2-24-1978

Deposition of Charles Robinson

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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF WASHINGTON

COLVILLE CONFEDERATED TRIBES,

Plaintiff,

v.) Civil No. 3421

BOYD WALTON, JR., et ux., et al.,

Defendants,

and

STATE OF WASHINGTON,

Defendant Intervenor.

UNITED STATES OF AMERICA,

Plaintiff,

v.) Civil No. 3831

WILLIAM BOYD WALTON, et ux., et al.,

Defendants.

DEPOSITION OF CHARLES ROBINSON

Deposition upon oral examination of Charles Robinson, taken at the request of the Defendant Intervenor, before David Caviezel, a notary public, at Room 897E, Federal Building, Spokane, Washington, commencing at or about 10:15 a.m. on January 6, 1978, pursuant to the Federal Rules of Civil Procedure.

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APPEARANCES:

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CHARLES ROBINSON

called as a witness at the request of the Defendant Intervenor, having been first duly sworn according to law, did testify as follows herein:

EXAMINATION

BY MS. ECKERT:

Q. Dr. Robinson, would you state your name and spell it for the record?

A. Charles S. Robinson, R-o-b-i-n-s-o-n.

Q. Where do you presently reside?

A. Golden, Colorado.

Q. By whom are you presently employed?

A. I'm self-employed.

Q. In what capacity?

A. Consulting engineer and mining geologist.

Q. In that capacity have you had occasion to become familiar with the area known as No Name Creek Basin, Colville Indian Reservation, Washington State?

A. Yes.

Q. Would you please explain to me when your first contact or knowledge of that area was?

A. My first visit to the area, I discussed it with Mr. Veeder and others prior to that, was approximately two years ago.

Q. And are you hired directly by the tribe at this point?

A. Yes.

Q. So you're not under subcontracting, say, to Morrison Maierle?

A. Not at the time.

Q. Okay, fine, and can you tell us a little bit why you were hired by the tribe, for what purposes?

A. I was hired by the tribe on the advice and counsel of Mr. Veeder.

MR. VEEDER: He's a good man.

Q. (By Ms. Eckert) I take it you were to perform certain investigations for the tribe. What kinds of investigations?

A. To determine the geology and ground water hydrology of the No Name Creek Basin.

Q. Did you so in fact determine the ground water geology and hydrology of the No Name Creek Basin?

A. Yes.

Q. And what kind of study did you make in the process of determining the geology and hydrology of the basin?

A. I made a study of the geology of the No Name Creek Basin, and I studied the available data and records on the ground water hydrology.

Q. Going into the first part, you studied the geology of the basin. How did you study the geology of the basin?

A. I went into the field and observed the natural materials that occur in and around the No Name Creek Basin.

Q. Did you do any field mapping?

A. Yes.

Q. Do you have those maps with you?

A. No.

Q. Now, with respect to studies of the ground water hydrology you said you investigated records of that. Would you tell us which records you investigated and looked at?

A. I reviewed the records that were compiled or data obtained by Morrison Maierle in their investigations, and have reviewed the records by the U.S. Geological Survey. They were obtained by the U.S. Geological Survey.

Q. For what purpose?

A. To understand the hydrology of the No Name Creek Basin.

Q. Did you prepare a report on your own of your understanding of the hydrology of No Name Creek Basin?

A. No.

Q. Did you make any report or memoranda to anybody in the tribe concerning your conclusions?

A. No.

Q. Let's see. Did you at any time during your period of employment with the Colville Tribes have any associates working with you?

A. My work was in association with Morrison Maierle.

Q. I see, but you had no associates of your own?

A. I brought none of my own staff, no.

Q. Now, I'm a little bit confused on all of this. The study that you did of the ground water hydrology, are you familiar with the work that Mr. Kaczmarek did?

A. Yes.

Q. To what extent did your studies overlap his studies?

A. I overlapped his studies except for the soil. I made no specific soil investigation.

Q. Did you make any conclusions respecting annual water supply available in the No Name Creek Basin?

A. No, I have not.

Q. Now, we have been talking about bedrock in the No Name Creek Basin. Would you describe on the basis of the study that you made in the area what is the bedrock in that area?

A. Bedrock is an old granitic material.

Q. Did you make any determination of the depth of that grinitic material throughout the basis?

A. I reviewed the logs which drilled through the over burden on top of the bedrock and have made cross sections or constructed cross sections through the valley which would determine the approximate depth of bedrock through--well, the geometry of--

Q. Do you have those cross sections with you?

A. No.

Q. For what purpose were these cross sections used?

A. To find--

MR. VEEDER: May I let the record show here that we do have exhibits developed by Mr. Robinson, and the exhibits were going to be used in trial, ma'am.

MS. ECKERT: I'm aware of that. I asked if he had the cross sections with him today.

MR. VEEDER: And the cross sections is what we're talking about, and I think they're here.

MS. ECKERT: But if the witness can testify, Mr. Veeder, if he doesn't know that they're here that's what he has to answer.

THE WITNESS: The cross sections that were here were constructed by Morrison Maierle. The cross sections that I specifically constructed were reviewed, I should say, and used by Morrison Maierle for the presentation of the exhibits are not here.

Q. (By Ms. Eckert) In discussing the bedrock we have been talking about the granite lip. Is that a portion of the bedrock that is an outcrop of bedrock?

A. The exposure of the bedrock.

Q. Are there areas in--I'm referring you to

Deposition Exhibit 1, or you can also use the larger one, Exhibit 2, are there areas in Allotment 526 in which bedrock outcrops show, to the best of your knowledge?

