EXHIBIT C

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

DEPARTMENT NO. 1 HON. JACK KOMAR, JUDGE

COORDINATION PROCEEDING SPECIAL TITLE (RULE 1550B) ANTELOPE VALLEY GROUNDWATER CASES	JUDICIAL COUNCIL COORDINATION NO. JCCP4408
PALMDALE WATER DISTRICT AND QUARTZ HILL WATER DISTRICT, CROSS-COMPLAINANTS, VS. LOS ANGELES COUNTY WATERWORKS, DISTRICT NO. 40, ET AL, CROSS-DEFENDANTS.	SANTA CLARA CASE NO. 1-05-CV-049053

REPORTER'S TRANSCRIPT OF PROCEEDINGS

WEDNESDAY, OCTOBER 8, 2008

APPEARANCES:

(SEE APPEARANCE PAGES)

GINGER WELKER, CSR #5585
OFFICIAL REPORTER

THE COURT: GOOD MORNING. WE WILL RESUME WITH THE DOCTOR AND WE'RE STILL ON DIRECT EXAMINATION.

MR. DUBOIS: THANK YOU, YOUR HONOR. JIM DUBOIS FOR THE UNITED STATES.

JUNE OBERDORFOR,

CALLED BY THE UNITED STATES AS A WITNESS, HAVING BEEN PREVIOUSLY SWORN, TESTIFIED FURTHER AS FOLLOWS:

DIRECT EXAMINATION (RESUMED)

BY MR. DUBOIS:

Q GOOD MORNING, DR. OBERDORFOR.

HOW ARE YOU?

A FINE, THANK YOU.

Q YESTERDAY WE HAD BEEN DISCUSSING WHAT WAS MARKED AS EXHIBITS 8 AND 9 WHICH WERE THE GROUNDWATER CONTOURS FROM 1915. DID YOU FOLLOW THAT?

A YES.

Q AND I HAVE GOT UP ON THE SCREEN EXHIBIT -- WHAT HAS BEEN MARKED AS EXHIBIT E8 THAT SHOWS THE

PREDEVELOPMENT ELEVATION CONTOURS AND FLOWS IN THE PRINCIPAL AQUIFER; IS THAT CORRECT?

A YES, IT IS.

Q WHAT DOES IT SHOW ABOUT THE GENERAL DIRECTION OF FLOW IN THE 1915 PERIOD?

A IT SHOWS THE GENERAL DIRECTION OF FLOW IS FROM THE RECHARGE AREAS AROUND THE MARGIN OF THE VALLEY TO THE MAIN DISCHARGE AREA HERE IN THE ROSAMOND LAKE VICINITY. SO FROM THE WEST TOWARDS THE EAST FROM THE

SOUTH TOWARDS THE NORTH AND FROM THE SOUTHEAST UP TOWARDS THE NORTHWEST TOWARDS THE LAKE.

Q AND EXHIBIT 9 IS NOW ON THE SCREEN. THIS IS MARKED AS E9; IS THAT CORRECT?

A YES.

Q AND THIS IS FOR THE SAME PERIOD BUT FOR THE DEEP AQUIFER; IS THAT RIGHT?

A CORRECT.

Q AND WHAT DOES THIS DEMONSTRATE REGARDING THE FLOW OF THE DEEP AQUIFER?

A IN PREDEVELOPMENT TIMES, THE FLOW WAS FROM THE SOUTH TOWARDS THE NORTH HERE INTO THE NORTH MUROC AREA; AND THEN IT EXITS TO THIS RELATIVELY NARROW GAP ONTO THE FREMONT VALLEY.

Q I WOULD LIKE TO TURN TO EXHIBIT E11. CAN YOU TELL ME WHAT THAT IS?

A THOSE ARE THE WATER LEVEL CONTOURS FROM 1961. IT'S FROM DURBIN 1978 REPORT BY A USGS WEBSITE AND THESE ARE THE WATER LEVEL CONTOURS AGAIN FOR THE

PRINCIPAL AQUIFER.

Q DOES EXHIBIT E11 SHOW ANY CHANGES IN THE LOCATION OF DISCHARGES OF THE DIRECTION OF FLOW IN THE PRINCIPAL AQUIFER IN COMPARISON TO THE 1915 CONTOURS?

