

1 CASE NUMBER: 1-05-CV-049053
2 CASE NAME: ANTELOPE VALLEY GROUNDWATER CASES
3 LOS ANGELES, CA WEDNESDAY, NOVEMBER 5, 2014
4 DEPARTMENT 56 HON. JACK KOMAR, JUDGE
5 REPORTER: JEANETTE COYLE, CSR NO. 12665
6 TIME: MORNING SESSION
7 APPEARANCES: (AS HERETOFORE NOTED.)
8

9 (THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT.)
10

11 THE COURT: GOOD MORNING. ARE YOU READY TO
12 CONTINUE?

13 MR. MILIBAND: YES, YOUR HONOR. GOOD MORNING.
14 THIS IS A QUICK MATTER. I DID REVIEW AND FOLLOW THE
15 COURT'S DIRECTION ABOUT LETTING COUNSEL KNOW THE
16 OBJECTIONS THAT I HAVE TO ANY OF THE DISTRICT 40
17 EXHIBITS.

18 THE COURT: YES.

19 MR. MILIBAND: I DID CONFER WITH MR. DUNN THIS
20 MORNING. WE ARE OF THE THINKING THAT WE CAN DEFER ANY
21 OF THOSE OBJECTIONS TO LATER TODAY OR WHENEVER IT IS
22 THAT DR. WILLIAMS TESTIFIED.

23 THE COURT: ALL RIGHT. THANK YOU.

24 YOU MAY CALL YOUR NEXT WITNESS.

25 MR. MILIBAND: THANK YOU. WE WILL CALL
26 MR. THOMAS HARDER.

27 THE COURT: COME FORWARD TO BE SWORN, SIR.

28 THE CLERK: DO YOU SOLEMNLY STATE THAT THE

1 TESTIMONY YOU MAY GIVE IN THE CAUSE NOW PENDING BEFORE
2 THIS COURT SHALL BE THE TRUTH, THE WHOLE TRUTH, AND
3 NOTHING BUT THE TRUTH, SO HELP YOU GOD?

4 THE WITNESS: I DO.

5 THE CLERK: PLEASE BE SEATED. PLEASE STATE AND
6 SPELL YOUR NAME FOR THE RECORD.

7 THE WITNESS: THOMAS E. HARDER. T-H-O-M-A-S, E,
8 PERIOD, H-A-R-D-E-R.

9
10 THOMAS HARDER,
11 CALLED AS A WITNESS ON BEHALF OF THE
12 CROSS-COMPLAINANT/CROSS-DEFENDANT, HAVING BEEN DULY
13 SWORN, WAS EXAMINED AND TESTIFIED AS FOLLOWS:

14
15 DIRECT EXAMINATION

16 BY MR. MILIBAND:

17 Q GOOD MORNING, MR. HARDER.

18 A GOOD MORNING.

19 Q COULD YOU PLEASE IDENTIFY WHAT YOUR JOB
20 TITLE IS AND THE NAME OF YOUR EMPLOYER.

21 A I AM PRINCIPAL HYDROGEOLOGIST AND
22 PRESIDENT OF THOMAS HARDER & COMPANY. WE ARE A
23 HYDROGEOLOGICAL CONSULTING FIRM.

24 Q ARE YOU A LICENSED PROFESSIONAL GEOLOGIST
25 AND A CERTIFIED HYDROGEOLOGIST IN THE STATE OF
26 CALIFORNIA?

27 A I AM.

28 Q WHAT YEAR WERE YOU LICENSED AS A

1 PROFESSIONAL GEOLOGIST?

2 A I WAS LICENSED IN 1996.

3 Q AND WHAT YEAR WERE YOU CERTIFIED AS A
4 HYDROGEOLOGIST?

5 A IN 1998.

6 Q MR. HARDER, I WOULD LIKE TO DIRECT YOUR
7 ATTENTION TO WHAT HAS BEEN MARKED FOR IDENTIFICATION
8 PURPOSES AS EXHIBIT 25.

9 BEFORE YOU, SIR, THERE IS A BINDER THERE
10 AT THE PODIUM. FEEL FREE TO TURN TO NUMBER 25 AS WELL
11 AS IT BEING PROJECTED HERE ON THE SCREEN IF IT'S EASIER
12 FOR YOUR EYES.

13 ARE YOU FAMILIAR WITH WHAT HAS BEEN
14 PREMARKED FOR IDENTIFICATION AS EXHIBIT 25?

15 A I AM.

16 Q WOULD YOU PLEASE DESCRIBE WHAT THIS
17 DOCUMENT IS.

18 A THIS IS MY CV.

19 Q IS THIS YOUR MOST CURRENT AND UP-TO-DATE
20 CV? IF YOU NEED TO TAKE A MOMENT, THAT'S FINE.

21 A IT IS.

22 Q WOULD YOU PLEASE PROVIDE SOME SORT OF
23 SUMMARY OF THE PROFESSIONAL ENGAGEMENTS OR PROJECTS IN
24 WHICH YOU HAVE WORKED IN YOUR CAREER IN WHICH YOU
25 APPLIED THE SKILLS OF A HYDROGEOLOGIST TO EVALUATE THE
26 HYDROGEOLOGIC CONDITION OF A BASIN SUCH AS THE ANTELOPE
27 VALLEY GROUNDWATER BASIN?

28 A WELL, I WOULD HAVE TO CATEGORIZE THAT INTO

1 MULTIPLE DIFFERENT AREAS. ARTIFICIAL RECHARGE,
2 GROUNDWATER RESOURCE EVALUATION, PROJECTS RELATED TO
3 THAT, LARGE SCALE BASIN, SAFE YIELD AND PERENNIAL YIELD
4 EVALUATIONS, GROUNDWATER FLOW MODELS, DEVELOPMENT,
5 CALIBRATION OF FLOW MODELS AND APPLICATION IN WATER
6 RESOURCE WORK.

7 I HAVE ALSO DONE GEOCHEMISTRY STUDIES.
8 AND I HAVE ALSO PERFORMED CONTAMINANT HYDROGEOLOGICAL
9 STUDIES.

10 Q WOULD YOU IDENTIFY SOME OF THE BASINS
11 OTHER THAN THE ANTELOPE VALLEY GROUNDWATER BASIN IN
12 WHICH YOU HAVE DONE THOSE DIFFERENT TYPES OF WORK THAT
13 YOU HAVE JUST DESCRIBED?

14 A CURRENTLY I AM VERY ACTIVE IN THE CHINO
15 BASIN IN SOUTHERN CALIFORNIA. I AM THE WATER MASTER
16 HYDROGEOLOGIST FOR THE BEAUMONT BASIN. I'VE WORKED IN
17 THE MURRIETA BASIN. I'VE WORKED IN THE BUNKER HILL
18 BASIN, THE RAYMOND BASIN. I WORKED IN THE ORANGE COUNTY
19 GROUNDWATER BASIN.

20 I AM CURRENTLY ALSO VERY ACTIVE IN THE
21 CENTRAL VALLEY GROUNDWATER BASINS UP THERE AND MORE.
22 THOSE ARE THE ONES THAT I CAN THINK OF RIGHT NOW.

23 Q FAIR ENOUGH.

24 YOUR HONOR, MR. HARDER WAS QUALIFIED AS AN
25 EXPERT AT THE PHASE THREE TRIAL. AND BASED UPON THAT AS
26 WELL AS TESTIMONY ON EXHIBIT 25 PRESENTED TODAY, I WOULD
27 REQUEST ON BEHALF OF PHELAN THAT THE COURT DEEM
28 MR. HARDER A QUALIFIED EXPERT FOR PURPOSES OF TESTIFYING

1 AS TO THE GROUNDWATER CONDITIONS, RETURN FLOWS AND HOW
2 THEY ARE RELEVANT TO THIS TRIAL.

3 THE COURT: IS THERE ANY VOIR DIRE?

4 MR. DUNN: NO, YOUR HONOR.

5 THE COURT: ALL RIGHT.

6 MR. DUNN: WE WOULD STIPULATE THAT HE IS
7 QUALIFIED.

8 THE COURT: THE WITNESS IS QUALIFIED AND MAY SO
9 TESTIFY.

10 MR. MILIBAND: THANK YOU.

11 Q BY MR. MILIBAND: MR. HARDER, YOU HAVE
12 HEARD PHELAN REFERRED TO IN SHORT AS PHELAN PINON HILLS
13 COMMUNITY SERVICES DISTRICT; IS THAT CORRECT?

14 A YES.

15 Q SO I WILL BE USING THAT SAME SHORTENED
16 NAME "PHELAN" TO REFER TO THE COMMUNITY SERVICES
17 DISTRICT. IS THAT UNDERSTOOD, SIR?

18 A YES.

19 Q COULD YOU DESCRIBE FOR US THE WORK THAT
20 YOU HAVE UNDERTAKEN IN THIS CASE ON BEHALF OF PHELAN?

21 A WELL, OUR WORK IN THIS CASE GOES BACK TO
22 PHASE THREE. AND ORIGINALLY, AS YOU HAVE SAID, WE WERE
23 ASKED TO EVALUATE THE HYDROGEOLOGICAL SETTING AND THE
24 CONDITION OF THE AQUIFER FROM WHICH PHELAN PUMPS ITS
25 GROUNDWATER.

26 OUR FIRST TASK REALLY WAS TO IDENTIFY A
27 SCOPE OR STUDY AREA. WE FOCUSED OUR STUDY ON THE
28 SOUTHEAST PORTION OF THE ANTELOPE VALLEY ADJUDICATION

1 AREA AND SPECIFICALLY THE PEARLAND BUTTES AND WHAT I
2 WOULD REFER TO AS THE HIGH VISTA AREA.

3 THE SECOND THING IS WE COMPILED AND
4 REVIEWED A NUMBER OF DOCUMENTS AND REPORTS, TRIAL
5 TESTIMONY, DEPOSITION TESTIMONY. WE ALSO COMPILED AND
6 REVIEWED USGS REPORTS AND DWR REPORTS AS WELL. I
7 CONDUCTED SEVERAL VISITS -- SITE VISITS TO THE STUDY
8 AREA ITSELF.

9 WE REVIEWED AND BECAME FAMILIAR WITH
10 PHELAN'S WELLS AND THEIR DISTRIBUTION SYSTEM. WE
11 CONDUCTED AN ANALYSIS OF THEIR RETURN FLOW. AND WE DID
12 THAT AS PART OF PHASE FIVE IN THIS PROCEEDING.

13 AND THEN WE UPDATED OUR HYDROGRAPHS AND
14 GROUNDWATER PRODUCTION DATA AS PART OF THIS STUDY TO
15 EVALUATE THE CONDITION OF THE GROUNDWATER BASIN.

16 Q IN THE COURSE OF UNDERTAKING THESE
17 DIFFERENT TASKS OR COMPONENTS OF YOUR WORK, DID YOU
18 PREPARE A REPORT AT SOME POINT?

19 A WE DID.

20 Q WHEN WAS THAT, AND GENERALLY WHAT DOES
21 THAT REPORT ENTAIL IN TERMS OF SUBSTANCE?

22 A OUR REPORT WAS PREPARED IN JULY OF 2010
23 AND POSTED ON THE COURT'S WEBSITE AS PART OF PHASE THREE
24 OF THIS PROCEEDING OR TRIAL.

25 Q GENERALLY HOW WOULD YOU SUMMARIZE THE
26 SUBSTANCE OF THAT REPORT THAT YOU PREPARED?

27 A IF YOU DON'T MIND, I WOULD LIKE TO PULL IT
28 UP.

1 Q WOULD IT REFRESH YOUR RECOLLECTION TO DO
2 SO?

3 A YES.

4 THE COURT: IS THAT AN EXHIBIT?

5 MR. MILIBAND: NO. I DON'T THINK IT HAS BEEN
6 MARKED.

7 THE COURT: IT DOESN'T NEED TO BE. I JUST WANTED
8 TO KNOW. THANK YOU.

9 THE WITNESS: IT'S BEEN A WHILE. I HAVE TO
10 REFRESH MY MEMORY.

11 THE COURT: GO AHEAD.

12 THE WITNESS: WE PROVIDED A BACKGROUND OF PHELAN
13 PINON HILLS COMMUNITY HILLS SERVICES DISTRICT. WE
14 LOOKED AT SPECIFICALLY WELL 14 AND ITS LOCATION WITH
15 RESPECT TO THE ADJUDICATION.

16 WE LOOKED AT THE PHYSICAL SETTING OF WELL
17 14, THE HYDROGEOLOGICAL SETTING INCLUDING GROUNDWATER
18 CURRENTS, RECHARGE, DISCHARGE, GROUNDWATER FLOW AND
19 HISTORICAL GROUNDWATER LEVELS. AND THEN WE ALSO DID A
20 VERY DETAILED ANALYSIS OF WELL 14 PUMPING, HISTORICAL
21 PUMPING. AND THEN WE SUMMARIZED THE FINDINGS.

22 Q IN THE COURSE OF DOING THE WORK THAT LED
23 TO THE PREPARATION OF THAT REPORT, WERE YOU SPECIFICALLY
24 LOOKING AT A CERTAIN AREA WITHIN THE ANTELOPE VALLEY
25 ADJUDICATION AREA OR WITHIN THE ANTELOPE GROUNDWATER
26 BASIN OR SOME OTHER AREA?

27 A WELL, LIKE I SAID, WE SPECIFICALLY FOCUSED
28 OUR STUDY ON PEARLAND BUTTES AND HIGH VISTA AREA. WE

1 ALSO LOOKED AT THE ANTELOPE VALLEY GROUNDWATER BASIN AS
2 DEFINED BY BULLETIN 118. AND THAT DOES EXTEND EAST OF
3 THE SAN BERNARDINO L. A. COUNTY BOUNDARY. WE INCLUDED
4 THAT AS PART OF OUR STUDY.

5 Q AS YOU SIT HERE TODAY, DESPITE HAVING
6 STARTED WORK GOING BACK TO PHASE THREE OR PRE-PHASE
7 THREE, WHAT IS YOUR UNDERSTANDING AS TO THE PURPOSE FOR
8 WHICH YOU WERE ASKED TO UNDERTAKE THESE DIFFERENT TASKS
9 RELATED TO YOUR WORK ON BEHALF OF PHELAN?

10 A WELL, THE PURPOSE WAS REALLY TO DESCRIBE
11 THE CONDITION OF THE AQUIFER, LIKE I SAID, FROM WHICH
12 PHELAN PUMPS ITS GROUNDWATER.

