ORAL HISTORY PROGRAM

Dennis Bryan: A Life and Love of Mining – Discoveries in the Midwest

2025

PREFACE

The following oral history is the result of recorded interviews conducted by Ronald L. Parratt with Dennis Bryan on February 26, 2024. This interview is part of the AIME Oral History Program.

ABSTRACT

Dennis Bryan grew up in Rapid City, South Dakota, in the 1950s. To bring in more money for his family, Bryan began working as a dishwasher at the age of 12, earning $0.50 a day. Yet, he discovered his lifelong passion not in the kitchen, but in the caves of the Black Hills. While cave crawling with his Boy Scout troop, Bryan fell in love with geology, marking the beginning of his journey to the South Dakota School of Mines, the Mackay School of Mines, and an exciting decades-long career in mining geology, culminating in his membership on the SME Foundation Board of Trustees and the SME Foundation presidency. Working solo, as well as with his own Geotech firm, Bryan discovered and tested numerous deposits of lightweight aggregates, rhyolite, and lithium in the American Midwest that significantly improved the work of block plants and construction companies. The lithium clay he discovered in the McDermitt Caldera with Western Uranium in the 2000s is set to go into production soon. He played a role in the MX Project in the 80s, the Tonopah Test Range, and the Salt River Freeway project. He compiled his industry knowledge in SME's publication, *Industrial Minerals and Rocks*, as a co-author. He is the recipient of the Hal Williams Hardinge Award, the Dreyer Award, and the AGC Award, among many others. However, his proudest achievements are the discoveries he has made and the mines he helped put into production. Bryan's devotion to mining has had such a profound impact on the industry that the full extent of his influence may never be fully known.

Readers are asked to bear in mind that they are reading a transcript of the spoken word, rather than written prose. The following transcript has been reviewed, edited, and approved by the narrator.

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00:00:011 Introduction

Parratt:

Good afternoon. Today is February 26th, 2024, and we're in Phoenix, Arizona, at the SME 2024 Annual Conference and Exhibition. It's really my pleasure, my honor, to be here to interview Dennis Bryan, a past senior vice president of Western Lithium. I've known Dennis for quite a number of years and have familiarity with his career, which has been just outstanding. My name is Ron Parratt. I'm a retired gold exploration executive and a past president of SME. Today, we're going to be recording a part of AIME's oral history capture program. Dennis, you've had quite a career over the years. It's been great to be first-hand around it all.

Bryan:

Well, I want to thank you, Ron, for agreeing to participate in this with me, and thank AIME for even wanting to know a little bit more about my history.

00:00:58 Baseball, Boy Scouts, and Blizzards – Growing Up in Small-Town USA

Parratt:

Well, where did you grow up, for instance? What part of the country?

Bryan:

I was born in Plentywood, Montana, in 1948. That's way up in the northeast corner of Montana, next to the Canadian border. But I grew up in Rapid City, South Dakota. My father moved there in the early 50s — work-related — and I went to school there from first grade all the way through high school at a Catholic school. So, I think I was very fortunate. I had all the same friends for all those 12 years. I had two older brothers, Mike and Jerry, but by the time I was 12, they were both away at college.

And I loved the Black Hills. Have you ever been to the Black Hills? Lots of trees and babbling brooks. When I was a young kid, I was active in some sports like Little League Baseball, but my real sport was swimming. Our house was close to a swimming pool and I really liked swimming. So I went over there, and I joined the swimming team. I was good at freestyle and butterfly. Butterfly was my specialty. I won a lot of ribbons. I was also very active in scouting. I had a great time growing up in Rapid City.

Parratt:

Kind of an ideal small-town setting to grow up in.

Bryan:

Rapid City was a small town. The school I went to was a rather small Catholic school. In high school, I was in football and basketball. There were only 40 of us in the senior class. They needed all of the boys to go out for the sports so they had enough kids to play. But I never really excelled at all that. All during my school years, I also participated in chorus and choir, and that carried over into college later on as well. I started working at the age of 12 during the summers, as many kids did at that time, just to make

some extra money. My first job, I was a dishwasher, making $0.50 an hour. I'd go to work on my bicycle.

Parratt:

Wonderful. Cool. What did your parents do for a living? What was their impact on you at that point?

Bryan:

My dad worked for International Harvester. He was a truck salesman, and that's how we ended up in Rapid City. He always drove a truck, and usually it was a four-wheel drive. We had blizzards sometimes. When I was a young kid, during one blizzard, Dad was in charge of furnishing some equipment out of the shop for the city when there were problems with blizzards, and he would take me down with him in the truck. I remember one blizzard in South Dakota, six inches of snow, but every bush and obstacle had a 3 to 5-foot drift behind it. So, you couldn't get around very easily. So, we'd be driving over lawns and through drifts to get down to the shop. Another time, I remember well, was when Dad was down on the Pine Ridge Indian Reservation showing a new pickup truck, and coming home after dark, got mixed up in a small buffalo herd. He was charged by a buffalo, which hit the front left side of the truck, turning it over. Dad had to spend the night in the truck because there were too many buffalo around. The one that hit the truck just walked away, according to Dad. I saw the truck later.

Parratt:

Neat place.

Bryan:

Yeah. Mom was a stay-at-home; she didn't even drive. We were not a wealthy family by any means. But hey, I had everything I needed, and I grew up in a good atmosphere, and my parents certainly encouraged me to excel at whatever I wanted to do and to further my education, just like my older brothers had.

00:05:22 Falling in Love With Geology and the Funnest Job I've Ever Had

Parratt:

Well, who then, or what, influenced you to become a geologist?

Bryan:

Well, when I was in grade school, I decided I wanted to be an engineer. I liked math and geometry, and it was the age of Sputnik, you know, and many of us boys wanted to get into engineering and build rockets, etc., and there was a college right there in town where I could do that. But I also, as previously mentioned, got into scouting early on. I started with Cub Scouts and then Boy Scouts. Lots of hiking and camping. When I got into high school, we were a little too old for Boy Scouts. So, some of us that were very much into scouting petitioned the high school to start an Explorer scouting program. Explorer Scouting is for older boys, up to senior level in high school. The school agreed, and an Explorer Scouting program was started. We had a fantastic time and had some great experiences. I flew for the first time in a DC-3 at Ellsworth Air Force Base. We went to jamborees, learned about wildlife behavior, learned

medical procedures such as applying bandages and casts for broken bones, participated in home construction, etc. But the one thing that really changed my future career path was we had an opportunity to go cave crawling, spelunking. We had an opportunity, and I said, "Yeah. Well, yeah, I'm interested." There are a lot of caves in the Black Hills, but I never really got interested before I went cave crawling for the first time, in Bethlehem Cave. Right there in the Black Hills.