A. Yes.

Q. Okay, and where generally are those outcrops located in 526?

A. I'll refer to Deposition Exhibit 2, if I may.

Along in Deposition Exhibit 2 in Allotment S-526 bedrock is exposed or crops out along the western side of that allotment, west of the area which has been defined as the irrigated and irrigable area. There is also some outcrop along the eastern limit of that allotment.

Q. Okay. Let me ask you this, referring you to Deposition Exhibit 2 and the yellow shaded area in there which are marked, undeveloped irrigable acres, in 526 are there any outcrops of bedrock in any of the yellow shaded areas, to the best of your knowledge?

A. Not to the best of my knowledge.

Q. Okay, and in 892 and the yellow shaded areas are there any outcrops of bedrock?

A. Yes there are. There is a--you mean totally encompassed by the yellow areas, as I understand your question?

Q. No, I'm talking about in the yellow area, are there outcrops of bedrock within that to the best of your knowledge?

A. No.

Q. Again, with reference to Allotment 901, the yellow areas in there?

A. There are no outcrops of bedrock within that yellow area.

Q. Now, the granite lip that we have been referring to is a point at which No Name Creek flows over an outcrop of bedrock, is that correct?

A. That's correct.

Q. Are there any other similar structures over which No Name Creek passes in the No Name Creek Basin?

A. By the term, structure, you mean is there any place that--I want to clarify your question--is there any place where the No Name Creek flows over granite bedrock?

A. That's correct.

A. No.

Q. Okay. Now, that's with reference to surface flow. Now, I take it that the flow of water through granite bedrock is very small, is that correct?

A. Negligible concerning--

Q. Okay. What I'm asking is, referring you to Exhibits 1 and 2, the present course of No Name Creek is in a generally southerly direction based on your study of the geology of that basin. Are there any other points at which waters in the No Name Creek Basin are leaving the basin other

than the granite lip?

A. Your question confuses me because--

MR. VEEDER: Then don't answer it.

MS. ECKERT: Well, I have no further questions then.

EXAMINATION

BY MR. PRICE:

Q. Mr. Robinson, could we see the exhibit that's been prepared outlining the depth to bedrock, the exhibit to which you're going to refer in your testimony at trial?

A. There are cross sections on which the bedrock profile is shown.

MR. PRICE: That exhibit is here today, apparently?

MR. VEEDER: Yes.

Q. (By Mr. Price) What I want to get at is some depths, and if you can give those to me without referring to it?

A. I couldn't at this time.

Q. All right. I'd like to see that if we could, please, have that produced.

MR. VEEDER: Mr. Price, the representative of the State of Washington raises some issues about materials that were prepared by Dr. Robinson. If you want those

available in the courtroom or if you want them here in advance of trial they will be made available. I want the record to show that. We have all the data available, we have just brought the finished exhibits. So if you're calling for those we'll get them for you.

Q. (By Mr. Price) Right, Doctor.

A. Yes, we can. I just--you know, they're work-sheets.

MR. PRICE: All I would like to see is a finished exhibit.

(Discussion off the record.

MR. PRICE: Have either of these been marked?

THE WITNESS: I don't believe so.

MR. PRICE: Are you going to order this or not? You haven't?

MS. ECKERT: Not this particular one, no.

MR. PRICE: Don't even bother marking it, then. We'll call Geologic Profile M-M' as Exhibit M-M'.

Q. (By Mr. Price) Would you describe what that depicts, please?

A. May I add to it also that part of it is put together as a Geologic Profile L-L'. The letters refer to lines on a plan map so that you know specifically where the line of section is, and this is the slice along that line. Rather than looking at the ground from the top we are now

looking as if we cut the ground in half and we could stand back and look at it. The profile, Geologic Profile L-L' and Profile M-M' is a profile that goes down or the length of the No Name Creek Basin. In other words, we start at the--this would be essentially the north end of the No Name Creek Basin. For instance, they've labeled on the exhibit the Paschal Sherman School Well No. 1 which we have discussed in testimony, and then at the far right at the exhibit, M-M' is shown Omak Lake. So this cross section extends from the north end of the No Name Creek area to Omak Lake and goes down essentially along the axis of the No Name Creek Basin.

Q. Okay. There are various colors depicted in there. Could you describe what these represent?

A. They represent different types of natural materials. The blue color is what we have referred to as a bedrock. This is the granitic bedrock. The green material is the No Name Creek Aquifer. The red material is the fine grained sediment in the No Name Creek Basin which does not yield water, is not an aquifer. That also shows below the granite lip, and we have an orange area at the far left side labeled QL which represents aluvium along Omak Creek.

Q. What is the northern terminus of that exhibit?

A. The northern terminus would be at the end of the--just north of the--well, near the end of the intersection of Mission Creek and Omak Creek.

Q. Do you know whether or not that coincides with the watershed boundary depicted on Exhibit 2?

A. Very closely. It goes a little beyond it because it shows part of the watershed along Omak Creek, but whis would be included within the Omak--within the watershed of No Name Creek.

Q. There is one color that you haven't described, I believe, and it's a brown color.

A. At the extreme right labeled QT on exhibit, Geologic Profile M-M' is a brown color, and that represents material intersected in two drill holes which is--it's a bouldery clay material considered as glacial till or moraine deposition.