13 Q MR. HARDER, I WOULD LIKE TO DIRECT YOUR
14 ATTENTION TO WHAT HAS BEEN MARKED FOR IDENTIFICATION AS
15 EXHIBIT 26. WOULD YOU PLEASE TURN TO THAT EXHIBIT, SIR.
16 WHAT DOES EXHIBIT 26 DEPICT TO YOU?

17 A IT DEPICTS PHELAN SERVICE AREA WHICH IS
18 INDICATED IN YELLOW AND ITS LOCATION WITH RESPECT TO THE
19 SAN BERNARDINO/LOS ANGELES COUNTY LINE WHICH IS RIGHT
20 HERE IN BLACK. IT DEPICTS ITS LOCATION WITH RESPECT TO
21 THE GROUNDWATER BASINS THAT HAVE BEEN DEFINED BY
22 BULLETIN 118, DEPARTMENT OF WATER RESOURCES.

23 Q ARE THERE WELLS IDENTIFIED ON EXHIBIT 26?

24 A THE BLUE DOTS ON THE MAP ARE PHELAN'S
25 WELLS.

26 Q AND WHAT IS THE GREEN BOUNDARY DEPICTING?

27 A THE GREEN BOUNDARY IS SHEEP CREEK WATER
28 COMPANY'S BOUNDARY WHICH OCCURS WITHIN PHELAN'S SERVICE

1 AREA.

2 Q AND THERE ARE ESSENTIALLY THREE DIFFERENT
3 SHADES OF COLORS IN WHICH THERE IS TEXT. STARTING FROM
4 THE LEFT IT SAYS: ANTELOPE VALLEY GROUNDWATER BASIN,
5 AND MOVING TO THE RIGHT, EL MIRAGE VALLEY GROUNDWATER
6 BASIN, AND TO THE FAR RIGHT UPPER, MOJAVE RIVER VALLEY
7 GROUNDWATER BASIN.

8 PLEASE DESCRIBE WHAT THAT MEANS TO YOU
9 BASED UPON THE TEXTS AND ITS COLORS.

10 A LIKE I SAID, THE ANTELOPE VALLEY
11 GROUNDWATER BASIN WHICH IS LOCATED HERE IN THE BROWN IS
12 THE AREA OF THE ANTELOPE VALLEY GROUNDWATER BASIN AS
13 DEFINED BY BULLETIN 118 DEPARTMENT OF WATER RESOURCES.
14 THE EL MIRAGE VALLEY GROUNDWATER BASIN WHICH IS IN
15 YELLOW HERE IS THE SAME.

16 THE BROWN/RED COLOR HERE IS THE UPPER
17 MOJAVE RIVER VALLEY GROUNDWATER BASIN FROM BULLETIN 118.

18 Q WAS EXHIBIT 26 PREPARED BY YOU OR AT YOUR
19 DIRECTION?

20 A IT WAS PREPARED AT MY DIRECTION.

21 Q WHO DID YOU DIRECT IN PREPARATION OF
22 EXHIBIT 26?

23 A I DON'T REMEMBER THE SPECIFIC PERSON, BUT
24 SOMEBODY ON MY STAFF PREPARED THIS EXHIBIT.

25 Q WHAT DATA OR INFORMATION WAS USED TO
26 PREPARE EXHIBIT 26?

27 A WELL, THE EXHIBIT WAS PREPARED USING A
28 GEOGRAPHIC INFORMATION SYSTEM WITH A BASE MAP WHICH IS

1 AN AIR PHOTO OF THE AREA. THE BASIS ARE WHAT IS
2 REFERRED TO AS GEOGRAPHIC INFORMATION SYSTEM OR GIS
3 SHAPEFILES, S-H-A-P-E-F-I-L-E-S.

4 WE OBTAINED THOSE FROM THE DEPARTMENT OF
5 WATER RESOURCES WEBSITE. THE WELLS WERE PLOTTED ON THE
6 MAP BASED ON FIELD CONFIRMATION OF THEIR LOCATION AND
7 INFORMATION PROVIDED BY PHELAN. THE PHELAN'S BOUNDARY,
8 AGAIN, WAS ALSO A SHAPEFILE PROVIDED BY PHELAN. WE
9 PLOTTED THESE IN GIS AND PREPARED THE MAP.

10 Q AND LOOKING AT EXHIBIT 26, DOES EXHIBIT 26
11 ILLUSTRATE -- WHAT PART OF EXHIBIT 26 ILLUSTRATES THE
12 STUDY AREA WHICH YOU UNDERTOOK FOR THE WORK THAT YOU
13 HAVE DONE ON BEHALF OF PHELAN?

14 A WELL, OUR STUDY AREA, WHAT I WOULD SAY,
15 THIS SHOWS THE EASTERN PORTION OF IT. IN GENERAL, THE
16 ANTELOPE VALLEY GROUNDWATER BASIN HERE EXTENDS TO THE
17 WEST FURTHER TO THE EDGE OF THE BUTTES SUB-UNIT. SO IT
18 EXTENDS BEYOND THIS MAP, BUT IT INCLUDES THIS ENTIRE
19 ANTELOPE VALLEY GROUNDWATER BASIN AREA.

20 Q WHAT CRITERIA DID YOU UTILIZE IN FINDING
21 OR FORMING THE STUDY AREA THAT YOU JUST DESCRIBED?

22 A WELL, THE FIRST CRITERIA WAS TO INCLUDE
23 THE ANTELOPE VALLEY ADJUDICATION AREA WHICH IS THE
24 SUBJECT OF THE TRIAL AND TO INCLUDE WELL 14.

25 LOOKING AT THE ANTELOPE VALLEY GROUNDWATER
26 BASIN AS A HYDROGEOLOGICAL BASIN NOT CONSTRAINED BY ANY
27 POLITICAL BOUNDARIES, WE INCLUDED THAT AS PART OF THE
28 HYDROGEOLOGICAL SETTINGS. SO IT WAS IMPORTANT TO US TO

1 INCLUDE THE ENTIRE BASIN.

2 THE WESTERN PORTIONS OF THE STUDY AREA AND
3 THE NORTHERN PORTIONS WERE INCLUDED BECAUSE WE FELT THAT
4 THEY WERE PART OF THE SETTING FROM WHICH PHELAN PUMPS
5 ITS GROUNDWATER. WE WANTED TO INCLUDE THAT, SO WE
6 INCLUDED THE ENTIRE BUTTES SUB-UNIT AREA EVEN THOUGH IT
7 EXTENDS QUITE FAR TO THE WEST OF OUR AREA.

8 Q FROM YOUR EXPERIENCE AS A GEOLOGIST AND A
9 HYDROGEOLOGIST, WHY WAS THAT IMPORTANT FOR YOU TO
10 INCLUDE ALL OF THE BUTTES SUB-UNIT IN EVALUATING THE
11 STUDY AREA?

12 A WELL, IT'S MORE CONVENIENCE THAN
13 IMPORTANCE. I THINK IT'S BASICALLY THAT WE CAN
14 CATEGORIZE AN AREA TO STUDY. IT HAS PHYSICAL BOUNDARIES
15 OR HAS HYDROGEOLOGICAL BOUNDARIES THAT HAVE BEEN
16 ESTABLISHED. SO IT'S A UNIQUE AREA TO INCLUDE. THAT'S
17 THE PRIMARY PURPOSE FOR LOOKING AT THE ENTIRE THING.

18 Q HOW DID YOU DEVELOP YOUR UNDERSTANDING OF
19 PHELAN WATER DEMAND AND ITS SUPPLY?

20 A AS YOU ARE AWARE, PHELAN INHERITED THE
21 COUNTY SERVICE AREA. AND WHEN WE FIRST GOT STARTED,
22 THEY WERE IN THE PROCESS OF COMPILING THEIR RECORDS FROM
23 THE COUNTY SERVICE AREA AND TRYING TO GET THAT
24 INFORMATION TOGETHER. EARLY ON WE MET WITH PHELAN STAFF
25 TO GO THROUGH THE ORIGINAL WATER METER PRODUCTION
26 HANDWRITTEN SHEETS OF THEIR PRODUCTION FOR THEIR WELLS.
27 THAT WAS THE ORIGINAL INTRODUCTION TO THEIR WATER
28 SYSTEM.

1 THROUGH THE YEARS WE HAVE CORRESPONDED
2 WITH THEM REGARDING THEIR OTHER WELL LOCATIONS. WE'VE
3 INSPECTED THEM IN THE FIELD, AND WE ALSO OBTAINED FROM
4 THEM THEIR WATER DISTRIBUTION SYSTEM LINES VIA
5 SHAPEFILE, AGAIN, GIS SHAPEFILE.

6 Q A SIMILAR QUESTION BUT IN CONTEXT OF THE
7 PHYSICAL SETTING THAT YOU TALKED A LITTLE BIT ABOUT, I
8 WOULD LIKE YOU TO ELABORATE. HOW DID YOU DEVELOP YOUR
9 UNDERSTANDING OF PHELAN'S PHYSICAL SETTING INCLUDING
10 THAT OF WELL 14?

11 A WELL, OUR UNDERSTANDING OF PHELAN'S
12 PHYSICAL SETTING WAS EVALUATED THROUGH OUR ANALYSIS OF
13 THE WELLS IN THIS AREA. WE ALSO RELIED QUITE HEAVILY ON
14 THE SUMMARY EXPERT REPORT THAT WAS DEVELOPED AS A RESULT
15 OF THIS TRIAL PHASE THREE. WE ALSO RELIED ON U.S.
16 GEOLOGICAL SURVEY. WE DIDN'T STOP AT THE SUMMARY EXPERT
17 REPORT. WE WENT BACK TO THE U.S. GEOLOGICAL SURVEY
18 REPORTS.

19 BLOYD 1967, WE LOOKED AT THAT AS THE
20 ORIGINAL BASIS FOR THE SUB-BOUNDARIES. WE LOOKED AT
21 LANTON & PHILLIPS, WHAT THEY DID. WE LOOKED AT SOME
22 CONSULTANT REPORTS FROM THE AREA THAT HAD BEEN DONE ON
23 THE EAST SIDE OF THE COUNTY BOUNDARY AS A BASIS FOR
24 FORMING SOME OPINIONS ON THE SETTING.

25 Q AND ASIDE FROM THAT SORT OF INVESTIGATION
26 OR EVALUATION THAT YOU CONDUCTED IN TERMS OF DOCUMENTARY
27 ITEMS, WERE THERE FIELD VISITS OR OTHER TYPES OF
28 INVESTIGATORY WORK THAT YOU UNDERTOOK AS PART OF YOUR

1 STUDY OR WORK?

2 A WE DID. LIKE I SAID, WE VISITED THE WELLS
3 THAT ARE LOCATED IN PHELAN'S AREA. I ALSO TOOK TWO
4 TRIPS UP TO THIS AREA UP HERE WHICH IS NORTHWEST OF
5 PHELAN SERVICE AREA WHICH IS REFERRED TO AS THE GREY
6 BUTTE FIELD AREA. THERE ARE SOME AGRICULTURAL
7 PRODUCTION UP IN THAT AREA.

8 I HAVE ALSO DRIVEN AND DONE SOME FIELD
9 WORK IN THE LOVEJOY BUTTES AREA AND INSPECTED SOME OF
10 THE LAKE LOS ANGELES AREA UP IN THIS AREA AS WELL.

11 Q OTHER THAN THE AGRICULTURAL FIELDS THAT
12 YOU JUST IDENTIFIED, HOW WOULD YOU GENERALLY
13 CHARACTERIZE THE LANDSCAPE AND PHYSICAL SETTING THERE
14 FOR THE AREA IN WHICH YOU DROVE AROUND?

15 A DRY.

16 THE COURT: MR. MILIBAND, YOU ARE DROPPING YOUR
17 VOICE AT THE END OF YOUR QUESTION.

18 MR. MILIBAND: I'M SORRY.

19 THE COURT: WOULD YOU SPEAK UP, PLEASE.

20 MR. MILIBAND: I'M SORRY. IT'S FAR TOO EARLY IN
21 THE DAY TO BE DOING THAT.

22 THE COURT: OKAY.

23 THE WITNESS: COULD YOU REPEAT YOUR QUESTION.
24 I'M SORRY.

25 Q BY MR. MILIBAND: SURE. COULD YOU PLEASE
26 DESCRIBE OR PROVIDE A CHARACTERIZATION OF THE AREA THAT
27 YOU DROVE AROUND IN TERMS OF JUST HOW THE LANDSCAPE OR
28 THE PHYSICAL SETTING APPEARS TO YOU?

1 A DRY.

2 Q AND WHAT MAKES YOU SAY DRY?

3 A WELL, IT'S A SEMI-ARID ENVIRONMENT. THERE
4 IS NOT A LOT OF VEGETATION. IT'S A TYPICAL HIGH DESERT
5 VEGETATION SCRUB BRUSH.

6 Q DESERT LANDSCAPE, IS THAT A FAIR
7 CHARACTERIZATION?

8 A I THINK SO. YES.

9 Q NOW THAT YOU HAVE DESCRIBED THE WORK THAT
10 YOU HAVE UNDERTAKEN FOR PHELAN AND YOU HAVE IDENTIFIED
11 SOME OF THE THINGS THAT YOU HAVE DONE, CAN YOU ELABORATE
12 MORE ON SPECIFIC TASKS THAT YOU SPECIFICALLY UNDERTOOK
13 TO COMPLETE THE WORK THAT YOU HAVE DONE?

14 A SPECIFICALLY, WE LOOKED AT WELL 14'S
15 GROUNDWATER PRODUCTION IN VERY GREAT DETAIL. THEY ARE
16 DOWN TO THEIR FIELD SUMMARY NOTES. WE LOOKED AT THE
17 RETURN FLOW THAT OCCURS IN THEIR AREA. PHELAN IS ON
18 SEPTIC SYSTEMS.

19 WE LOOKED SPECIFICALLY AT THE PORTION OF
20 PHELAN'S SERVICE AREA THAT OVERLIES THE ANTELOPE VALLEY
21 GROUNDWATER BASIN AS DEFINED BY BULLETIN 118. WE LOOKED
22 AT THEIR PRODUCTION HISTORY, PHELAN'S PRODUCTION
23 HISTORY.

24 Q FOR WELLS, THAT IS?

25 A FOR THEIR WELLS AND FOCUSED ON THE WELLS
26 THAT ARE IN THE ANTELOPE VALLEY GROUNDWATER BASIN. AND
27 WE LOOKED AT GROUNDWATER LEVEL TRENDS. WE LOOKED AT
28 GROUNDWATER LEVEL TRENDS.

1 Q AND WHEN YOU SAY THE WELLS THAT ARE WITHIN
2 THE ANTELOPE VALLEY GROUNDWATER BASIN, ARE THOSE THE
3 WELLS ON EXHIBIT 26 IDENTIFIED AS BLUE DOTS WITHIN THE
4 BROWN AREA?