Well, I got out of that cave, and I went right to the library, and I checked out every book I could find on caves. Well, that led to, how do these things form? You know, that's geology. What is limestone? And how does that differ from the granite that makes up Mount Rushmore? I enjoyed caving so much that the next summer, I found a job as a cave guide in one of the commercial caves in the Black Hills, Wonderland Cave. I was 16 years old, just able to start driving, and I got $4.50 a day and room and board. I used to say it was the funnest job I ever had because I learned more about caves, and I had a captive audience of all these people coming through on a tour, 10 or 15 people, and I could tell them anything, and they believed me. We even got to the point where a couple of us guides were competing to see who could get the most phone numbers from some of the cute girls who were enthralled with us guides. In addition, I found I really enjoyed talking to people and making presentations to groups, attributes that have benefited me throughout my career. So, in summary, I got into scouting, which led me to caves, which led me to geology, which led me to combining engineering and geology for my career path.

00:09:16 My Many Learning Experiences at University and in the Field

Parratt

So, at that point, then, where did you go to school? Where did you start and how did you choose that, where you wanted to go?

Bryan:

Well, Rapid City has the South Dakota School of Mines & Technology. It's an engineering/science college. You can get a degree in geological engineering. Exactly what I wanted, and I could stay at home because I couldn't afford to go elsewhere. My parents couldn't afford to send me someplace else. I stayed at home and was able to make enough money during the school year and the summers to buy books and pay some tuition, with the help of a student loan. In addition, my father got me an old 1957 Ford and found me a summer job with the Rapid City Street Department during my first college years, where I learned some practical construction, including building masonry walls, placing concrete, and driving equipment. So, four years later, I graduated in 1970 with a degree in geological engineering. During that time, from my freshman year on, I got involved in the local student chapter of AIME [The American Institute of Mining, Metallurgical and Petroleum Engineers]. AIME at that time was big at the school because Homestake Mine was going strong in Lead, not too far up in the Black Hills. They paid for all of us students to go to their meetings, and they took us underground. I remember being underground at Homestake, 7000 feet down. You know, that was pretty impressive. It was a little warm down there. AIME certainly helped introduce me to mining, and I was proud to be chairman of the student chapter my senior year. And when we had the opportunity, we enjoyed the Black Hills, spending time exploring the old mining districts, camping, and mineral collecting. Some of the pegmatites in the Black Hills have fantastic minerals. I still have some of those specimens I collected back then.

I took part in some extracurricular activities while at the Mines as well. I was in the Singing Engineers,

and I really enjoyed elective classes in speech, where I enhanced my communication skills, which helped me in my future. I even entered the school's talent contest in 1967, winning first place with my stand-up comedy routine.

And I kept cave crawling. When I first started freshman year, one of the construction companies in the hills had a quarry, and they broke into the top of this cave, a big dome room. They tried to fill it, but couldn't. They called the School of Mines, asking for some advice. So, the school referred them to the Cave Club, and a few of us went down there to investigate. We spent two years exploring and mapping that new cave. We named it Reed's Cave after the man at the quarry who was responsible for first breaking into it. That was quite an experience because if you've ever been in a place where nobody's ever been before, it's a thrilling experience. In addition, during college at South Dakota Mines, I was an intern for a couple of summers. One was working for one of my professors, a USGS project up in the hills near Homestake, and I did plane table work for most of the summer and got to look closely at some of these old mining districts.

Parratt:

So what's plane tabling, Dennis?

Bryan:

Good question. The younger people probably aren't familiar with plane tabling. It's surveying, but with a plane table and alidade. You place the alidade on a table, you shoot a rod to get distance and elevation, and you make maps right on that table in the field. That was a lot of fun. Then the second summer, I worked for Duvall. Duvall was looking for molybdenum in the northern Black Hills, and we did a lot of sampling, mostly stream sediment sampling. We got to do some drilling as well. I'd never been exposed to this stuff before. And working under their geologists, I really loved it. They wanted me to lay out a drill road for one of our drill pads. And, you know, I wanted to be very conscientious (at one time, I had even considered being a forest ranger). So, I laid out this drill road, and my boss came over, and he saw it, and the dozer was there to start the road. They couldn't get the drill rig in there because I'd gone around all these trees, as I didn't want to destroy the trees. Well, we realigned the road to get the proper access. So, that was a big learning experience for me.

Parratt:

It sounds like you had a lot of activity that really complemented your education then. I can see how it would have encouraged you to be involved in both mining aspects of the business and then the geology.

Bryan:

During these two summers, I lived in Deadwood, and I loved working in the Black Hills, among the trees, and the mountains, and the babbling brooks. Then in the evenings, it's a tourist town, and there were all kinds of young girls to pursue. I wanted to be an exploration geologist if this is what life was like!

Parratt:

Tell me, were there any political events or personal events or anything like that as well that affected

your studies one way or another?

Bryan:

That was during the Vietnam War, and I had some health issues, so I was 4-F. I didn't go to Vietnam, but some of my friends did. Also, one summer, I had met a girl when I was a cave guide through some weird circumstances. I went to San Diego. I had a motorcycle, and I went to San Diego on my motorcycle and stayed with her and her parents during the summer of '68. That was an eye-opening experience for me. I'd never been to California. I'd never been on my own like that before. I drove through Las Vegas, Los Angeles, and San Diego. It helped me grow up.

Parratt:

Las Vegas would be quite a different scene than South Dakota, I would think. Yeah.

Bryan:

Well, it was so hot when I drove through there that the patches on my inner tube in one of my tires melted off. So anyway.

00:16:05 Exploration Geology in Chalk Mountain – My Graduate Thesis and Mentors

Parratt:

Well, so it sounds like the undergraduate program went fine, and you developed a lot of strong interests. Did that drive you then to a graduate degree program?

