

Ralph E. Roderick

His Memoir

of

CH2M HILL

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CH2M HILL
Memoir Program

RALPH E. RODERICK
His Early Life and Career
with CH2M HILL

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INTRODUCTION

These interviews with Ralph E. Roderick span the years of his life from early school days through his retirement (in 1970) from the Corvallis-based firm, CH2M HILL. The major focus, however, was on his years with the consulting firm from 1946, when Mr. Roderick joined, to his retirement. Mr. Roderick was one of the early partners in the firm and contributed heavily to its rapid growth and outstanding reputation. In the ensuing transcript, he discussed the major events, together with the strengths and weaknesses of the firm during his tenure with it. His impressions and remembrances of the contributions made by the founders are invaluable, for these people provided the momentum and inspiration which made the firm the success it is today.

Ralph Roderick was born in 1908 and spent his early life on the family dairy farm in Kansas. Inspired by a favorite high school teacher, Roderick yearned to become a teacher too. He tried the occupation for one year, and decided teaching was not for him. His next job suited him better, and was, the first step toward a lifetime career in engineering: he went to work for a construction company.

Encouraged by the son of the owner to study engineering, Roderick entered Kansas State University, majoring in civil engineering and specializing in highway construction. He graduated in 1932, in the midst of the Great Depression. However, with luck and persistence he landed his first job with a consulting firm in Salina, Kansas. During the years 1933 until 1939, among other duties, he supervised construction of a couple of sewage treatment plants and one water treatment plant for the firm. This experience would serve him well in later years when he worked with the newly formed Corvallis firm.

One Salina client, the people of the City of Garnett, Kansas, thought so highly of Ralph Roderick's work, that they persuaded him to quit his old job and work as their city engineer in 1939. However, his career in Garnett was abruptly interrupted in 1941 by World War II. He was ordered to active duty in the U.S. Coast Artillery Corps. The almost five year stint in the military gave him more experience in engineering, and exposed him to a new and different environment from Kansas--the West Coast, where he was stationed at Seattle, Washington and later Dutch Harbor, Alaska. He became increasingly enamored with this general area.

Earlier he had met and married the former Mary Wilson. A brief sojourn back to Kansas after the war convinced them that the Pacific Northwest had won their hearts. The engineer and his wife headed west to locate a job in sanitary engineering. Everywhere in the Northwest he looked, the reply to his job inquiries was, "Why don't you go see those guys in Corvallis?" He finally headed to the firm of CH2M in Corvallis, Oregon.

He first encountered the loquacious Fred Merryfield (as Mr. Roderick described him) in the midst of moving the firm offices from one building to another. Later

he met the other three partners--James Howland, Holly Cornell and Thomas (Burke) Hayes. Merryfield was an engineering professor at Oregon State University who had a knack for selecting exceptional staff people to work for the firm; these first three partners were former students of Merryfield. The four men--the professor and three students--started the consulting firm of engineers in January, 1946.

Ralph Roderick was impressed with the four partners and interested in the type of projects they were doing. He was offered a job with the newly formed business and started work during the latter part of 1946, moving permanently from his home state of Kansas. As Roderick stated, "Once I started and got acquainted with the guys, it was the greatest thing that ever happened ...They were doing work in a manner that [represented] high quality engineering ...you couldn't beat it anywhere." He remained with the firm for twenty-four years until he retired in 1970.

About the same time that Roderick became associated with the firm, another gifted engineer also joined. Archie Rice was a sanitary engineer and also a former student of Merryfield. Two years after they started, because of their performance and talent, Roderick and Rice were asked to be the fifth and sixth partners in the firm. Very honored to be a partner, Roderick stated, "I suppose one of the great things for me personally, would be when I was invited to become a partner." The expertise of both men (many times they worked closely together) contributed considerably to the successful completion of projects in sanitary engineering.

During the interviews, Roderick praised these five men--Merryfield, Howland, Cornell, Hayes and Rice--as well as Clair Hill whose California- based engineering firm of Clair A. Hill and Associates later merged (in 1971) with CH2M. He described the caliber of these people using laudatory phrases like, "outstanding ability", "hard worker", "talent and brains", innovative", "great", "inspiring", "anything for an honest buck". Remarkably, as Roderick noted, "Six guys dominated the firm for most of that time, and in all of our meetings there never was a hard word." From the firm's inception, staff cooperation, team work and talent have been the key to expansion, growth and success for CH2M HILL.

The two interviews (May 19 and 27, 1980) were conducted in the attractive and tidy Roderick home located in a quiet residential area in northwest Corvallis. Mr. Roderick was a warm and gracious host and a willing participant in the interview. Although a humble man about his own achievements in the firm, Mr. Roderick was generous in his praise of others and proud of the accomplishments of the CH2M HILL staff. He scarcely could think of any criticism of the firm and staff. "I'm too much of a firm-man to even realize there were weaknesses." He still attends the CH2M HILL annual meetings and is thrilled when the managers tell the progress of present and future projects. However, after retiring, he rarely has frequented the firm offices, choosing instead to pursue his own numerous activities.

One glimpse of Mr. Roderick's study indicates the major retirement interest in his life--golf. Humorous golf-related plaques and other paraphernalia adorn his office. Besides playing golf, he and his wife travel, work in their well-manicured garden and spend time with their two daughters and their families.

Ralph Roderick has confidence in the future growth and success of CH2M HILL. He described the current staff, " ...they've got a board of strong people. Of course, they have to be strong--we trained them!"

[Editor's note: *Following is a summary of Ralph Roderick's original memoir. The summary focuses on key events and issues that have impacted the history of CH2M HILL as recalled by Ralph.*]

THE WAR YEARS AND THE WEST COAST

What were your career intentions after the war? Had they changed at all?

Well, I thought I might move into city management because I liked working for cities.

What did you like about that?

Working with the public. Municipal work. Engineering work. I went to work about November 1945 for the city. I worked there all that winter and during the next summer, but it was too hot. I'd forgotten how hot it could be.



The heat hadn't bothered you before?

I didn't know any better before. (chuckle) I just thought that was part of living, you know -- the cold in the winter time, hot in the summer. But I'd been on the West Coast for five years, and I knew better. In August of 1946 I went home one Saturday -- and my wife had been urging me to move anyway -- so I said, "Let's go to the West Coast." We got my mother down to take care of the girls, and we headed out the next day for the West Coast.

Just to look for a job?

Yup. Actually, after I got out of the service down at San Diego in October, 1945, we'd travelled north up the coast on the way home, and we visited some friends in Salem here in Oregon. I talked at that time to a few of the engineers here in Oregon with the bug in my mind that I might be interested in engineering on the West Coast. I was convinced after visiting with these few engineers that there was a lot of sanitary engineering work here on the West Coast.

Had you ever heard of Corvallis, Oregon before that time?

No. I still had Kansas blood I guess -- back to Kansas. (chuckle) After spending a couple of weeks looking around we had headed back to Kansas and went to work there. But the contacts that I'd made here just kept bothering me. In fact, I got together with a couple of friends back there that I'd worked with in Paulette and Wilson they'd been in the service and before they settled down I talked them into coming out here and looking around in Oregon, with the idea that the three of us would form a consulting firm here and set up practice.

In the Pacific Northwest?

Yes.

It was your idea?

Yes, and they came out and they toured around Oregon and talked.

Who were these two people?

Gordon Frank and Vern Harvey. They'd both worked for this consulting firm before the war that I was with in Kansas.

What about your desire to be a city manager?

That was, you know -- different possibilities in my mind. They came out and looked around here, and they discovered that another firm had started up here in Corvallis and had too much of a go on them. So these two guys didn't want to go ahead and come to the West Coast and try competing with them.

The one firm would have been too much competition?

Well, you know, they'd just started up and that would be two firms starting up here. Of course, these people were known in Oregon and wouldn't be brand new from Kansas.

Where were you thinking of starting your firm?

Any place here in the West. In Oregon primarily.

In Oregon, not Washington or Idaho?

Well, primarily Oregon, yes.

What did you think of these fellows giving up?

I said, "Okay, if that's the way you size it up." We just scratched it as a bad idea.

Were you disappointed?

I guess probably, but I was lucky that we didn't because this was CH2M that had started up. That was when Cornell, Howland, Hayes, and Merryfield had just started in January of 1946, and this is the bunch that they ran into.

INTRODUCTION TO CH2M AND FRED MERRYFIELD

Were you along when these two came out to the West?

No, no. Anyway, I stayed on there in Kansas, and we were doing quite a bit of work. Things had settled down during the war so there was a lot of work to be done for the city. I'd started to work on expanding the water treatment plant, and had a lot of work going on during that summer, but the heat got me. I remembered how nice the West Coast was, so I said, "Let's go West." (chuckles) And away we went; and I said, "We" go to Seattle instead of Oregon," because I thought I wouldn't run into the firm [in Corvallis].