A THE PRIMARY CHANGES HAVE TAKEN PLACE IN THIS CENTRAL LANCASTER REGION AND SO THE MAIN REASONS OF DISCHARGE HAVE SHIFTED FROM THE ROSAMOND LAKE AREA TO A REGION JUST SOUTH OF ROSAMOND LAKE. YOU CAN SEE A CONE OF DEPRESSION HAS FORMED HERE AND FLOW IS NOW GOING TOWARDS THAT CONE OF DEPRESSION.

THERE'S A SECOND CONE OF DEPRESSION JUST TO THE EAST OF LITTLE BUTTES AND SO FLOW NOW IS COMING OUT THROUGH THIS AREA AND INTO THAT CONE OF DEPRESSION LIKEWISE FROM THE SOUTH.

Q DR. OBERDORFOR, JUST REMEMBER WE ARE TALKING FOR THE RECORD SO "THIS AREA" HAS NO MEANING. SO BACK UP AND START WITH THE FLOW IS COMING FROM?

A THE FLOW IS COMING FROM THE REGION OF TEHACHAPI MOUNTAINS ALONG THE WESTERN PART OF THE BASIN AND THIS PORTION -- THE SOUTH WESTERN PORTION OF THE SAN GABRIELS FLOWING THROUGH THE WEST HERE PRIMARILY THROUGH THIS REGION AND --

Q WHAT REGION?

A BETWEEN LITTLE BUTTES AND THE WILLOW SPRING AREA AND TO THE CONE OF DEPRESSION JUST TO THE EAST OF LITTLE BUTTES.

Q THANK YOU.

COULD YOU GIVE ME EXHIBIT E12.

THIS HAS PREVIOUSLY BEEN MARKED AS EXHIBIT E12; IS THAT CORRECT? I'LL REPRESENT THIS IS E12.

CAN YOU REMIND THE COURT WHAT THIS EXHIBIT DISPLAYS?

A THIS IS FROM ANOTHER PLATE IN DURBIN 1978 REPORT, AND THESE ARE THE CONTOURS FROM THAT PLATE JUST FOR THE DEEP AQUIFER REGION. SO AGAIN WE ARE LOOKING AT NORTHERN PART OF THE LANCASTER REGION UP TOWARDS NORTH MUROC.

Q AND DOES THIS PLATE ALSO SHOW CHANGES IN GROUNDWATER FLOW IN COMPARISON TO THE 1915 PLATE?

A WELL, AGAIN, BECAUSE PUMPING HAS BEEN GOING ON NOW IN THIS AREA FOR PROBABLY A DECADE OR SO, SLIGHTLY OVER A DECADE, WE DO SEE SHIFTS IN THE CONTOURS AND, THEREFORE, ALSO IN FLOW DIRECTIONS. FLOW IN THE VERY NORTHERN PART OF THIS -- OF THE DEEP AQUIFERS STILL TOWARDS THE NORTH AND OUT TO THE FREMONT VALLEY. BUT NOW WE SEE THE CHANGE HERE, FLOW IS COMING TOWARDS A PUMPING CENTER AT EDWARDS AIRFORCE BASE, AND WE ALSO SEE A SHIFT OF CONTOURS HERE IN THE SOUTH PRESUMABLY PUMPING FURTHER FROM THE SOUTH.

Q SO THE CHANGES BETWEEN THE 1915 TO 1961 CONTOURS IS THE RESULT OF PUMPING?

A THE RESULT OF PUMPING AND LARGELY THE CESSATION OF NATURAL DISCHARGE THAT USED TO TAKE PLACE AROUND THE AQUIFER.

Q SO THE CHANGES IN THE STRESS FROM THE PUMPING CHANGED THE GRADENCE IN THE FLOWS OF DIRECTION?

A YES.

Q I WOULD LIKE TO SHOW YOU WHAT I WOULD LIKE TO HAVE MARKED AS EXHIBIT E13.

AND FOR EVERYONE ELSE, IT IS BEHIND THE TAB THAT WAS EXHIBIT 15 OF THE PACKAGE THAT EVERYBODY HAS GOT.

