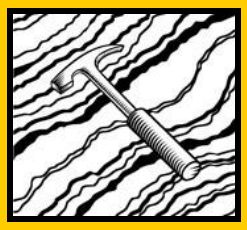
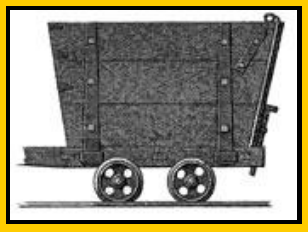
Gem Hunter – The Prospector's Newsletter





Vol 2, No 5, May 2010 *Newsletter from the GemHunter*

NORTH TO ALASKA

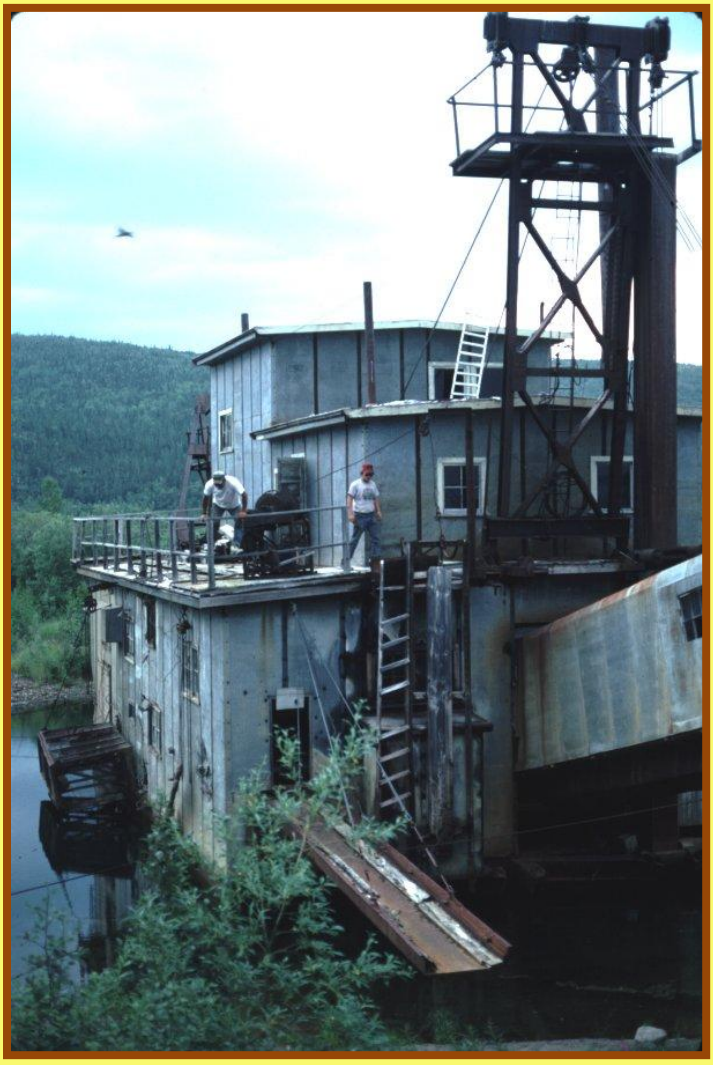
In the summers of 1988 and 1989, I took leave from the Geological Survey of Wyoming to consult on a project in Alaska. Each year, I accumulated as much leave as possible so I could take vacations to consult on projects I found exciting. This was a great way for me to learn about the geology of other regions of the world, while a company paid for my education.

Holy Cross, seen in southwestern Alaska, is located 50 miles west of Donlin Creek-Snow Gulch and Anchorage is located 275 miles to the southeast of Donlin Creek.

Dr. Paul Graff from Casper had been hired to run a gold exploration project in the Kuskokwim Mountains of southwestern Alaska for WestGold. Paul asked me to come on board because of my reputation for detailed geological mapping and for my expertise in hard rock geology. Paul, himself, was also a highly-skilled geological mapper who had produced geological maps in the Precambrian terrain of the Medicine Bow Mountains of Wyoming, so it was an honor that he would consider me. Besides, Paul was a lot of fun to be around – so my response to him – "how big of a gun should I take"?