5 A THEY HAVE SIX WELLS IN THE ANTELOPE VALLEY
6 GROUNDWATER BASIN AREA. THEY ARE WELLS 6-A AND 6-B, 10,
7 11 AND 12 AND WELL 14.

8 Q DID YOU USE AT ANY POINT IN THE COURSE OF
9 YOUR WORK SATELLITE IMAGERY?

10 A WE DID, ACTUALLY. WHEN WE WERE LOOKING AT
11 THE LAND USE UP IN THE GREY BUTTE FIELD AREA AND SOUTH
12 OF LOVEJOY BUTTES, WE LOOKED AT SATELLITE IMAGERY TO SEE
13 HISTORICALLY WHAT HAD BEEN GROWN THERE, THE AREA OF THAT
14 IRRIGATION AND LANDSCAPE OR AGRICULTURAL IRRIGATION THAT
15 HAD OCCURRED TO TRY TO GET A HANDLE ON WHAT THEIR WATER
16 DEMANDS WERE IN THOSE AREAS.

17 Q EARLIER WHEN YOU MENTIONED THAT YOU
18 REVIEWED TRANSCRIPTS WHETHER DEPOSITION OR TRIAL
19 TRANSCRIPTS, DO YOU RECALL WHICH WITNESS' TESTIMONY YOU
20 WERE REVIEWING?

21 A YES. EARLY ON I REVIEWED JOE SCALMANINI'S
22 TRIAL TESTIMONY. I ALSO ATTENDED SOME OF HIS
23 DEPOSITIONS DURING PHASE THREE. I ALSO REVIEWED MARK
24 WILDERMUTH'S TRIAL TESTIMONY WITH REGARD TO HIS SAFE
25 YIELD ESTIMATES. I ALSO REVIEWED A NUMBER OF OTHERS.
26 THE NAMES ARE GOING TO ESCAPE ME.

27 Q DOES MR. SHEAHAN RING A BELL?

28 A YES. TOM SHEAHAN, I REVIEWED HIS TRIAL

1 TESTIMONY AS WELL.

2 Q WHAT ABOUT DR. LIST?

3 A I PROBABLY DID; I JUST DON'T RECALL.

4 Q BUT MR. SCALMANINI AND MR. WILDERMUTH'S
5 TESTIMONY OR AT LEAST PART OF THEIR TESTIMONY IS WHAT
6 YOU RECALL BEST AS YOU SIT HERE TODAY FROM HAVING
7 REVIEWED BEFORE?

8 A I DO. AND I WOULD ADD ALSO DR. WILLIAMS'
9 TESTIMONY, HIS LATER TESTIMONY AS PART OF PHASE FIVE. I
10 REVIEWED THAT AS WELL.

11 Q WHEN YOU SAY DR. WILLIAMS' TESTIMONY, ARE
12 YOU REFERRING TO THE TWO DEPOSITIONS THAT HE HAS HAD
13 TAKEN THIS YEAR?

14 A YES.

15 Q AND WHETHER IT'S DR. WILLIAMS,
16 MR. SCALMANINI OR MR. WILDERMUTH, WHY WERE YOU REVIEWING
17 THOSE TRANSCRIPTS IN PARTICULAR?

18 A WELL, ORIGINALLY I WAS TRYING TO
19 UNDERSTAND THEIR UNDERSTANDING OF THE BASIN, OF THE
20 BOUNDARIES OF THE BASIN, OF THE CONDITION OF THE BASIN,
21 OF THE PROCESS THAT THEY WERE USING TO EVALUATE THE SAFE
22 YIELD OF THE BASIN AND THE CONDITION WHETHER IT WAS AN
23 OVERDRAFT OR NON-OVERDRAFT.

24 THEY ALSO DID WORK IN THE SOUTHEAST AREA.
25 SO I WAS TRYING TO UNDERSTAND FROM WHAT THEY DID THE
26 CONDITION OF OUR AREA AS A STARTING POINT. I NEVER
27 STOPPED THERE. I AM ALWAYS GOING TO WANT TO DO MY OWN
28 WORK, BUT I WANTED TO GET THEIR UNDERSTANDING.

1 Q WHEN YOU SAY THAT YOU STARTED WITH REVIEW
2 TO GET AN UNDERSTANDING OF THEIR UNDERSTANDING, DID YOUR
3 PURPOSE CHANGE AT SOME POINT IN YOUR EVALUATION OF THE
4 TRANSCRIPTS AND REVIEWING THE TRANSCRIPTS?

5 IN OTHER WORDS, WHAT OTHER PURPOSE DID YOU
6 REVIEW TRANSCRIPTS FOR IF NOT JUST TO GAIN AN
7 UNDERSTANDING OF WHAT THAT THE WITNESS' UNDERSTANDING
8 WAS?

9 A WELL, I DON'T KNOW IF IT CHANGED.
10 ORIGINALLY WE WERE TRYING TO DESCRIBE THE
11 HYDROGEOLOGICAL SETTING OF THE SOUTHEAST PORTION OF THE
12 ANTELOPE VALLEY ADJUDICATION AREA. DURING THE COURSE OF
13 OUR WORK WE ALSO RELIED ON THEIR WORK TO UNDERSTAND THE
14 CONDITION OF THE BASIN IN TERMS OF CHANGES IN
15 GROUNDWATER STORAGE, CHANGES IN GROUNDWATER LEVELS AND
16 THOSE TYPES OF THINGS. BUT THOSE ARE ALL RELATED TO OUR
17 UNDERSTANDING OF THE CONDITION OF THE BASIN.

18 Q NOW, YOU HAVE MENTIONED SOME REPORTS IN
19 TERMS OF BLOYD, LANTON & PHILLIPS AND SUMMARY EXPERT
20 REPORTS. IS THAT ESSENTIALLY THE UNIVERSE OF DOCUMENTS
21 AND REPORTS THAT YOU REVIEWED SPECIFICALLY TO THE
22 ANTELOPE VALLEY GROUNDWATER BASIN, OR WERE THERE OTHER
23 REPORTS IN ADDITION TO THOSE THREE?

24 A THERE IS A REPORT BY CARLSON AND PHILLIPS
25 OR I THINK CARLSON AND OTHERS. THERE WERE NUMEROUS
26 REPORTS THAT WE RELIED ON. I CAN GO THROUGH IN MY
27 REFERENCE LIST IN OUR REPORT AND GO THROUGH THOSE IF YOU
28 WOULD LIKE. I DON'T RECALL THEM OFF THE TOP OF MY HEAD.

1 Q IT'S PROBABLY FINE NOT TO DO THAT. BUT
2 JUST TO GET A BETTER UNDERSTANDING OF WHAT REPORTS ARE,
3 WERE THEY USGS REPORTS IN PARTICULAR?

4 A YES. U.S. GEOLOGICAL SURVEY PROFESSIONAL
5 PAPERS, WATER SUPPLY PAPERS, OPEN FILE REPORTS,
6 DEPARTMENT OF WATER RESOURCE BULLETINS FOR THE AREA.
7 YEAH, THOSE ARE THE MAIN TYPES. WE ALSO LOOKED AT SOME
8 CONSULTANT REPORTS, LIKE I SAID EARLIER.

9 Q ELABORATE ON THAT A LITTLE BIT MORE. WHAT
10 DO YOU MEAN BY CONSULTANT REPORTS?

11 A THERE WAS A RESULT BY HORN 1989,
12 HYDROLOGIC STUDY OF THE PHELAN EL MIRAGE AREA PREPARED
13 FOR THE SAN BERNARDINO COUNTY SPECIAL DISTRICTS. HE WAS
14 A CONSULTANT WORKING AT THE TIME. THAT IS AN EXAMPLE.

15 I WOULD ADHERE TOO THAT WE LOOKED AT
16 GEOLOGICAL MAPS, GROUNDWATER CONTOUR MAPS. BOOKMAN
17 EDMONSTON ALSO PREPARED A REGIONAL WATER MANAGEMENT PLAN
18 THAT WE REVIEWED. WE ALSO REVIEWED URBAN WATER
19 MANAGEMENT PLANS FOR PHELAN'S AREA THAT HAD BEEN
20 PREPARED BY OTHER CONSULTANTS.

21 Q MR. HARDER, I WOULD LIKE TO DIRECT YOUR
22 ATTENTION TO WHAT HAS BEEN MARKED AS EXHIBIT 27. IT'S
23 ALSO IN THE BINDER IN FRONT OF YOU AND PROJECTED ON THE
24 SCREEN.

25 WHAT DOES EXHIBIT 27 ILLUSTRATE TO YOU,
26 MR. HARDER?

27 A THIS IS AN ILLUSTRATION THAT WE PREPARED,
28 MY OFFICE UNDER MY DIRECTION, THAT SHOWS THE BOUNDARIES

1 OF THE PEARLAND TO THE SOUTH, THE BUTTE SUB-UNIT HERE
2 AND WHAT I REFER TO AS THE HIGH VISTA AREA WHICH IS
3 NORTHEAST OF THE BUTTE SUB-UNIT. AND IT SHOWS THE
4 RELATIONSHIPS OF THESE SUB-UNITS TO WHAT PHELAN'S WELL
5 14 AND OTHER WELLS THAT ARE WITHIN THOSE SUB-UNITS IN
6 THE AREAS.

7 Q WHAT ARE THESE DIFFERENT SHAPES
8 IDENTIFYING WITHIN PARTICULARLY THE BUTTES AND THE
9 PEARLAND SUB-UNITS? WHETHER IT'S TRIANGLES OR SQUARES
10 OR OTHER SHAPES, WHAT ARE THOSE DEPICTING?

11 A THESE SHAPES DEPICT INDIVIDUAL WELLS. I
12 AM POINTING TO AN AREA SOUTH OF LOVEJOY BUTTES WHICH IS
13 REFERRED TO AS THE RETLAW RANCH AREA. THESE ARE GREEN
14 SQUARES. SO IN THIS CASE GREEN IS REPRESENTED BY
15 BOLTHOUSE. THE SQUARE MEANS IT'S AN AGRICULTURAL WELL.
16 TRIANGLES ARE MUNICIPAL WELLS. IN THIS CASE HERE, THESE
17 BLUE TRIANGLES ARE PALMDALE WATER DISTRICT WELLS.
18 DIAMONDS ARE OVERLYING WELLS, ET CETERA.

19 Q WHAT DO YOU MEAN WHEN YOU SAY "OVERLYING
20 WELLS"?

21 A WE OBTAINED THIS INFORMATION THROUGH THE
22 PHASE-FOUR DISCOVERY. THESE ARE WELLS BY OTHERS. FOR
23 EXAMPLE -- I AM HAVING TROUBLE READING IT FROM HERE --
24 GRANITE CONSTRUCTION, SERVICE ROCK PRODUCTS AND THE
25 LIKE.

26 Q THAT WAS PART OF THE ANSWER OF MY NEXT
27 QUESTION, BUT WHAT DATA DID YOU UTILIZE IN CREATING
28 EXHIBIT 27?

1 A WE UTILIZED THE INFORMATION THAT WAS
2 PROVIDED DURING THE PHASE-FOUR DISCOVERY. SO MOST OF
3 THE PEOPLE THAT PROVIDED INFORMATION DURING THAT TIME
4 PROVIDED THEIR WELL LOCATIONS. WE PLOTTED THEM BASED ON
5 THAT INFORMATION.

6 Q SO AS FOR EXHIBIT 27'S DEPICTION OF WELLS,
7 WHETHER OVERLYING MUNICIPAL OR AGRICULTURAL, YOU
8 OBTAINED THE INFORMATION FOR WHAT YOU DEPICTED ON
9 EXHIBIT 27 FOR PHASE FOUR; IS THAT CORRECT?

10 A WITH THE EXCEPTION OF WELL 14, PHELAN'S
11 WELL 14 WE HAVE VERY DETAILED INFORMATION ON THAT FROM
12 PHELAN. AND THIS IS SHEEP CREEK MUTUAL WATER COMPANY
13 WELL NORTH OF OUR WELL WHICH I LOCATED IN THE FIELD WITH
14 A GPS UNIT.

15 Q OKAY. WHAT I AM TRYING TO DO IS SEPARATE
16 A LITTLE BIT OF WHAT ALL EXHIBIT 27 REPRESENTS AND THE
17 SOURCE OF DATA FOR IT. PUTTING ASIDE THE WELLS AND WHAT
18 IT DEPICTS, IN TERMS OF THE SUB-UNITS, YOU HAVE ON THERE
19 THE BUTTES AND THE PEARLAND SUB-UNITS.

20 WHAT DATA DID YOU ANALYZE FOR ESSENTIALLY
21 MAPPING OUT THOSE SUB-UNITS ON EXHIBIT 27?

22 A THESE SUB-UNITS ARE GENERALLY CONSISTENT
23 WITH BLOYD. AND THEY WERE EXPANDED IN THE 2003 LANTON &
24 PHILLIPS REPORT TO INCLUDE THE SOUTHEAST PORTION OF
25 ANTELOPE VALLEY GROUNDWATER BASIN OVER HERE.

26 SO WE RELIED ON LANTON & PHILLIPS. AND
27 THEN WE WANTED TO MAKE SURE THAT THEY WERE CONSISTENT
28 WITH WHAT WAS REPORTED IN THE SUMMARY EXPERT REPORT. SO

1 WE DID SOME WORK TO MAKE SURE THAT THEY ARE THE SAME.

2 Q WOULD YOU PLEASE DESCRIBE HOW EXHIBIT 27
3 WAS PREPARED.

4 A WELL, THIS WAS PREPARED IN GIS. AGAIN, I
5 DO NOT RECALL HOW THE SUB-UNITS -- THESE SUB-UNITS MAY
6 HAVE BEEN DIGITIZED BASED ON THE MAPS THAT WE HAD FROM
7 LANTON & PHILLIPS. THEY MAY HAVE BEEN DIGITIZED INTO
8 GIS AND MATCHED ON HERE.

9 THE OVERLAYS OF THESE SERVICE -- THESE
10 SHADED AREAS, THE GREEN, THE PURPLE AND THE BEIGE, THOSE
11 ARE OTHER PURVEYOR WATER DISTRICT AREAS. WE GOT THOSE
12 FROM PHASE FOUR. I BELIEVE WE DIGITIZED THOSE BASED ON
13 PHASE FOUR AND THE DISCOVERY DOCUMENTS AS WELL.

14 THE WELLS WERE LOCATED BASED ON -- WE PUT
15 THOSE IN. WHEN WE HAD COORDINATES WE USED THOSE. WHEN
16 WE HAD MAPS WE USED THOSE.

