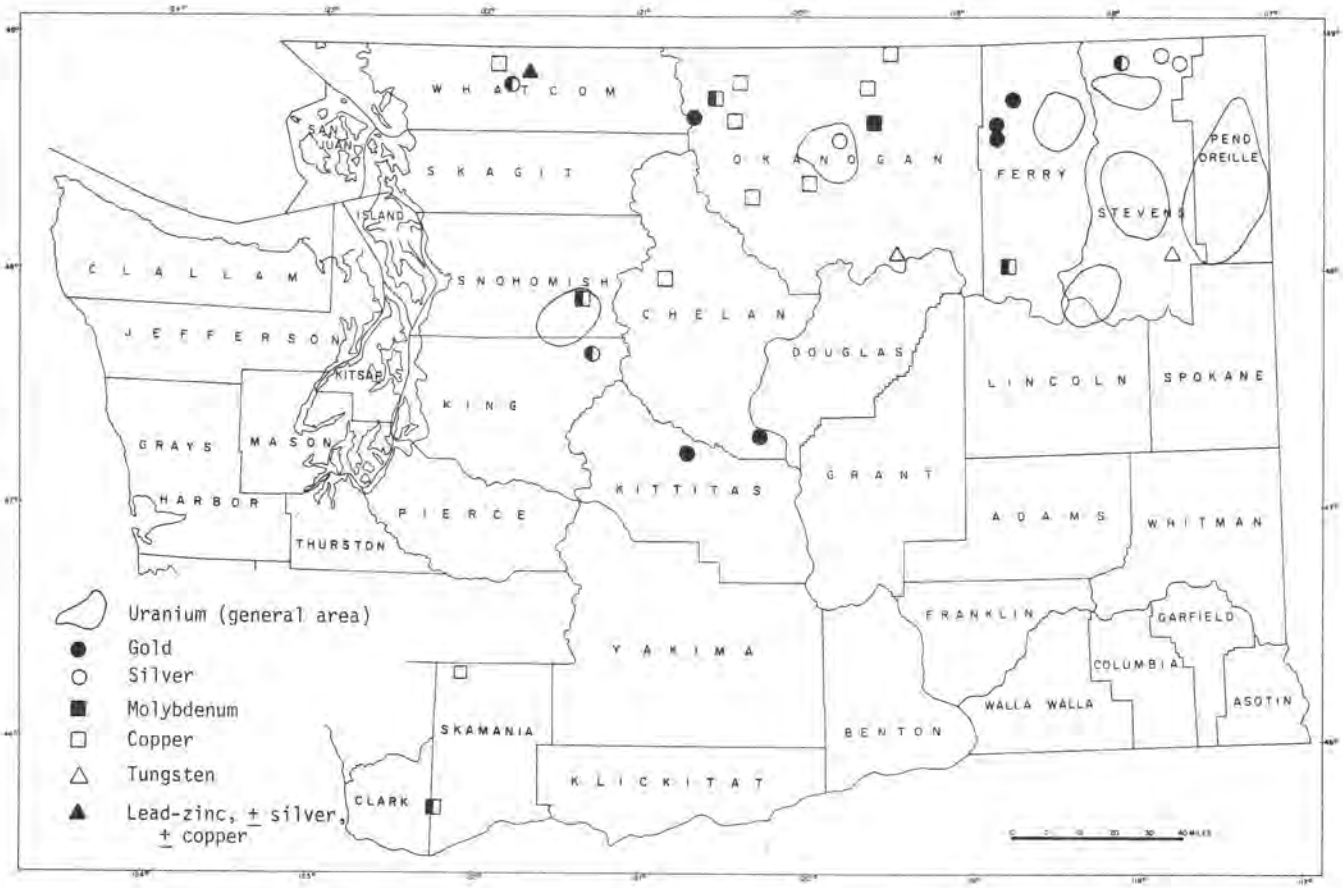


Figure 2.—Locations for metallic mineral exploration, 1978.

in the Tertiary sedimentary sequences (Tiger Formation) and felsic intrusives of the valley region. Nothing economic has apparently been found to date. At least 10 major mining companies were reported to be in various stages of exploration from reconnaissance examination to drilling. Companies working in the Pend Oreille Valley are: Conoco, BurWest, Inspiration Development, Lucky Mc Uranium, Wold Nuclear, Kerr-McGee, Minatome, Resource Associates of Alaska, Denison, and Reserve Oil and Minerals. Reserve Oil is drilling twenty 1,000-foot holes in the Cusick Basin of the lower valley region.