Some people actually think bears are cuddly. They are higher on the food chain than we are and will eat you! Every time I see a *National Geographic* film of cuddly polar bears, I wonder how they were able to recover the photographer's camera from the stomach of the bear. And then there were those college students I ran into along the Wood River in Wyoming's Absaroka Mountains near Yellowstone. Believe it or not, a group of college students had registered for a wilderness survival class through some California university

and when I ran into them on the trail, they wanted to know why I was backpacking in the wilderness by myself carrying a .44 magnum. When I told them it was bear repellant, they looked shocked. Apparently, some irresponsible faculty member had convinced these students that bears were relatively tame (I kid you not!), so some of the students carried bells (think of these as dinner bells). Hopefully, none of the students (other than the faculty member) ran into any bears on that excursion. Bears around the Wood River and Kirwin in the Absaroka Mountains are just plain angry – they don't like people except when they need extra fiber from granola bars along with pepper spray for spice. So, when I got to Alaska and found bears up there were nearly twice the size of Wyoming bears, it didn't take long for me to realize my .44 caliber did not have enough fire power. After seeing my first Alaskan bear, I started looking through catalogues for a rocket launcher. Bears in Alaska are big! I assume it is partially because of the abundance of berries (I seldom packed a lunch in Alaska because of all of the berries – just had to make sure I was not in the buffet line with any of the local critters).



Bears are better armed than geologists and prospectors. Thus many Alaskans I met tried to put the odds in their favor and carried a Freedom Arms .454 or .475 caliber revolver or a saw-off shot gun. I had never heard of these hand guns before. But, then again, I'm not much into guns except when it comes to bears. After all, I've trained in martial arts all my life, but I know when I'm out-gunned and out-muscled. These guns made my .44 magnum look like a pea shooter: not only that, they were made in Wyoming from stainless steel. After just a couple of days in the humidity of the Alaskan outback, a non-stainless steel gun will start to rust.

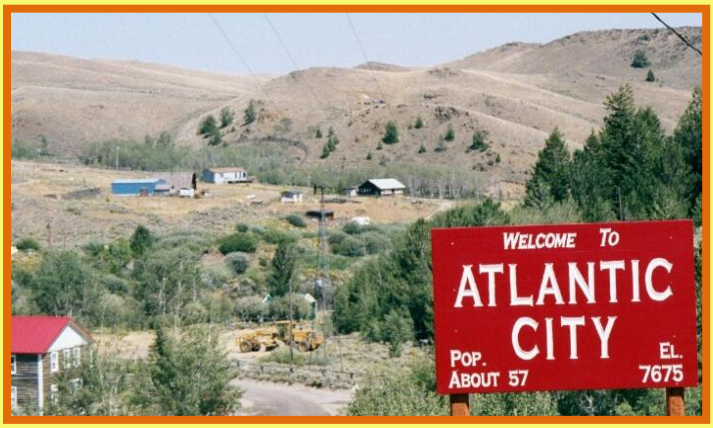
Abandoned gold mining dredge at Flat Alaska – where we spent our 4th of July.

Everyone in Alaska has bear problems. One evening a bear wandered into the WestGold camp at Snow Gulch looking for a midnight snack. Unfortunately, his plans focused on a geologist who climbed on top of a tent and yelled for help. The first responder was our driller who couldn't find his bottleneck glasses and couldn't see clearly without them. To try to frighten the bear, he shot his .357 magnum into the air.

This woke the camp. Another geologist ran out and took the driller's gun. At point blank range, he shot the bear between the eyes. This really made the bear mad but gave the perpetrator a nasty headache. Now, visualize what happened next. This geologist decided to shoot again – he took aim, pulled the trigger and *'click'* - the gun was empty! The driller had fired 5 rounds into the air to scare the bear and didn't count his shots. It was time to clean everyone's shorts out! With a nasty headache, the bear decided he had enough for the night and left. The next morning he was back with his distinct red streak between his eyes. One of the Eskimos with the sampling crew finished the intruder with a .30-06.

When I flew to Alaska, I left from Denver and flew to Anchorage. I was impressed by Anchorage – it was a real city that looked like any other modern city. Chain stores, restaurants, shopping malls, cars, etc. The next day I left Anchorage on a flight to Crooked Creek and met most of the 137 residents within the first minute of arriving. Crooked Creek was similar to many of the towns in Wyoming and Montana – take for instance Atlantic City, Wyoming.