Bryan:

Well, my undergraduate geological engineering program was a rather strict engineering curriculum. I loved the geology courses and related stuff, but there was a lot of engineering courses, so I wanted more geology. I loved the mineralogy and petrology and looking at thin section, but I wanted more. So, I decided I was going to go to grad school, and I applied to, I think, four or five different schools. And the Mackay School of Mines in Nevada, in Reno, was the only school that offered me a teaching assistantship, and I needed the money, the support. So, I put my motorcycle on the back of my '59 Buick and drove to Reno, and spent two years in graduate school in Reno, learned the geology of the Great Basin, and got to know a lot of lifelong friends. I graduated with an MS in Geology in 1972 and stayed in Nevada the rest of my career.

Parratt:

Was there any specialty study that you did in that graduate program that influenced what you ended up doing in your career?

Bryan:

Well, I kind of wanted to be an economic geologist. My thesis described a small mining district in central Nevada, Chalk Mountain. I had to buy an old pickup and put a camper shell on it, and I camped out there

for the majority of the summer. I mean, it was really a good experience, but there was not a tree in my entire thesis area. I was camping out, and there was no town nearby I could drive to. I almost got heatstroke one day. I got to thinking that maybe I should explore some other things as well, besides classic exploration geology. My thesis defense—one of the profs brought out that I probably wasn't going to be the research geologist that finds the next Bingham Canyon. But they did say that I was very well-rounded. This confirmed my thoughts of keeping an open mind in pursuit of a career in geology or geological engineering.

Parratt:

So, it sounds like you had some faculty and perhaps others that gave you some mentoring that helped guide your direction, that you were going to go, subsequently.

Bryan:

Absolutely. In fact, at South Dakota, John Paul Gries. He was the geologist I worked under, a professor in the USGS program I worked on. And then Willard Roberts. He was the mineralogy professor, and he's actually the author of the *Encyclopedia of Minerals.* He was very knowledgeable. He would take us up to these pegmatites and show us all of these minerals. And we'd do collecting, and it was really fantastic. Then, in Nevada, my thesis advisor was Arthur Baker. Art Baker was the dean of the college at that time, and he helped me with my thesis. In my thesis, there was a 500-foot shaft, and I wanted to map the geology in that shaft because, you know, my caving background and stuff. I liked underground. He went down there with me. We climbed down these rickety ladders, and that was quite an experience. I wouldn't want to do that today. A couple of my fellow students were also influential to me, both then and in my future: David Shaddrick and Dan Kappes. David, I got to know while we were both students at South Dakota. He is a successful exploration geologist who later came to Nevada. Dan was a Mining Engineering MS student the same time I was in grad school at Nevada. We bunked together for many years, and he went on to be very successful within the mining industry. They have both been valued advisors to me over the years.

00:20:34 A Las Vegas Discovery With Rilite Aggregate – My First Job in the Industry

Parratt:

Pretty good. Well, now you've got a graduate degree. You've got some pretty interesting experiences. Where did that lead you, job-wise, then, after you were heading that way?

Bryan:

Yes, good question. My first job offer after I graduated was a small silver mine in central Nevada. They needed a mine geologist. I went out there, and it looked interesting and everything. The nearby town where everybody was staying, this very small town, there was, you know, a “nice little building”. I thought, well, at least they got a nice restaurant. No... it turned out to be the local brothel.

Parratt:

Yep.

Bryan:

It's legal in Nevada. So I decided, well, yeah, maybe I should move on. So, a little bit after that, I was up at school one day, and saw a notice on the bulletin board that a local aggregate company was looking for a young geologist to help them look for pumice for their block plant. Well, that sounded intriguing. I went and talked to them. Well, that changed my career path again.

Parratt:

What does a pumice do in a block plant? What's the significance of that?

Bryan:

Well, you need aggregate in concrete. You use cement, aggregate, and water, and that makes concrete. Concrete masonry units, commonly referred to as cinder blocks, are often 8” X 8” X 16” in dimension. They are molded concrete. You don't want a heavy 30-pound block. That's hard for a mason to lay a wall with something that heavy. They want 20 or 15-pound blocks so they can more easily lift it, so block ideally uses a lightweight aggregate. That's why we're looking for the pumice. But I didn't know this either. Just like the question you asked, I was very curious about this industry that I was going to go to work for. I convinced my boss to let me learn more about aggregate and concrete and the block industry, so I could do better when I went and looked for this stuff. It was just not the geology of the aggregate of that aggregate, but the properties of that aggregate and how those properties affected the end product...the concrete. My boss connected me with a couple of the salesmen for the ready-mix concrete, and I hung around with them. They taught me a lot about the business and products they were manufacturing, including marketing, quality control, placement, and all that (and I'd never had Manhattans at lunch before, and I'm glad I didn't get into that habit.)

Parratt:

Well, it sounds like it was some pretty good mentoring, really. And obviously, given what you did subsequently, that really, really caused a change in direction in terms of what you focused on.

Bryan:

Well, yes, I went out and explored for pumice. I did a lot of research, reviewed geological maps, did a lot of exploration and reconnaissance, looked at reported pumice occurrences. We did find a suitable deposit and we put it in production, and I was put in charge. I located the claims, built the road, and found people to do the mining and hauling it to Reno, and that was great. Unfortunately, they sold the block plant shortly thereafter, and that little mine shut down. During this time, my employer was Rilite Aggregate Company. And it's R-I-L-I-T-E, not how you spell the rock name. Well, as the name implies, they were mining rhyolite in Reno, and it was a glassy young deposit. It was being used in concrete at that time. It was starting to be used as a semi-lightweight aggregate for high-rise construction in Reno. There was a lot of construction for casinos and warehousing, where you lift big, heavy panels up and set them on end. So, the lighter the concrete, the more economical the building became. You know, less foundations and less this and that. And it was right there in Reno, and they were utilizing it. They didn't have to import lightweight aggregate from elsewhere.

Parratt:

So, it sounds like you were a quick learner here in this new business of aggregates and so forth. What was that first project really like? A little more detail about that first project, because it seems like it was a pretty good learning experience for you.