Elsewhere in the Okanogan Highlands Physiographic Province, Kerr-McGee, Conoco, and Reserve Oil are drilling in central Stevens County, an area of possible "Midnite-type" extensions. Western Nuclear, St. Joe, Nesco, and Inspiration Development prospected for uranium in east-central Ferry County. The Mount Leona and Sherman Pass areas of Ferry County are still thought to have the possibility of economically important deposits. In Okanogan County, Washington Public Power Supply System (WPPSS) plans to drill on Mineral Hill in the Conconully area. U.S. Borax and Conoco continued reconnaissance exploration throughout the entire Okanogan Highlands.

The Cascade Mountains region of western Washington underwent minor uranium exploration. Kerr-McGee carried out a stream sediment program in the Sultan Basin region of southeastern Snohomish County. In the Spirit Lake area of northwestern Skamania County (Mount St. Helens District), Burlington Northern found anomalous radioactivity in Miocene rhyolites and tentatively identified a uranium mineral as carnotite.

Gold-Silver Exploration

This past year, 12 of the 45 mining companies active in Washington were exploring, developing, or mining precious metals. Activity was scattered throughout the Okanogan Highlands and Cascade Mountains physiographic provinces.

In northeastern Stevens County, mining continued on the Melrose silver mine near Northport by Charleston Resources, and Brinex drilled a silver property in this region. In the Mineral Mountain area west of Northport, Totem Industries Ltd. of Vancouver did considerable exploratory work on deposits of gold, silver, copper, and tungsten and are contemplating mining operations.

North of Republic in Ferry County, Ruby Mines, Inc. conducted leaching tests at the Valley View gold mine. South of here and in the vicinity of Republic, Houston Oil and Minerals continued investigations for gold at the Flag Hill mine. Just north of Republic, in an attempt to keep the Knob Hill mine open, exploration was conducted by Day Mines, Inc. They also plan extensive exploration on gold-bearing veins in much of the Republic mining district.

On Mineral Hill, in the Conconully area of Okanogan County, Mineral Hills Mines, Inc. continued development of the Sunny Peak silver mine.

In the North Cascades of western Okanogan County, Lions Mines Ltd. continued development on the Newlite gold mine in the Harts Pass region. The 100-ton-per-day mill at the property is being readied for operation. In central Whatcom County, U.S. Borax drilled the Great Excelsior silver property east of Glacier, in the Mount Baker district. In King County of the central Cascades, Inspiration Development explored for gold and silver in the Miller River and Money Creek area. South of Wenatchee in Chelan County, Amoco explored for gold deposits near the Lovitt mine.

Base Metals and Tungsten Exploration

Base metal exploration has been predominantly in the Cascade Mountains and western Okanogan Highlands. Sixteen companies explored for copper, molybdenum, lead, and zinc, with the primary activity directed toward copper and molybdenum.

In Skamania County of the southern Cascades, Amoco continues to investigate copper and molybdenum deposits on the Miners Queen property in the Silver Star mountain area. In the northwestern part of the county, Duval also continued to explore a low-grade copper property north of Mount St. Helens.

In the Sultan Basin of Snohomish County in the central Cascades, Exxon explored the Broken Ridge copper-molybdenum prospect in the Silver Creek area. North of Lake Wenatchee in Chelan County, Bethex investigated a copper property on Basalt Peak. In Whatcom County Texasgulf explored a copper prospect in the Church Mountain area north of Mount Baker. Also in this region, Asarco prospected for copper, zinc, and silver. In the Slate Creek mining district of eastern Whatcom County, Duval staked a claim group on a copper-molybdenum showing.