When I worked (lived) in Atlantic City, I was one of a handful of Atlantic City snowbirds. I lived in a tent for 5 summers so I could map the 250-square-mile greenstone belt and its associated gold districts. I was the only employee in the state given a tent and can opener and restricted to a couple of dollars per day for per diem. While others at the Geological Survey (as well as all other state agencies) stayed in motels and ate at local restaurants, I was living out on the Prairie and eating canned soup. There were times I felt the State had two different standards – but then again I did feel sorry for the other employees. I was out looking for gold, enjoying the clean air and camping out, while the rest of the poor slobs had to stay in motels.



The time I spent at in South Pass I will treasure for the rest of my life. Trading stories, discussing politics and drinking beer in the Atlantic City mercantile in the evenings was a colorful life, and most prospectors and ranchers in the Atlantic City area were some of the more honest (and different) people I had ever met. People who work off the *land* seem to be more – well forgive the pun – 'down to *earth*'.

Since I was living in the area, local prospectors trusted me enough to show their gold. I met one (Shorty Haddenham) who had several Ball jars filled with nuggets from Rock Creek, another who found over 100 nuggets on Rock Creek and Big Atlantic Gulch, another who found nuggets in the dirt Crow's Nest, another from Arizona who had been thrown off public land by the BLM because he found more than US$30,000 in gold in just a couple of weeks on Strawberry Creek. There was another who recovered nuggets from dredge tailings on Rock Creek, another who filled several vials of gold from Smith Gulch; another who

recovered a nice 7.5 ounce nugget from Big Atlantic Gulch, another with one of the larger nuggets I had seen in the area found on Willow Creek (probably at night). Then there were people who found quartz samples with visible gold at Miners Delight, Carissa, Duncan, Tabor Grand, Diana, Mary Ellen, Good Hope and others.

The prospectors of Atlantic City were similar to people in Alaska. I was envious of the Alaskans. They were independent and most lived off the land. They invited strangers into their homes for a can of beer or cup of coffee, but they also wanted civilization to leave them alone. When I heard Sarah Palin was planning to run for VP in 2008, I was elated – an Alaskan! She seemed to have all of the values and ethics Alaskans share - rooted to the earth.

So there I was in Anchorage waiting for my flight to Crooked Creek. For those of you who have seen the Red Green show, I can tell you from firsthand experience that flying with duct tape is a way of life in Alaska. After I boarded the flight from Crooked Creek to Snow Gulch-Donlin Creek, it easily could have been an opening scene at Possum Lodge on the Red Green show. In just one year (1988), the population of Snow Gulch more than doubled. In the following year, it doubled again. For example, in 1988 the Snow Gulch population grew from a one prospector and his wife, to include a band of geologists and a cook from WestGold looking for gold. After we touched down at Donlin Creek International, I knew this was where I was supposed to be. What a beautiful site!

The runway at Donlin Creek-Snow Gulch, Alaska in 1988. A well-used airplane with duct tape provides a north compass for travelers. Similar planes are found in essentially every airport in the Alaskan outback.

So why were we starting our search for gold at this location? Gold is found all over Alaska (Hausel, 2010a,b). There is so much gold that from 1869 to 2008, Alaska produced >40 million troy ounces of gold (worth nearly $50 billion at today's gold price). A large amount of the gold was recovered from stream placers with no known lode source. Such circumstances will usually set off bells and whistles in a geologist's head. Placers with no nearby lode means there are hidden lodes waiting to be found. Thus, WestGold decided to look at some of these placers.

Our goal was to examine outcrops near streams that produced flakes of gold with cornflake texture (very rough edges) and/or fragile nuggets. Just imagine what cornflakes look like. If you watch the video by NovaGold you'll see an example of these gold cornflakes. All

prospectors should study these. In addition to cornflake gold, some rare and extremely fragile gold nuggets were found in the Donlin Creek area.

Gold is malleable. If it is transported any distance from a lode, rough edges will be molded into smooth, rounded edges – usually this happens within the first few yards of a lode. If you have rough gold in a placer with rough edges, you are standing adjacent to the lode source. For those of you who are new to gold prospecting, there are differences between lode and placer gold deposits. Very briefly, placer gold is detrital and occurs in streams and rivers whereas lode gold is found in place in the outcrop. Watch for an article I wrote for *Lost Treasure Magazine* scheduled to be published next month.