You were still thinking about starting your own firm?

Yes, still thinking about working with a firm.

That takes a lot of guts to come West and leave a good job.

Well, (chuckles) yes. But I was young enough in those days, and I knew there was work here. There wasn't any question I could find work somewhere. I went to Seattle, and I toured around, and every place I went, the suggestion was, "Why don't you go see those guys in Corvallis?"

Why did they say that?

Well, you know, I was interested in the same thing that they were doing, and people that knew them said, "Why don't you go see them?"

What were they saying about the firm, do you remember?

They said they were just starting up, and that would be a good place to make a contact, so go talk to them and so I finally did.



Who did you talk to here?

I talked to Fred Merryfield, or I should say, I listened to Fred Merryfield. (laughter) I caught him moving. They were moving their office from one building to another down on 3rd Street. Here he stood for an hour or two talking to me with his arm full of books.

On the street corner?

Yes, yes. (laughter)

What was he telling you?

Oh, we visited and visited. You don't know Fred. Yes, Fred was a great guy. A college professor. Fred was, of course, the main cog in starting the firm; it was three men and a professor, that's the theme. Oh, I visited with Fred then for, I guess, an hour and a half anyway. My wife was sitting in the car, along with my sister and her husband. I talked to Fred in the middle of the walk, and if you know Fred, you don't talk to him about engineering in a few minutes. It takes a while. We had a great visit, and then I went and met Jim and Burke. I didn't meet Holly as he was up at Forest Grove on a project.

What was your first impression of this group of men?

I was scared of the professor.

Why?

I didn't think I wanted to do engineering work for a professor. I thought it took more practical experience than they had, and so I was hesitant about the professor. But after I met Burke and Jim, I was impressed that they were the type of guys I would like to work with.

What was your first impression of Jim Howland?

Oh, great guy. I just didn't know him that well, you know. It wasn't until you got acquainted with Jim that you really appreciated him, I was impressed that both of them; personality-wise they were great.

It was meeting with them that convinced you you should join the firm?

Well, I decided that I'd like to go to work for them if they had a place for me.

Why did you decide that?

They were interested in doing the type of work that I had experience in, and they were just starting up so there was a potential.

You were looking at other jobs?

Yes, seeing what the possibilities were. That was Friday afternoon. We decided we'd better hightail it back to Garnett and get back to work.

You hadn't made any prior appointment with the firm here?

No, no, we just came here to get acquainted and visit. So I high-tailed it back to Garnett.

What did you and your wife talk about on the way back concerning these job possibilities?

Well, we wanted to move. We'd made up our minds we wanted to move to the West Coast.

But you still hadn't decided which place.

No. I made an offer to go to work for the firm. They wanted to weigh the thing in their mind and know that they had enough work to justify me moving out from Kansas.

It seems to me with a very new firm, there wouldn't be as much likelihood of a guaranteed salary?

No, it wasn't guaranteed. It was just that they didn't want someone to quit and make a move and then have to turn him loose in a week or a month. It was, I guess, probably a month later before I heard from them. They sent me a wire saying that they felt that they could assure me employment and to come on out.

You weren't concerned about a possibly unstable salary?

No. Actually I took a cut in salary. I worked starting for \$290 a month and I was getting \$300 a month back there. (laughter) But the West Coast had a field I knew...

You really moved west then for the climate and the environment more than for the job and firm?

Yes, a place to live, yes.

EMPLOYMENT WITH CH2M AND JAMES C. HOWLAND

What was the exact date that you joined the firm?

Heck, I don't remember. It was sometime in October of 1946.

Can you remember those first few months that you were working with the firm?

Yes, oh yes. Let's see, I had worked for this consulting firm there in Kansas, and I think I was the only one really in the group that had had previous experience in the consulting field. The others hadn't had. Holly and Jim had worked for an oil company after they finished their graduate work, and before they went in the service. Burke had worked for a consulting firm in Oklahoma for a few months, but he was an electrical engineer and his experience was in the electrical engineering rather than the construction field. Anyway, I think I was the one with the most experience in the consulting field and with construction experience and working with specification work and that sort of thing. So the thing that I was able to contribute to the firm was this experience.



Having that experience was the most important contribution you made in those first years?

In the first, to start it off. Holly had put one project under construction up at Forest Grove, and they were working on others but to start out with you have a lot of work to do in developing your plans and specifications and a plan for construction and a whole sequence of things. Holly had done a heck of a job on that, and I think a lot of his work continued to be used but there were improvements. I think, that maybe suggestions I'd made helped some at that time but not materially. I know one of my first jobs in designing was designing a filter plant -- a water treatment plant, for Forest Grove. The reservoir was under construction, and then we were to design the water treatment plant. I was assigned to help pull that together.

Who assigned you to do that?

Jim. He was the office manager.

Why wouldn't Fred Merryfield have been doing that?

Fred never participated in day-to-day management.

But I thought you said Jim Howland had less experience.

Yes, yes, but somebody had to be the manager and poor old Jim, he was stuck with it.

Why was he chosen over somebody else?

I suppose primarily his personality. The firm of CH2M is Jim Howland.

Can you elaborate about this?

Well, Jim is such a great individual. I've said many times that there never was a greater Christian than Jim Howland. (emotionally expressed) The firm is in many ways an image of Jim. Jim had a motto -- "anything for an honest buck" -- that the firm adopted, and many times I've heard Jim say that to young engineers. The first thing was that it must be an honest buck, and that's the reputation the firm has established -- integrity. This has come from Jim as the leader. Not that anybody tried to persuade him otherwise, but it was just a dominant thing on his part integrity of the firm in all the work.

What would you say his greatest contribution is to the firm?

Jim? Oh, the inspiration that he gave the young people working for the firm.

Can you describe the qualities that made that inspiration possible?

Well, I think in fairness, Jim is the most unselfish guy you ever met. He was never concerned with what Jim got out of it. It was, "What does the firm get out of it, and what is the best for the firm?" He's a hard worker. Worked hard. We overworked him by keeping him manager all those years just because we couldn't stand to lose him. He was too valuable as a leader.

As we began to get larger and needed to establish policies, we all got involved in the discussions. It would generally be Jim's ideas that would lead off the discussions. Now we didn't always just follow his suggestions, but it was his leadership. Nobody had ever done what this firm did in the way of its policies and procedures. Most every consulting firm in existence had been started by one or two guys, and they might expand to three or four partners as far as owners are concerned, but they never concerned themselves with perpetuating the firm. These firms would essentially collapse because there was no plan for perpetuating them. There was no market for the firm. It was built around those whose name was involved as the owners of the firm, and when they died the business folds; somebody maybe gives a few dollars for the projects that were on the books still to be done. But our goal here was to perpetuate the firm.

Whose idea was that?

Well, I think probably the founders. To start with, of course, it didn't dawn on us. The goal at first was to make a go of it and to make the thing pay. You know, a pleasant place to work and to do interesting work were the goals more to start with. But as we grew and became a larger firm, employed more people, the only way that we could offer those people anything besides just a salary meant that they had to become involved in the ownership of the firm. So when we got into that phase of it, that's when additional goals had to be established and policies adopted.

When did this happen approximately?

Well, it was probably in the late fifties and early sixties when that took place.

Over ten years after the firm had started.

Oh yes, fifteen years, maybe. See it started in 1946. By 1960 we had twelve partners. Just the policy of being a partnership firm got to be kind of dangerous, having that many people and their wives involved in a partnership. In fact, the original partners wondered whether they could make a go of it as partners, and then there were six of us. Archie and I were taken in 1948, I think it was, and we became partners. Everybody says: "Well, partnerships can't succeed. Just somebody is going to get mad and blow the thing up."

Did that ever happen?

Never happened in my entire life with the firm.

How can that be?

Yes, (nodding) six guys dominated the firm for most of that time, and in all of our meetings there never was a hard word. Never. And we had a lot of meetings. (chuckles)

How was strife prevented?

It was just our goal. Everybody had a right to his thoughts. We just made it... We made an effort that this was the way that we wanted to run the thing. We never criticized anybody in a manner that would hurt his feelings, and it wasn't necessary.

There was never any personality conflicts?

Never any personality conflicts.

Who usually dominated?

Well, Jim dominated the thing again. This is Jim. Holly Cornell was another one of the stalwarts in the thing. And everybody contributed, but it was amazing, really! We used to shake our heads and wonder how we could get along the way we did. We met every Monday noon for years and years.

From the very beginning were you part of the decision-making process?

I would say it was after a couple of years. It was two years later when I became a partner.