Q. Also depicted on there at various stages in yellow are well sites?

A. These are both wells and observation holes which were drilled and are the basis, of course, or the data used to construct this cross section. They are shown, some of their colors above the ground and others with the colors below because the true elevation of the well is plotted. I might note that elevation is shown along the left margin and the right margin in this diagram, and all these wells that weren't drilled along a line were projected into their line of section at their true elevation, and as a result the colors in some instances is graphically shown above the line of

section.

Q. This is not three-dimensional, obviously, but how does the location of the wells line up in terms of how they're actually placed? Are they in a straight line as could be depicted coming down the valley?

A. No. They were drilled, if I may refer to, I guess, Defendants' Deposition Exhibit 1, they were drilled across and back and forth throughout the No Name Creek Valley, and yet--so that they don't fall in any single line. Now, any two of them we could draw a line through it, but it would be difficult to draw a line through more than two because they were drilled in areas to obtain information on materials and on the ground water levels. When we constructed this section we just took them--if this one, for example, was maybe three or four hundred feet, to the right of that section, why, then it would--it was just brought over to that elevation and plotted in the line of the section in order to show the type of material that it penetrated. The Geologic Cross Sections A-A' and others are sections at right angles, approximately, to this line of section and show the other dimension of the valley. They go across the valley, not down the valley.

Q. That is the Paschal Sherman well as shown, depicted there, Colville 1 and Colville 2, correct?

A. Yes, they are.

Q. And are they depicted there relative to their

actual depths?

A. They are shown in their true depth, plotted correctly as were known.

Q. Paschal Sherman has a funny delineation.

MR. VEEDER: Counsel, I wish you'd explain what you mean by funny.

Q. (By Mr. Price) Paschal Sherman School Well No. 1 has solid lines down fairly deep and then it starts as a dashed line--

MR. KACZMAREK: That's the Paschal Sherman Domestic Well No. 2. Could I explain that for you?

THE WITNESS: It's because we don't know the truth depth.

MR. KACZMAREK: No, that's not--this is the well that was drilled last summer. This was drilled to bedrock, but it was only cased down as far as the solid line. So the dashed lines show a drilled hole, that it was drilled, but not cased. There are similar wells that have similar phenomena depicted, and there is one other well that we do not know the truth depth.

Q. (By Mr. Price) Can you tell me approximately the average depth to bedrock in the green portion moving from north to south?

A. On a scale of what, it's approximately 12, 13--oh, it's 300 feet, 350 feet. That is well along that line of

section. We have to restrict it to the--

Q. Can you by looking at one of the other cross sections A, A prime or whatever you call it, give me an average width of the No Name Creek Valley as it covers the green portion area in M-M' and L-L'?

A. If I may, Mr. Price, I'll just flip through these.

Q. Fine.

A. The horizontal scale is one inch equals a hundred feet. The blue on these cross sections is the bedrock. I think you'll see that the width of that valley changes considerably. Now, I'd like to say that we are starting with Section A-A' and going through a series, and as we do we go down the valley cross sections down the valley so it's--

Q. We'll be starting from south--

A. Starting from north and going south.

Q. So actually A-A' would be relative to the north part of L-L' and M-M'?

A. Yes. A-A' is shown on Geologic Profile L-L', and B-B' and C-C', the locations of them are shown.

Q. They're actually depicted on there?

A. They're depicted on there, and we just go down this Section B-B', see if it's expanded, and as we get down-- this is possibly to orient you, this is Section D-D', which should be approximately in this area.

Q. Now, are you able to tell the width of the basin encompassed within the bedrock at that point from Cross Section D-D'?

A. Well, I can tell it even--we have reconstructed it based upon a knowledge of geomorphology, the origin in these basins for different vertical depths. This is starting from the surface down to where we have interpreted the depth to bedrock to be.

Q. All right. At the surface, let's say, on Cross Section D-D', would you have knowledge of the width of the--

A. Well, the knowledge of the width at the surface could actually be measured on the ground. We would measure this off of the map of the surface. So that this width and--we have a scale here.

Q. That's what I'm getting at. Is Section D-D', Cross Section D-D' to scale so that could be determined?

A. Oh, yes.

Q. Just from--

A. It's accurately constructed, and the horizontal scale is one inch to a hundred feet. Now, in order to depict these minor geologic features we have expanded our vertical scale, and the vertical scale is one inch to ten feet. So we have a ten times--that's what distorts these pictures, but you wouldn't be able to show small features in the vertical if we did not expand that vertical scale.

MR. VEEDER: I'd like the record to show that we have surveyed the widths all the way through, it's going to be an exhibit, put in the record, so you'll get all that, Mr. Price.

THE WITNESS: These are engineering drawings, these are accurate drawings within the limits of the ability of science.

Q. (By Mr. Price) Paschal Sherman Well No. 1 on Exhibit L-L' is the irrigation well?

A. Yes, right.

Q. All right. Then proceeding to Colville Well No. 1, Colville No. 1 is the deepest well depicted on Exhibit L-L' and M-M', is that correct?

A. I think the Paschal Sherman Domestic Well No. 2 might--is probably deeper, but it's--the Colville Irrigation Well No. 1 is the deepest of the irrigation wells and the observation wells down the--well, no, these test holes T-1 and T-2--

Q. Eliminating anything south of what I'll refer to as the granite lip, the intersection of the red with the blue, is Colville No. 1 the lowest well including Paschal Sherman Domestic in light of Mr. Kaczmarek's statement that--

A. Well, his statement was that the diagram shows only the depth to casing. Now, the hole may still be open below that depth.