In Okanogan County eight exploration companies actively prospected for copper and molybdenum. In the northwestern part of the county, Northwest Mining Ltd. examined the Copper Glance property in the upper Eightmile Creek area. Quintana continued its investigation of the Mazama Copper property. A few miles north of Twisp, Utah International explored for copper in the Bonner Lake area. East of Twisp on Buck Mountain, Gulf Minerals has a lease on a molybdenum prospect. West of Tonasket, Amax drilled molybdenum deposits at the Star Moly prospect. Southwest of Oroville, Bethex examined the Copper World property on Palmer Mountain. North of Oroville near the Canadian border, U.S. Borax explored the Kelsey property on the west side of Lake Osoyoos. Inspiration Development explored prospects of copper, lead, and zinc throughout Okanogan, Chelan, and Snohomish Counties.

In southern Ferry County in the Keller area, Amax leased the Mount Tolman copper-molybdenum property from the Colville Indian Tribe. Bear Creek released the property last year after 12 years of exploration (1964-1976). Previous estimates indicate 140 to 240 million tons of ore at a grade of 0.12 percent copper and 0.13 percent MoS_2 in a porphyry-type deposit.

Two tungsten properties were active in Washington this year. The Blue Grouse mine in the Deer Lake area of southern Stevens County was leased to Kimmer Coal Company, who has been investigating deposits there. In southern Okanogan County along the Columbia River and south of Omak Lake, Union Carbide examined economic possibilities at the Chief Jo tungsten mine.

Producing Mines

Western Nuclear's Sherwood uranium mine in southwestern Stevens County began producing ore in May of this year. Milling of the ore at 2,000 tons per day was finally achieved in early November. Mining continued from the east pit ore body and the ore grade is generally 0.08 to 0.10 percent U_3O_8. Approximately 5 miles to the north of the Sherwood mine, the Midnite uranium mine is operated by Dawn Mining Company. Dawn is milling ore at 480 tons per day and at a grade of about 0.10 percent U_3O_8.

At the Melrose silver mine in northeastern Stevens County, Charleston Resources mined 12 carloads of silver ore, averaging 24 ounces per ton. The ore is shipped to the Tacoma and Trail smelters. To date, 18,074 ounces have been mined.

Bunker Hill's Pend Oreille zinc mine near Metaline Falls has been closed for over a year because of low zinc prices that are still not high enough to economically reopen the mine.

The Knob Hill mine, a few miles north of Republic in Ferry County, closed last February but was opened several weeks later by Day Mines, Inc., its new owners. Mining has continued throughout the year at a level below the 400-ton-per-day mill capacity.

In the Liberty area of northern Kittitas County, the Swauk mining district is once again seeing the glitter of gold. Gold Placers, Inc., operated a gold placer washing plant part-time on Williams Creek and recovered gold nuggets up to 2 ounces in size. The "Miser's Face," a 55 ounce nugget, was taken from this area around 1900.

MINING COMPANIES ACTIVE IN WASHINGTON, 1978

Alliance Nuclear
Amax
Amoco
Anaconda
Asarco
Bethex
Brinex Ltd.
Burlington Northern
BurWest
Charleston Resources
Conoco
Dawn Mining Co.
Day Mines, Inc.
Denison Mines, Inc.
Duval Corp.
Exxon
Gold Placers, Inc.
Gulf Mineral Resources Co.
Houston Oil and Minerals Corp.
Inspiration Development Co.
Kerr-McGee Resources Corp.
Kimmer Coal Co.
Lions Mines Ltd.
Lucky Mc Uranium Corp.
Midnite Mines, Inc.
Minatome Corp.
Mineral Hills Mines, Inc.
Nesco Mining Corp.
Northwest Mining, Ltd.
Quintana Minerals Corp.
Reserve Oil and Minerals Corp.
Resource Associates of Alaska
Rexcon
Ruby Mines, Inc.
St. Joe American Corp.
Silver Consolidated Mining Co.
Silver King Mines
Texasgulf, Inc.
Totem Industries Ltd.
Union Carbide
U.S. Borax
Utah International
Washington Public Power Supply System (WPPSS)
Western Nuclear, Inc.
Wold Nuclear

NONMETALLIC AND INDUSTRIAL MINERALS AND ENERGY EXPLORATION

By
Ellis R. Vonheeder

INTRODUCTION

The nonmetallic mineral industry in Washington experienced an overall growth rate of approximately 7 percent in 1978, according to preliminary figures released by the U.S. Bureau of Mines. The total state mineral production figure is projected to be approximately $188.4 million. Portland cement ($65.3 million), sand and gravel ($39.1 million), and stone ($28.2 million) make up approximately 68 percent of the total value of minerals produced. Fossil fuels and metallic minerals account for the majority of the remainder.