What did that involve?

I became part owner in the firm, and I became an equal partner with Archie and I both moved into that. They offered us an equal share of the ownership. We had to pay them for what they had invested into it by that time and buy into the ownership, but this we were happy to do. From then on, there was the six of us for some time. Then it became seven, and then it became ten and then it became twelve, and that's when we knew we needed to incorporate. By then we had many valuable engineers and the only way to keep from losing them was to offer them ownership so as to keep them in the firm.

In those early years in the late forties, did you ever have any second thoughts about leaving the firm and going someplace else?

Oh, no, no! Once I started and got acquainted with the guys, it was the greatest thing that ever happened.

Why was that?

Well, they're such great guys. They were doing the work in the manner that it was high quality engineering. To be associated with and to have the opportunity to work with this quality of people -- you couldn't beat it anywhere.

POLLUTION ABATEMENT SPECIALIZATION AND CONTRIBUTIONS

What were your goals in those early years?

I was the sanitary engineer that handled wastewater, and this was my field in the firm. Goals were to build bigger and better plants, I guess (chuckles) and do larger projects, and to supervise the personnel. Now it just happened that pollution abatement -- which was my specialty and the field that I got assigned to handle -- became more popular than motherhood, you know. (chuckles) People were just coming to our door for help in this field, in the pollution abatement field. It was just being at the right place at the right time. We were growing and expanding and growing and expanding.

Your experience in the sanitary treatment field was a major contribution?

Yes.

Did you foresee this kind of thing happening?

Well, not as much as -- not to the extent that the public did. -- during the growing years in the firm, pollution abatement became, as I say, more popular than motherhood. So it was just the timing and the firm was johnny-on-the-spot at the right time to take advantage of it and to gain employment.

Who in the firm was johnny-on-the-spot then?

The whole firm was. I happened to head up pollution abatement but it was the whole firm. We had other projects too, many important ones but this was the dominant thing because there was more work, more demand for it than other things.

Would you say then that you were the primary person in charge that could see this trend?

Well, no. It was just because I was in charge of pollution abatement for the firm, and our firm was the one that was doing most of the work. I didn't do all the work by any means.

But you had seen this twenty years before most other people?

I, well, yes. I was older. I guess I got started in it earlier. Of course, Fred was involved too. This was his field. He was the sanitary engineer that made a survey of the Willamette River back in the late thirties and early forties to try to demonstrate how bad the river was.

Archie Rice is also a sanitary engineer. That was his field. Now Fred was always a professor rather than a designer. It happened that Archie got into the water treatment end of the business, and I got into the wastewater treatment end of the business. Archie designed. He designed several sewage treatment plants as well as I did, but that was my major field, and in the firm I headed up the wastewater treatment end of it. This led to the firm being as popular as it is today, but I wasn't any more responsible for it than many, many others in the firm.

Without your expertise it probably wouldn't have grown as much?

Well, I don't know.

You're being modest. (chuckle)

Well, I'm not but I want to be fair. I had one goal that I think was dominant - - that every plant had to have something new in it. We had to do something different. That was a goal -- not to turn out a plant exactly like the last one. We needed to think, why are we doing this? Not just because we did it last time. Every time consider something about that plant that you last built that could have been better and come up with a new something or other, a new process or a new means of doing something. Now this was a goal that I think that I led on, and it was this thing that was important to us -- that we became known as innovators in the field.

This goal originated with you but it was firm-wide?

Yes, it was the goal of the firm. What really launched the firm was innovative ability of the firm on projects -- that we didn't just take what we did last time and do it next time and next time and next time and never improve. It was to innovate and improve. So the firm became involved in side developments. We found things that needed to be done different, and there wasn't anybody else doing it, so we led in and actually branched off and made these things. First, we established a new firm called Flomatcher, which you've heard of. That was an innovative thing. Burke Hayes was one of the leaders in that. It was because this was something that was needed, desperately needed -- a need for an improved way of pumping wastewaters. [\[Read More .. Innovations, W/W, Flomatcher\]](#)

Microfloc was another?

Microfloc was the next thing, another sideline thing that we developed, and Archie was the leader with that. Archie had worked on a water treatment plant up in Richmond, Washington. There, he worked with a guy by the name of (pause) Walter, I'll think of his name -- the outstanding water treatment man in the United States, and I can't think of his name (chuckle). Anyway, he was the engineer for the Atomic Energy Commission. They had to have a

higher quality water treatment than they had ever been used up till that time, and as he was a chem engineer -- Conley, Walt Conley was the guy's name, I knew it would come to me -- they developed the different process known as the Pitcon Process. That was Pitman and Walt Conley and they called it the Pitcon Process.

Archie then picked up this idea, and he also picked up Walt Conley to come with us because he saw the ability Walt had as a leader in new process for water treatment; and so the two of them worked together on improving the process that they had developed up there. They developed a process known later as Microfloc process. The thing that they actually developed was a method of processing and developing a mixed filter media. This mixed filter media becomes or approaches the ideal filter media for treating of water. So after they got that going for water treatment, then I grabbed the idea -- old greedy Ralph -- and we went to treating wastewater with the same process. [\[Read More ... Innovations, W/W, The Microfloc Process\]](#)

This was your innovation?

Yes. We set up a pilot unit down in the Corvallis Sewage Treatment Plant. The same filter media that they developed, we applied to treating wastewaters. Never before could we filter water fast enough to create enough water to backwash the filters. You just never got anywhere. There was so much material in the wastewaters that it would plug up your filters. The only way you can clean the filters is to wash them. You have to have clean water to wash them and so (chuckles) you can't get enough through it to clean it with, so it was a dead end. But this Microfloc process and this type of filter media made it possible to do that.

Then we moved that process. Walt Conley and the staff of the firm did work on it, and Walt and I took it to Los Angeles and demonstrated it down there. And that's when it first got introduced just as a pilot plant to show what can be done. Then we were employed to work with a firm of engineers known as Clair Hill & Associates at Lake Tahoe. Later we built the plant at Lake Tahoe, and this was visited by more people, sanitary engineers and others, than any other plant in the country. [\[Read More ... Vignettes/Lake Tahoe Story\]](#)

That must have been very exciting.

It was exciting. Yes, and then ...

And all due to you, actually.

Well, it would have happened I'm sure. Somebody else would have seen it. Anyway, as a result of Tahoe then here came the State Board of Health of Virginia out, and they saw the Tahoe plant and there wasn't anything that could happen but what they would have Tahoe East back there in Fairfax, Virginia, and that consulting firm in Corvallis would be their engineers. So that launched us on to the East Coast. Then the thing has just gone on, and now it's beyond the needs of a lot of places it does more than is needed in many places; but there are instances such as Tahoe and in Virginia where it

is a very important solution to the problems. [Read More ... Vignettes/UOSA Story]

I understand that President Nixon recognized your plant in Tahoe.

Would you say that you are the proudest of that project?

Oh, I think so, yes. It's the case of your innovations, and I think that's probably one of my major contributions to the firm was the innovative ability that I have to think of new ways of doing things, to study the problem and visualize alternate possibilities to solving the problem. They didn't always work, but it's a great thrill really to come up with something that is new and different and see it work.

Did you stress this goal to the other partners all the years that you were involved?

Oh yes, gee, I can think of many times going into Jim's office -- "I got an idea" -- I suppose he got awful tired of hearing me say that. Then he and I would kick it around. "Well let's give it a whirl." But Jim, was the manager and that was the next thing for me to do, if I had an idea that was something different and innovative, and the firm was going to be involved in risking some investment capital as well as the possible potential failings. (chuckles)

Was it also the firm's policy to try to put something new and innovative in other projects, projects you weren't involved in?

That I wasn't involved in? Well -- I'm sure there were, yes. I don't know that it was stressed to the extent that I did.

Would you say this emphasis is different from that of other engineering firms?

That innovative part? I think that is very seldom done by consulting engineers. Just because we happened to be at the right place at the right time it became effective, and that's why the firm is selected in Mississippi and Denver and all these places. It became known that this was an innovative, a new idea, firm so when there is something that is real tough why your name comes to the forefront to be selected.

Had you had this goal conceptualized before you ever joined the CH2M HILL firm?

No, and it couldn't be. It could only be as a group because it takes the thing that the firm has to offer is all this talent; they've got brains in that firm from one end to the other, all this variety of mechanical, chemical, structural, all the electrical, all these things. Getting something complicated you have to have all the skills; not anyone could do it. I couldn't have done it without the skills of the other people. It was Walt Conley that made the Tahoe thing a success. It was because he and Archie Rice created this mixed media.

It came about because of the make-up of this firm?