WestGold picked Snow Gulch in the Kuskokwim Basin because of many gold placers in the area and because of the presence of cornflake gold. Gold had been found in the Kuskokwim River basin in the 1800s and prospectors of the past and present worked George, upper Holitna, Tuluksak, Salmon and Kwethluk rivers; the New York, Bear, California, Marvel, Taylor, Forty-seven, Canyon, Crooked, Julian, Donlin and Flat creeks; and Murray, Snow, Omega, Ruby, Quartz, Queen and Lewis gulches. It was notable that some of these creeks and many of the gulches were within our project area. Was there a major lode source providing gold for these placers? Go to coordinates ***62°04'32"N*** and ***158°11'54"W*** on *Google Earth* to see the area where we began our search.

Nugget from Snow Gulch (left). The nugget forms a fragile and malleable spike projecting from a rounded pebble. Such a nugget could not have been transported more than a few feet from its source area unless the gold grew on the rounded pebble (which is also possible) in the creek. Compare this nugget to the rounded nuggets found by prospectors at Julian Creek, 30 miles to the east-northeast. These are more rounded.

This region attracted WestGold's interest because of pristine gold flakes, fragile gold nuggets in placers, and the abundant gold placers in a small area – all which suggested a nearby source area and potentially a large lode deposit. Our exploration began immediately upstream. The local prospector owned a D-9 Cat, so the company hired him to dig several trenches. My job was to map and sample these trenches. It didn't take long and soon we were finding evidence of lode gold over a widespread area (Hausel, 1989).

A short distance upstream, we discovered a group of northeast-trending felsic sills and dikes (granodiorite, rhyodacite, rhyolite) that intruded sedimentary rocks. The igneous rocks and adjacent sedimentary rocks contained gold in association with sulfides, quartz veinlets and breccias. Higher gold values were associated with arsenopyrite, stibnite and quartz in the dikes and sills that intrude a thick sequence (>5000 feet) of folded Cretaceous graywacke, sandstone and shale. Sulfide minerals often contain gold in their crystalline lattice. In places in Russia, arsenopyrite was found to contain as much as 2,298 ppm (parts per

million) gold! This means that if you had a ton of massive arsenopyrite (arsenic-bearing pyrite), it could contain economic amounts of gold or nearly 75 ounces of gold hidden within the crystal lattice! Pyrite (fool's gold) sometimes has as much as 2000 ppm gold. How do you recognize arsenopyrite? It is metallic, alters to scorodite (a greenish-yellow stain) and it you hit it with a rock hammer, you will all of a sudden smell garlic – that's the odor of arsenic.

Three members of the Donlin Creek discovery team pose with drillers & samplers at Snow Gulch in 1989. Rob Rutherford (standing left), camp geology manager Paul Graff (standing right) & the author (sitting right).

The mineralized dikes and sills at Donlin Creek were found to be 1.2 miles wide and 5 miles long (that is a very sizable gold deposit!). Donlin Creek is now known as Alaska's largest gold deposit and runs along a ridge east of Crooked Creek at the head of Lewis, Queen, Ruby, and Snow Gulches.

Gold is also found in the adjacent calcareous shale and graywacke of the Upper Cretaceous Kuskokwim Group which strikes west-northwest and dips 10-50^{o}SW (Hausel, 1988, 1989).

The author prospecting on ridge at Donlin Creek with Snow Gulch in background.

Ore minerals are primarily gold-bearing arsenopyrite and arsenian pyrite which are disseminated in the felsic igneous rocks (dikes) and in veins and networks of veinlets in the igneous and sedimentary rocks. The veins and veinlets consist of quartz and carbonate gangue, with gold and several ore minerals. In addition chalcopyrite, cinnabar, cassiterite, covellite, galena, marcasite, molybdenite, native arsenic, pyrrhotite, sphalerite, scheelite occur in minor to rare amounts.

Mapping in Queen Trench at Donlin Creek – the author rides through the mineralized dikes at Donlin Creek.

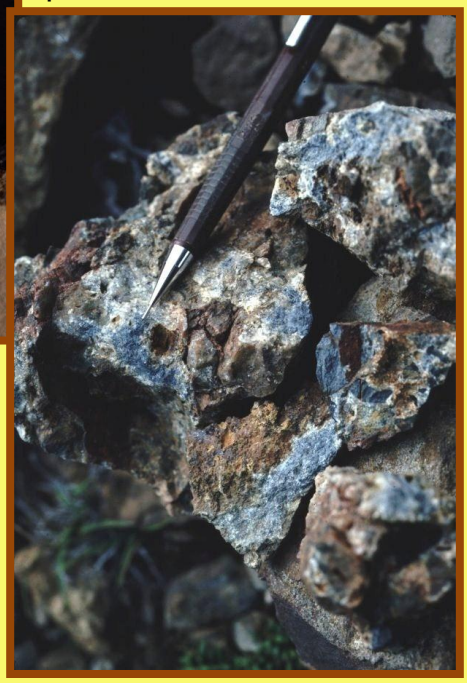
The gangue (waste) and alteration minerals include crystalline and chalcedonic quartz, sericite, illite,

kaolinite, carbonate, pyrite and dickite. Garnet and high tin in some porphyry dikes indicate that at least part of the intrusive suite is peraluminous. Miller and Bundtzen (1994) report that the felsic dikes vary from 65 to 71 Ma (million years old).