Energy exploration, namely coal exploration, received much attention in Washington in 1978, with over a dozen coal exploration companies actively engaged in exploration and(or) evaluation of available data. Exploration and evaluation of geothermal sources in the state will increase in the next 2 to 4 years as two federally sponsored projects begin.

INDUSTRIAL AND NONMETALLIC MINERALS

Unlike the state's metallic minerals, which are concentrated essentially in northeastern Washington, every county in the state has a history of nonmetallic mineral production.

The stone industry, according to figures from the U.S. Bureau of Mines, has shown approximately 9 percent growth in production over last year, and reflects a substantial increase in demand for crushed stone as used in such applications as road-metal, aggregate, and riprap. The 1977 Washington Directory of Mining Operations lists over 100 quarries, mainly in King, Snohomish, and Whatcom Counties, which produce andesite, basalt, limestone, and sandstone.

Sand and gravel operations number over 320 active pits, for the most part concentrated in King, Pierce, Snohomish, and Spokane Counties. Production figures indicate a 7 percent increase over last year. Sand and gravel production in 1978 continued to re-

flect the dramatic number of new housing construction projects in the Puget Sound area in the last 3 to 5 years. Demand for sand and gravel is expected to increase, and prices are expected to increase proportionally as federal and county regulations preclude or seriously hinder the opening of new pits near urban areas. As funding for state and federal highway building programs is curtailed, this demand for sand and gravel is expected to decrease.

Portland cement is manufactured in King, Whatcom, and Pend Oreille Counties. Preliminary figures indicate a 21 percent increase in the production of Portland cement. In 1978, 1.5 million tons of Portland cement were produced, with about 520,000 tons (35 percent) of that figure derived from limestone quarried within the state.

Dolomite

Northwest Alloys, a subsidiary of Alcoa, Inc., and located at Addy, Washington, is the largest producer of magnesium metal in the state. The plant has been in production since January, 1976; capacity of the plant at full operation is 24,000 tons of magnesium and 16,500 tons of silica annually. Approximately 300 tons of metallic magnesium are produced in one week.

Raw material production tonnages through October of this year include over 351,700 tons of dolomite and 16,500 tons of silica. Developmental drilling was undertaken at the company's quarries this past year. Conservative estimates suggest at least a 45-year supply of dolomite and quartzite.

Industrial Mineral Products of Ravensdale (near Seattle) recycles slag and magnesia waste from the Addy operation. Approximately 100,000 pounds of magnesium metal per month are reclaimed. The slag finds use as riprap and is ground fine for use as roofing granules.

Other waste products from the Addy operation are also reclaimed. A soil conditioner, under the trade name Do-Lime, is used extensively on Hawaiian sugar plantations. Calcium silicate also is used as a soil additive. Waste silica is reclaimed as a smelter flux. Owners of Industrial Mineral Products see their business showing conservative and solid growth as other markets and uses for their products are discovered.

Olivine

The Olivine Corporation of Bellingham continues to produce about 10,000 tons of mineral per year from their quarry on the north side of the Twin Sisters massif in Whatcom County. Approximately 600 acres in 30 claims are held by the company. No new exploration drilling was undertaken in 1978. Increasing restrictions in the use of silica sand has opened up new markets for olivine as an additive for pig iron and as a casting sand in manganese steel foundries.

Northwest Olivine, the largest operator in the state, has been in existence for 20 years. In 1964, it acquired Wiseman Minerals of North Carolina. In 1968, the company was in turn purchased by International Minerals and Chemicals and remains an IMC subsidiary today. A steady growth rate of 2 to 5 percent in the last 6 years has been exhibited by the company.

The Washington State market varies in proportion to the cyclical variations of the steel and foundry market. North Carolina production figures recently surpassed those of Washington State, primarily due to olivine finding increased use as a slag conditioner in eastern U.S. foundries. The company optimistically forecasts a 5 to 7 percent growth rate through June 1979.