17 Q AND GOING BACK TO THE HIGH VISTA AREA,
18 WOULD YOU PLEASE POINT WITH YOUR LASER POINTER ON
19 EXHIBIT 27 THAT IS PROJECTED ONTO THE SCREEN WHERE
20 GENERALLY THAT AREA IS.

21 A THE HIGH VISTA AREA IS THIS AREA TO THE
22 NORTHEAST OF THE BUTTE SUB-UNIT. SO IT INCLUDES THESE
23 OUTCROPS, BLACK BUTTE, THREE SISTERS AND THIS ENTIRE
24 AREA UP HERE. IT PROCEEDS TO THE NORTH. BUT, IN
25 GENERAL, IT'S NORTHEAST OF THE SUB-UNIT.

26 Q AND ON EXHIBIT 27 YOU HAVE WITHIN THAT
27 HIGH VISTA AREA TWO DIFFERENT COLORS, ESSENTIALLY BLUE
28 AND GREEN THAT ESSENTIALLY APPEAR TO BE SQUARES. IS

1 THAT HOW YOU WOULD CHARACTERIZE THOSE?

2 A YES. THE GREEN SQUARES ARE AGRICULTURAL
3 WELLS. THE BLUE AREAS ARE AGRICULTURAL PARCELS BASED ON
4 THE INFORMATION PROVIDED BY BOLTHOUSE DURING PHASE FOUR.

5 Q SO IS IT YOUR UNDERSTANDING THAT THOSE ARE
6 BOLTHOUSE PRODUCTION MODELS?

7 A THAT IS MY UNDERSTANDING.

8 Q WHEN YOU MENTIONED RETLAW THAT'S WITHIN
9 THE BUTTE SUB-UNIT, IS IT ALSO YOUR UNDERSTANDING THAT
10 THOSE ARE BOLTHOUSE WELLS?

11 A THAT IS MY UNDERSTANDING.

12 Q DO YOU HAVE ANY UNDERSTANDING AS TO WHAT
13 BOLTHOUSE'S PRODUCTION HAS BEEN AT ANY PERIOD OF TIME AT
14 EITHER THE HIGH VISTA AREA YOU IDENTIFIED OR AT THE
15 RETLAW AREA?

16 A I DO.

17 Q WHAT IS YOUR UNDERSTANDING AS TO ONE OR
18 BOTH OF THOSE AREAS?

19 A IF I CAN PULL SOME OF MY DOCUMENTS.

20 Q IF IT WILL REFRESH YOUR RECOLLECTION,
21 PLEASE DO SO.

22 A IN THE PHASE-FOUR DISCOVERY DOCUMENTS
23 PROVIDED BY BOLTHOUSE PROPERTIES IN THE RETLAW RANCH
24 AREA AGAIN THIS IS THE AREA -- THIS AREA HERE ON THE MAP
25 SOUTH OF LOVEJOY BUTTES. THEY PUMPED BEGINNING IN 2000
26 ANYWHERE FROM 600 ACRE-FEET PER YEAR UP TO 8,800
27 ACRE-FEET IN 2008.

28 THIS IS WHAT IS REFERRED TO AS THE S&P

1 ROWEN RANCH. IN THIS AREA THEY PUMPED FROM 2001
2 ANYWHERE FROM 2,300 ACRE-FEET PER YEAR TO 5,200, AND I
3 AM ROUNDING. IT'S DIFFERENT FROM THAT IN THAT RANGE OF
4 ACRE-FEET PER YEAR.

5 Q WHEN YOU SAY IT'S DIFFERENT THAN THAT,
6 PLUS OR MINUS --

7 A 5,236 ACRE-FEET IN 2003.

8 Q SO WITHIN THE BUTTE SUB-UNIT, HOW MANY
9 WATER PRODUCERS WOULD YOU ESTIMATE THERE ARE BASED ON
10 EXHIBIT 27?

11 A WELL, THERE IS BOLTHOUSE, LOS ANGELES
12 COUNTY WATER WORKS UP HERE IN LAKE LOS ANGELES AND
13 PHELAN. I BELIEVE THAT THE LOS ANGELES DEPARTMENT OF
14 AIRPORTS HAS ONE WELL HERE. I AM NOT SURE OF ITS STATUS
15 IN TERMS OF PUMPING.

16 Q SO DOES THAT MEAN YOU ESSENTIALLY FIND
17 THAT THERE ARE FOUR WATER PRODUCERS WITHIN A BUTTE
18 SUB-UNIT?

19 A YES.

20 Q AND BEFORE MOVING ON TO THE NEXT EXHIBIT
21 JUST GOING BACK TO WHAT YOU POINTED TO IN THE LOWER
22 RIGHT CORNER OF EXHIBIT 27 THERE IS THE BUTTE SUB-UNIT.
23 IT LOOKS TO BE MORE OF A BLUE OR PURPLE LINE; IS THAT
24 RIGHT?

25 A YES.

26 Q AND IT EXTENDS ACROSS THE LOS ANGELES/SAN
27 BERNARDINO COUNTY LINE; IS THAT CORRECT?

28 A RIGHT.

1 Q WHERE IT ENDS IN THE LOWER RIGHT CORNER OF
2 EXHIBIT 27, WHAT IS THE BLACK LINE THAT INTERSECTS
3 WITHIN THAT SAME LOWER RIGHT-HAND CORNER OF EXHIBIT 27?

4 A THIS AREA OF THE BUTTE SUB-UNIT IS WHERE
5 IT INTERSECTIONS WITH THE ANTELOPE VALLEY GROUNDWATER
6 BASIN AS DEFINED BY BULLETIN 118. SO THEY DON'T MATCH.

7 SO IF I CAN POINT HERE, THIS BLACK LINE
8 HERE IS THE ANTELOPE VALLEY GROUNDWATER BASIN BOUNDARY,
9 THE EASTERN BOUNDARY. THE BLUE LINE IS THE BUTTES
10 SUB-UNIT OF THE ANTELOPE VALLEY GROUNDWATER BASIN AS
11 DEFINED BY LANTON & PHILLIPS.

12 Q WHAT IF ANYTHING DOES IT MEAN TO YOU FOR
13 THE WORK THAT YOU HAVE DONE IN THIS CASE THAT THE BUTTE
14 SUB-UNIT DOES NOT MATCH AS YOU DESCRIBED IT WHERE THE
15 DWR 118 BOUNDARY IS?

16 MR. KUHS: RELEVANCE, YOUR HONOR.

17 THE COURT: OVERRULED.

18 THE WITNESS: I AM NOT SURE WHAT IT MEANS TO ME.
19 WHEN WE DID OUR GROUNDWATER CONTOUR MAPS, IT WAS MY
20 OPINION THAT THE BULLETIN 118 BOUNDARY OF THE ANTELOPE
21 VALLEY GROUNDWATER BASIN WAS MORE CONSISTENT WITH THE
22 GROUNDWATER LEVELS AS A GROUNDWATER FLOW DIVIDE THAT
23 SEPARATES IT FROM THE EASTERN EL MIRAGE VALLEY TO THE
24 EAST. I'M NOT SURE WHAT BASIS OF THE LANTON & PHILLIPS
25 BOUNDARY WAS IN THIS PORTION OF THE BASIN.

26 Q BY MR. MILIBAND: IF I CAN DIRECT YOUR
27 ATTENTION TO EXHIBIT 28, PLEASE.

28 THE COURT: BEFORE YOU DO THAT, WHAT IS YOUR

1 USAGE OF THE WORD SUB-UNIT? TELL ME WHAT THAT MEANS.

2 THE WITNESS: A SUB-UNIT IS A SUBSET OF A LARGER
3 GROUNDWATER BASIN.

4 THE COURT: WELL, ARE YOU TALKING ABOUT
5 SEPARATION, OR ARE YOU JUST TALKING ABOUT ARTIFICIAL
6 LINES THAT DELINEATE THE VARIOUS PORTIONS OF THE BASIN.

7 THE WITNESS: NO.

8 THE COURT: PUT 27 BACK UP.

9 THE WITNESS: THESE BOUNDARIES WERE ORIGINALLY
10 DEFINED BY BLOYD. THEY ARE BASED ON HYDROGEOLOGIC
11 CHARACTERISTICS IN THE AREAS. THOSE ARE FAULTS,
12 ESSENTIALLY. SO THIS SOUTHWESTERN BOUNDARY HERE IS A
13 FAULT. IT HAS BEEN MAPPED. THIS NORTHWESTERN BOUNDARY
14 HERE IS ALSO A FAULT THAT HAS BEEN MAPPED. AND THIS
15 BOUNDARY HERE IS A FAULT.

16 IN THE CASE OF THE SOUTHEAST AREA, I AM
17 NOT SURE. THERE IS PROBABLY FLOW DIVIDES BASED ON
18 CONTOUR MAPPING THEY DEVELOPED AT THE TIME. IN GENERAL,
19 THIS AREA HAS DISTINCT HYDROGEOLOGICAL CHARACTERISTICS
20 THAT SEPARATE IT FROM THE NEIGHBORING BASINS.

21 THE COURT: YOU ARE NOT USING THAT TO DEFINE THE
22 WORDS "SUB UNIT" TO DEFINE A SEPARATE BASIN?

23 THE WITNESS: NO.

24 THE COURT: THANK YOU. I JUST WANTED TO CLARIFY
25 IT. THANK YOU.

26 MR. MILIBAND: I MIGHT NEED TO ASK MR. HARDER A
27 CLARIFICATION. WHEN YOU ARE USING THE TERM "SUB UNIT,"
28 ARE YOU SAYING THAT IT'S A SEPARATE BASIN, OR ARE YOU

1 SAYING SOMETHING DIFFERENT?

2 THE COURT: HE JUST ANSWERED THAT, DIDN'T HE?

3 THE WITNESS: I AM JUST SAYING IT'S A SUB-UNIT OF
4 A LARGER BASIN WITH DISTINCT HYDROGEOLOGICAL
5 CHARACTERISTICS.

6 THE COURT: DIFFERENT BUT NOT SEPARATE?

7 THE WITNESS: EXACTLY.

8 Q BY MR. MILIBAND: I THINK WE WILL BE
9 TALKING MORE ABOUT THAT IN A MINUTE.

10 A YES.

11 Q MR. HARDER, IF I CAN DIRECT YOUR ATTENTION
12 TO EXHIBIT 28. WHAT DOES EXHIBIT 28 ILLUSTRATE TO YOU?

13 A THIS IS A GROUNDWATER ELEVATION CONTOUR
14 MAP BASED ON GROUNDWATER LEVELS THAT WERE MEASURED IN
15 MARCH 2013. THE GROUNDWATER CONTOUR MAP COVERS THE
16 SOUTH EASTERN PORTION OF THE ANTELOPE VALLEY GROUNDWATER
17 BASIN AND INTO THE EL MIRAGE GROUNDWATER BASIN.

18 Q DOES EXHIBIT 28 ESSENTIALLY TAKE EXHIBIT
19 26 AND ADD THE CONTOURS TO IT?

20 A YES.

21 Q WAS EXHIBIT 28 ALSO PREPARED BY YOU OR AT
22 YOUR DIRECTION TO YOUR STAFF?

23 A YES, IT WAS.

24 Q WHAT DATA OR INFORMATION WAS USED TO
25 PREPARE EXHIBIT 28, SPECIFICALLY THE GROUNDWATER
26 CONTOURS?

27 A THE WELLS THAT WERE USED AS CONTROL FOR
28 THE CONTOUR MAP ARE SHOWN IN GREEN. YOU CAN SEE THE

1 GREEN DOTS HERE AND THE LABEL OF WHICH WELLS THEY ARE.
2 AND UNDERNEATH THAT IS THE GROUNDWATER ELEVATION THAT
3 WAS MEASURED IN MARCH OF 2013.

4 IN SOME CASES THE DATA WAS MEASURED NOT
5 QUITE IN MARCH OF 2013. WHERE THAT IS THE CASE IT IS
6 INDICATED. THE SOURCES OF THE DATA -- MOST OF THE DATA
7 IS FROM THE U. S. GEOLOGICAL SURVEY ONLINE WEBSITE WHICH
8 PUBLISHES THIS GROUNDWATER DATA ONLINE. IN THE CASE OF
9 PHELAN'S WELLS, WE OBTAINED THEIR GROUNDWATER LEVEL
10 INFORMATION FROM PHELAN'S STAFF.

11 Q WOULD YOU PLEASE DESCRIBE HOW EXHIBIT 28
12 WAS PREPARED.

13 A EXHIBIT 28 WAS PREPARED BY FIRST LOCATING
14 THE CONTROL WELLS THAT WERE USED TO DEVELOP THE
15 GROUNDWATER CONTOUR MAP ACCURATELY IN GIS BASED ON THE
16 COORDINATES THAT WERE PROVIDED ON THE USGS WEBSITE AND
17 THE COORDINATES THAT WE HAVE FROM PHELAN PINON HILLS.

18 WE THEN TOOK THE ELEVATION DATA AND DREW
19 THE CONTOURS ON THE MAP. THOSE CONTOURS, YOU CAN SEE
20 THEY ARE EQUALLY SPACED BETWEEN THE DATA POINTS. THESE
21 CONTOURS ARE ALSO IN A UNIFORM CONTOUR INTERVAL WHICH IS
22 100 FEET, I BELIEVE. WE THEN DIGITIZED THE CONTOUR MAP
23 INTO GIS AND PLOTTED IT ON THIS MAP.

24 Q IS IT FAIR TO SAY THAT THE CONTOURS THEN
25 ALLOW YOU TO INDICATE IN WHICH DIRECTION OR DIRECTIONS
26 GROUNDWATER IS FLOWING?

27 A YES. THE LINES ARE LINES OF EQUAL
28 GROUNDWATER ELEVATION. SO GROUNDWATER FLOW IS GOING TO

1 BE FROM AREAS OF HIGH GROUNDWATER ELEVATION TO AREAS OF
2 LOW GROUNDWATER ELEVATION FLOWING PERPENDICULAR TO THE
3 LINES.

4 Q IN APPROXIMATELY THE MIDDLE OF EXHIBIT 28
5 YOU HAVE A DASHED BLACK LINE WITH AN ARROWHEAD AT THE
6 TOP; IS THAT CORRECT?

7 A YES.

8 Q WHAT IS THAT ILLUSTRATING TO YOU?

9 A WELL, WE PICKED A POINT ON THE CONTOUR MAP
10 TO SHOW WHERE THE FLOW DIRECTION WOULD BE AT THAT
11 LOCATION AS AN EXAMPLE. YOU CAN PUT MORE ON THERE. YOU
12 CAN GENERATE A FLOW NET BASICALLY OF GROUNDWATER FLOW.
13 WE JUST USED IT AS AN EXAMPLE.