THE COURT: ALL RIGHT. MARK THAT.

(EXHIBIT E13 IS MARKED.)

BY MR. DUBOIS:

Q AND IT IS THE DOCUMENT WITH THE TITLE ACROSS

THE TOP, "1996 GROUNDWATER ELEVATION CONTOURS." DO YOU HAVE THAT?

A I DO HAVE THAT.

Q ALL RIGHT. CAN YOU IDENTIFY THIS DOCUMENT FOR ME, PLEASE?

A THIS IS A FIGURE TAKEN FROM THE REPORT. ACTUALLY, A LARGE PLATE BY CARLSON ET AL IN 1998; AND THEY ARE THE GROUNDWATER ELEVATION CONTOURS FOR 1996. THIS PARTICULAR FE -- OR PLOT BOTH THE PRINCIPAL AQUIFER AND DEEP AQUIFER CONTOURS ON THE SAME MAP.

Q AND DOES EXHIBIT 13 SHOW CHANGES IN THE CONTOURS FROM THE 1961 CONTOURS IN EXHIBITS 11 AND 12?

A YES, IT DOES. THE CONE OF DEPRESSION THAT USED TO EXIST JUST SOUTH OF ROSAMOND LAKE HAS FILLED IN SOMEWHAT AND THAT CONE OF DEPRESSION HAS SHIFTED FURTHER TO THE SOUTH AND PARTICULARLY INCREASED HERE IN THE

VICINITY OF PALMDALE.

THE CONE OF DEPRESSION OR THAT DEPRESSION, THE WATER LEVEL THAT USED TO BE FOCUSED HERE JUST EAST OF LITTLE BUTTES HAS SHIFTED NORTHWARD INTO THIS GENERAL REGION. AND, AGAIN, THAT HAS SHIFTED THE DIRECTION OF FLOW.

Q WHAT IS THE GENERAL DIRECT OF FLOW FROM THE NATURAL RECHARGE AREAS?

A FOR THE WESTERN PART OF THE BASIN. SO ALONG TEHACHAPIS AND THIS WESTERN PART OF THE SAN GABRIELS, THE FLOW IS STILL PRIMARILY TOWARDS THIS REGION SO TOWARDS THIS CONE OF DEPRESSION CENTERED NORTH NOW OF LITTLE BUTTES.

IN THE SOUTHEASTERN DIRECTION, IT IS STILL PRIMARILY TOWARDS THE NORTHWEST TOWARDS THESE CONES OF DEPRESSION IN THE LANCASTER BASIN. IT HAS GOTTEN A BIT MORE COMPLICATED THROUGH HERE, FLOW RECHARGE COMING OFF THIS AREA INTO THIS LARGE CONE OF DEPRESSION HERE.

Q USE -- WHEN YOU SAY "HERE" --

A I'M SORRY. OFF OF THE CONSIDERED CENTRAL PART OF THE SAN GABRIELS TOWARDS THIS CONE OF DEPRESSION NORTH OF PALMDALE.

Q THANK YOU.

NOW, DO THESE CHANGES IN FLOW DIRECTION, DOES THIS ALL RELATE TO OUR DISCUSSION OF CONSERVATION OF MASS YESTERDAY?

A WELL, IT DOES STILL SAY WATER HAS TO FLOW WHERE IT IS BEING RECHARGED TO WHERE IT IS BEING

DISCHARGED. AGAIN, THE DISTINCTION BEING THAT WE ARE NOT IN STEADY STATE SYSTEM NOW. WE HAVE HAD WATER REMOVED FROM STORAGE. AND SO AS THAT REMOVABLE OCCURS IN DIFFERENT PLACES, THIS PUMPING CENTER SHIFT, YOU WILL HAVE THOSE FLOW DIRECTIONS WILL ALSO BE SHIFTED.

Q SO THE NATURAL RECHARGE HAS DISAPPEARED FROM OUR FIRST 1915 PLATE THAT THE --

A NO, THE NATURAL RECHARGE.

Q EXCUSE ME, NATURAL DISCHARGE HAS CHANGED?

A NATURAL DISCHARGE HAS ESSENTIALLY BEEN STOPPED.