Well that's right, that's right. It never would have happened. I'd have never been able to have sold it to the boss probably in the firm that I was with in

Salina. It had to be somebody that was in the group that was willing to do these things and could see the advantages to them and had the ability to do all that. (pause) It's such a grand bunch of guys with tremendous ability. You just don't see how you could possibly have found better.

HOLLY A. CORNELL

We talked a little bit about Jim Howland and Fred Merryfield. Can you tell me what the contributions of Holly Cornell were?

Well, Holly probably is the strongest technical man of the original group.

What do you mean by that?



Of real strength as an engineer, understanding and knowing the technical side of the project. His major field is in structural engineering, and I think, probably, he was the strongest of any of the group when inquiring about structural. That was his specialty, and he did more of the paperwork in developing the plans and specifications and operating procedures and this sort of thing. He would sit down and because of his technical ability, and his ability as, I guess a writer, would put these things down. I think that he was the major strength that the firm had in that...

More so than in public relations then?

Well, later on he got more active in public relations. Holly has a real strength too in public relations.

Can you tell me of an experience you had with him that would demonstrate his qualities?

You know, there are so many encounters it is hard to separate them. (pause) Just have a hard time coming up with any one special. We used to go to council meetings together, and fight the battles to get the projects together. I think that Holly's major contribution to the firm was especially his technical skills, and his ability to write and express himself. I don't know whether you have gotten into any of our plans and specifications and contract documents and this sort of thing. That is the legal end, and the technical end, that you get involved with and you can lose your shirt with a mistake. I think we depended more on Holly's technical ability and his legal ability; he's not a lawyer, just he could seem to spot the potential for trouble.

It seems to me that that was his greatest contribution to the firm. Well, his management of personnel certainly is. When he went to Seattle and let's see, he was there about ten years managing that office so he had office management capabilities as well. Following that he came back and then replaced Jim Howland as firm manager for a few years. All in all I think I'd say Holly made his greatest contribution to the firm with his leadership in developing the contract documents and specifications. He developed a

Manual of Processes and Procedures, I think we call it, for the firm. That was used as our Bible and the guide for project management and that sort of thing.

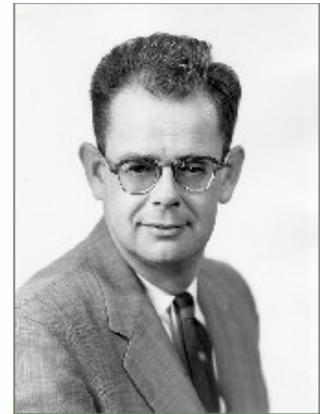
Going back to the original partners, who do you think was the best at negotiating with the client?

Oh, I suppose Holly. (pause) Yes, I think Holly would be the one. (pause) He had a lot of patience, and he could understand. He had the ability to evaluate the clients and to pretty well decide what they were thinking, and to say the things that needed to be said to swing them around to thinking your way.

ARCHIE H. RICE AND BECOMING A FIRM PARTNER

What qualities did Archie Rice bring to the firm in 1946?

Well, he was another one that Fred Merryfield had seen go through Oregon State and he had said, "I've got to have Archie Rice." Archie really was the sanitary engineer that came with the firm. Jim was hydraulics; Holly was structural; Burke was electrical; and Fred was the sanitary. But when they decided that Fred would stay with the University ...



Who decided that?

Well, the partnership. The four.

It was a group decision that he should stay?

Oh yes, yes. That he would stay on at the University.

It is a different relationship when the professor would listen to his former students.

Well, yes. But it wasn't that way. Fred wasn't that strong. His vote didn't count any more than anybody else's. His opinion didn't count any more than anybody else.

It didn't?

No. (chuckle) No. There was lots of things that Fred couldn't do; and there was lots of things that I couldn't do; and there was lots of things that others couldn't do; but we always got along. The thing that we were able to do was to evaluate and appreciate the strength of the others and the weaknesses so that they could be directed.

Going back to Archie Rice. He started in 1946 with you.

Yes, he and I started; I think he is number five and I am number six. Archie has ingenuity and imagination and ability to see and innovate new processes and new ways of doing things. The greatest guy you ever knew. He and I used to work together. Our offices were together, and I learned a tremendous lot from Archie Rice. He was a lot better student than I was, and

he is a strong chemist, and I didn't know chemistry from nothing. (chuckle) He gave me a lot of help in chemistry and in a lot of ways a lot of sanitary problems, the technical part of it. I went to the wrong school to be a strong technical man in sanitary. -- all of my training was for highway engineering, and if I could have gone to a place like Oregon State I would have been so much better off.

I got an education working with Archie because when we got into the technical end of the plant design to start with, why I learned it from Archie. I learned a lot of hydraulics from Jim Howland. This was the advantage that a guy has working with all these guys we have here. If you didn't know it, you could find the guy that did know it, and the only thing is to be smart enough to know you didn't know it, I guess. (chuckles) There was a lot of things I didn't know, and I needed to learn, but it was available. That was an advantage that a knucklehead (chuckles) has working with a bunch of great guys.

Can you tell me something about the personality of Archie Rice?

Oh (chuckle) yes. Greatest guy you ever knew. Always had a story to tell, and it was a wild experience. He never went any place that he didn't come back with some wild experience to tell you. He could keep a crowd in an uproar for hours on end. He was the greatest Santa Claus that ever came down the pike.

You mean from experiences with his projects?

No, well yes. Experience in living. I remember one time he went to Florence for a survey. They were out looking for a water supply for the city, and they were out chopping down trees and going across through the brush, you know, trying to find another stream over here, and get a sample of water from it to try. They came to this stream, and so they chopped down a tree. I don't know whether you're acquainted with the Coast, but you know the brush just grows so thick you can't hardly crawl through it. So they had hacked down this tree, and fell it across the stream. The guy that was helping him was still chopping on the stump -- the log had stayed hooked up on the stump -- while Archie was out in the middle of the log cutting the limbs off without this other guy seeing him. The other guy gave a swing at the log with his ax, and Archie flew head over heels into the stream. (laughter) And Archie, you know, comes out ringing wet. (laughter) Well, this is just the way with everything he did. Your sides would just be splitting as he embellished the story to where you couldn't stay and listen to him.

Was it Archie who was with you in eastern Oregon on the occasion of the story about the steaks?

Yup.

Why don't you tell me that story?

This must have been 1947. We'd made some policy that we would stay in nice hotels wherever we go so as to impress the people, but we didn't have

to have a steak every time we had a meal. We were to be a little conservative about what we ate because it was on the company, and we shouldn't just go completely berserk and buy steaks every night for dinner.

Archie and I were up in Pendleton together running a pilot plant. I'd been up there working on the project before, and I'd seen a lumber company there that made survey stakes for engineers as a sideline. So I'd gotten a price from them and told them that when I come back up there I would see them about getting the order okayed. I'd told Holly about it, and he'd said, "Well, we ought to get some."

But anyway, we'd been just working our tail off all day at this pilot plant, getting it built and operating it, and getting everything going in the right direction. Along in the afternoon, well 4:00 or 5:00, we were getting to thinking about dinner, getting hungry I guess. We allowed as how we'd worked damned hard, and we would go and have a steak that night. (chuckles) So we go up to the hotel and got our key and there was a telegram for us. We read the telegram and the thing says, "Cancel order for steaks, got cheaper ones here." Well, we only had one steak in our mind, and that was some big old thick one about so big, you know. (laughter) I looked at Archie, and I knew I'd been with him all day, and there wasn't any way he could have pulled that trick on me to put the telegram in there. (laughing) He was the only one that could have known about my being hungry for a steak, and the vice versa the same thing for me. He'd been with me all day and all night. Finally, it dawned on me that the girl had misspelled stakes. (laughter) That's why we only thought of steaks as something to eat when the wire came through. I don't know whether it was the secretary or the girl that called the wire in; probably at the telegraph station. Anyway (chuckles) instead of s-t-a-k-e, it was s-t-e-a-k the way the wire said.

What were the circumstances surrounding you and Archie Rice becoming partners in 1948?

The circumstances surrounding it? Well, I don't really remember why they decided to add two more to the partnership.

Why were you two particular individuals chosen over others?

Well, we were the stronger I guess, of the staff. More experience. I don't remember what our staff was as that time. We probably didn't have more than twelve or fifteen and since, in many respects, we were about equivalent in experience to the three of the original four that were active in the firm, they elected to expand the partnership to take us in. I don't remember whether it was mentioned in my presence why they elected to expand to take us.

That was quite an honor to be invited to join.

It was appreciated certainly on our part. It was a break for us, no question about it due to the continued growth and expansion of the firm.

How did your position change after you became a partner?

We were more involved, of course, in the management of the firm, and we sat in on the weekly meetings that discussed policy and management of the business.