14 Q IN THE UPPER LEFT PORTION OF EXHIBIT 28
15 WHERE YOU HAVE SOLID BLUE LINES THAT MAKE A PARTIAL
16 VIEW, WHAT DO THOSE ILLUSTRATE?

17 A ARE YOU TALKING ABOUT RIGHT HERE?

18 Q YES, SIR?

19 A THOSE ARE GROUNDWATER CONTOUR LINES BASED
20 ON THE GROUNDWATER LEVELS THAT ARE MEASURED AT THIS WELL
21 HERE, HERE AND HERE.

22 Q I GUESS MY QUESTION IS WHY ARE THEY
23 SHORTER IN LENGTH THAN THE REST OF THE CONTOURS ON
24 EXHIBIT 28?

25 A WE DID NOT CARRY THEM. AS CAN YOU SEE,
26 THE GROUNDWATER BASIN EXTENDS INTO HERE, THESE AREAS OF
27 GRAY ARE BEDROCK OUTCROPS. AND IT'S WIDELY ASSUMED, I
28 THINK, CONSISTENT WITH THE PHASE-THREE TESTIMONY THAT

1 GROUNDWATER FLOW DOES NOT OCCUR TO ANY MEANINGFUL DEGREE
2 AND TO ANY BEDROCK OUTCROPS.

3 WE COULD HAVE CARRIED THE CONTOURS UP INTO
4 THIS AREA, BUT THERE IS REALLY NO DATA. SO WE TRUNCATED
5 THEM ALONG THIS LINE ROUGHLY CORELATIVE WITH THESE
6 OUTCROPS AND BEDROCK. THE ASSUMPTION IS THAT THE
7 ALLUVIUM IS RELATIVELY SHALLOW IN THAT SO WE DIDN' T
8 CARRY IT THROUGH.

9 Q BASED UPON THE WORK YOU DID IN THE
10 PREPARATION OF EXHIBIT 28, HOW WOULD YOU DESCRIBE THE
11 GROUNDWATER FLOW WITHIN THIS PORTION OF YOUR STUDY AREA
12 AS DEPICTED IN EXHIBIT 28?

13 A WELL, THE GROUNDWATER FLOW DIRECTION
14 VARIES FOR THE SOUTHEAST PORTION OF THE ADJUDICATION
15 AREA IN THE ANTELOPE VALLEY GROUNDWATER BASIN, IT FLOWS
16 TO THE NORTHEAST.

17 Q FOR A CLEAR RECORD, WOULD YOU PLEASE
18 IDENTIFY WHERE YOU ARE POINTING TO WITH YOUR LASER
19 POINTER.

20 A I AM POINTING TO THE SOUTHEAST PORTION OF
21 THE ANTELOPE VALLEY ADJUDICATION AREA. I BELIEVE THAT'S
22 IN THE VICINITY OF MESCAL CREEK.

23 Q AND THAT'S WEST OF THE COUNTY LINE; IS
24 THAT CORRECT?

25 A THAT'S WEST OF THE COUNTY LINE.
26 GROUNDWATER FLOWS TO THE NORTHEAST. AND THEN AS YOU GET
27 FARTHER NORTH, THE FLOW DIRECTION CHANGES, BECOMES
28 NORTHERLY AND THEN FLOWS TO THE NORTHWEST.

1 Q WHAT ABOUT EAST OF THE COUNTY LINE? HOW
2 WOULD YOU DESCRIBE THE GROUNDWATER FLOW DIRECTION OR
3 DIRECTIONS?

4 A WELL, GROUNDWATER FLOW EAST OF THE COUNTY
5 LINE IS CONTROLLED TO SOME DEGREE BY SHEEP CREEKS WASH
6 WHICH RECHARGED WITHIN THAT WASH. IT CREATES A BIT OF A
7 MOUND AND SUCH THAT GROUNDWATER ON THE WEST SIDE OF THIS
8 EL MIRAGE ANTELOPE VALLEY GROUNDWATER BASIN BOUNDARY
9 FLOWS TO THE WEST.

10 THE COURT: TO WHERE?

11 THE WITNESS: TO THE WEST, THE NORTHWEST AND
12 GROUNDWATER TO THE EAST. THE EL MIRAGE DRY LAKE AREA
13 FLOWS TO THE NORTH ULTIMATELY FLOWING TOWARDS EL MIRAGE
14 DRY LAKE. IT'S A GROUNDWATER FLOW DIVIDE.

15 Q WHEN YOU SAY IT'S A GROUNDWATER FLOW
16 DIVIDE, WHAT ARE YOU REFERRING TO?

17 A I'M REFERRING TO THIS BOUNDARY BETWEEN THE
18 ANTELOPE VALLEY GROUNDWATER BASIN AND THE EL MIRAGE DRY
19 GROUNDWATER BASIN.

20 Q MR. HARDER, IF I CAN DIRECT YOUR ATTENTION
21 TO EXHIBIT 29, PLEASE. WHAT DOES EXHIBIT 29 ILLUSTRATE
22 TO YOU?

23 A EXHIBIT 29 SHOWS HYDROGRAPHS WHICH ARE
24 GRAPHS OR PLOTS OF GROUNDWATER LEVELS OVER TIME FOR
25 SELECTED WELLS IN THE BUTTES SUB-UNIT. THE WELL
26 LOCATIONS ARE INDICATED BY THE GREEN DOTS. THE
27 HYDROGRAPHS ARE SHOWN IN THE CHARTS. THE Y AXIS OF EACH
28 CHART IS THE GROUNDWATER ELEVATION. THE X AXIS IS TIME.

1 THE CHARTS ARE ALL CONSISTENT. THEY GO
2 FROM 1951 TO 2006. YOU CAN'T SEE THAT ON THERE. THE
3 BLUE DATA OR BLUE LINES HERE ARE MEASURED GROUNDWATER
4 LEVELS THAT WERE MEASURED AT EACH OF THOSE WELLS. IN
5 SOME CASES THE MEASURED GROUNDWATER LEVELS ARE CONNECTED
6 BY A LINE.

7 Q WAS EXHIBIT 29 PREPARED BY YOU OR AT YOUR
8 DIRECTION TO YOUR STAFF?

9 A IT WAS PREPARED BY A COMBINATION OF ME,
10 AND SOME OF MY STAFF WORKED ON IT AS WELL.

11 Q AND YOU HAVE IDENTIFIED HYDROGRAPHS AS A
12 SOURCES OF DATA. WHAT OTHER DATA WENT INTO THE
13 PREPARATION OF EXHIBIT 29?

14 A WELL, WE UTILIZED THE LOCATIONS OF THE
15 WELLS THAT WE OBTAINED, AS I MENTIONED EARLIER, FROM THE
16 U. S. GEOLOGICAL SURVEY. WE PLOTTED THEM ON A MAP WITH
17 BUTTES SUB-UNIT BOUNDARY AND THE PEARLAND SUB-UNIT
18 BOUNDARY. OTHER THAN THAT IT'S JUST GROUNDWATER LEVELS.

19 Q OF THE SIX HYDROGRAPHS DEPICTED ON EXHIBIT
20 29, ARE THEY ALL LOCATED WITHIN THE BUTTES SUB-UNIT?

21 A THESE WELLS ARE. YES.

22 Q A FEW MOMENTS AGO WE LOOKED AT OTHER
23 EXHIBITS WHERE THERE WERE OTHER WELLS; DO YOU RECALL
24 THAT?

25 A YES.

26 Q ARE ANY OF THE WELLS DEPICTED IN
27 EXHIBIT 29 SOME OF THOSE WELLS THAT WERE DEPICTED IN
28 THAT EARLIER EXHIBIT? AND, FOR CLARITY, THAT IS EXHIBIT

1 27.

2 A NO. THESE ARE WHAT I WOULD REFER TO, WITH
3 THE EXCEPTION OF CSD NUMBER 10 AND CSD NUMBER 6-A, THESE
4 ARE MONITORING WELLS, USGS.

5 Q AND CSD 10 AND 6-A ARE THOSE PHELAN WELLS,
6 10 AND 6-A?

7 A THOSE ARE PHELAN'S WELLS THAT ARE LOCATED
8 EAST OF THE COUNTY BOUNDARY.

9 Q AND OF THE FOUR HYDROGRAPHS FOR OTHER
10 WELLS WITHIN THE BUTTES SUB-UNIT, WHEN YOU SAY
11 "MONITORING WELLS," WHAT DO YOU MEAN BY THE PHRASE?

12 A WHAT I MEAN BY THAT IS THEY ARE NOT
13 PUMPING WELLS. IN OTHER WORDS, THOSE WELLS ARE NOT
14 ACTIVELY PUMPING GROUND WATER. SO THE GROUND WATER
15 LEVELS ARE INDICATIVE OF STATIC CONDITIONS.

16 Q AND STATIC, WHAT IMPORTANCE OR
17 SIGNIFICANCE DOES STATIC CONDITIONS PRESENT TO YOU IN
18 YOUR EVALUATION OF THE BUTTE SUB-UNIT?

19 A WHEN WELLS ARE PUMPED, IT LOWERS THE
20 GROUNDWATER LEVEL IN THE WELL. PUMPING WELLS,
21 OFTENTIMES YOU NEED TO ALLOW THEM, IN OTHER WORDS, TO
22 GET A TRUE CONDITION OF THE AQUIFER, YOU WOULD WANT IT
23 TO BE OFF AND GET A STATIC CONDITION OF THE AQUIFER.

24 YOU WOULDN'T WANT TO PRODUCE A HYDROGRAPH
25 OF PUMPING OTHERWISE THIS WOULD BE VERY JAGGED. SO WE
26 TRIED TO GET STATIC CONDITION GROUNDWATER LEVELS. AND
27 MONITORING WELLS ARE IDEAL FOR THAT. THE REASON BEING
28 IS THAT SOMETIMES PRODUCTION WELLS WE DON'T KNOW HOW

1 LONG THEY ARE ALLOWED TO REST BEFORE THE WATER LEVEL IS
2 TAKEN. WE DON'T KNOW IF IT'S INDICATIVE OF TRUE STATIC
3 CONDITIONS.

4 THE COURT: WELL, ARE THESE MONITORING WELLS, OR
5 ARE THESE PUMPING WELLS THAT ARE SHOWN ON EXHIBIT 29?

6 MR. MILIBAND: YES, YOUR HONOR.

7 THE WITNESS: THESE FOUR WELLS ARE MONITORING
8 WELLS. THESE TWO OVER HERE ARE PHELAN'S WELLS WHICH
9 THEY PUMP GROUNDWATER FROM. NOW, THEY ALLOW -- WHEN WE
10 GET THESE WATER LEVELS, THESE WATER LEVELS ARE STATIC
11 WATER LEVELS THAT WERE TAKEN AFTER THE WELLS WERE OFF.
12 THEY ARE NOT PUMPING WATER WELLS, BUT THEY ARE ACTIVE
13 PUMPING WELLS.

14 (PHONE INTERRUPTION.)

15 THE COURT: LET'S DO THAT AGAIN. WE'VE GOT FOUR
16 HYDROGRAPHS THAT ARE MONITORING WELLS.

17 THE WITNESS: RIGHT.

18 THE COURT: WE HAVE TWO THAT ARE PUMPING WELLS.

19 THE WITNESS: RIGHT.

20 THE COURT: BUT YOU SAY THEY ARE INACTIVE PUMPING
21 WELLS?

22 THE WITNESS: THE WATER LEVELS WERE TAKEN AFTER
23 THE PUMPS WERE TURNED OFF.

24 THE COURT: FOR HOW LONG?

25 THE WITNESS: THAT I DON'T KNOW.

26 THE COURT: ARE ANY OF THOSE HYDROGRAPHS WELL 14?

27 THE WITNESS: NO.

28 THE COURT: HAVE YOU DONE ONE FOR WELL 14?

1 THE WITNESS: YES.

2 THE COURT: WE WILL GET TO THAT I AM SURE.

3 MR. MILIBAND: YES, YOUR HONOR.

4 THE COURT: GO AHEAD.

5 MR. KUHS: YOUR HONOR, MAY I ASK A QUESTION FOR
6 CLARIFICATION?

7 THE COURT: WELL, WHY DON'T YOU WAIT UNTIL
8 CROSS-EXAMINATION. WE'RE GOING TO GO BACK TO THESE
9 EXHIBITS, I AM SURE, FOR SOMEBODY.

10 Q BY MR. MILIBAND: MR. HARDER, WHEN I WAS
11 ASKING YOU ABOUT THE SIGNIFICANCE OF LOOKING AT
12 MONITORING WELLS, IS IT A FAIR STATEMENT THAT THE
13 MONITORING WELLS HELP ENSURE PROVIDING YOU WITH AN
14 ACCURATE BASIS ON WHICH TO FORMULATE ANY KIND OF
15 CONCLUSION OR OPINION AS TO THE CONDITIONS WITHIN THE
16 BUTTE SUB-UNIT?

17 A YES. THAT'S ACCURATE.

18 Q AND WHEN YOU LOOKED TO PRODUCTION WELLS
19 SUCH AS YOU DID HERE WITH PHELAN'S WELLS 10 AND 6-A,
20 WHAT SORT OF STANDARD WOULD YOU LIKE TO SEE TO ENSURE
21 THAT A STATIC LEVEL HAS BEEN REACHED IN ORDER TO HAVE
22 THAT SAME OR SIMILAR LEVEL OF CONFIDENCE THAT YOU HAVE
23 WHEN LOOKING AT THE STATIC LEVEL OF THE MONITORING WELL?

24 A YOU KNOW, IT DEPENDS.

25 Q ON WHAT?

26 A ON THE PERMEABILITY OF THE AQUIFER IN
27 WHICH THE WELL IS CONSTRUCTED. HIGHLY PERMEABLE WELLS,
28 THE WATER LEVEL CAN RETURN TO STATIC CONDITIONS AFTER

1 PUMPING IS TURNED OFF WITHIN HOURS OR EVEN MINUTES. IF
2 THE WELL IS COMPLETED IN A LOWER PERMEABILITY UNIT, IT
3 CAN TAKE DAYS. SO IT'S REALLY SPECIFIC TO THE
4 CONDITIONS OF THE AQUIFER IN THE WELL.

5 THESE WELLS ARE CONSTRUCTED IN A
6 RELATIVELY PERMEABLE AQUIFER. SO I WOULD EXPECT THEM TO
7 RECOVER TO STATIC CONDITIONS RELATIVELY QUICKLY.