Q. The deepest casing depicted is Colville--

A. Is Colville Irrigation Well No. 1.

Q. All right. Now, you're knowledgeable about ground water movement, is that--

A. Correct.

Q. That is part of your expertise?

A. Correct.

Q. Are you able to tell from Exhibit L-L' how far apart Colville No. 1 is from Colville No. 2 and so forth?

A. Yes. They are plotted correctly.

Q. All right. Is cone of depression a term that is used in geology, hydrology?

A. Yes.

Q. Are you familiar with it?

A. Oh, yes.

Q. And what does it relate to?

A. It relates to the pumping of a well.

Q. Is it true that pumping from one well can affect the ability of another well to produce depending on the relative location to each other?

A. Yes.

Q. As an example, would it be possible for Colville No. 1, assuming hypothetically it had a power plant capable of pumping great enough quantities of water, to actually reverse the ground water flow from, say, what might be its natural

north to south flow, and actually draw it back north, say, from Walton irrigation well or from Peter's Observation Well?

A. We're dealing with a great many hydrologic factors related to the aquifer. We want to remember, Mr. Price, that a cone of depression is a three-dimensional feature and we're looking at two dimensions. If the size of the well were adequate, the size of the pump were adequate, you could reverse flow of water from south of the Colville No. 1 well, and the normal grading without pumping would be down the valley, but if you had all the adequate equipment, all the things required, you could draw water from south of the well as far as the Colville No. 1 or the Peter's Observation Well back towards the Colville No. 1, but it takes a lot of--there is a lot of if's there.

Q. Okay. In your study have you reviewed the U.S. Geological Survey records with respect to the levels of the various wells that we have been talking about in this deposition?

A. Yes.

Q. Did you make the determination in 1977 whether in fact that phenomena occurred whereby the water was caused to flow north from the Peter's Observation Well, Walton new irrigation well, towards the Colville No. 1?

A. I couldn't make the determination of whether the water flowed, no.

Q. What prevented you from making that determination?

A. I could determine and did make some preliminary determinations on the extent of the cone of depression which would, and the cone of depression, at least in the work I studied, did not show that it intersected the Colville No. 2 well. So that what I'm saying is that you did not have an immediate reversal of flow. You had a lowering of the water level in the whole aquifer as a result of pumping all the wells, but as far as the reversal of flow, you had no data to--

Q. According to this, if I understand ground water phenomena correctly and I'm sure I don't, is it possible that pumping from Colville No. 1 could draw the water table down below the lowest point of Walton's new irrigation well, Walton's abandoned irrigation well, or Walton's new domestic well?

A. Again, it would require--the present installation I don't think could. If we put all the right plumbing, the right pumps and everything else, I think we could draw the water down on that well alone.

Q. Okay. Did you make a determination as to whether or not the pumping in Colville No. 1 has any effect on Walton new irrigation well, for instance?

A. Pumping in any of the wells in the aquifer will have an effect on any other well in the aquifer.

Q. Then why can't we state that it is possible for

Colville No. 1 or the combination of Paschal Sherman, Colville No. 1 and Colville No. 2 to take the water table down below the lowest point of Walton's new irrigation well?

A. I lost the question. I got the statement but I didn't catch the question.

Q. Is it not possible with the existing systems that are installed to lower the water table below Walton new irrigation well?

A. Yes.

Q. Okay. If that in fact occurred, assume hypothetically that that in fact occurred. Once that occurred there is nothing Walton could do assuming that's his deepest well to adversely affect water uses, the water table to the north of him?

MR. VEEDER: I'm going to object to this as purely hypothetical at this point, Counsel.

MR. PRICE: Right.

MR. VEEDER: If you've got some fact--

MR. PRICE: I'm asking a hypothetical.

THE WITNESS: Well, if I understand your question correctly, if there is no water in the bottom of Walton's well he can't pump water, is that what you're saying?

MR. PRICE: Right.

THE WITNESS: And therefore if he can't pump water he isn't affecting what water remains in the aquifer?

Q. (By Mr. Price) Right. Would that be a fair statement in this hypothetical situation?

A. I'd agree to that, if there is no water in his well he can't pump it.

MR. VEEDER: I think I'd even stipulate to that, Counsel.

Q. (By Mr. Price) In analyzing the U.S. Geological Survey records did you prepare any graphs or diagrams or drawings depicting the various cones of depressions of the wells involved?

A. I did not.

Q. But in your preliminary study the cone of depression of Colville No. 1 didn't even reach as far as Colville No. 2?

A. Well, we're getting a problem here in the fact that during the operation of the irrigation system all the wells were pumped. The Colville No. 2 was pumped, of course Walton was pumping his pump, the Colville No. 1 was pumped, the Paschal Sherman well was pumped, and the only data that you get from the survey, U.S. Geological Survey records, are the yield from each of these individual wells and water levels. So that it is not possible--and the trend through the season, because of all the operation of all the wells, was to lower the water level in the whole No Name Creek Aquifer, but you can't assign which, at what point in time, the level was the

responsibility of which well pumping where. That is, the fact that all of these are interrelated, all of the wells in the aquifer is interrelated, you're affecting it at four or five points by your pumping, and the interrelationship, they all run at the same time, the pumps were all run at the same time, so that in some cases one cone of depression was overlapping another, and at other times they weren't, and it's not possible just from yield measurements and from the levels of water in the aquifer to specifically state which cone of depression was intersecting another well at what point. As a matter of fact, one cone of depression essentially eliminates the other cone of depression and they meet and lower the water level.