How was your opinion regarded after that time?

Oh, I don't know that it really changed because our opinions must have meant something to them to have been asked to join them. So it probably wasn't much different. (chuckles)

It was quite a commitment to become a partner?

Yes it was. It meant that instead of four there were then six of us that were financially responsible in the operation of the firm, and of course, any liabilities that were incurred that could fall on us. I know we often discussed the partnership and the continuation of the group as a partnership. We discussed in later years, the need for adding additional partners, and the risk involved in adding additional partners.

Was everybody in agreement that more partners should be added?

In some form, yes, whether as partners or stock owners. We were in agreement that more owners should be involved, but there was a question in a good many minds regarding the advisability of having them be partners or proceeding to incorporate and become stock owners rather than partners.

Who advocated what?

Well, it was not any one individual. It was just discussions and planning on how to proceed to grow. We established our goals by discussion and voting on it. We would establish goals for a three-year period or a five-year period, what we should do and what did we really want to do. We had to decide what we thought we wanted to do, and then with those ideas brought forth, we established goals for obtaining these ideals in expansion and growth.

What was the nature of these goals?

Well, to expand and to do work that was interesting and to be able to take on larger projects. There were financial goals as well as aspirations to do bigger and better-sized projects. Oh, the goals were to proceed in a manner that would help us attain more interesting projects.

What do you mean by interesting?

Larger projects, more complicated projects, I guess you might say; and interesting projects. Projects that were maybe new and different and not just your run-of-the-mill street work and sewer work and that sort of thing. Get involved in a wider scope of projects. More electrical projects, more mechanical projects, to do work for industry as well as for municipalities, and [to widen] the type of projects or type of clients that we did the work for.

Who took the leadership role in establishing and defining these goals?

I think it was just the partners in meetings. Probably Jim Howland would be the one that would then work out more of the details and bring it to us for adoption of his ideas.

Which person, would you say, had the foresight to see the direction the firm was going or should go?

I don't know that any one individual did. I think it was a composite of ideas that were kicked around. We met every Monday noon, and many times we would bring up projects and different things that we could do that would be of benefit to the firm and of interest to the firm.

You mentioned last time that one of your goals was to put something new in each project.

Well, that was to improve our image as far as the type of work we did. The idea was that we should improve, we should learn by doing, and every time we build a plant, analyze it and see what we could do next time that would be better.

Could you characterize each person's qualities and contributions? That is, what some partners are lacking and where another fills that lack, and how they complement each other.

Well let's see. We've pretty well discussed Holly and Jim and Archie. I've talked a bit about Fred. I haven't talked much about Burke Hayes.

THOMAS B. HAYES

What contributions do you feel Burke Hayes made to the firm?

Well, of course, Burke was the electrical engineer of the group, and Burke had outstanding ability as a technical man in electrical engineering. Quite a few of our innovations and developments involved the electrical engineering technical aspect so he contributed to this development. His physical characteristics -- his stature, his poise -- were outstanding in dealing with our clients, and often we called on Burke to assist us in making a presentation to a client because of these physical characteristics. He had stature and poise that make a good presentation to the client. And he was one of the early leaders in developing projects in the electrical engineering field; and to a considerable extent, our other projects always involved a certain amount of electrical engineering work. The plant work especially -- water plants and sewage treatment plants -- required a considerable amount of electrical engineering work, and he headed up this phase of it initially, and contributed then to the success of the plants by having the electrical engineering done properly. He was also involved in the general planning of the firm too, and contributed ideas in our study of expansion and growth of the firm.



What were his professional philosophies and goals for the firm?

I think his major contribution in that manner was again in just the planning aspect of the firm. To be able to expand and grow. I think he was responsible for public relations aspects of the firm probably more than anyone else.

I thought Jim Howland ...

Well he, yes. He was the manager of the firm but in the public relations Burke would work with our P.R. people. In fact, he selected the P.R. people that we used, and then he worked with them in putting out anything possible to advertise the firm and to get our name known around the Pacific Northwest.

Could you tell me of an experience that you had with him or one you know about that would shed light on his contributions and his personality?

(pause) Gee, I just don't recall any specific work along that line. He was project manager of several projects that I was familiar with. I think Burke and I together -- probably more through his technical ability than mine -- developed the Flomatcher. In fact, I think the patent was obtained in Burke Hayes' name because it involved mostly electrical engineering aspects, and it was his knowledge of electrical engineering that made it possible to come up with the development. He was project engineer on a pump storage type project for the Eugene Water and Electric Board. He was also project engineer on a Waterville Power Generation Plant.

You said one contribution that you felt proud of was that every project had to have something new in it. What did Burke emphasize?

(pause) I guess all I can think of is the fact that he emphasized the quality of electrical engineering that was accomplished by the firm. Burke is very intelligent and very strong in electrical engineering technology. He was an outstanding student of electrical engineering no question about it. He presented a real strong image of the firm as far as client contacts were concerned. He worked a lot with the management of power companies and with the Bonneville Power Administrative staff.

I think his real strength to the firm was the stature he presented, at least to the clients. It was more indicative of the technical abilities of the firm as he worked aspects and his personal as Bonneville people and with the public, both through his public relations contact with the management of industry as well this sort of thing. I think one of his last jobs was involved in the management of an installation of hydroelectric power generation for the city of Portland.

I understand that earlier he almost went to a teaching position at MIT but chose the firm instead.

Burke would have been an outstanding professor in electrical engineering had he selected that field, and I know that he had feelings that way. He would enjoy being a professor, a teacher of electrical engineering. As I remember,

he did some teaching over on the campus -- a few courses because of his interest in electrical engineering and his abilities; he was asked to at least substitute over there several times.

THE FIRM, GROWTH AND CHANGE

The three qualities that you attributed to all of these people we have talked about are their technical skill, their skills in public relations, and their leadership qualities. Actually, you seem to assess them as being about equal with regard to these qualities.

Well, I do. Of course, that's the thing that made the firm successful, I guess, is the leadership and the technical ability. We certainly had to have them all. First of all, we had to be highly skilled technically to do the skilled work involved and to supervise others because as the firm grew there were so many people involved that we had to do a big job of supervision.

Would you ascribe these same qualities to yourself then?

Well, well, yes. I'd have to say that in my specialized field, that most of these are true. I think the success of the firm shows that, that all of us contributed in these areas.

What would you say were the most important qualities that you looked for in new employees?

Oh, (chuckle) their personality, their ability to work with people, and certainly their technical qualifications. Their training and experience in the technical aspects of the work.

The ability to work with others is very important?

Oh, yes. Probably the working with clients, public relations. One of the biggest problems with new staff, let's say inexperienced staff, is to be able to communicate -- to write a report. Most of the college students are not trained to write reports. (chuckles) Their English is lousy, their spelling is terrible, mine included. If an engineer can't spell, you might say that this guy would be a good engineer. (laughter) I think that at least it is typical in a lot of engineers. They can't spell. That was one of the things that we had to continually work on, especially with our younger staff, and we did an awful lot of report writing. The first thing you do on a project is to analyze the problem, and then you come up with recommended procedures for solving the problem. Then you wrote the report to tell the client what needed to be done, and unless the client could understand what your evaluation of the problem and your proposed procedures for solving the problem, why it was of no value to that. So this is always our goal.

How did you teach them better communications?

"Do it over." (chuckles) As far as the reports go, over and over. Scratch it out and make them do it again. Seemed like the only way we could develop was just, "Do it." After a while they become good report writers.

I assume verbal communication would be also important?

Oh, yes. Oh, my, very important to be able to communicate. In reports they have to communicate. The project manager had to be able to communicate to the clients as well as in supervising other people. You have to be able to communicate with them.

Can you describe for me the spirit of the firm in those early years as it was growing and more projects were coming in?

In the early years, of course, everybody knew what all the projects were. What other people were doing and the possibilities for developing and promoting new projects, and it was always a great day when somebody went to a meeting and come back with another contract to do some more engineering work. The prime indicator of success of the firm was that we were able to communicate with potential clients and gain their confidence and to be selected to do the engineering work. We had quite a bit of competition in the Northwest. In the early days, whenever a project came up, there would be other engineering firms attempting to get the work as well as ourselves. So we had to compete with other people.

You were going to describe the spirit of the firm as it was growing.

Oh, yes. We had an esprit de corps amongst everybody. There was all the feeling, you know, behind the firm. Everybody was behind the firm to make it a success. To do whatever was necessary to make the firm, present the firm, and make it a success. It was very pleasant and a very professional place to work. Soon after we got going I know we eliminated the clock punching. We were professional people, and we didn't worry about punching a clock.

You punched the clock at first?