8 Q WHEN YOU SAY "RELATIVELY QUICKLY," CAN YOU
9 QUANTIFY WITH AN ESTIMATE HOW QUICKLY THAT WOULD BE?

10 A I CAN'T. NO.

11 Q MR. HARDER, IF I CAN DIRECT YOUR ATTENTION
12 TO WHAT HAS BEEN MARKED AS EXHIBIT 30, PLEASE. WHAT
13 DOES EXHIBIT 30 ILLUSTRATE TO YOU, MR. HARDER?

14 A IT'S AN EXHIBIT OUT OF APPENDIX E OF THE
15 SUMMARY EXPERT REPORT. IT'S A REPORT PREPARED BY
16 WILDERMUTH ENVIRONMENTAL. AND WHAT IT SHOWS ARE
17 GROUNDWATER STORAGE CHANGES ACROSS THE ANTELOPE VALLEY
18 ADJUDICATION AREA DUE TO GRAVITY DRAINAGE. AND IT'S FOR
19 SPECIFIED PERIODS IN TIME STARTING IN 1951 AND GOING
20 THROUGH 2009.

21 Q WAS EXHIBIT 30 PREPARED BY YOU OR AT YOUR
22 DIRECTION TO YOUR STAFF?

23 A WE DIDN'T PREPARE THIS. WE BASICALLY TOOK
24 IT FROM THE SUMMARY EXPERT REPORT.

25 Q AND DID YOU REVIEW AT LEAST THAT PORTION
26 OF THE SUMMARY EXPERT REPORT TO WHICH EXHIBIT 30 RELATES
27 TO?

28 A WE DID.

1 Q AND WHICH PORTION OF THE SUMMARY EXPERT
2 REPORT WAS THAT THAT YOU REVIEWED?

3 A IT WAS APPENDIX E.

4 Q AND WHAT IS YOUR UNDERSTANDING AS TO WHAT
5 APPENDIX E WAS DEALING WITH IN TERMS OF THE SUBJECT
6 MATTER?

7 A WELL, I THINK IT WAS DEALING WITH STORAGE
8 CHANGE AND GROUNDWATER LEVELS IN THE BASIN. I DON'T
9 RECALL THE EXACT TITLE OF APPENDIX E, BUT THIS IS PART
10 OF IT.

11 Q BUT, GENERALLY, CHANGES STORED,
12 CALCULATIONS?

13 A UH-HUH. GROUNDWATER LEVEL CHANGES OVER
14 TIME.

15 Q WHY DID YOU LOOK AT APPENDIX E AND
16 PARTICULARLY UTILIZE THIS PAGE THAT IS DEPICTED WITHIN
17 EXHIBIT 30?

18 A WELL IF YOU LOOK AT GROUNDWATER STORAGE
19 CHANGE OVER TIME, IT'S AN INDICATION OF THE CONDITION OF
20 THE GROUNDWATER BASIN. SO DURING PERIODS OF
21 OVERDRAFT -- AND MAYBE FOR CLARIFICATION HERE, THE RED
22 COLORED AREAS INDICATE NEGATIVE CHANGES IN STORAGE. IN
23 OTHER WORDS, THE GROUNDWATER STORAGE IS GOING DOWN, AND
24 GROUNDWATER LEVELS ARE DROPPING.

25 AREAS OF GREEN INDICATE AREAS WHERE
26 GROUNDWATER LEVELS ARE RISING AND STORAGE IS INCREASING.
27 AND THE WHITE AREAS WITHIN THE ANALYSIS AREA ARE AREAS
28 WHERE THERE IS NO CHANGE. SO DURING PERIODS WHEN THE

1 AREAS ARE RED, THOSE AREAS HAVE A DECREASING STORAGE SO
2 THAT RECHARGE IS NOT BALANCED WITH THE DISCHARGE.

3 DISCHARGE EXCEEDS THE RECHARGE, AND THE
4 GROUNDWATER STORAGE IS GOING DOWN AND VICE VERSA. AND
5 IN THE GREEN AREAS RECHARGE EXCEEDS, THE DISCHARGE AND
6 THE GROUNDWATER LEVELS ARE COMING UP.

7 Q AND IN LOOKING AT EXHIBIT 30 AND BASED
8 UPON THE WORK THAT YOU HAVE DONE, DO YOU SEE ANY SORT OF
9 TREND OR PATTERN PARTICULARLY AS DEPICTED WITHIN THE
10 ILLUSTRATIONS IN EXHIBIT 30?

11 A WELL, WE FOCUSED ON THE TIME FROM ABOUT
12 1992 TO 2009 AND FOCUSED ON THE AREA OF THE BUTTE
13 SUB-UNIT REALLY BECAUSE THAT WAS OUR STUDY AREA. SO WE
14 DID NOT FOCUS ON THE REST OF THE BASIN.

15 Q AND WHY WAS THERE A FOCUS AT LEAST ON THAT
16 ONE-TIME PERIOD OF 1992 TO 1999?

17 A WELL, WHEN I LOOKED AT THE HYDROGRAPH THAT
18 WE JUST LOOKED AT BEFORE, GROUNDWATER LEVELS IN THE
19 BASIN HAVE COME UP AND GONE DOWN OVER TIME DURING
20 VARIOUS CONDITIONS. AND, ACTUALLY, FOR THE PERIOD
21 BETWEEN ABOUT 1980 TO 2006, GROUNDWATER LEVELS WERE
22 EITHER RISING OR STABLE. SO I WANTED TO LOOK AT THAT
23 AREA, THAT CONDITION SPECIFIC TO THE SOUTHEAST PORTION
24 OF THE ADJUDICATION AREA AND THE AREA OF WELL 14.

25 Q I WANT TO BREAK THAT DOWN A LITTLE BIT.
26 YOU SAID RISING OR STABLE. I WOULD LIKE TO BREAK THAT
27 DOWN TO ORALLY AND SPACIALLY.

28 A OKAY.

1 Q WHEN YOU USE RISING OR STABLE, WHAT TIME
2 PERIOD ARE YOU UTILIZING TO SAY THAT THERE WAS RISING
3 AND STABLE AND WHAT SPECIFIC AREA?

4 A WOULD YOU BE WILLING TO GO BACK TO THE
5 HYDROGRAPHS FOR THAT?

6 Q ABSOLUTELY.

7 A I REALLY NEED TO LOOK AT THAT TO ANSWER
8 THAT QUESTION.

9 Q WE WILL JUMP BACK TO EXHIBIT 29.

10 A OKAY. I WILL LOOK AT WELL 22 D-1. IT'S
11 IN THE UPPER LEFT-HAND CORNER, AND THESE BLUE LINES ARE
12 THE HYDROGRAPHS. BETWEEN 1951 AND I WOULD SAY THROUGH
13 ABOUT 1970, GROUNDWATER LEVELS WERE DECLINING AT LEAST
14 IN THIS AREA. AT ABOUT THAT TIME THEY BECAME STABLE.
15 AND EVEN DURING THE 1980'S THEY BEGAN TO RISE SOMEWHAT.
16 THEY WERE PRETTY MUCH STABLE UP UNTIL 2006.

17 Q MR. HARDER, I WOULD JUST LIKE TO INTERRUPT
18 FOR CLARITY. YOU ARE POINTING TO THE HYDROGRAPH IN THE
19 UPPER-LEFT CORNER OF EXHIBIT 29 WHICH IS ALSO DEPICTED
20 ON THAT EXHIBIT AS SIX NORTH, ONE SOUTH; IS THAT
21 CORRECT?

22 A SIX NORTH, TEN WEST.

23 Q I THOUGHT YOU WOULD GET THAT ONE RIGHT.

24 A 22 D-1.

25 Q RIGHT. OKAY. THANK YOU. PLEASE CARRY
26 ON.

27 A AND THAT'S A SIMILAR PATTERN THAT WE HAVE
28 SEEN IN OTHER HYDROGRAPHS. IF YOU LOOK AT 111, THERE

1 WAS AN INITIAL DECLINE, A STABILIZATION RISING
2 GROUNDWATER LEVELS INTO THE 80' S AND THEN THE
3 STABILIZATION UP THROUGH THE 2000' S. HERE IS ANOTHER
4 ONE, 5-R. THERE ARE TEMPORAL CHANGES IN GROUNDWATER
5 LEVELS, BUT OVERALL THEY ARE RELATIVELY STABLE.

6 SO IN TERMS OF LOOKING AT THAT, THAT'S AT
7 A POINT IN SPACE. I ALSO WANT TO LOOK AT IT -- MARK
8 WILDERMUTH PREPARED AN AERIAL VIEW, A MAP VIEW OF
9 CHANGES IN STORAGE OVER TIME FOR THE ENTIRE AREA.

10 THE COURT: YOU STARTED TO SAY UNTIL 2006.

11 THE WITNESS: RIGHT.

12 THE COURT: ALL RIGHT. WHY DON'T YOU FINISH THAT
13 SENTENCE. WHAT WAS HAPPENING AFTER 2006?

14 THE WITNESS: WELL, AFTER 2006 WE HAVE SEEN
15 LOCALIZED AREAS WHERE GROUNDWATER AREAS WERE BEGINNING
16 TO DECLINE.

17 Q BY MR. MILIBAND: AND WHERE HAVE YOU SEEN
18 THOSE LOCALIZED AREAS?

19 A CAN YOU GO BACK TO THE HYDROGRAPH.

20 Q SURE.

21 A I'M SORRY.

22 Q BACK TO EXHIBIT 29, WHERE ARE YOU
23 REFERENCING WHEN YOU ARE SAYING LOCALIZED AREAS?

24 A THIS 5-R TO HERE NEAR BIG ROCK WASH. SO
25 IT'S BEEN ABOUT SINCE 2005 WE HAVE SEEN A BIT OF A
26 DECLINE IN THAT STORAGE. NOW, THERE COULD BE MULTIPLE
27 REASONS FOR THAT.

28 Q SUCH AS?

1 A SUCH AS, WE HAVE BEEN IN A RELATIVELY DRY
2 PERIOD SINCE 2006, AND THAT WELL IS RELATIVELY SHALLOW.
3 IT'S LESS THAN 150 FEET DEEP, AND IT'S LOCATED RIGHT
4 ALONG BIG ROCK WASH. IT MAY BE A COMBINATION OF A DRY
5 PRECIPITATION PERIOD.

6 IT'S ALSO LOCATED DUE SOUTH OF THE RETLAW
7 RANCH WHERE YOU CAN'T SEE ON THAT MAP.

8 THE COURT: WILL YOU SHOW US ON EXHIBIT 28 WHERE
9 THAT IS.

10 THE WITNESS: SURE.

11 THE COURT: OR EXHIBIT 27.

12 THE WITNESS: ON THIS MAP, THAT WELL WOULD BE
13 LOCATED RIGHT ABOUT WHERE MY POINTER IS.

14 Q BY MR. MILIBAND: AND, FOR THE RECORD,
15 SINCE THE RECORD CANNOT SEE THE PICTURE, RETLAW IS IN
16 THE CENTER; IS THAT RIGHT?

17 A I'M SORRY?

18 Q RETLAW RANCH IS IN THE CENTER?

19 A THIS BLUE AREA WITH THESE GREEN WELLS,
20 THIS IS THE RETLAW RANCH.

21 THE COURT: THOSE ARE BOLTHOUSE?

22 THE WITNESS: THOSE ARE BOLTHOUSE, YES.

23 Q BY MR. MILIBAND: THE ONE WELL, WAS IT
24 5-R?

25 A YES.

26 Q AND THE BIG ROCK CREEK?

27 A UH-HUH.

28 Q WASH AREA, THAT IS A LITTLE SOUTH OF THE

1 RETLAW RANCH; IS THAT CORRECT?

2 A UH-HUH.

3 Q YOU HAVE SEEN SOME DECLINE TO SOME EXTENT?

4 A RIGHT.

5 Q AND THAT'S WITHIN THAT ONE HYDROGRAPH; IS
6 THAT CORRECT?

7 A THAT'S CORRECT.

8 Q DOES THAT MODIFY OR OTHERWISE AFFECT YOUR
9 STATEMENT FROM A FEW MOMENTS AGO THAT LEVELS WITHIN THE
10 BUTTE SUB-UNIT HAVE BEEN RELATIVELY STABLE OR EVEN
11 RISING?

12 A IT DOESN'T CHANGE THAT. IT DOESN'T CHANGE
13 IT, BECAUSE IT'S TEMPORARILY RESTRICTED. IN OTHER
14 WORDS, THE 1980'S THROUGH THE 2006, THEY SEEM TO HAVE
15 BEEN FAIRLY STABLE IN THOSE WELLS AND IN THIS AREA. I
16 THINK AFTER THAT WE HAVE SEEN SOME DECLINES.

17 Q AND WHEN YOU SAY "SOME DECLINES" THAT IS
18 WHEN YOU ARE TALKING ABOUT 5-R?

19 A 5-R. WE HAVE SEEN SOME DECLINES OUTSIDE
20 OF THE BUTTE SUB-UNIT TOO IN THIS AREA SINCE THAT TIME.

21 Q YOU'RE REFERRING TO THE HIGH VISTA AREA?

22 A I AM REFERRING TO THE HIGH VISTA AREA IN
23 THE VICINITY OF S&P ROWEN RANCH AS WELL.

24 Q WHEN YOU SAY S&P ROWEN RANCH, THAT IS THE
25 BOLTHOUSE AGRICULTURAL WELLS THAT YOU REFERRED TO
26 EARLIER; IS THAT CORRECT?

27 A THAT'S CORRECT.

28 THE COURT: BUT THE DECLINE IS SHOWN BY THE

1 MONITORING WELLS; IS THAT RIGHT?

2 THE WITNESS: YES.

3 THE COURT: THANK YOU.

4 Q BY MR. MILIBAND: MR. HARDER, I WOULD LIKE
5 TO JUMP BACK TO EXHIBIT 30 FOR A MOMENT. A LITTLE
6 EARLIER TODAY YOU INDICATED THAT GREEN ILLUSTRATES TO
7 YOU THAT RECHARGE IS GREATER THAN DISCHARGE; IS THAT
8 CORRECT?

9 A THE GREEN INDICATES THAT THE STORAGE HAS
10 BEEN POSITIVE DURING THAT TIME. AND SO THE INFERENCE
11 WOULD BE THAT RECHARGE EXCEEDED THE DISCHARGE IN THAT
12 AREA DURING THAT TIME. YES.