Bryan:

Actually, as I learned more about the business, I got more involved in the quality control, too. So, I got to learn a lot of different aspects of concrete. I got into mixed designs, how to design concrete mixes using aggregates, water, and cement, and based on durability, strength, use, and placement, and even got into distress analysis and related stuff. I worked with structural engineers, local and federal building departments, design firms, testing labs, and inspection agencies. But I also got to know that semi-lightweight rhyolite deposit that they were mining right there in town. I got to thinking, you know, this is very unique. Why can't this be used elsewhere? Why can't there be other deposits like this elsewhere? So, I did a little research, and I approached my boss, and I said, "There might be some more of this in Las Vegas," 400 miles away, and I got him interested. He let me go down there for a couple of months just to look. I didn't know if I was going to find anything, but I knew there was some volcanic terrain down there that might have some similar rhyolites. Well, I went down there, and I actually found three or four of these things, and within a reasonable distance of Las Vegas and in geologic environments identified on the geologic maps [as] “undifferentiated volcanics.” But getting into the text of those reports would indicate there's basalts and rhyolites. Had to go look, and the one we eventually zeroed in on, I found by chasing float.

I was looking in this drainage because, looking at the mountains, you could tell that there could be rhyolites up there, light-colored. Sure enough, I found rhyolite in the drainage. I followed it up, and there was this big outcrop of this beautiful stuff. It was a pumiceous rhyolite breccia unit, and I convinced my boss to let's go for that. He agreed, and I ended up staking claims and building a road up there. We did excavation, we did drilling. And it was funny; back then, permitting was a lot easier. It was on BLM ground. I remember going to the BLM and asking them, and telling them what I wanted to do. The only thing they told me was, if I want to build a road, "Keep the road out of the drainage." That was my permit. That was back in the early 1970s.

Parratt:

Wow.

Bryan:

It worked. So now, we had to go find somebody that was interested. Well, by that time, I no longer worked for Rilite, but I was still consulting for them. But I spent a lot of time helping develop that deposit. I found the people that wanted to use it and convinced them. It went into production in 1979 for a new block plant in Las Vegas. I'm very proud to say that deposit is still in production today.

Parratt:

Well, a great learning experience. Practical.

Bryan:

Oh, yeah.

Parratt:

Career-driven.

Bryan:

I did the development, I did the marketing, and it was quite an experience. Yeah.

00:29:49 Prospecting Out West – A New Chapter in My Career

Parratt:

So, after that, your involvement wound up, I guess, in that. Then what did you do then?

Bryan:

Well, because of that, I decided there's probably more of these things out there. So, that's when I left Rilite Aggregate. I was still working on the Las Vegas deposit part-time. I went to work for a geotech firm that I got to know during my time with Rilite Aggregate and their accompanying firm, CB Concrete, and, about a third of my time, I went prospecting in the West looking for these things. I had this model in my head. It had to be young. It had to be glassy. It had to be semi-pumiceous, but not pumice. That wasn't adequate. Semi-pumiceous. And it had to be unaltered and perhaps associated with perlite or pozzolan. That was my target. I found deposits in Oregon, in California, in Colorado, New Mexico, and Arizona. And I had working relationships with people from local block companies that I had approached that were interested. The one in California, we even went out and drilled and blasted and sampled, and they were definitely interested, but we took it to the county, and the county says, "We're not going to have any mining in our county."

This was a county in the Bay Area. That was early on. Just think what their attitude toward mining would be now. The other ones in Oregon, in Colorado, in New Mexico; the economics just weren't there yet. And probably the location and the access problems weren’t right, so they didn't go, but Arizona went. It was a block plant in Phoenix, and this was a deposit 60 miles east of Phoenix in the shadows of the Superstition Mountains, and I found this. I mean, it was a virgin deposit. It wasn't even a prospect. I talked to all the block people in Phoenix. I got the largest masonry contractor in the southwest involved, Guy Apple, and he was using volcanic cinder from Flagstaff in his block plant. This was closer, and this made a better-looking block. So we put that thing in production, and he paid for everything, but I was a partner with him. Then the recession in the early 80s hit. Construction just tanked. His block plant went belly up, bankrupt. The mine went bankrupt. But I had become a mine owner for a short span of time. And that was fantastic.

00:33:21 Ronald Reagan’s MX Project, the Salt River Freeway, and Other Geotech Projects

Parratt:

That sounds like it was a great experience in life and certainly for a career. Those are things you really

learn. I was really impressed with your model for what you were looking for to find those things. Well, after this, what other positions then did you have going forward?

Bryan:

Well, about that same time, I'd gotten with some of the people I had met when I was more into concrete and aggregates in Reno, and we formed a geotechnical company in Reno. A small geotech firm that included a soils engineer and a materials guy to do all the testing. I was the geology end, and by that time, I'd gotten my PE certification, complementing my degree in geological engineering. Well, I'd done enough design with concrete, aggregates, construction-related materials, and soils that I was able to get a PE, so I was one of the PEs of the firm. Our firm did Geotech engineering, construction testing, materials evaluation, and worked all phases of new construction, including casinos, highways, failure analysis, and mine construction. But I also started to get involved in some of the other industrial minerals, especially related to construction and cement.

Over the subsequent years, I did a lot of work in cement raw materials, some gypsum, perlites, and pozzolans. We went through this economic downturn in the early 80s, and we almost lost our business. It was a trying time. We merged with another firm and then later sold that to a bigger company, and I just stayed on board for all of that. But, over the years, I was involved in some really neat projects, mostly with aggregates, cement raw materials.

But boy, I remember—you might remember the MX program.

Parratt:

Yes.

Bryan:

This was back in the 80s, when Ronald Reagan, to counteract Russian nuclear capability, initiated a program of deterrence that included designing all of these railroads in Nevada and Utah, in the valleys, to have ballistic missiles on them so they couldn't be easily targeted. Well, anyway, we ended up working for the major engineering contractor doing the geological investigation of these valleys. Part of that was looking for aggregate. We ended up doing all of the testing, and that was a huge project for us. We not only tested the aggregate for suitability for concrete because they were going to need a lot of concrete, but we tested concrete made from the better aggregates. That was a fantastic project. Then, I had a project on the Tonopah Test Range back in the 80s. That's where the stealth bomber was first located—this was kind of a secret base at the time. You couldn't talk about anything.

Parratt:

Area 51.