Q. Is there not information available as to when one well came on whether or not another one was pumping, and the various--do we have the measurement levels of those respective wells as of the day that a certain pump well came on? Those can be overlaid with one another, can they not, to determine whether there is an effect on--

A. Unfortunately the U.S. Geological Survey did not make records of that daily. It would have been of interest had they been willing to do it, but they took records--I don't want to say infrequently, they took records at intervals, but they were not constant intervals and so you don't--you only have a yield, for instance, from--

Q. I'll accept that. Did you chart the lowest level of the water table in the green area on L-L' for the year 1977?

A. I did not, no.

Q. Do you know whether or not that has been charted?

A. I believe it has.

Q. In other words, if somebody has a figure as to the level of the water table could we overlay that on here and see, essentially, based on this--

A. The calibration on the left-hand side isn't at the same scale so it wouldn't work as an overlay.

Q. We can transfer it to this?

A. We can take--they have plotted the hydrographs for each of the wells and show the lowering of the water level in the wells from that U.S. Geological Survey data, and you can then make a drawing which would plot each one of these out here. Then we could--we'd have to assume a certain time, that would have to be a correction, because measurements weren't all made at the same time either. This is another unfortunate thing about their program.

MR. VEEDER: I would suggest, Mr. Counsel and Mr. Witness and the State of Washington, that Exhibit 19 covers that very fully.

MS. ECKERT: Do you have it here?

MR. VEEDER: It's here, yes.

MS. ECKERT: Maybe Mr. Price would like to see it then.

Q. (By Mr. Price) Before we get to that, what I'm getting to, would that tell us whether or not--let's assume, again hypothetically, that the water level had not been drawn down below, was still above all of the Paschal Sherman, Colville 1, Colville 2 and Walton's new irrigation well, and what I'm getting at, is it possible, the way these wells are now set up, the operation of one or two or a combination of any of these could for a period of time affect adversely any of the existing wells to the point that they could not operate?

A. Yes.

Q. And can you give me an example of such a situation?

A. Well, again, it is possible to, say, pump the --well, if we operate all the wells there are four present wells which draw large quantities of water from the aquifer. There is the Paschal Sherman Well, the Colville No. 1 and 2, and there is the Walton new irrigation well. If we turn these all on, pump them at their full capacity the records would show that we would pump the water down, and we would be producing more water from the aquifer than, of course, is recharged during that period of time, and you drop the water level down

below Walton's irrigation well it would eventually pump the water down probably to below the Colville No. 2 Well, which is at a depth of approximately here, and in that way affect the production from the Colville No. 2 Well.

Q. Temporarily? I'm not talking about drawing the whole water table down below the depth of any of the wells. I'm talking just for a short period of time. Can you actually adversely affect an adjoining well to the point that it could not pump even though the water table was not down below the lowest point, below the lowest point of the adversely affected well?

A. I don't think the wells are designed to do that. In other words, if I pumped only one well, pumped the hell out of it, it would be a long time before I could make that cone of depression finally expand so that it intersected all the other wells. Actually, I could probably calculate that, but we haven't had that situation.

Q. Paschal Sherman was shut down, as I understand it, sometime during the 1977 irrigation season, and are you familiar with whether or not the water table was actually below the lowest point of that well?

A. Well, the cone of depression was. The well couldn't pump water.

Q. Okay. The cone of depression, however, doesn't necessarily--is not the same thing as the ground water table?

A. Well, it is the top of that at that point.

Q. At that point in time?

A. That's right.

Q. You shut off the well the cone of depression is eliminated over a period of time?

A. Yeah, given time. You have recovery and the water around the well then reach test level of the water table. You're pumping water, a cone of depression develops simply because you're pumping water faster than it could flow into that area.

Q. Now that you've used all the water up?

A. That's right.

Q. That's the difference?

A. Yeah, but that whole cone of depression and the amount of water you've taken out, that is distributed in time again throughout the whole basin, and so the whole basin is lowered proportionate to the total amount of water.

Q. Did you attempt to analyze whether or not the shutdown of the Paschal Sherman Well was related to an actual lowering of the water table below the well or whether it was adversely affected by the cone of depression?

A. Well, we're talking about the same thing.

Q. No, we aren't.

A. The cone of depression is the water level.

Q. At a given point in time--

MR. VEEDER: I'm going to object to this. The Paschal Sherman Well was never shut down ever.

THE WITNESS: No, you're right, that wasn't.

MS. ECKERT: It was No. 1, I think.

THE WITNESS: It was the well that was operated all year to supply water to No Name Creek although it wasn't used all year for operations.

MR. PRICE: Could we see Exhibit 19, please?

(Discussion off the record.)

Q. (By Mr. Price) Mr. Robinson, with respect to this exhibit entitled Ground Water Profiles, could you explain for us briefly what that depicts?

A. On the exhibit entitled Ground Water Profiles the top blue line is the surface of the ground and it's along the same section L-L' which we were discussing as a Geologic Profile L and L'. The scale is the same both horizontally and vertically as the Geological Profile L and L'. On it are shown--

Q. Excuse me, just a minute. It does not extend as far as--or is it just L-L'?

A. It is just L and L'. It does not include the part of M and M'.

MR. VEEDER: Maybe the State of Washington, Mr. Price, would like to have these marked as deposition exhibits. I hadn't thought to mention it. Do you want these marked, Mr.

Price?

MR. PRICE: No.