13 Q IF WE WERE TO FOCUS A MOMENT ON THE
14 LOWER-RIGHT ILLUSTRATION IN EXHIBIT 30 WHICH IS THE 2006
15 TO 2009 TIME PERIOD, HOW WOULD YOU CHARACTERIZE THE
16 STORAGE CONDITION FOR THAT TIME PERIOD WITHIN THE LOWER
17 RIGHT-HAND AREA OF THE BUTTE SUB-UNIT?

18 A WELL, FROM 2006 TO 2009 SPECIFIC TO THE
19 FURTHEST SOUTHEAST AREA OF THE ANTELOPE VALLEY
20 ADJUDICATION AREA ACCORDING TO THIS MAP IT'S EITHER
21 POSITIVE OR NO CHANGE IN STORAGE.

22 Q WHAT DOES NO CHANGE IN STORAGE MEAN TO
23 YOU?

24 A IT MEANS STABLE GROUNDWATER LEVELS. THEY
25 ARE NOT MOVING EITHER UP OR DOWN.

26 Q AND WHAT DOES POSITIVE CHANGE IN STORAGE
27 MEAN TO YOU?

28 A THAT MEANS GROUNDWATER LEVELS ARE RISING

1 TO SOME DEGREE.

2 Q AND THOUGH IT'S A LITTLE SMALL EVEN
3 PROJECTED ON THE SCREEN, MAYBE THE HARD COPY IN FRONT OF
4 YOU WOULD BE EASIER TO REFERENCE. AGAIN, LOOKING AT
5 THAT 2006 TO 2009 ILLUSTRATION, WHERE APPROXIMATELY
6 WOULD YOU PLACE WELL 14?

7 A I BELIEVE WE HAVE IT ON ANOTHER MAP, BUT
8 IT WOULD BE APPROXIMATELY RIGHT HERE.

9 Q MAYBE IT'S A GOOD TIME -- WHY DON'T WE
10 TURN TO EXHIBIT 31 --

11 THE COURT: YOU PUT YOUR LASER IN THE WHITE AREA.
12 IS THAT INTENTIONAL?

13 THE WITNESS: WELL, HE IS ASKING WHERE WELL 14
14 WOULD BE ON THAT MAP, AND THAT IS WHERE IT WOULD BE.

15 THE COURT: IN THE WHITE AREA, NOT IN THE GREEN
16 AREA?

17 THE WITNESS: IN THE WHITE AREA. THAT IS
18 CORRECT.

19 Q BY MR. MILIBAND: THAT WAS A BIT UNFAIR OF
20 ME TOO. IF WE TURN TO EXHIBIT 31, IT MIGHT MAKE IT A
21 WHOLE LOT EASIER. I WOULD LIKE TO DIRECT YOUR ATTENTION
22 TO EXHIBIT 31, MR. HARDER.

23 A SO HERE IS WELL 14.

24 THE COURT: WERE THEY MONITORING WELLS IN THAT
25 AREA?

26 THE WITNESS: THERE ARE A FEW, YOUR HONOR. THERE
27 IS NOT VERY MANY. THIS IS REALLY A DATA-FOUR AREA.

28 Q BY MR. MILIBAND: MR. HARDER, WOULD YOU

1 PLEASE EXPLAIN WHAT EXHIBIT 31 ILLUSTRATES TO YOU.

2 A EXHIBIT 31, WHAT WE HAVE DONE IS TAKEN
3 THOSE COLORIZED STORAGE CHANGE MAPS. WE'VE REGISTERED
4 THEM IN GIS AND PLOTTED THEM AT A LARGER SCALE AGAINST
5 THE MAP THAT SHOWS THE SUB-UNIT BOUNDARIES AND THE WELLS
6 THAT ARE IN THE SUB-UNITS FOR THE PREVIOUS EXHIBITS.

7 SO THIS MAP IS JUST A BLOWUP OR EXPANSION
8 OF WHAT WE JUST SAW IN THE PREVIOUS EXHIBIT FOR THE
9 PERIOD OF 1992 TO 1997. AGAIN, THIS IS FROM APPENDIX E
10 OF THE SUMMARY EXPERT REPORT.

11 Q AND OTHER THAN THE INFORMATION THAT YOU
12 UTILIZED FROM THE APPENDIX E AND THE SUMMARY EXPERT
13 REPORT, WAS THIS EXHIBIT 31 PREPARED BY YOU OR AT THE
14 DIRECTION TO YOUR STAFF?

15 A THIS WAS PREPARED AT THE DIRECTION OF ME
16 BUT PREPARED BY MY STAFF.

17 Q AND JUST SO I AM CLEAR, WAS THIS
18 ESSENTIALLY USING A LOT OF THE SAME DATA AND INFORMATION
19 THAT YOU DESCRIBED ALREADY FOR SOME OF THE EARLIER
20 EXHIBITS?

21 A IT IS.

22 Q AND WHAT SIGNIFICANCE IF ANY DOES
23 EXHIBIT 31 PRESENT TO YOU?

24 A WELL, THIS GOES BACK -- I SUPPOSE WE COULD
25 HAVE LOOKED AT SOME OF THE EARLIER STORAGE CHANGE MAPS
26 AS WELL. I STARTED IN 1992 TO JUST TRY TO GET A FEEL
27 FOR WHAT THE CONDITION OF THE AQUIFER SYSTEM WAS DURING
28 THAT TIME PERIOD. AND WHAT THIS SHOWS IS THAT BETWEEN

1 1992 AN 1997 IN THE MAJORITY OF THE BUTTE SUB-UNIT
2 GROUNDWATER LEVELS WERE EITHER RISING OR STABLE.

3 Q AND AS YOU SIT HERE NOW, IS THERE ANYTHING
4 ELSE THAT JUMPS OUT AT YOU IN TERMS OF SIGNIFICANCE AS
5 IT RELATES TO EXHIBIT 31?

6 A I THINK THE THING THAT JUMPED OUT TO ME
7 INITIALLY WHEN I DID THIS AND PLOTTED IT UP IS THAT THE
8 S&P ROWEN RANCH IS NOT INCLUDED IN THE AREA THAT WAS
9 EVALUATED FOR THE STORAGE CHANGE. AND FOR WHATEVER
10 REASON, IT CUTOFF THE SOUTHEAST PORTION OF THE ANTELOPE
11 VALLEY ADJUDICATION AREA.

12 OTHER THAN THAT, IT'S BASICALLY SHOWING
13 STABLE GROUNDWATER LEVELS IN THE VICINITY OF WELL 14
14 WHICH IS ALSO CONSISTENT WITH WHAT WAS STATED IN THE
15 SUMMARY EXPERT REPORT AS WELL. THEY STATED AS MUCH IN
16 THE ACTUAL TEXT.

17 Q ALL RIGHT. MR. HARDER, IF I CAN DIRECT
18 YOUR ATTENTION TO THE NEXT IN ORDER, EXHIBIT 32, PLEASE.

19 IS EXHIBIT 32, SIMILAR TO EXHIBIT 31
20 EXCEPT THAT IT'S LOOKING AT A DIFFERENT TIME PERIOD?

21 A THAT'S CORRECT. THE TIME PERIOD HERE IS
22 FROM 1998 TO 2005.

23 Q AND WHAT DIFFERENCE OR DIFFERENCES DOES
24 EXHIBIT 32 ILLUSTRATE TO YOU IF ANY AS COMPARED TO
25 EXHIBIT 31?

26 A WELL, AS I SAID BEFORE, WHEN YOU LOOK AT A
27 HYDROGRAPH, GROUNDWATER LEVELS ARE GOING TO GO UP AND
28 DOWN OVER TIME. AND IN THIS CASE DURING THIS TIME

1 PERIOD THROUGHOUT A LARGE PORTION OF THE SUB-UNIT,
2 GROUNDWATER LEVELS ARE DROPPING WITH THE EXCEPTION OF
3 SOME AREAS. IN THE SOUTHEAST PORTION THOUGH, ACCORDING
4 TO THIS, IT IS STABLE, NO CHANGE IN GROUNDWATER STORAGE
5 IN THE VICINITY OF WELL 14.

6 Q MOVING ALONG TO EXHIBIT 33, SIMILARLY,
7 THIS EXHIBIT 33 IS ESSENTIALLY THE SAME IN TERMS OF
8 PREPARATION AND DATA?

9 A YES.

10 Q BUT DEPICTING A DIFFERENT TIME; IS THAT
11 CORRECT?

12 A THAT'S CORRECT.

13 Q WHAT IS THE TIME PERIOD DEPICTED BY
14 EXHIBIT 33?

15 A THE 2006 TO 2009.

16 Q WHAT SIGNIFICANCE DOES EXHIBIT 33 PRESENT
17 TO YOU?

18 A IT STILL -- IT'S JUST A DIFFERENT TIME
19 PERIOD. IN THIS PARTICULAR TIME PERIOD, ACCORDING TO
20 THIS ANALYSIS, WE HAVE POSITIVE STORAGE CHANGE THROUGH A
21 LARGER PORTION OF THE SUB-UNIT. THERE ARE STILL AREAS
22 THAT ARE DECLINING. BUT MORE SIGNIFICANTLY NEAR WELL 14
23 INDICATES IT'S STILL STABLE GROUNDWATER LEVELS.

24 Q GENERALLY, IS IT A FAIR STATEMENT THAT
25 THERE IS MORE GREEN OR WHITE THAN THERE ARE THE SHADES
26 OF ORANGE OR RED?

27 A YEAH. IT'S HARD TO PUT THAT OBJECTIVELY,
28 BUT IN GENERAL, YES. IT APPEARS THERE IS MORE GREEN

1 THAN RED DURING THIS TIME PERIOD.

2 Q ANYTHING ELSE OF SIGNIFICANCE TO YOU AS IT
3 RELATES TO EXHIBIT 33?

4 A NO.

5 Q MOVING TO THE NEXT IN ORDER, EXHIBIT 34.
6 PLEASE TURN TO THAT. WHAT DOES EXHIBIT 34 ILLUSTRATE TO
7 YOU, MR. HARDER?

8 A THIS IS THE SAME TYPE OF MAP SHOWING
9 CHANGES IN STORAGE, BUT IT'S FOR THE CUMULATIVE PERIOD
10 OF 1951 TO 2009. SO IT SHOWS AREAS OF GREEN, POSITIVE
11 STORAGE CHANGE OVER THAT TIME PERIOD THROUGHOUT PORTIONS
12 OF THE BUTTE SUB-UNIT. AND IT SHOWS AREAS OF NEGATIVE
13 STORAGE CHANGE OVER OTHER PORTIONS OF THE BUTTE
14 SUB-UNIT.

15 Q AND ULTIMATELY WHAT REFERENCES OR
16 INFERENCE, RATHER, DO YOU MAKE IF ANY AS IT RELATES TO
17 EXHIBIT 34?

18 A WELL, IT JUST TELLS ME THAT DURING THIS
19 PERIOD THERE HAS BEEN AREAS WHERE THE STORAGE HAS BEEN
20 POSITIVE, AND THERE'S BEEN AREAS WHERE THE STORAGE IS
21 NEGATIVE INCLUDING THE WELL 14 AREAS RIGHT ON THE
22 BOUNDARY BETWEEN POSITIVE AND NEGATIVE, WHICH MEANS IT'S
23 PRETTY STABLE.

24 I THINK ONE OF THE THINGS THAT JUMPED OUT
25 TO ME WHEN REVIEWING THIS MAP IS IF YOU LOOK AT THE
26 NORTHWESTERN BUTTE SUB-UNIT BOUNDARY WHICH IS A FAULT,
27 AND IT'S A PARTIAL GROUNDWATER FLOW BARRIER. NORTHWEST
28 OF THAT BOUNDARY IS THE AREA OF THE ANTELOPE VALLEY

1 GROUNDWATER BASIN. THE LANCASTER SUB-UNIT IS UP HERE,
2 WHERE MOST OF THE GROUNDWATER LEVEL DECLINED AND
3 OCCURRED DURING THAT TIME.

4 THERE IS A MARKET CHANGE OR DIFFERENCE IN
5 APPEARANCE OF THE STORAGE CHANGE, AND IT'S CORRELATIVE
6 WITH THE BOUNDARY WHICH IS CONSISTENT WITH THAT BOUNDARY
7 BEING A PARTIAL FAULT. IT'S NOT A BARRIER IN THE SENSE
8 THAT NO WATER FLOWS THROUGH, BUT IT'S LESS PERMEABLE.
9 SO IT IMPEDES GROUNDWATER FLOW FROM THE BUTTE SUB-UNIT
10 INTO THE LANCASTER SUB-UNIT TO THE NORTHWEST.

11 Q SO EARLIER WHEN YOU WERE TALKING A LITTLE
12 BIT ABOUT A SUB-UNIT AND HOW SUB-UNITS, AT LEAST AS YOU
13 HAVE DONE YOUR WORK HERE FOR THE BUTTE SUB-UNIT, DOES
14 NOT MEAN THAT IT'S A SEPARATE BASIN OR UNIT ALTOGETHER
15 FROM THE REST OF THE ANTELOPE VALLEY GROUNDWATER BASIN;
16 IS THAT CORRECT?

17 A THAT'S RIGHT.

18 Q SO IS IT MORE OF A DEGREE OF RELATIVELY IN
19 TERMS TO WHAT EXTENT IT HAS INTERCONNECTIVITY WITH WHAT
20 WOULD BE -- IS THAT THE LANCASTER SUB-UNIT THAT IS ON
21 THE OTHER SIDE OF THE BUTTE SUB-UNIT?

22 A THIS IS THE LANCASTER SUB-UNIT. AND IN
23 ANSWER TO YOUR QUESTION, YES. THERE IS HYDROLOGIC
24 CONNECTIVITY BETWEEN THESE TWO. GROUNDWATER IS GOING TO
25 FLOW BASED ON THE CONTOUR INTERVALS FROM THE BUTTE
26 SUB-UNIT INTO THE LANCASTER SUB-UNIT. IT'S JUST THAT.

27 WITH THE FLOW BARRIER, THERE IS MORE
28 RECHARGE AVAILABLE TO THIS AREA. AND EVIDENTLY LESS OR

1 MORE PUMPING IN THIS AREA IS CAUSING THE GROUNDWATER
2 LEVEL DECLINES IN THAT AREA.

3 THE COURT: IT WOULD BE REALLY HELPFUL FOR THE
4 RECORD IF YOU DESCRIBED AS YOU ARE TALKING ABOUT IT THE
5 EXACT AREAS WHERE YOU SAY THERE IS MORE OR LESS.
6 OTHERWISE, THE RECORD IS NOT GOING TO PICK IT UP.