Yes. But we were concerned then, of course, about presenting to our staff a professional type of an organization so that they would do and became professional in their attitude and their approach to work. In the engineering group, of course, there is never such a thing as a strike or anything like that because we are professional. Sure we work for salaries and for a good many years someone would come with the firm why that's, that's all they get out of the firm is the salary at the end of the year. But the reason for developing the type of policies and procedures was to win the person over from just being an 8:00 A.M. to 5:00 P.M. clock puncher. He became so interested and so involved in the work and proud of the work that he did the work as a professional.

This professionalism was expressed from the very beginning of the firm?

Well, yes. From the very beginning. Before I became a partner I know this was what we talked. I know that I was one of the guys who rebel led about

punching the clock because if I needed to work till 6:00 or 7:00 at night to get the job done, that was my responsibility to do it -- to see that the work was done. And this was adopted by everybody -- you do that, so why worry about the clock. We worked from early to late, many hours.

So the firm gained; there wasn't any question about it. From a monetary standpoint, the firm gained by developing this attitude because people worked a lot more than their forty hours a week. I think later on we got to the point where we were paying overtime for work because, as projects developed, some people would be involved in projects that did take more time than others, and so that was the move to pay overtime for work over more than eight hours a day. But the main thing was to develop a professional approach to the work rather than as a clock puncher.

How else was this done?

Well, of course, the responsibility that we assigned so that people took on a professional responsibility for doing the work. Now this was selective to some considerable extent. The people in the printing department and some of the other staff that did drafting and that sort of thing were not professional; they did more repetitive type work and so they were not. The effort was not made to incorporate them as much. But later on we did. There are secretaries that are owners of stock just like professional people. And some in the print department were taken in as owners, or offered the opportunity to become owners, I guess you say. And drafting personnel, especially the decision makers in the drafting department.

Is this one of the reasons for the low turnover of employees?

I think, yes. And as I mentioned last time, from an aspect of perpetuating the firm it was necessary to do these things because, as the older partners retire, it is a way of continuing the firm and perpetuating it; and that is a benefit to the original partners. Gee, we had a built-in market for the business, and that was one of our early goals to be able to develop this market for the business.

Who was most assertive about getting projects?

Oh, I don't know that anybody was. I think we all were. In order to exist you had to get projects. I don't know that anyone would be more assertive than anybody else; each one of us had our field to develop and work in. What happened was that as you worked with clients, the goal was always to be able to repeat and continue to work for them. Just year after year after year you worked for those same clients so each one of us would have a group of clients that we continually contacted and kept in touch with so when a project came up it was just automatic that they would call on you to do additional work.

What did clients see as the positive qualities in your firm over another engineering firm?

I think the fact that we had skilled staff in the various types of engineering fields. We had personnel in all fields of engineering that were skilled. There isn't anybody who can know it all, how to do it all. We had mechanical and electrical and soil engineers, we had sanitary engineers, structural engineers, so that every aspect of the project could be done by people that are especially skilled in that branch of engineering. Now many engineering groups don't have that. Well, one not big enough to have it; they just can't afford to keep a variety of personnel around. And others just don't. So this was the thing that made it possible for us to sell our firm over others, the fact that we had all these special skills on the shelf. We had brainpower on the shelf that was able to move in.

Did someone among the partners stress expansion to include economists and planners and architects?

Oh, I don't know that any one did. Maybe Burke and Holly might have been more in that field than the rest of us. (pause) Our economists -- I think Burke was the one that was first, or maybe Holly. I don't know. One or the other though was the one that hired the first economists.

Would you say they had more foresight into the future than the rest?

Well, no, I think that they felt the need of this knowledge to complement or supplement, in order to do the entire project in the most skilled manner. Now I think when we got into economists and that sort of thing, we were moving into bigger projects which needed economists to be involved. He got into the planning field later on too in the sixties -- municipal planning and this sort of thing. Maybe Jim was the one that pushed adding the planning personnel. Our Portland office was the first one. That was when our major move into the planning field as opposed to engineering design and construction supervision took place.

What about the international market?

We didn't have any international work when I was active. That's come on since.

I thought you went to Costa Rica to see about a project.

Well, I went to Costa Rica, but I didn't get the project. That was a development project but we weren't selected. I went to Venezuela to promote some work, but that's before we were successful in developing any foreign work.

Was anybody talking about foreign work before you retired?

Oh, yes. We continued to kick it around and wonder about getting into it.

Who was mostly concerned with it?

I think probably Holly. Of the original partners, probably Holly was the one that pushed the foreign work aspect more than anybody else. But, as I say, we never generated any until after I left. After I retired they appointed Les

Wierson in charge of that, and since then they've developed foreign work. I don't know whether it's good or bad. (chuckles).

What do you think of expanding internationally?

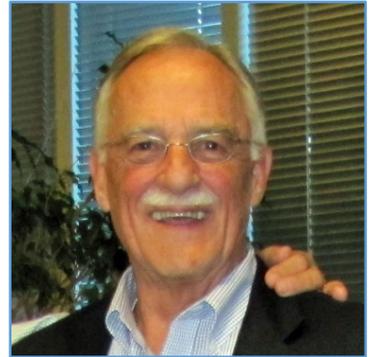
I really don't -- I haven't enough background in it. I didn't do any so I shouldn't say.

Do you think it is a positive expansion?

Oh, it could be from a long range standpoint. I'm not sure it's a money maker at all. I'm sure that it adds some prestige to the firm, and whether they are making any money out of it I don't know. I'm not in on it.

Who was most concerned with the fiscal matters?

I would say Jim was. Until, oh, into the mid-sixties when we finally brought a fiscal officer into the firm. Like Jim says, it was kind of the case of the blind leading the blind until we got Mike Fisher. He was a professionally trained business manager.



I read that Mr. Howland had a no-frills attitude.

Well, Jim, that was in his personal attitude. Jim is just so humble. He wouldn't want to ride in a Buick; he would want to stay in a Ford. But this was just a personal approach. Of course, Jim never wanted to try to push himself.

What about his professional approach in fiscal matters.

Oh, excellent, yes, no question there. He was outstanding in his professional approach and for integrity, but his no frills is just his own life style. He's just a tremendous guy. He does so much. He and his wife always have got somebody in their home they're helping take care of. Of course, they were scout leaders, both boys and girls. Always taking people in. Just such a tremendous(pause). A member of the community. I'm sure he is a major contributor to the community. He was one to provide a community that was a great place for the staff to live. The gain that the firm got out of community betterment was to improve the living conditions.

Why do you think he had this concern?

Well, just for the good of the firm, of the people that he employed, because it's a happier living condition that's more conducive to maintenance of your personnel. They're not going to take off on you and leave. It was for the goodwill of the staff.

What events or projects do you see as benchmarks in the firm's history?

Of course, I have the problem of being closely associated with a certain branch of them. Jim could give a lot better evaluation of that because he wasn't so directly associated with(pause). I would think that you might say a benchmark for some of the things that we did was like doing work for the Eugene Water and Electric Board. When we started in business that was

all done by an engineering firm in Portland, and when we were first selected to do any work for them, and as we followed through and continued to be selected, I would say that would be a benchmark. Then we would talk to other clients, we could refer to the projects that we did for the Eugene Water and Electric Board.

In a firm starting out like we did the big thing is to be known and to develop a reputation of abilities so that when something needs to be done, why "That firm down there in Corvallis, they did a job over here," that's the way you got your name around. It doesn't do any good to be the best engineer in the world if nobody knows about it so it's a matter of public relations, and reputation that you develop; you become known. It was a matter of going to all kinds of organization meetings, both with industry and with municipalities and county organizations. It was government organizations of all kinds because those people are decision-makers on who's going to do the work. You need to get to be known, not just who you are but also what you've done and your qualifications. So what brought on all this I don't ...(chuckle)

Benchmarks ... (laughter)

Benchmarks. To start with Fred Merryfield was very active in water works associations and sewage works associations and he was this as a college professor. He knew a lot of people in the Northwest. These both were the Northwest organizations and this background that he brought to the firm was one of the things that made it possible for the firm to be selected on the initial projects. Once we started getting our name around and doing projects and people hearing about us, that would have to be a benchmark. The fact that Fred had acquaintances with these organizations, especially municipal organizations, made it possible that we could get our foot in the door to talk to them.

What about external events like government legislation, water pollution control, population expansion?

Well(pause) Oh, many of these things were just really somebody driving projects to your door -- the fact, as we mentioned last time, that pollution abatement became so necessary in everybody's minds that projects resulted from this demand for pollution abatement. Without that demand, we'd never gotten the work. Also from water treatment standpoint, when we started there was hardly a water treatment plant in the State of Oregon. There might have been one or two but very few, very few; there were some built about that time but these ... I'm sure that all of us felt that there was a potential here for an organization because we could see the need for these types of projects and engineers to do it, and that's why we were all gung-ho to go at it, I guess, but without that need, why we'd have never made it.