MR. VEEDER: You people are in agreement, though, that there--

MR. PRICE: We're in agreement that they've been prepared.

MR. VEEDER: You're in agreement, though--I have a genuine worry that somebody is going to say, well, we didn't know these exhibits were available.

MS. ECKERT: I'm in agreement that it exists and has been prepared, but we're not having them marked for the deposition.

MR. PRICE: You can argue ad infinitum that they were here.

MR. VEEDER: I'm just concerned that someone will say they never saw it before, that's all.

MR. PRICE: The judge can say that's our own fault.

THE WITNESS: On the diagram are shown the observation wells, the pump wells, the domestic wells, the sources of hydrologic data. The red lines are plots of the piezometric surface, or if we may say, the water table levels on specific dates. There is some red lines on there as plotted from the records of the U.S. Geological Survey. There is one for August 13th, 1975, there is one for March 29th, 29th of

March, 1977, one for 12th of September, 1977.

Q. (By Mr. Price) Is this scale broken down by day? It's not broken down as to the particular minute or day of the month, is it?

A. No. In terms of along the horizontal portion of the scale, the horizontal scale is a linear measurement of the length of a section in feet, and we have a vertical scale at one inch to 20 feet on the right and left margin, which is again a measurement in feet.

Q. Does not that exhibit actually show or depict that in fact Colville No. 1 is reversing the flow as of September 12th, 1977, of the water from its otherwise natural state?

A. Well, I'm going to have to accept--in this line of section it shows that there is a depression around the Colville No. 1 irrigation well based on what we consider as probably a measurement that has a potential error in it, and the error is indicated by the difference between the solid and the dash line. Unfortunately we don't do all these measurements and we didn't have control over the quality of them, and as a result we have to accept certain errors which were inherent in the records furnished.

Q. You're referring to the U.S.G.S.?

A. Yes. If you look at this line of section it shows the hydrologic gradient between piezometer C-1 and Colville irrigation well No. 1 is to the north whereas the

normal gradient upon a piezometric surface where the well is not pumping would have been the south.

Q. Did you prepare this?

A. I did not.

Q. Do you know why August 13 of '75, March 29th of '77, and September 12th of '77 were chosen as the three dates or the only three days--

A. They aren't the only three dates. They were picked as three dates, and again, I did not prepare the exhibit so possibly someone else should answer.

MR. PRICE: I'll ask, does anybody know if there are other exhibits similar to this depicting other days or is this the only one?

MR. KACZMAREK: This is the only one.

MR. VEEDER: Those, of course, are the highs and lows, Mr. Price, for the year. Excuse me for testifying, I'm not under oath.

MR. PRICE: That's okay, we may put you on the stand.

Q. (By Mr. Price) In looking at that, is it a fair statement that on September 12th, 1977, the water table at its low point was--can you tell whether or not it was beneath Walton new irrigation well or not?

A. No, I can't tell. One of my problems, you see, is that this is a section drawn along a line, and we need a

three-dimensional--or we need the cross section in the opposite direction to be absolutely sure, and these wells have been projected into the line of section, and, of course, when this was constructed then the measurements were put on and projected in the line of section, so specifically I can't say without looking at the records.

Q. From the U.S.G.S. records will we be able to tell as of other dates, let's say March 1976, we could plot on there from the U.S.G.S. records the water level and the various wells in the No Name Creek Valley what the level of the water table was on that date?

A. We could if we had--we can tell from these records if the water level was measured, and of course we don't--the records are not complete always, and I cannot remember whether on any specific date the Walter irrigation well was measured or not, but anytime it was measured, that is the time we know what the level of the water in that well is, and we can compare that in elevation if the water was measured in any other piezometric or piezometer or well or any other well, we can tell what the measurement is, virtually.

Q. Do you know if there is a chart or exhibit or graph that would depict the water level at the beginning of each irrigation season starting from '75 through '77?

A. I don't believe there is one.

Q. Do you of your own personal knowledge know

whether the water level at the start of each of the irrigation seasons for the years '75 through '77 came down to the line depicted as August 13th, 1975, or not?

A. I don't know. I looked at that one at one time and I'm not confident in my memory on whether it was higher or lower in the previous irrigation season.

Q. Are there any other records, to your knowledge, or do you have knowledge as to what the present water table is of the No Name Creek?

A. Today?

Q. Yes.

A. I do not know.

Q. Does that exhibit tell you that the cone of depression of Colville No. 1 would not affect, have an effect on Walton's new irrigation well to the south?

A. No.

Q. It does not tell you that?

A. It does not tell me that.

Q. As I understand it, you have not made calculations to determine whether or not that is in fact the case?

A. It would be a calculation in futility because of too much interference from other pumping of other wells and other factors.

Q. Well, how do you go about making an establishment of wells in relation to one another?

A. I assume if there are existing wells and you want to obtain water for beneficial purposes, for commercial purposes, you don't necessarily sink the well right next to the other one.

Q. Are there considerations that go into that?

MR. VEEDER: I object to the question. I think that you're moving into an area that this witness is not called upon to testify to, and I object to him being interrogated in regard to it. He is not going to testify on that particular subject. Secondly, I think that--and the record should show that both Mr. Kaczmarek and Mr. Walton are going to testify in depth in regard to that very exhibit that's there. You're picking on the wrong man.

MR. PRICE: That's your opinion.

MR. VEEDER: Well, if he's not going to touch upon this on direct examination I submit that this is a waste of time.

MS. ECKERT: Depositions can be used to gain any relevant evidence.