Dr. Paul Graff right admires old hydraulic Giant at Fullerton, Alaska 1988.

This deposit is now known as one of the top 30 gold deposits in the world (Novagold Press release, January 28, 2002). The *Northern Miner* reported Donlin Creek to be one of the largest undeveloped gold deposits in the world and the largest undeveloped gold deposit in North America. Although WestGold disappeared and the property was later picked up by others, mine permit applications were finally submitted in 2009 by NovaGold and mine construction is proposed to begin in 2012. For those wondering about how rich the geologists are who made the discovery – except in very rare cases, geologists always get the shaft. Personally, I received consulting fees, thousands of mosquito bites and a great time – that was all the reward I received and all I really needed.

Plans are for a mine to produce 1.5 million ounces per year from ore averaging 0.07 to 0.08 ounces per tons gold. Drilling over several years identified proven and probable resources of 30 million ounces with additional indicated resource of 10 million ounces. This is an Elephant (so to speak in the exploration business)! Donlin Creek has a gold resource similar to the legendary Homestake mine in South Dakota which produced 41 million ounces over a century of mining and as much gold as has been mined in all of Alaska from 1869 to 2007! In other words, it has the potential to produce $40 to $55 billion in gold.



Although it took more than 20 years, seven members of the WestGold team were presented with Economic Geology's highest honor. At the Prospector's and Developers Association Conference in Toronto, we were presented the *Thayer Lindsley Award*.

REFERENCES

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RARE EARTH METALS & ENERGY TO SUPPLY THE WORLD

Green Energy: wind power, solar power – are these efficient? Can they replace fossil fuels? Next time you drive by a wind farm, look to see how much land has been removed to protect all of those wind turbines: much more than most coal mines. But there is another problem most of us are not aware of: a shortage of rare earth metals (REM). To produce electricity from turbines and batteries, we need very strong rare-earth magnets.

Studies have shown these green sources are very inefficient compared to fossil fuels and nuclear fission. To produce energy from wind turbines, solar cells, and battery powered cars, we need rare earth metals. The Baiyun Ebo mine in Mongolia, China is the only operating rare earth metal mine in the world (and they are polluting the environment with toxic chemicals). California, one of the least mining-friendly states in the US, has another REM deposit known as Mountain Pass. This property was mined in the past and is scheduled to reopen in a few years – but a combination of Mountain Pass and the Chinese operation are not enough to cover the world's requirements particularly if we build more and more electric cars and wind turbines. There are a few deposits of REM that are being investigated – but these are not rich enough to cover the planet's needs. There will be a major short fall in a very, very short time.

When found, commercial amounts of REM are found in carbonatites (and in some pegmatites), one of the rarest rock types on earth. When I was at the Geological Survey, I was working on a couple of rare earth deposits, but both were very low grade. One however, may have enough gold to mine for the gold and recover REM as a by-product – but it will not supply the world's needs, particularly if we continue to develop green technology. Civilization uses REM for hundreds and hundreds of modern uses for which there are no substitutes. Just a few of the uses include petroleum refining, pollution control, catalytic converters, cell phones, CD players, sound systems, computers, color TVs and lasers. Want to give up our cell phones so we can generate electricity with wind power or to drive your new electric car? This will be a necessary choice in the near future unless the US develops its uranium and carbon resources. Support of Cap and Tax by the Obama

Administration is not in our best interests. Wind turbines require strong magnets to generate electricity. One needs as much as a ton per each industrial grade windmill turbine – that is a lot of REM. This is not sustainable. Electric cars also require REM as well as another uncommon metal – lithium.

Examination of our country's carbon resources show we have unbelievable amounts if they are developed. Thus use of REM resources for energy production is may not a good direction to take. We have been misled to believe our demand for carbon resources is unsustainable. But there is so much coal, oil, gas and uranium, that you are going to be more than surprised – You are going to be shocked!