Bryan:

Yeah, right next to Area 51. They needed aggregate because they were expanding the base. We went down there, and I found them some aggregate. Our firm ended up doing a lot of construction testing, as well. So that was pretty good. Then, I had a big project with one of the major construction aggregate

producers out of the Midwest that was expanding West. They wanted somebody to help them evaluate all of these new aggregate sources that they were buying, to verify tonnage and quality. So, I spent a lot of time doing that. And right here in Phoenix, I worked for the Attorney General's office when they built the Salt River freeway from Phoenix East. I was their expert witness because that freeway was going through some of the sand and gravel pits along the Salt River. They had to condemn them, and they had to compensate the owners. Well, you wouldn't believe some of the owners of these pits, what they claimed. So, I had to keep them honest, so to speak. I don't know if I made any friends with some of those guys, but I ended up testifying in several lawsuits.

Parratt:

Well, with all these new ventures you had and different projects and different locations, there must have been some influence or some people that were giving you guidance, mentoring you too. Were there any people in particular you'd want to mention?

Bryan:

My first boss, when I went to work for Rilite Aggregate Company, was Bruno Benna. He taught me a lot about the business end of the thing, and he let me do what I suggested in going prospecting near Las Vegas, which, you know, for a young guy, was pretty good. Then, one of my partners in the Geotech firm, Gil Vineis, taught me the practical aspects of aggregate and concrete, and we used him exclusively for our testing when I was with Rilite Aggregate. So, we got to be great friends and later went into business, and let's see. One of my clients, because I did a lot of aggregate work in the Reno area, was Pat Shane. He owned several aggregate deposits in California and Reno, and I got to work with him for 20-some years and found him some new deposits. We did all of his testing, and he taught me a lot, too. Another important person who influenced my career was Keith Papke. He was the Industrial Minerals Geologist for the Nevada Bureau of Mines and Geology. He taught me a lot. After he retired, we often worked together on varied industrial minerals projects. He was a wealth of information and a valued friend.

00:39:54 From Pumice to Lithium – Evolving in Life and in the Field

Parratt:

Dennis, I know you had, at some point in here, you had a bit of a change in life. And I think there were some things that influenced you going forward at that point in time, a family-related one.

Bryan:

Yeah. In 2004, my wife Diane passed away from cancer, and that kind of threw me for a loop there for a while. Fortunately, a couple of projects came along that occupied a lot of my time. One of them was with the Bureau of Land Management in Las Vegas. There was a big contest with a major producer that was claiming this particular limestone deposit was uncommon and, therefore, locatable under the mining law. Most aggregates are not locatable. Aggregates on public lands are obtained under Material Sales regulations. Well, because I'd done so much work in the Las Vegas area and I knew the Las Vegas area pretty well and the aggregates, I was their expert witness. We tested this material, that they said

was uncommon, and compared it to all the other aggregate sources in Las Vegas. We sampled, and we tested. We made concrete out of them and compared them all. I testified for many hours before the IBLA (Interior Board of Land Appeals). I spent many hours preparing for this case with the BLM solicitors and was up with them till midnight during this hearing, and I'm glad to say that the BLM was successful. Made me pretty proud.

Then, the other thing at the same time was that I got involved with *Industrial Minerals and Rocks*, SME's prize industrial minerals publication. There was a new edition coming out in 2006, and I was a coauthor of two articles, one on Lightweight Aggregates, under commodities, and the other on Aggregates, under markets and uses. Not the geology end but the use end. Usage includes all kinds of stuff and permitting. So, I felt pretty good about that. It was a prestigious publication, and that was my thing, aggregates, at that time.

Parratt:

Well, I know you continued to evolve, looking at different things and that, and from my notes, I know that you made yet another change commodity-wise.

Bryan:

Oh, lithium.

Parratt:

Why don't you tell us about that?

Bryan:

Well, in late 2007 — and I was kind of on my own and doing various consulting and stuff — a friend of mine, Pam Klessig with Western Uranium, called me and asked if I was interested in helping them with a lithium clay. Initially, I declined. Well, she was persistent, and I decided, yeah, let's do this. The story behind this was that Western Uranium was looking for uranium up in northern Nevada in the McDermitt Caldera, and they inherited a bunch of information that Chevron had done in the 1970s. They were looking for uranium, but Chevron, in some of their drilling, found anomalous lithium. And at that time, in the early to mid-70s, lithium was of interest to them as an energy company, not only for possibly future batteries but for nuclear fusion. Lithium was being considered for possible fusion technology. So, Chevron did some drilling, and they found these extensive occurrences of lithium, but they eventually dropped the project. Well, Western Uranium inherited all of this data from Chevron, which included the lithium data. And at that time, lithium was starting to take off for battery technology, and a lot of people were getting interested. So, Western Uranium spun off a separate company just to look at the lithium.

That's how I got involved. I was the first employee, and eventually became VP of Development, and for the next few years, we put down 250 drill holes, did feasibility studies, metallurgical studies, and we did various environmental and archeological studies. We collared bighorn sheep in the Montana mountains just to see if they were going to be impacted, if we ever went into production. So that was a great experience. We came up with a resource, a real resource that ended up being very big. We merged with Lithium Americas around 2016, and shortly thereafter, I retired. I was ready to retire at that time. Lithium Americas have taken that deposit and expanded it further, and it looks like this thing might go to

production. They've actually broken ground, and it's purported to be one of the largest lithium resources in the world. It used to be, every time we drilled a hole, we found more lithium. It's a clay, so that was a challenge in the lithium industry because lithium usually came originally from pegmatites, but then later from brines, thanks to Ihor Kunasz.

Parratt:

Yes. A mutual friend.

Bryan:

So, we came in with this clay. A lot of lithium in this clay. So, it was kind of an uphill battle convincing people that maybe this would work. Well, Lithium Americas has taken that to the next step, and there might be a lithium mine up there pretty soon.

00:47:25 The Barriers and Challenges of Mining, Then and Now

Parratt:

They're working on it. They have—compared to your permitting in Las Vegas that you talked about, how was the permitting at that point in time then, for this lithium project?