A new exploration program is now in progress at the company's property, located on the southwest side of the Twin Sisters massif. The program includes 40 drill holes, each 50 feet in depth. Evaluation of the drilling program will give Northwest Olivine a more accurate picture of quality and extent of reserves. The company estimates that within 5 years the operation will change from the present "talus

slope" operation to a bona fide "hard rock quarry" operation.

Diatomite

Witco Chemical Corporation continues to produce diatomite from their two pits near George in Grant County. Results of exploration drilling undertaken this summer are still being evaluated.

Diatomite finds extensive use in industrial applications as a filtering agent and as an insulating medium.

ENERGY

Coal

Interest in Washington coal resources remains fairly high, although no new coal mining operations started in 1978.

Washington Irrigation and Development Corporation remains the largest coal-producing entity in the state. Approximately 5 million tons per year are produced at the captive mine near Centralia; total production is used to generate power at the adjacent thermoelectric plant. Confirmation drilling of reserve holdings and seam characterization prior to mining continue; present reserves are estimated to be approximately 60 million tons.

The only other coal producer in this state at the present time is Palmer Coking Coal of Ravensdale. Palmer produces approximately 25,000 tons of bituminous coal per year, mostly for small institutional contracts and domestic use. The Black Prince strip mine, a small two-man operation just east of the Widco mine, was shut down earlier this year. The owner found that expenses of meeting federal requirements would have made the operation uneconomical.

Burlington Northern Inc. drilled exploratory holes at 31 locations on their property near Roslyn. Pending evaluation of this year's data, Burlington Northern may elect to do further drilling in the 1979 field season.

During September a major Northwest timber firm retained the John T. Boyd Co., of Denver, to drill 27 holes in the Toledo-Castle Rock coal district of southwestern Washington. Total footage drilled was in excess of 7,000 lineal feet.

Harrison-Western of Denver has been retained by a group of Northwest investors to evaluate coking coal reserves in the Hamilton-Cokedale area of Skagit County. Drilling and exploration activities there are expected to extend through the 1979 field season.

GRC Exploration of Denver, a subsidiary of Gulf Resources and Chemical Corporation, has drilling rights on approximately 480 acres near Ashford, west of Mount Rainier. Other activities include reevaluation of existing data, trenching, and sampling of potential coking coal reserves in the Ashford field.

Utah International of Salt Lake City has ended its second field season in Washington State. A close evaluation of preliminary data gained from general reconnaissance and some exploratory drilling last season will determine if the company will return for the 1979 field season.

In February, 1977, the City of Seattle retained a number of consultants to use available data in evaluating coal resources in both the Roslyn and Green River fields and to prepare a mining plan in each area to supply an assumed 300-megawatt coal-fired thermoelectric power plant.

Summarizing a report prepared jointly by Shannon & Wilson and Kaiser Engineers, City Light states that coal in sufficient tonnages to feed the power plant for its 35-year-life is available only in the Green River area. Such coal would have to be mined underground; mining costs would make the coal more expensive than Rocky Mountain coals delivered to western Washington markets at today's prices.

The report also mentions that methane gas reserves are not present in sufficient quantity to justify recovery for use in a combined cycle power-generation plant. Underground gasification of coal in the Green River area was deemed to be difficult and expensive. Generation costs in a combined-cycle system using

coal gasified in place could not be estimated because it was felt that a commercially feasible process would not be available for another 15 years.

Other companies continue to evaluate existing data in office studies prior to committing funds for exploration and drilling. Some of those companies are listed at the end of this paper.

Of the state's 6.1 billion tons of coal reserves, only 8 percent are considered to be strippable. The remaining 92 percent would have to be won by costly underground methods or remote methods which would not involve men underground.

Thus, underground coal gasification techniques have been considered at various times in the past. Exploration in Washington for a suitable underground coal gasification pilot site should begin soon. Eight hundred thousand dollars ($800,000) of the 1979 U.S. Department of Energy budget has been earmarked for such preliminary site characterization in this state. The prime contractor has not been selected yet, but should be announced early in 1979. With underground mine capitalization costs increasing continually, underground coal gasification may be the only profitable way the majority of Washington's coal resources can be profitably exploited.