Can you tell me when some of the most difficult times for the firm were?

(pause) Oh, there surely most have been some. (chuckle)

You're an optimistic person.

Well, we really didn't, you know. (pause) Previously in Kansas when I worked for this firm back there, there were times when we were not able to meet the payroll and that sort of thing because we didn't have the work. Of course, that was in the thirties when lots of people were out of work. But the times were different; and this goes from after World War II when there was a backlog of money, because it couldn't be spent for these projects during the war, and there was a backlog of work. So from the word go, it seems like we always had projects to do. Now I'm sure there were times when we would wonder, "When we get this one done, what the heck are we going to do next;" but something always came along. There never was a time that we couldn't meet the payroll, and never a year that we didn't add more people and have more work to do, and so we had to expand. There really never was any any real slump that I can think of in our work. Doesn't seem possible that that could have been so but...

You can't remember any negative times with the firm?

(chuckle) It just doesn't seem possible that there couldn't have been some rocky roads to travel. Maybe Jim absorbed them, and I didn't know about them.

In your experience and your observations there were no negative aspects to the firm?

No. In all the people we've employed -- sure we had some people that were not producers so we had to send them down the road, but very few of them -- it was a rare thing when we employed somebody that we couldn't continue to employ them, especially the professional people. Sure a lot of them have come and gone because, for various reasons, they would want to change fields -- become a teacher or something rather than a project manager. But few and far between.

What were some of the weaknesses of the firm that you observed as you look back?

(long pause) Oh, gee, I guess you're going to have to find somebody else, I'm too (chuckles) much of a firm-man to even realize there was weaknesses. Isn't that ridiculous! (chuckle) And there had to be weaknesses. Couldn't all have been a rose garden. (pause)

One weakness I suppose was spending too much time on projects. Not knowing when to quit especially in your studies when you are doing studies on projects. There are always unanswered questions that come up, and that was probably one of the firm's weaknesses. This was not from a weakness in engineering but a weakness in business management. We wouldn't know when to quit studying and draw our conclusions. This, in the consulting engineering business is a fatal thing because you get so much money to accomplish a project with, and you've got to call a halt and make a decision. I think this was one of the weaknesses that I can think of that the firm had.

How was that problem remedied?

I don't know that it was. I think that it was in our Policy and Procedures Manual we came up with. Also when we got a fiscal officer in, he kept you a little better informed on where you were on your projects as far as money is concerned. Probably help to solve the problem at least was to be fiscally aware of the status of your work, as well as calling a halt to studies and making conclusions.

How did the management philosophy change from the beginning through the twenty-some years that you were with the firm?

Oh, I suppose in the matter of growth. Right from the start I think we always had a feeling you couldn't stand still; you either grew or you slipped back, and in order to keep from slipping back, we would keep growing and adding staff. Then as we got bigger -- and they're still getting bigger -- the type of projects that we looked for and the selection of these projects, the type of work that we tried to promote, changed.

We changed our goal to one of selecting interesting projects, and projects that were more fiscally money makers. Our attitude at first was anything for an honest buck; that was our motto for years. Later on, and now I'm sure, not just anything. They are more selective in the type of work that they do. Instead of anybody can call you up to do something and be right down to see you, now they are more selective in the type of projects. In the last year, they have moved into new fields that we have never worked in before, and that is because of the selection of the type of work. They are now in the mining field with an office in Utah. Salt Lake City is primarily involved in mining industry. And so they haven't stopped growing yet as far as types of work they do, as well as the size of projects.

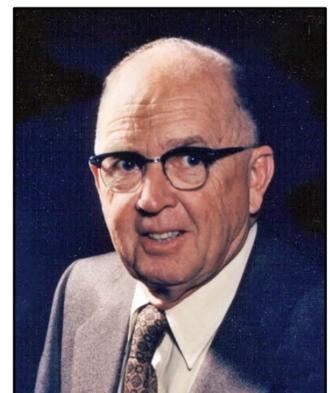
MERGE WITH CLAIR HILL AND ASSOCIATES

We talked about the four original partners, and Archie Rice and you. We haven't talked about the time Clair Hill and Associates joined the firm. Can we talk about Clair Hill?

Oh, yes. Well, really I guess it was early in the sixties we started doing work for Clair Hill in electrical and mechanical work. He didn't have electrical and mechanical capabilities on his staff so when he needed this type of work, he contacted the firm and we did work for him.

Why did he select your firm?

I guess it's because we probably heard that he needed some help, and we went to see him about doing the mechanical and electrical work. He was doing housing projects for the Air Force. He was able to because he had structural people and survey people and that sort of thing. He could handle all kinds of concrete, construction and that sort of thing. He could do that type of work but he didn't have the mechanical and electrical skills for the



heating and ventilating and the wiring and that sort of thing. So I think probably we contacted him to see about doing some of that when he got the project.

When we started work for him, Burke's staff would be working for him, because Burke headed up the mechanical and electrical group. Burke was able to promote some sanitary engineering projects -- Clair didn't have any sanitary engineers. Then he hired the firm to do the sanitary work for him, and he would do the building, the structural, and that sort of thing. So we started just doing work for Clair. That was in the mid-sixties, and the more we worked with each other, the more we saw an advantage of moving together; he did aerial mapping for us that we needed done. So it was a matter of just growing. We worked together for each other, and we finally said, "Gee whiz, let's get married." So we did. (chuckle)

Whose decision was this?

It was the Board's. In 1960 we incorporated and so the management then was by a Board of Directors. Of course, the old original partners were pretty much continuously on the Board of Directors, and so it was just the same group really carrying on. But it was a management decision by the Board of Directors.

Your firm certainly had worked with other engineering firms earlier. Why did you decide to merge with Clair Hill and Associates?

Because we wanted to move into California. His work had practically all been in California. At the time we merged, we opened an office in San Francisco, and we did it as a joint venture -- the two of us together. Just which came first, I'm not sure that I remember. I opened up the office in San Francisco, and we staffed it both from CH2M people as well as Clair Hill people. Jim Howland, I think, actually went through most of the fiscal, the dollar signs, on the venture because he was the manager.

At one time, before I opened the office at San Francisco, I was involved with working out an arrangement with Clair to merge and also a couple of other firms in California job for, I guess, a month or so was to investigate these firms and to get the fiscal data on them. One of them was in Santa Ana, California, down south of Los Angeles and another one in Palo Alto. They had different types of work but we were working with these other firms too. We had a job in Las Vegas at that time that we did joint venture with the Santa Ana group, and one in Palo Alto. We were working for them or they were working for us or something.

Why did you merge with Clair Hill?

Why did we pick Clair rather than? I guess he had a larger organization, and he was most interested to join. I think the one at Santa Anna, they were not so anxious to join. I don't know whether it was just them or whether it was both of us. We worked with each other later on but we just never did merge. It probably was just that the ownership was not interested in getting

together. Maybe we took Clair because they were a bigger organization and we took them first and thought we would give that a trial. Once we got that going and we were into California, we didn't have so much to gain by moving in with any of the other firms.

We were going to talk about Clair Hill's contributions.

Yes. I worked with Clair quite a bit before I retired, and especially since I was involved in the California office down there. And I was involved in the Tahoe project and actually we did that work for Clair. He had the engineering contract with the client, and we did it for him and his staff. Now you're wanting me to discuss more about Clair himself.

Yes.

Because of this work I've gotten to know Clair and I guess Clair and I are very nearly the same age so we had a lot of similar background. Clair grew up there in Redding. He did graduate work at Stanford. I'm not sure where he did his undergraduate work now whether it was all Stanford; I've forgotten. But anyway, I know he did graduate work at Stanford and was primarily started out in strictly civil engineering type of work, land surveying and this type of work. He had done some work after he got out of school before World War II, but World War II grabbed him like it did so many of us. He was in Alaska part of his hitch in World War II.

It wasn't really until after World War II that he started in a bigger way there in Redding, and he kept adding staff and getting more projects and adding staff. As I say, he was primarily in the civil field which you think of primarily as surveying, and he had developed aerial survey skills and abilities. Then he acquired structural people. But Clair did this all by himself. He was just a one-man show, and Clair made all of the decisions. But he kept getting more work.

By the time we started work for him his oldest son had finished college and was working with Clair. Clair has done a lot of irrigation work in California and so he knew a lot of people in irrigation and flood control, both. He had been involved, later and by the time we started working together, in the building of earth dams for flood control and irrigation and soils engineers.