Wyoming's Powder River basin alone has possibly a trillion tons of coal (along with considerable coal bed methane gas)! Then there's the oil in Montana's and South Dakota's Williston Basin (the Bakken deposit). This is an enormous deposit and is sufficient to supply our country's needs for a very, very long time! Of course, there is concern for man-caused global warming – but the scientific evidence for this is not compelling and is why more than 31,000 American scientists signed a document of non-support. Look at the Williston Basin. This deposit has the potential to eliminate all American dependence on foreign oil. The Energy Information Administration estimates it has a minimum of 503 billion barrels of oil worth more than $5.3 trillion – and there are no oceans and no possibility for oil spills. It has enough crude oil to fully fuel the American economy for 2041 years non-stop – all we need is for government non-interference. Recently, I was told that the BLM suspended more than a thousand oil and gas leases in this region. Without much less government interference, we would be a very productive society.

DIAMONDS IN THE NEWS

Glenn Worthington is a diamond prospector from Arkansas. Glenn recently sent some excellent photos of some diamonds he found at the Crater of Diamonds State Park at Murfreesboro. Here are some of his diamonds:

Glenn Worthington's 2.04-carat Easter Sunrise (left) was the first two-carat-plus diamond found in 2009. These are some beautiful diamonds!

LINKS

[GemHunter](#)
[Diamond Prospector](#)
[Gemstone Hunter](#)
[Rubies and Sapphries](#)
[World Class Colored Gem Deposit discovered](#)
[Geological Consultant](#)
[Gold Prospector](#)
[Gems Minerals & Rocks of Wyoming](#)
[Discovery of Major Diamond Province](#)
[Jade Deposits](#)

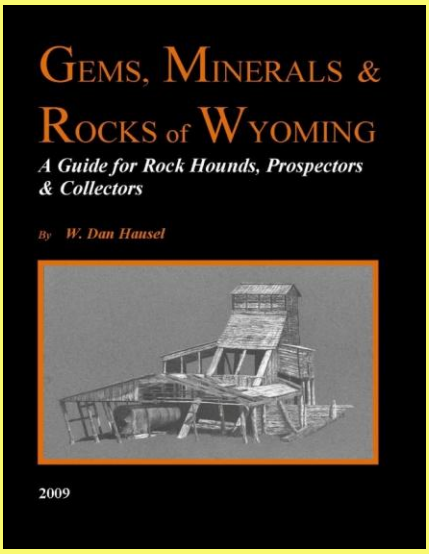
The GemHunter Newsletter
W. Dan Hausel (DiamondProspector@live.com)
The GemHunter

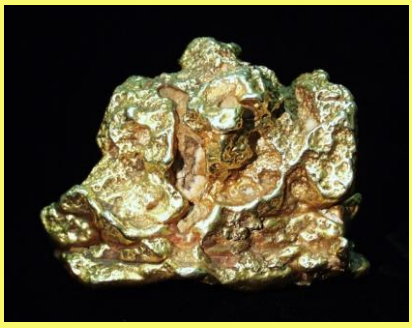
Gold at South Pass
Gold Prospecting
Gold in Montana
Donlin Creek Gold
Gold in California
Gold in Alaska
Leucite Hills Lamproites and Peridot
FIELD TRIPS

Rattlesnake Hills Gold Deposit
Seminoe Gold Deposit
Chrome Diopside
Mountain of Gold
Gold in Arizona
Giant Opal Deposit found in Wyoming
Gem Garnets

BOOKS

Gems, Minerals and Rocks of Wyoming – A Guide for Rock Hounds, Prospectors and Collectors is available from Amazon: or order it from your local bookseller.





In 2010, watch for: ***'GOLD: Geology, Prospecting Methods & Exploration'***. A book on how to find gold and other precious metals and where to find them.

Over 3 decades, I found two (possibly 3) major gold deposits and hundreds of anomalies. I enjoyed finding them – now it's up to you to explore and mine them.

GEOLOGICAL CONSULTING

I've been asked about my fees, etc. for geological consulting. Please refer to my website for information on fees, etc. I do not provide information on mineral ownership, land ownership or claim staking. Please contact the BLM for this kind of information. For those attending field trips this summer, you will have the opportunity to learn about gold and diamond prospecting and we look forward to meeting you.

W. Dan Hausel (DiamondProspector@live.com)
The GemHunter