Oil and Gas

There were no exploratory oil or gas wells drilled in 1978. One gas storage well was drilled at the Jackson Prairie unit in Lewis County. In 1978, the State of Washington leased 101,851 acres for oil and gas exploration purposes in Pacific and Wahkiakum Counties. Of the total acreage leased, 76,963 acres were in tidelands and 24,888 acres were included in upland leases.

Geothermal

Although none of the more than 100 pending leases for geothermal exploration and development on federal lands has been granted, interest in Washington's geothermal resources is increasing. During the year Burlington Northern has continued to explore for geothermal targets in the Cascade Range, Seattle City Light has advertised for proposals to assess geothermal resources, Crown Zellerbach has applied for federal funding to search for and develop geothermal resources for space and process heating at their Camas paper mill, and Washington Public Power Supply System began to consider geothermal resources as future electricity producers. In addition, new federal and state geothermal assessment programs were begun.

ENERGY EXPLORATION COMPANIES

ACTIVE IN WASHINGTON, 1978

Abcon Engineering
Amnedo & Ivey
Burlington Northern Inc.
Floyd Cardinal
Dawson Oil Properties
Exxon
GRC Exploration
Gulf Mineral Resources
Harrison-Western
John T. Boyd Co.
Minerals Exploration Co.
Nissho-Iwai American
Rushing Minerals, Inc.
Utah International
Washington Irrigation & Development Corp.

GEOLOGIC RESEARCH PROJECTS IN WASHINGTON STATE NOW IN PROGRESS AT COLLEGES AND UNIVERSITIES

Listed below are additional geologic research projects to supplement the main listing in the April Newsletter:

Western Washington University

— Recently Completed Master's Theses —

Paleomagnetism and tectonic significance of the Goble Volcanics of southern Washington. Cynthia Burr.

Pleistocene geology and related landslides in the lower Skagit and Baker Valleys, north Cascades, Washington. Paul Heller.

Volcanology and geochemistry of the south flank of Mount Baker, Cascade Range, Washington. Douglas McKeever.

A gravity survey and analysis of the Mount Stuart block of Washington State. Gregg Petrie.

Stratigraphy and chronology of raised marine terraces, Bay View Ridge, Skagit County, Washington. Robert Siegfried.

Shoreline processes and sediment response related to the origin of beach cusps on Whidbey and Fidalgo Islands, Washington. John Spasari.

The origin of serpentinites associated with the Shuksan metamorphic suite near Gee Point, Washington. Daniel Wilson.

— Theses Nearing Completion —

Quaternary geology and stratigraphy of Kitsap County, Washington. Jerry Deeter.

The stratigraphy and petrology of the sedimentary section of the Fidalgo ophiolite, Washington. Daryl Gusey.

Puget Sound bluff stability and shoreline changes in Skagit County, Washington. Ralph Keuler.

— Theses In Progress —

Petrology, petrography and geochemistry of the Black Jack breccia pipe of the Silver Star plutonic complex, Skamania County, Washington. Bob Birk.

Petrography and petrochemistry of the Chilliwack Group rocks near Sauk Mountain, north Cascades, Washington. Bruce Christensen.

Stratigraphy and depositional environment of the Deming formation, Washington. Bob Crandall.

Metamorphism and correlation of the rocks in the Cultus Mountain area, Washington. Jack Cruver.

The mechanics of creep and its relationship to slope stability (north slope of Manastash Ridge (Ellensburg Formation) near Ellensburg, Washington). Chuck Eccleston.

Paleomagnetism, geochemistry, and petrology of the Black Hills basalt, Thurston, Mason, and Grays Harbor Counties, Washington. Brian Gloverman.

A paleocurrent analysis of the western part of the Chuckanut depositional basin (near Bellingham, Washington). Jim Hartwell.

Geology of the Shuksan greenschist and associated rocks in the Mount Watson area, north Cascades, Washington. Ralph Haugerud.

The net shoredrift of Whatcom County, Washington. Ed Jacobsen.

The emplacement conditions and geochemistry of the Lake Ann stock, north Cascades, Washington. Eric James.

Mineralogy and chemistry of clays of the Chuckanut

Formation, Higgins Mountain, Washington. Sue Kinder.