MR. VEEDER: Let's go ahead, we haven't got all day.

Q. (By Mr. Price) Mr. Robinson, in terms of your testimony in respect to ground water movement, what essentially are you going to testify to based on Exhibit L-L' and M-M' in terms of ground water movement?

A. That will be dependent upon the direction, I believe, and I cannot--

Q. What is the ground water movement in No Name Creek Valley?

A. Down a hydraulic gradient.

Q. From north to south?

A. That's correct, and from east to west and from west to east, and in three dimensions.

Q. Through the green portion, at least, and then what happens when the water reaches the red portion?

A. That's when the water is--we have an effective natural damming of the ground water basin or a normalization, let's say, of the lower edge of the ground water basin, and water does not move from the green area into the red area at a significant rate.

Q. Does it then take the form of surface water?

A. It depends if there is enough water to raise it above the level of the red. If you have not had enough recharge or too much pumping or pumping in excess of recharge then the water comes down here and that's it, it doesn't go, but assuming that the valley was allowed to return to its natural state without the interference of man, the ground water table would eventually build itself up and in the green area to the point where it would spill over on top of the red area.

Q. All right. What accounts, in your opinion, then,

for the wells, the surfacing of water to the north of the red area at Walton's spring area and the springs in Allotment 828, whatever it is?

A. You mean out in the spring area?

Q. Right. What's the intersection of the water table or the piezometric surface with the topographic surface? Depict that for me, if you can, with just hand line or something.

A. Well, water level in the aquifer is risen to the point where it is above the effective dam of the fine granular material in the lower part of the No Name Creek Valley. Piezometric surface of the water level is raised above that, and is now allowed to drain out across the--it's topping the dam.

Q. Okay. It's reached its storage capacity?

A. No. It's reached a point where some water may discharge. The storage capacity will also depend upon the rate of recharge.

Q. With the gradient of this No Name Creek Valley why haven't you reached your state of storage capacity?

A. Because the flow through a material is time dependent, depends upon the permeability of the material, and so you can add storage, if you have the flow through the material, less than the recharge. In other words, you can fill a bucket with a small hole in it if you pour enough water

in fast enough so that you can add more water to your bucket even though you've got a hole in the bucket. The hole happens to be at the top of the bucket in this case, however, if I may be so bold to call this the top of the bucket.

Q. With an uneven top on the bucket?

A. That's correct, but also an uneven permeability in porocity.

Q. You're not suggesting that you're going to hold water up here in space somewhere when you don't have any land down here in which the water can be held?

A. Oh, absolutely.

Q. There is no land at this point?

A. That's right.

Q. And there is land up here?

A. Right.

Q. This land could contain water?

A. Right, and it better or our whole theory of hydrology has gone down the tube.

Q. That is, the water flows from north to south, it's going to, when it reaches this point, appear on the surface?

A. That's right.

Q. Okay. Are we not talking about relatively within a certain amount of feet the top surface level or the top level of this aquifer?

A. Well, I think I can eliminate one of your problems. A piezometric surface is not a leveled surface. If it was you'd have no flow. You have to have a gradient to your piezometric surface, and that gradient is going to be dependent upon the character of the materials and the rate of recharge so that you can build storage in an aquifer above the point of discharge. You have to build storage above the low point in an aquifer to have discharge. You have to have some force to drive that water out for it to move, and the amount of storage that you'll have above a perfectly level line across here is dependent upon the hydrologic characteristics of the material and the rate of recharge.

Q. Okay. At the intersection of the green and red point?

A. Yeah.

Q. If the level of the water is below that, and assume the springs appear at the intersection of the green and the red point, the level of the water in the green area is below that point, what's going to cause that water to appear as a spring at that point?

A. If the water level in this aquifer is below this point--and we're looking at a two-dimensional diagram, unfortunately and we shouldn't, we should look at a three-dimensional--but if the water level in that aquifer was at the lowest point of the intersection of the red and the green

there would be no spring zone.

Q. As a matter of fact, some of the springs occur above what is depicted on there as Walton new irrigation well, is that not correct?

A. Not above the color, no, no. What do you mean by above?

Q. Above that north/south direction, not in elevation?

A. Yes, there are farther north, but lower in elevation.

Q. Correct. Is there any springs north of what we refer to as the springs in the north boundary of Walton's property in 526 or 892?

A. I lost--I'm a little--

Q. Are there any springs, other springs in 526 and 892 other than the ones that we have been referring to at the northern boundary of Walton's property?

A. There is a spring zone which has been defined, and that does extend a very short distance to the north of Walton's north property line.

Q. Okay. Other than that, are there any springs?

A. Oh, there is springs up on the sides of the mountains, there are lots of springs, but not out of the No Name Aquifer.

Q. Okay. I'm interested in the No Name Aquifer.

A. All right.

Q. Okay. There are none to the north?

A. There are none to the north of the spring zone.

Q. Okay. Surface water runoff, have you made any determination as to what effect Omak Creek runoff, say, has on the No Name Creek Aquifer?

A. No.

Q. Why not?

MR. VEEDER: Because I told him not to.

MR. PRICE: I'm asking the witness.

THE WITNESS: I could say I wasn't paid to.

Q. (By Mr. Price) Would you state for the record why you didn't, please?

A. I wasn't requested to.

Q. In your opinion, does that have an effect on No Name Creek Valley or Aquifer or not?

MR. VEEDER: I object to that, it goes far beyond the date that I set out in the answers to the interrogatories as the scope of this man's testimony.