Q AND THE NATURAL RECHARGE IS ALL COMING FROM THE SAME AREAS?

A ESSENTIALLY FROM THE SAME AREAS, THE

NATURAL, YES.

Q SO IF YOU ARE LOOKING AT THIS SYSTEM AS A MASS BALANCE ISSUE, YOU STILL HAVE YOUR NATURAL RECHARGE. YOU NO LONGER HAVE YOUR NATURAL DISCHARGE AND YOU ARE AT LEAST IN SOME AREAS TAKING WATER FROM STORAGE AND THOSE BECOME DISCHARGE POINTS FOR PURPOSES OF FLOW?

A YES.

Q AND IT MOVES WHEREVER THE RECHARGE IS TO WHERE THE DISCHARGE IS?

A CORRECT.

Q IF THE DISCHARGE POINT SHIFTS TO NEW CHANGED PUMPING PATTERNS, WHAT WOULD BE THE EFFECT OF WATER FLOW IN THE AQUIFER?

A WELL, WHEREVER THOSE NEW PUMPING STRESSES

OCCUR, THEN THE -- OF COURSE, DEPENDING ON THE GRADIENT AND THE MAGNITUDE OF THOSE STRESSES, THE CONES OF DEPRESSION COULD THEN SHIFT TO NEW LOCATIONS AND YOU COULD HAVE ALTERED FLOW DIRECTIONS.

Q IF PUMPING DECREASES IN AN AREA OVER TIME?

A WATER LEVELS PRESUMABLY WOULD RISE IF THEY WOULD INFLOW WITH SUFFICIENT WATER TO THAT AREA AND THAT WOULD ALSO ALTER FLOW OF DIRECTIONS.

Q NOW, ARE THERE EXAMPLES OF THIS KIND OF CHANGE IN WATER LEVELS IN RESPONSE TO EITHER PUMPING OR DECREASE IN PUMPING SHOWN ON EXHIBIT 13?

A WELL, CERTAINLY THE DECREASE IN PUMPING BEFORE WE HAD A CONE OF DEPRESSION CENTERED UP HERE; AND I THINK THERE HAS BEEN RECOVERY IN THAT AREA. HERE WE HAVE HAD INCREASED PUMPING PRESUMABLY CREATING THIS CONE

OF DEPRESSION.

Q THIS --

A I'M SORRY, JUST NORTH OF PALMDALE.

Q THANK YOU.

LET'S TURN OUR ATTENTION BACK TO BEDROCK RIDGE WHICH WE WERE GETTING INTO YESTERDAY AFTERNOON. I THINK YOU STATED THAT YOU WERE FAMILIAR WITH THE GENERAL LOCATION OF THAT RIDGE?

A YES, I AM.

Q AND DID -- ARE YOU AWARE OF MY IMPEDIMENTS TO FLOW IN THE SEDIMENTS OVERLYING THE RIDGE?

A NO, I DON'T BELIEVE THERE ARE ANY.

Q ARE THE SEDIMENTS OVERLYING THE BEDROCK

RIDGE SATURATED?

A THEY'RE ON THE ORDER OF SEVERAL HUNDRED FEET OF SATURATED SEDIMENTS.

Q IS THAT OVER THE ENTIRE LENGTH OF THE RIDGE?

A NO. THE RIDGE BECOMES SHALLOW IN SOME AREAS. IN FACT, IT DAY LIGHTS ABOVE THE GROUND SURFACE SO IT IS -- ONLY A PORTION OF THAT RIDGE HAS SATURATED SEGMENTS ON THE ORDER OF SEVERAL HUNDRED FEET.

Q IN LENGTH OF IT BEING IN FEET, MILES?

A MILES. ON THE ORDER OF SIX TO EIGHT MILES IN SATURATED SEDIMENTS.

Q WOULD WATER FLOW THROUGH THOSE SEDIMENTS IN RESPONSE TO CHANGES IN HEAD ON EITHER SIDE OF THE RIDGE?

A AS LONG AS YOU HAVE A WATER LEVEL DIFFERENCE ACROSS THE RIDGE, YOU WILL HAVE FLOW ACROSS THAT RIDGE.

Q ALL RIGHT. AND HOW WILL PUMPING ON THE