Stratigraphy and metamorphism of the Nooksack Group in the Glacier Creek-Skyline Divide area, north Cascades, Washington. Jon Sondergaard.

Geochemistry of the Shuksan metamorphic unit, north Cascades, Washington. Leah Street.

The geology and geochemistry of the Molly property with special reference to uranium distribution, Snohomish County, Washington. R. L. Zamboras.

U.S. GEOLOGICAL SURVEY OPEN-FILE REPORTS

The following reports are now available for inspection in our division library:

Radium and uranium data for mineral springs in eight western states, by J. Karen Felmlee and Robert A. Cadigan, 21 figs., 4 tables, 45 p. Open-file Report 78-561.

Well-sample and core repositories of the United States and Canada, by C. K. Fisher and M. P. Krupa, 73 p. Open-file Report 77-567.

YOUR STATE GEOLOGIST REPORTS

In recent years I have found myself having a harder time understanding the geologic literature. This is, of course, due to the increase in the number of people working within narrow specialized fields. Bearing this in mind, it was with considerable satisfaction that I recently read a report edited by Victor R. Baker, of the University of Texas at Austin, and Dag Nummedal, of the University of South Carolina, on the Channeled Scablands. The report consists of a series of well-written papers by Baker, Nummedal, and a few other authors, dealing with the scablands. I found it very refreshing to be able to sit down and read a geologic report much as one would read a novel. The articles are well illustrated with photographs and drawings and cover everything from surficial and bedrock geology to the paleohydraulic and erosion features. Of particular interest is the excellent step-by-step review of how J Harlan Bretz put the "flood theory" together and met each challenge that was thrown against it by other workers. In this day of articles on the size of unit cells and statistical analyses of variations within fossil populations, if you want to read a good old-fashioned report on megageology, this is it.

Ted Livingston

DIVISION SHIFTS RESPONSIBILITIES FOR ASSISTANT SUPERVISORS

Some time ago, a major shift of supervisory work was made in the Division of Geology and Earth Resources, with Don Ford and Eric Schuster trading some responsibilities. The Land Use Geology section was placed under Don, and Eric took over supervision of publication preparation. The final phase of this reorganization has now been finished. The complete functional organization of the division, with the employees in each section, can be seen on the back of this newsletter cover.

U.S. GEOLOGICAL SURVEY 7½-MINUTE TOPOGRAPHIC QUADRANGLES
(Maps received in the division library since November 15, 1978)

Name	New edition	Photo revised	Latitude (indicates southeast corner)	Longitude	County
Bassett Junction	1956	1978	47°00'00"	119°00'00"	Grant
Carlsborg	1956	1978	48°00'00"	123°07'30"	Clallam
Copalis Beach	1955	1973	47°00'00"	124°07'30"	Grays Harbor
Crescent Harbor	1977		48°15'00"	122°30'00"	Island; Skagit
Ediz Hook	1961	1978	48°07'30"	123°22'30"	Clallam
Ephrata	1956	1978	47°15'00"	119°30'00"	Grant
George	1966	1978	47°00'00"	119°45'00"	Grant
Ginkgo	1953	1978	46°52'30"	120°00'00"	Kittitas; Grant
Johnson Butte	1964	1978	46°00'00"	119°07'30"	Benton
Mae	1956	1978	47°00'00"	119°22'30"	Grant
Moses Lake South	1956	1978	47°00'00"	119°15'00"	Grant
Naches	1958	1978	46°37'30"	120°37'30"	Yakima
Portland, Ore. - Wash.	1961	1970;1977	45°30'00"	122°37'30"	Clark
Sunnyside	1965	1978	46°15'00"	120°00'00"	Yakima
Upper Nasalle River	1949	1978	46°22'30"	123°37'30"	Pacific; Wahkiakum
Walla Walla, Wash. - Ore.	1966	1978	46°00'00"	118°15'00"	Walla Walla
Wenatchee	1966	1978	47°22'30"	120°15'00"	Chelan; Douglas
White Salmon, Wash. - Ore.	1978		45°37'30"	121°22'30"	Klickitat

Department of Natural Resources
Division of Geology and Earth Resources
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BULK RATE
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