MR. PRICE: It says, surface water runoff, Mr. Veeder. I am inquiring about that.

Q. (By Mr. Price) In your opinion, would surface water runoff from Omak Creek have an effect on the No Name Creek Aquifer?

A. The surface water runoff from Omak Creek--I'm

not sure what surface water--there is flow within Omak Creek.

Q. Okay. Let's just stop it right there.

A. Okay.

Q. Is there flow on the surface of No Name Creek at times?

A. At times, yeah.

Q. Is there flow beneath the surface of Omak Creek at times?

A. Yes.

Q. On those occasions when you see surface flow will there always be ground water flow?

A. Yes.

Q. All right. Do either of those flows, the surface flow or the ground water flow from Omak Creek, have a relationship to the No Name Creek Aquifer?

A. Yes.

Q. And what is that relationship?

A. There is some leakage from the Omak Creek chanel or bed to the aquifer.

Q. Have you made any calculations--apparently you have made no calculation?

A. I have accepted the calculation of my associates after detailed and careful review.

Q. Have you been asked to do any studies with regard to the level of Omak Lake?

regard to the level of Omak Lake?

A. No.

Q. Do you know whether or not anybody has that you've been associated with?

A. No.

Q. Have you made a determination whether Omak Lake was higher or lower in years past going back hundreds of years even than it is at the present time?

A. I have observed through physiographic features that the lake was higher in the past.

Q. Have you observed anything that would indicate that it's lower in the past?

A. No, because if it was lower it would have been under water, and I didn't go under water.

Q. Okay. You're not familiar with the fact that there was a forest growing on the floor of Omak Lake at one--that there is remnants of a forest there?

A. No.

MR. VEEDER: Once again, I object on the ground that it goes far beyond the scope of this witness' testimony.

MR. PRICE: That's all I have, thank you very much, Mr. Robinson.

MR. SWEENEY: I don't have anything.

MS. ECKERT: Just one or two follow-up questions.

EXAMINATION

BY MS. ECKERT:

Q. Dr. Robinson, we have been talking mainly about ground water hydrology. Did you make any studies of the surface water hydrology of No Name Creek?

A. No.

Q. Have you made any determination whether or not No Name Creek, that is, the flow of No Name Creek makes any contribution to the ground water in the basin?

A. No.

MR. VEEDER: What's this? I'd like to have that question read back to which you said no.

(The Court Reporter read back the previous question.)

MR. VEEDER: Okay.

Q. (By Ms. Eckert) You stated in response to several of Mr. Price's questions concerning hypothetical pumping out of Colville 1 and 2 that it would depend on "the capacity of the wells", and you did not believe that those--that well at present had the capacity to pump as much as Mr. Price was suggesting in his hypothetical. Do you in fact know what the capacity of Colville No. 1 is?

A. No.

Q. Do you know the capacity of Colville No. 2?

A. No.

Q. Of Paschal Sherman?

A. No.

Q. Now, when we're discussing cones of depression, the cone of depression, I take it, is a three-dimensional phenomena?

A. (The witness nodded his head affirmatively.)

Q. Referring you to what you've got back there, L and L' and M and M', the difference between the red zone and the green zone, does the difference between the materials in any way affect a cone of depression, let's say, extending from the Colville No. 1 well? Let's assume that a cone of depression extends out this far. This is a hypothetical. You've pumped Colville No. 1 to a great extent so you'd have a cone of depression extending out. Does the existence of this difference between the red and the green make any difference as to the shape of the cone of depression, do you know?

A. We're hypothetical?

Q. That's correct.

A. It does make a difference in the shape, and I might point out that any change in lithology or changing of a condition and it is not a smooth planar surface as we like to draw them, it's affected by all of the lithologies and deficiencies of the wells and other hydrologic parameters.

Q. Just so that I am absolutely clear on this, referring again to what we've attached on the wall, L and L'

and M and M', you refer to the unit in green as an aquifer?

A. Uh-huh.

Q. Is the unit, the red unit above the granite lip, is that also an aquifer, in your opinion?

A. If we define an aquifer, one that produces or yields water readily to wells, no.

MS. ECKERT: I don't have any other question. Mr. Veeder may have some follow-up questions before you step down.

MR. VEEDER: I have no questions.

MR. PRICE: I have just one, I think.

EXAMINATION

BY MR. PRICE:

Q. In terms of your expertise have you made any determinations as to the water that's applied for irrigation purposes in the green area, how much of that surface water returns to the ground water table?

A. I have not done those calculations.

Q. Pardon?

A. I have not done those calculations.

Q. That is in the area of your expertise, is it not?

A. I do, yes, I could--I could do it and have done it. I have not done it in this instance.

MR. PRICE: Okay, thank you.

(Deposition concluded.)

STATE OF WASHINGTON)
) ss:
COUNTY OF SPOKANE)

REPORTER'S CERTIFICATE

I, David Caviezel, a notary public in and for the State of Washington;

DO HEREBY CERTIFY:

That the foregoing is a true and correct transcription of my shorthand notes as taken upon the deposition of Charles Robinson on the date and at the time and place as shown on page one hereto;

That the witness was sworn upon his oath to tell the truth, the whole truth and nothing but the truth, and did thereafter make answers as appear herein;

That I am not related to any of the parties to this litigation and have no interest in the outcome of said litigation;

WITNESS my hand and seal this 22 day of February, 1978.

David Caviezel

Notary Public in and for the State of Washington, residing at Spokane.