Bryan:

The permitting was a little easier at the beginning. I mean, we were getting plans of operations for drilling programs approved. We did have to do archeological surveys and stuff like that. But I got the feeling a lot of people, you know, they say, "Oh, just another junior mining company; it's not going to go anywhere." So now, the permitting is becoming much more complicated. At the end of my time up there, it started to get more encompassing. Sage-grouse became a big issue up there. Mitigating that and the trout habitat, or I forget what— And the snail, the pygmy rabbit, etc. And they're going through other stuff right now. At that time, we went to the tribes at McDermitt, and we told them what we were doing, and they said the only question was, where are you getting your water? Well, we had bought a ranch near Orovada for the water rights, and we had 1000 acre-feet of water rights for a potential future mine. They also asked if we could put some of them to work if we ever go into production? Well, of course. Well, now, since the mine is getting closer to actual production, it's gotten a lot more complicated, but they're working through that. So, I'm not too worried about it.

Parratt:

Were there any other unusual barriers you ran into through these various projects that you'd want to comment on? I mean, permitting has certainly always been one.

Bryan:

Well, public relations, I guess. I spent a lot of time doing public relations—making presentations to people in Winnemucca and the gun club up there. There was a lot of interest in lithium, of course, so I was on a few programs explaining lithium and what we plan on doing, and everything takes longer than you think.

00:50:07 They're Not Gold, But They're Real – My Lasting Impact and Career Recognition

Parratt:

Yeah. Well, tell me, and for the talk we're doing, can you kind of share in a summary fashion the contributions that you made to industry from these various activities you did? Because certainly it sounds like to me you did, but tell us.

Bryan:

Well, thanks. The majority of my career was involved in aggregates, and in lithium at the end. And, in the aggregate industry, I was very proud of the fact that I was able to put a model together for lightweight aggregates and come up with something that we actually went out and looked for and found and put in production, and it's still in production. And I did a lot of work in the normal aggregate industry, too. I found a lot of deposits that are still in production, and they're not gold, but they're real, they're mines. It's very satisfying to see these things that went into production and are furnishing aggregates for various uses.

And the other thing, I was a commissioner on the Commission on Mineral Resources for the State of Nevada for 19 years. That was a very rewarding activity, and that's a government-appointed position, seven commissioners. I represented the small miner in the industrial minerals sector of the mining industry in the state of Nevada. During that time, the commission, through the Division of Mineral Resources, which worked under the commission, we were able to draft legislation and rules on specific things that helped the industry. We were also able to help the university with funds because all of our funding came from mining claim fees. We especially were able to help the mining engineering department up at Mackay over the years. So, that was a rewarding experience for me.

Parratt:

So you really were able to bring to bear, in matters like that, your experiences from the work you've done through your career in industrial minerals. Quite a good fit. That was good. Well, along the way now, you've had all these great experiences. Have you received any awards from SME or anyone else for the efforts you've made?

Bryan:

Yeah. I'm very proud of SME awards. I got the Hardinge Award in 2011, and that was for my contributions to the industry, plus my contributions to SME. And then I ended up, I think, in 2019 with the Dreyer Award, that recognized the exploration and finding of deposits and helping get them into production. I was recognized by the Industrial Minerals [and Aggregates] Division, and I've been a long-time member of the Mackay School of Earth Science and Engineering Advisory Board. I was named alumnus of the year in 2011. Let's see, I got an award from the AGC [Associated General Contractors of America] when I was in the geotech business. I was on their board of directors for a while, and I got the Community Service Award because of my community activities. I was chair of the community affairs committee. I was also involved back then with the American Council of Engineering Companies (ACEC), too, as president of that organization in Nevada. I got a national award for community service in 1996. So, I was happy with those.

Parratt:

Well, you should be. I think they're certainly recognizing the contributions you've made through the various activities you've done over the years. That's really outstanding, and I'm sure very, very well deserved.

Bryan:

Thank you.

Parratt:

Well, what would you say are perhaps some milestones, some things that changed in the industry, that you feel you made a contribution to that are still benefiting the industry today?

Bryan:

Well, my experience in aggregates, I've noticed from the time I got on board in the early 70s, the aggregate industry has changed a lot, and it's mostly [that] the big companies have acquired the small mom-and-pops and the smaller companies. The smaller operations have never had the resources to do really adequate mine design, nor evaluation from a geological point of view, nor future planning, nor have they had some of the processing capabilities that the big companies have. So, the big companies have brought all these advances to the industry. More consolidation, more technology, and efficiency. That's really enhanced the aggregate industry, I think.

And, of course, the lithium. I mean, 20 years ago, nobody really cared much about lithium. But then, when I got involved initially, that was when lithium started coming to the forefront. The electrification of transportation, the advances in battery technology. And everybody wanted to look for lithium, and they still are looking for lithium because they realize that lithium is the battery technology of the future. Lithium is the top as far as energy density. That means for the weight, you get more energy than any of the other metals out there.

Parratt:

Certainly, you had a big input in developing what I guess today is probably the largest—one of the largest, if not the largest, lithium deposits, certainly, in Nevada and maybe in the country.

Bryan:

Yes, I'm kind of proud of that.

00:57:08 Blending Family Life With Industry

Parratt:

Yeah. Well, through all of this activity, how did things impact your family life, then? How did you handle all of that and juggle it?

Bryan:

Well, I mentioned Diane's passing in 2004. Well, I met Diane back in the mid-70s when I was working with Rilite Aggregate. She had come up from California and was starting a new life. She was a bank teller, and I went into the bank one day to put some money in the bank or whatever. I left my checkbook there because I saw this cute blond, and [it] got me kind of flustered. Well, it was a good thing I left my bank book there because she called me and said, "Hey, you left your bank book." And our relationship kind of blossomed from there. She had three small children from a previous marriage, and, well, anyway, we got together and I became stepdad, and I saw these kids grow up from a young age, and Diane got involved in the industry. She took to it. She worked for me for a little bit in our geotech firm, but you don't want to do that. So, she went to work for Dan Kappes when he was first starting his company, Kappes Cassiday. Then, she went to work for an exploration firm.

Diane and the kids and I, we'd spend a lot of our weekends early on going camping and exploring Nevada. We had a great time, and she got interested, and she went to work for this exploration company, and she got interested in educating people about mining. So, she joined the Nevada Mining Association's education committee. She was chair of that for years. Then she went to work for the Nevada Mining Association because she just believed in mining. And geez, I remember in the early days, I'd drag her around to some of these meetings in Nevada — Nevada Mining Association, little conventions — and I remember when I first started to introduce her, somebody would say, "Oh, yeah, who's this cute girl with you?" I introduced Diane. Well, by the time she ended up with the Mining Association, she knew everybody. I'd go to meetings, and they'd say, "Yeah, Diane, who's this guy with you?" [Laughing] That shows how many people she knew. And her passing, it was — people came together, and we got a nice scholarship endowment at the university for young people that want to get into the industry, but with an education bent to it. So, that's what she wanted.