Clair himself is basically just a good old civil engineer. He's in love with horses and so in his survey workHe did lots of work for the power companies, and they had camping material; their crews would go out and they'd camp for weeks out in the mountains and surveying through the mountains. This was quite a different life than our type of engineering where we sat at the desk and work. Clair still does. And his office, I mean the Redding office -- Clair has retired -- but the Redding office still does an awful lot of survey work. Of course, since World War II we have moved into an advancement in aerial mapping. A project we acquired in Denver, just couple of weeks ago, was 100-mile stretch of highline -- power transmission lines from Denver west over the Rockies. Of course, we wouldn't have gotten that project without Clair's back- ground and experience and that office's ability to

do aerial mapping and that type of thing. Clair built that up just from a one-man show. He's very personable individual and probably not a very good manager.

Why do you say that?

Well, because it was a real asset to his company to associate with the firm and to straighten out some of the management problems that had generated there. One of the things that Clair gained by coming with the firm was the fact that he then was with a firm that had policies and procedures worked out and management personnel, which he didn't have.

So he gained and the firm gained. Why do you think he wanted to merge?

Well I think that was it. He was aware of his fiscal problems. It was like Jim Howland said about our firm, that it was a kind of the blind leading the blind until we got sane professionally trained people to do management. Now Jim did management; he could say that. But engineers are real smart people. They know everything but (chuckle) until you get involved in running a business you find out that there are some things that you don't know. And I guess Clair was just as typical to some extent as our firm. We saw it before Clair did and took the steps necessary to bring in management personnel. It is a profession just the same as engineering is a profession, and it takes training and skill and background to be able to do it in the proper manner. I think that would be Clair's gaining in the organization. It also provided him a market for -- see Clair was getting near retirement age, and he needed a market for his business so another asset to him was that it was a place to move his business and perpetuate it.

The advantage to this firm here was expanding the expertise of the engineering field?

Yes, and moving us into projects in California that we weren't able to get. Well, it would have taken us longer to get them anyway. He had served on boards and committees down there and state organizations to where he was known, and they'd done a lot of work.

Whose idea was it to put "HILL" on CH2M?

Oh, it was the joint decision between Hill and the firm. We had resisted adding any names to CH2M all the time, but because we were acquiring a firm down there that had a reputation, we needed to perpetuate that. If we'd have dropped off the name of Hill, it would have still been just CH2M moving into California. But the fact that we had HILL on it when we were contacting clients, and his name was part of the firm's name --he was so well known, Clair Hill -- why it wasn't some new firm moving in.

That was a positive move for the firm.

Yes.

I'm going to switch gears and ask you how the partners felt about having women professionals come into the firm.

Oh, they had them.

I understand the first one really was a draftswomen in the sixties?

No, she was a graduate engineer. She and her husband both were sanitary engineers.

Were there any problems in adjusting to professional women employees?



So there was no problem in adapting to women?

Oh no. Carol Wilkinson, she's the fiscal secretary. I don't know whether you've met her or not. Carol is just a tremendous gal, and now you wonder how you'd get along without her. She's just built herself up and knows so much about the firm and what's going on. You've met Mike Fisher; he leans on Carol -- I tell you. I don't know how many gals they have on the professional staff now.

THE FUTURE

We've talked about the four original partners, Archie Rice and you, and Clair Hill. There seems to have been team work and cooperation and all of these qualities that we discussed among you partners. What is going to happen to the firm in the future as all of you retire?

Well, the new owners have been there since that; I know so many of them running the different offices. Reynold has been managing. He's been there since 1948,. Only one guy left -- Jim Howland is the only one that hasn't retired. The staff that are running it now are going to carry on the same procedures and as they make changes that are necessary ...

Do you think people like Earl Reynolds will carry on the values and goals in the same way as the original partners?

Oh, I think so. Maybe he has his weaknesses and his strengths, but he has managed that office over there since 1950. He's gone through some rough times and some good times. I'm sure that he will have different strengths than Jim. He's the president; he isn't the manager. As chairman of the board, he will be influential at least in moving, maybe correcting some things that have been weak. But, gee, they've got a board of strong people. Of course, they have to be strong; we trained them! (laughter) No, they're great. There's no shortage of management ability as far as technical management goes.

Where do you see the firm heading in the future?

Gosh , I don 't know.

Can you make any predictions?

No. I don't even know enough about it really. Ten years I've been gone. I went over this morning. First time I've been over there for a while, and I

knew the board still because from memory I remember the board. Ten years since I've been doing anything really over there. I go over once in a while and we kid with each other.

You have no interest in continuing working on projects or having an active ...?

Oh, no. I couldn't. You've got to either be in it or out. You can't be half in and half out.

Why did you decide to be out?

Well, because I want to do other things. I was getting on in years. I didn't need to work. I'd built up enough to be fiscally independent, so before I got too old to enjoy playing golf or going fishing and so on I was sixty-three -- I retired instead of waiting. And I'm glad I did.

Many times people who have worked many years for a firm that they have enjoyed, want to continue on.

Yes, Fred did that. Fred wouldn't stop. I don't think he stopped until he died. When we made up the rules, we made an exception for Fred because he worked on the campus until he was sixty-five, and then he wanted to spend some time with the firm afterwards so he worked until he was seventy. He was an owner until he was seventy. Now the regulations, I mean the rules, don't say you've got to stop, but you can't be an owner after sixty-five. And I think that's still held up in spite of Uncle Sam saying you didn't have to unhitch when you're sixty-five, but I think that is still the practice that they are doing.

I wanted to ask something about that subject. How did your work and your personal interests fit in your life during your working years? How did you weigh the importance of each?

Well, the work took priority. It was whatever needed to be done. I know after I was with the firm fifteen years, I finally decided that I couldn't do everything. (chuckle)

It took you fifteen years to realize that?

Well, you go a long time. You just, keep working. You work Saturdays; you work nights. Finally it dawned on me that I couldn't do everything so you just have to do what you can and quit. I know I deliberately made this decision at some time back that I couldn't do everything so I did what I could, and what I couldn't get done would be there the next day.

Do you think the other people that we've talked about had a healthy attitude as regards work and lei sure?

Oh I think so, yes. They all have their different interests. Now Archie retired early. But he wants to farm, and he bought him a ranch down here. I can't believe it, but he'd work every day of the year on that darned farm down there and enjoy every minute of it. That's fine. That's just what he likes to do. Burke retired a couple of years; oh he's still working occasionally. I don't

know just how much time he puts in. I haven't seen him for a year. But Burke's got a lots of interests, and he has no problem of filling his time. This worrying of what you are going to do with your time when you retire is a bunch of foolishness. (chuckles) It's too nice.

What are your interest and hobbies?

Golfing mostly is my hobby. I haven't played so much this year as I have other years but that's about the main hobby.

That is what you mainly wanted to do after you retired then.

Yes, that's what I did do.

I read about the Nimble Nimrods.

Nimrods, yes. Well, Archie was the promoter of the Nimble Nimrods, and I used to go with him. That was after they shook me out of the sack at 5:00 in the morning to go fishing up on frozen hills. That's enough of that foolishness. (chuckles) I'm not truly a fisherman at heart, but we used to go up -- they still, I think, go up on the top of the Cascades sometime about now and spend a weekend fishing and drinking beer and having fun. (chuckles)

What were some of the most memorable times with the firm? Can you give me a few highlights?

Oh boy. Just the most memorable times with the firm. They were all great. I just don't seem like I can come up with anything. (pause) I suppose one of the great things for me personally, would be when I was invited to become a partner. I think that probably was, as far as the firm is concerned, one of the rewarding contributions to have been associated with that group of guys. What an opportunity it was! Just to be able to work with them and to see them grow. I guess I mentioned when I attended the annual meeting up in Portland. We spent the morning listening to the managers of the various offices get up and tell what they were doing and what projects they were going to work on this year, one after another. The managers were staff that we took on while I was active, and I knew them so well and here they paraded by. Couldn't have been anything more thrilling. (emotional pause) They are all doing so well and you know you get kind of pumped up with pride when you see that. And I suppose that was one of my big thrills.

That's great. What are your goals for the future?

Play golf. (chuckles) I want to hit a long drive and my heart give out and I fall over. (chuckles) That's the way I want to go. Last year one of the buddies that I play golf with just had hit a long drive and walked over to the golf cart and the lights went out. Now isn't that a way to go?

You don't see that as any goal do you?

Not yet anyway. (pause)

Do you have anything else you would like to say?

I think I've yacked quite a while. (chuckles) I must have said it. Just it was such a privilege to have the opportunity to work with There was about four hundred on the staff when I quit. Now there's five times that many. Like I was kidding this morning, I said: "Gee whiz, you should have kicked me out years ago. Look what happened after I got out. It went five times as big!" (chuckle)

End