Parratt:

Oh. Pretty good. Well, Dennis, I seem to recall something else you wanted to bring up, family-wise. Can I jog your memory on that?

Bryan:

Yeah, I want to mention Sharon. Sharon's my longtime fiancé. I met Sharon originally when I started graduate school at Mackay in 1970. I was teaching a lab, and I loved teaching the 101 geology lab. It was a lot of fun. She was one of my first students, and we actually dated a little bit after that, before I'd ever met Diane. But we went our separate ways, and I met Diane and, you know. After Diane passed away in 2004, within a year, I happened to be out at one of the parks walking around, and I bumped into Sharon after 30 years. She recognized me before I recognized her, and it just so happens that, as she put it, her dance card was empty, and so we hit it off. So that's been 18 years ago or so, and we've set a date. It's still kind of out there. So, I've gotten Sharon more involved in the industry. She's been with me on some of the geology excursions and mine tours, and even underground.

She went underground at Turquoise Ridge many years ago—loved it. We had an opportunity to go to Alaska a few years ago, through the foundation, by the way. The SME Foundation. They used to give a trip to the Pebble Project away at their annual auction, and we bid on it, and we got it.

Parratt:

Wow.

Bryan:

Neil Prenn and his wife Cammy, and Sharon, and I went to Alaska and got in a helicopter tour of the Pebble project. We spent time on the Katmai Peninsula watching the bears, and then went east to Kennecott, and then went up to McKinley National Park and stayed at Kantishna, inside the park, for a couple of days—it's not McKinley anymore, I can't remember. But anyway, we stayed there for a while. That was a great trip. And I've had her to Scotland, and she went with me to the Atacama Desert in Chile, looking at the lithium brines down there. So, she's gotten involved. Not to the extent that Diane used to, but she likes the people in the industry, too.

01:03:51 Getting Involved With the Community – Work Outside of the Industry

Parratt:

Very good. Well, maybe moving on a little bit, I know you've had a lot of community involvement, quite serious. Involved and successful. Can you tell us all about that?

Bryan:

Well, living in the same place for a lot of years, with the family and stuff, you get involved in the community. I was involved with the Chamber of Commerce a lot early on. I went through their leadership program and was on some of their committees. But the two organizations that we really spent time at, one of them was Hot August Nights. Hot August Nights started in 1986. At that time, I had just bought a '57 T-Bird. I always wanted to buy one. Hot August Nights was a community event for the Easter Seals, a one-time thing, and they had the cars, show and shines, all these classic cars, the music of the '50s and '60s. We saw Wolfman Jack, we saw the Righteous Brothers, Jan and Dean. Diane and I fell in love with that event. We went the first year. The second year we joined it as a member, you know, the volunteers. That event from that time to today has grown substantially, and I was involved pretty much from the beginning in various committees, and I was president in 1997, and I was on the board of directors for 20 years. That event is the largest event in Reno, and it's considered the largest nostalgia car and music event of that type in the country. Hundreds of millions of dollars, lots of people come, and it's fantastic. Anyway, I was very much involved, and still am, in Hot August Nights and very proud of it. The other event is Sheep Dip. Sheep Dip started in the 60s.

Parratt:

You may have to explain these a little bit.

Bryan:

Sheep Dip is our—well, if you know what sheep dip is, it's kind of a cleansing. This is a cleansing of the community, and it was patterned after Laugh-In, if you remember Laugh-In years ago. I mean, skits and music and monologue. We clean the community, in other words. It's a stage production with skits and all kinds of neat [stuff], and films. The governor used to show up, and we'd give prizes and awards for

the foibles that the community did. It's a roast of the town, and every governor has been to Sheep Dip.

Parratt:

No one is immune. Huh?

Bryan:

No. And boy, you know, the president of the UNR [University of Nevada, Reno] and the business leaders in town, if they ended up on the front page of the paper with something, we recognized them. We sometimes embellished a little bit, but it was all in good fun. We got so involved. I was executive producer of that organization for three years, but it finally closed. We had to say goodbye to it a few years ago because it was just a little bit too politically incorrect for this new day and age. But that was a great experience. And I got to do some stand-up comedy routines again, in front of a receptive audience (well, usually receptive, anyway)

Parratt:

Sounds like two material events in our community, Reno, that you've gotten involved in. But not just involved; you were a big part of them, just like you have been in many other aspects of your career.

Bryan:

Yeah, I tend to — when I get involved, I get involved.

01:08:46 Attracting Young People to Industry and Working My Way Up the Ladders of AIME and SME

Parratt:

So, beyond these, then, how about professional societies? Dennis, when did you first hear about AIME, your member society? How did your involvement progress over the years with AIME?

Bryan:

Well, I think I mentioned when I went to college in Rapid City, I joined AIME, that was representing the students. When I came to Nevada, I got involved in AIME again because that represented my career choice, and I got involved — and I'm still involved — in the local chapter of AIME. Well, it's SME now. I got more involved in national, and I joined the Industrial Minerals [and Aggregates] Division. I worked my way up the ladder in that and eventually was division chair. And then that put me on the board of directors of SME. I think I came off the board around 2004, and I've been involved in many of the committees, ABET [the Accreditation Board for Engineering and Technology], the accreditation and curricular affairs committee. I chaired that once, and I got involved in the foundation for many years. In 2015 and 16, I was president of the SME Foundation. I was very proud of that. That was the time that we kind of maneuvered the foundation more into fundraising. Nowadays, it's doing fantastic. There's a lot of people participating, contributing to the foundation.

Parratt:

Certainly. So, how do you think this membership has benefited you in your career?

Bryan:

Oh, it's been a tremendous benefit. I mean, the people I've met through the meetings and everything have helped steer my career. As you know, Ron, you get to know people all over the country and all over the world in places. You learn so much from others when you listen and they give you advice. Without that networking— It benefits your career so much. I really enjoyed it.

Parratt:

Oh, it sure does, and benefited you directly. How do you think SME benefits other people in the industry? Is it the same, or anything different about that?

Bryan:

Well, the other people, they're you're peers. You should spend time with your peers in the industry, and SME allows that. They give you that with the publications and the SME meetings, the technical talks, and going to the exhibit hall. I mean, if you were selling a product, you got to go where you can meet the people that want that product. Or if you're looking for a product, this is the place to be because, you know, 6000 people, and you're going to get to know a lot of these people, and it's going to advance your career.

Parratt:

Sure

Bryan:

It's the networking. The networking.

Parratt:

Well, if you were to recommend your society to a new graduate, someone just getting into the business, what would you tell them about it?

Bryan:

If you want to get to know people in your industry and advance your own career, stay attuned of what's happening in the industry. There shouldn't be a question. You need to be involved in SME. You need to network because without that, you're kind of in a—you're isolated. You get to know people that will stay your friends forever. And I've got to know a lot of people. I mean, I don't know if I can name all of the people, but some of the people I've got to know have helped me so much in my career and advised me. I mean, the people like Ihor, Mr. Lithium. Nikhil, he was in the Industrial Minerals [and Aggregates] Division, and we're friends always. And Bill Langer, he was Mr. Aggregate with the USGS. Without being part of this organization, I wouldn't have known any of these people. I'd have known a few people in Nevada. But this, it completely expanded my view of the world as far as the mining industry.

Parratt:

With this great importance, really, that you've found to be a member, what would you try to do or suggest be done to attract new members to the society?

Bryan**:**

You know, that's very important. You got to find these people when they're young. The mining industry has a challenge with the general population and convincing them how important it is, our industry.

Parratt:

Right.

Bryan:

We need people in the industry that are interested in the industry and want to get into it. You've got to get them young. In the case of geology, people that like the outdoors, people in scouting. You've got to stress the importance of mining and what those commodities mean. What are they used for? People don't often equate mining with some of what you see all around you. You know the old saying, "If you can't grow it, you've got to mine it." And if you stress that, you can get more people involved.

01:16:10 Career Reflections, Advice for Young Engineers, and My One Regret

Parratt:

Well, we've danced around this next thought quite a bit, but what's made working in this field meaningful for you, and what has been your favorite part, if there is one favorite part? Sounds to me like you might have many favorite parts. But comment on that for us.

Bryan:

My favorite part? From a satisfaction point of view, I mean, being able to go out there and find something and see it put in production and actually help it get into production, not just finding it, but marketing it — that's very satisfying. I don't know what else I'd have done to make it that satisfying.

Parratt:

Well, this gets to maybe another question for you — dances on this topic — but do you have any regrets regarding your career and what you chose, where it's taken you, or anything that you think you might have done differently if you had the chance to do it again?

Bryan:

I don't have any regrets. What I think about is there's all these points in my career, and I'm sure your career and others' careers, where you make a decision, and that's the direction you go. If I hadn't gone cave crawling, I might not be in geology. If I hadn't chosen the Mackay School of Mines or if they hadn't offered me an assistantship with money, who knows where I'd have gone. If I hadn't gone to work for

that aggregate company, I don't know what I'd be. I could be a billionaire; I could be in jail. I don't know.

Parratt:

I highly doubt the latter, but [laughing].

Bryan:

But, no, I don't regret it. Well, I guess one thing I regret is when I left Lithium Americas, I wish I'd have kept some more options [laughing].

Parratt:

Well put. Well put. Well, here's another tough one for you. Can you please sum up your career in 2 or 3 words?

Bryan:

Well, very satisfying but challenging. Challenging, but you overcome that.

01:19:05 Industrial Minerals vs Metals – Final Thoughts

Parratt:

And then, the next one. What advice would you have for today's young leaders in the engineering and mining profession?

Bryan:

Well, get involved. Get involved. Meet your peers. Get involved with SME. If you're in the industry, you can't go wrong getting involved in SME. Networking will determine your future, I think.

Parratt:

Well put. Well put. Is there anything else that you think you'd like to discuss that we haven't covered in the interview so far? Any other thoughts? Anything you have in mind?

Bryan:

One fun thing I did when I got the Dreyer Award. You're supposed to give a talk, a presentation on something related to the exploration and finding of a deposit, and I gave a talk on how I got into the—why I chose industrial minerals rather than metals, and the classic mining industry versus industrial minerals. And I emphasized more the bulk commodities like aggregates or limestones versus the metals, where you got a certain amount of ppm, and you've got all of this 99.9% is waste, whereas industrial minerals, most of it is good. So, the prices are different, and the transportation is so important. You know, a gold mine, it doesn't matter where in the world you find it; you don't have to worry about transportation costs. For industrial minerals, you need to consider transportation. In fact, we had exploration programs for one of the cement plants. We were looking for limestones—certain kinds of

limestones within ten miles of the freeway or railroad track. That was kind of our exploration target. Another thing is depending on where you want to live. You know, like an aggregate deposit, especially with the companies taking over the mom-and-pops, there's opportunities from mining engineers, especially, anywhere in this country in the metropolitan areas. They need that kind of expertise. And you can kind of choose where you want to live if that's your propensity, if you don't want to live in a small town out in the middle of Nevada or something. But there's a lot of differences and similarities, you know?

Parratt:

Well, that's very good, Dennis. It's apparent that you've had a very fascinating and interesting career, certainly involvement in aggregates, in lithium. You've had leadership roles and worked on those and development, just like everything else you've done for SME and through involvement with the foundation and all. It's been a real pleasure. It's been an honor for me to have the chance to speak with you about all this, your career, and your path. Thanks for the time that you've given.

Bryan:

Well, thank you for agreeing to do this. I'm officially retired, but I'm not retired from the industry. I still do a little bit, and I still want to come to the SME meetings because of so many of my friends, and keep up with what they're doing. Unfortunately, sometimes we don't see some of our friends anymore. But it's a great opportunity and organization, and I love coming here.

Parratt:

Well, thanks so much for sharing your story.

Bryan:

Well, thank you.

Parratt:

Letting us all have some insights into you. I certainly didn't know all of them, and I've known you for a long time. Others will benefit from this story. So, thanks.

Bryan:

Well, somebody else is going to actually look at this? [Laughing] That's good. Thank you.