7 THE WITNESS: OKAY. I AM TALKING ABOUT RIGHT NOW
8 THE LANCASTER SUB-UNIT WHICH IS NORTHWEST OF THE
9 NORTHWEST BUTTE SUB-UNIT BOUNDARY. THAT AREA OF THE
10 LANCASTER SUB-UNIT, BASED ON THE STORAGE DECLINE MAPS,
11 SAW THE MAJORITY OF THE GROUNDWATER STORAGE DECLINE FROM
12 1951 TO 2009.

13 IN THE BUTTE SUB-UNIT TO THE SOUTHEAST OF
14 THAT BOUNDARY THERE IS INDICATIONS THAT STORAGE CHANGE
15 HAS BEEN POSITIVE IN SOME AREAS AND NEGATIVE IN OTHERS,
16 BUT THERE IS DEFINITELY A DIFFERENT STORAGE CHANGE
17 SIGNATURE THAT WOULD IDENTIFY IT AS DISTINCT FROM THE
18 LANCASTER SUB-UNIT TO THE NORTHWEST.

19 THE COURT: ALL OF YOUR WELL CONTOURS, WATER
20 CONTOURS, SHOW FLOW FROM THE SOUTH LINE OF THE SOUTHEAST
21 AREA TO THE FIRST -- TO THE NORTHEAST WHICH WOULD TAKE
22 IT INTO THE GREEN AREA AND THEN ABOVE THAT TO THE
23 NORTHWEST. AM I UNDERSTANDING YOUR TESTIMONY?

24 THE WITNESS: IN TERMS OF GROUNDWATER FLOW
25 DIRECTION?

26 THE COURT: THE CONTOURS.

27 THE WITNESS: THE CONTOURS. I DON'T HAVE A
28 CONTOUR MAP OF THIS AREA RIGHT HERE.

1 THE COURT: WELL, WE DO, DON'T WE?

2 MR. MILIBAND: I DON'T THINK MR. HARDER WENT FAR
3 NORTH. YOUR HONOR, IF WE TURN BACK TO EXHIBIT --

4 THE COURT: EXHIBIT 28.

5 MR. MILIBAND: YES, SIR. WOULD IT BE EASIER FOR
6 THE COURT IF I KEPT EXHIBIT 34 ON THE PROJECTOR AND WE
7 LOOK AT THE HARD COPY OF 28?

8 THE COURT: I AM LOOKING AT 28.

9 MR. MILIBAND: WOULD YOU LIKE ME TO PUT 28 UP ON
10 THE SCREEN?

11 THE COURT: YEAH, I THINK SO, SO HE CAN EXPLAIN
12 IT. I JUST WANT TO UNDERSTAND HIS TESTIMONY.

13 THE WITNESS: TO GET YOU LOCATED, THIS IS BEDROCK
14 CREEK RIGHT HERE ON THE FURTHEST WESTERN PORTION OF
15 THAT.

16 THE COURT: GO OVER TO THE SOUTHEAST CORNER OF
17 THE ADJUDICATION AREA.

18 THE WITNESS: YES. RIGHT HERE?

19 THE COURT: YES. AND THE AREA THAT IS PHELAN'S
20 AREA WOULD BE TO THE EAST.

21 THE WITNESS: RIGHT.

22 THE COURT: THOSE CONTOURS SHOW FLOW IN WHAT
23 DIRECTION?

24 THE WITNESS: THE CONTOURS IMMEDIATELY EAST OF
25 THE COUNTY LINE. AND PHELAN'S SERVICE AREA FLOWED TO
26 THE NORTH. AND ULTIMATELY THEY TURNED NORTHWEST AND
27 FLOW INTO THE ANTELOPE ADJUDICATION AREA.

28 THE COURT: OKAY. NOW GO BACK TO EXHIBIT 34.

1 THE WITNESS: SO THIS WOULD BE THE AREA THAT WE
2 WERE JUST LOOKING AT. THIS IS THE AREA IMMEDIATELY EAST
3 OF THE COUNTY BOUNDARY AND IN THE ANTELOPE VALLEY
4 ADJUDICATION AREA. AND GROUNDWATER FLOWS TO THE NORTH
5 AND THEN NORTHWEST.

6 THE COURT: PUT YOUR LASER, IF YOU WOULD, ON THE
7 LOCATION OF WELL 14.

8 THE WITNESS: IT'S THE YELLOW DOT RIGHT HERE.

9 THE COURT: OKAY. IT SHOWS RED BELOW IT AND
10 GREEN ABOVE IT?

11 THE WITNESS: YES.

12 THE COURT: OKAY.

13 Q BY MR. MILIBAND: MR. HARDER, EARLIER YOU
14 MADE A STATEMENT I WANT TO CLARIFY, IF I MAY, THAT THE
15 FACT THAT WELL 14 SEEMS TO BE SOMEWHAT ON THE BORDER OF
16 GREEN AND RED, THAT INDICATES STABILITY TO YOU; IS THAT
17 YOUR TESTIMONY?

18 A ACCORDING TO THESE MAPS, THAT WOULD
19 INDICATE STABILITY. IT'S ON THE BOUNDARY. I THINK A
20 BETTER INDICATION OF WELL 14'S CONDITION WOULD BE TO
21 LOOK AT ITS HYDROGRAPH AFTER IT HAS BEEN PUMPING. BUT
22 MY CONCLUSION FROM THIS INFORMATION HERE IS, YES.

23 OVER THAT TIME PERIOD THIS AREA OF THE
24 BASIN WAS RELATIVELY STABLE. AND I WOULD EXPECT THAT
25 BECAUSE THERE WASN'T ANY PUMPING EARLY ON. THERE REALLY
26 WAS NO PRODUCTION OTHER THAN THE AGRICULTURAL PRODUCTION
27 THAT WAS OCCURRING UP HERE IN THE GRAY BUTTE FIELD AREA
28 WHICH IS THE HIGH VISTA AREA AND RETLAW RANCH.

1 THE COURT: WELL, WHEN DID WELL 14 START TO PUMP
2 SIGNIFICANTLY?

3 THE WITNESS: IT WAS DURING -- LET ME REFRESH MY
4 MEMORY. I WANT TO BE ACCURATE. OKAY. 2006.

5 THE COURT: OKAY. THAT WAS FIRST PUMPING; RIGHT?

6 THE WITNESS: YES, IN FEBRUARY OF 2006 IT BEGAN
7 PUMPING IN EARNEST.

8 Q BY MR. MILIBAND: WHAT DID YOU MEAN BY
9 THAT? I'M SORRY. DID YOU SAY IN EARNEST?

10 A I SAID IN EARNEST. THERE WAS SOME PUMPING
11 BEFORE THEN, BUT IT WAS REALLY NOT.

12 Q BASICALLY IN 2005 THERE WAS 1.11 ACRE-FEET
13 PUMPED; IS THAT YOUR UNDERSTANDING? GO AHEAD AND
14 REFRESH YOUR MEMORY?

15 A THAT IS CORRECT. IN 2005 THERE WAS 1.11
16 ACRE-FEET OF GROUNDWATER PRODUCTION.

17 THE COURT: WHY DON'T WE STOP AT THIS POINT FOR
18 ABOUT 15 MINUTES AND TAKE A RECESS.

19 (A RECESS WAS TAKEN.)

20 THE COURT: ALL RIGHT. YOU MAY RESUME.

21 Q BY MR. MILIBAND: IF I MAY DIRECT YOUR
22 ATTENTION BACK TO EXHIBIT 33. IT IS WHAT APPEARS ON THE
23 PROJECTION SCREEN.

24 FOR CLARIFICATION, WAS WELL 14 PUMPING
25 DURING THIS TIME PERIOD OF 2006 TO 2009?

26 A YES. WELL 14 BEGAN PUMPING -- BEGAN
27 PRODUCTION IN 2006.

28 Q IF WE CAN MOVE TO EXHIBIT 35, MR. HARDER.

1 PLEASE EXPLAIN WHAT EXHIBIT 35 ILLUSTRATES TO YOU.

2 A THIS IS ACTUALLY GROUNDWATER ELEVATION ON
3 THE Y AXIS. THE BLUE LINE IS THE STATIC GROUNDWATER
4 LEVEL. AND THE RED LINE IS THE PUMPING GROUNDWATER
5 LEVEL.

6 Q FIRST OF ALL, IN TERMS OF THE PREPARATION
7 OF EXHIBIT 35, WAS THIS PREPARED BY YOU OR AT THE
8 DIRECTION OF YOUR STAFF?

9 A NO. WE RECEIVED THIS DIRECTLY FROM
10 PHELAN'S STAFF.

11 Q AND IN UTILIZING EXHIBIT 35, WOULD YOU
12 PLEASE EXPLAIN A LITTLE BIT MORE ABOUT THE RED LINE AND
13 THE BLUE LINE WHAT YOU MEAN BY EACH OF THOSE STATIC AND
14 PUMPING LEVEL LINES.

15 A YES. THE WATER LEVELS THAT WERE MEASURED
16 AND SHOWN HERE AS THE DOTS ON THE BLUE LINE WERE
17 MEASURED WHEN THE PUMP IN THE WELL WAS OFF. SO THEY ARE
18 MORE INDICATIVE OF WHAT I WOULD REFER TO AS STATIC
19 GROUNDWATER LEVELS.

20 THE RED DOTS ARE MONITORED WATER LEVELS
21 WHEN THE WELL WAS ON, THE PUMP WAS ON. SO THEY ARE
22 INDICATIVE OF PUMPING GROUND LEVELS.

23 Q AND THE FACT THAT THERE IS A DIFFERENCE IN
24 SPACE ON EXHIBIT 35 BETWEEN THE RED LINE AND THE BLUE
25 LINE, WHAT DOES THAT MEAN TO YOU?

26 A WELL, IN ANY WELL THAT IS PUMPED THERE IS
27 GOING TO BE A CONE OF DEPRESSION THAT OCCURS AROUND THE
28 WELL. AND THERE IS GOING TO BE WELL LOSS AS WATER FLOWS

1 INTO THE WELL. THERE'S GOING TO BE HYDRAULIC LOSSES.
2 THE PUMPING LEVEL IN THE WELL IS A REFLECTION OF BOTH
3 THE DRAWDOWN IN THE AQUIFER AND THE LOSSES IN THE WELL.

4 THIS WATER LEVEL HERE IS A PUMPING
5 GROUNDWATER LEVEL MEASURED IN THE WELL. THAT IS A
6 REFLECTION OF THAT CONE OF DEPRESSION AND THOSE WATER
7 LOSSES. THIS STATIC GROUNDWATER LEVEL -- THIS
8 DIFFERENCE -- AND I GUESS I AM NOT SURE IF I ANSWERED
9 YOUR QUESTION.

10 Q THAT'S FINE. IN LOOKING AT THIS WELL 14
11 HYDROGRAPH, DOES IT APPEAR CONSISTENT TO YOU TO WHAT YOU
12 TYPICALLY SEE WITH HYDROGRAPHS WHEN YOU ARE LOOKING AT
13 PUMPING LEVELS AND STATIC LEVELS?

14 MR. KUHS: OBJECTION; VAGUE.

15 THE COURT: WHY DON'T YOU REPHRASE THAT, PLEASE.

16 Q BY MR. MILIBAND: MR. HARDER, DOES EXHIBIT
17 35 CONTAIN THE TYPE OF DATA YOU EXPECT TO SEE WHEN YOU
18 ARE EVALUATING STATIC AND PUMPING LEVELS FOR A
19 PARTICULAR WELL?

20 A YES.

21 Q AND THE DATA THAT IS DEPICTED WITHIN
22 EXHIBIT 35, WHAT DOES IT DEMONSTRATE TO YOU?

23 A WELL, IT'S TYPICAL OF A HYDROGRAPH FROM
24 ANY WELL WHERE THERE IS SOME VARIATION OF WATER LEVELS
25 OVER TIME. THIS VARIATION CAN BE A REFLECTION OF THE
26 TIME IT TOOK TO MEASURE THE WATER LEVEL AFTER IT WAS
27 PUMPED. IT CAN ALSO REFLECT MAYBE SEASONAL CONDITIONS
28 AND OTHER AREA PUMPING. AND IN THIS CASE, ONE THING I

1 MIGHT POINT OUT IS THAT IN 2009 THERE WAS A DROP IN
2 WATER LEVEL.

3 Q WOULD YOU PLEASE EXPLAIN WHERE YOU ARE
4 POINTING YOUR LASER.

5 A I AM POINTING MY LASER AT THE STATIC
6 GROUNDWATER LEVEL LINE WHICH IS THE BLUE LINE. IN
7 APPROXIMATELY MAY OF 2009 IT BEGAN TO DROP A BIT MORE.
8 AND THAT CORRESPONDS WITH THE TIME DURING THE PUMPING
9 HISTORY OF WELL 14 WHERE THEY BEGAN TO PUMP MORE WATER
10 OUT OF THE WELL.

11 IT CORRESPONDS WITH AN INCREASE IN THE
12 PUMPING RATE OF THE WELL. BUT, OVERALL, THE GROUNDWATER
13 LEVELS BETWEEN 2009 AND 2013 ARE RELATIVELY STABLE.
14 THEY GO UP AND DOWN. BUT ALL IN ALL THEY ARE VERY
15 STABLE.

16 Q IF YOU WERE TO LOOK TO THE FAR RIGHT OF
17 EXHIBIT 35 AT THE PUMPING LEVEL WHICH IS THE BLUE LINE;
18 CORRECT?

19 A THE BLUE LINE IS THE STATIC.

20 Q EXCUSE ME, THE STATIC. THAT IS THE LINE
21 THAT YOU ARE JUST REFERENCING. IF YOU WERE TO LOOK AT
22 THE STATIC LINE AS DEPICTED IN THE BLUE LINE ON EXHIBIT
23 35, ON THE FAR RIGHT IT STARTS -- THERE'S A VERTICAL
24 LINE THAT REPRESENTS THE BEGINNING OF 2014; IS THAT
25 CORRECT?

26 A RIGHT.

27 Q DOES THE STATIC LINE THAT STARTS AT 2014
28 AND PROCEEDS TO THE RIGHT TO THE END OF THE ILLUSTRATION

1 ON EXHIBIT 35 SHOW AN UPWARD TREND? HOW WOULD YOU
2 CHARACTERIZE THAT?

3 A WELL, THERE HAVE BEEN UPWARD TRENDS
4 PERIODICALLY THROUGHOUT THE HISTORY OF THE MONITORING OF
5 THIS WELL. THERE IS AN UPWARD TREND HERE. BUT, YES,
6 TOWARD THE END THERE IS AN UPWARD TREND.

7 Q AND FOR THE DATA DEPICTED IN EXHIBIT 35,
8 WHAT TREND IF ANY WOULD YOU SAY THERE IS AS IT RELATES
9 TO WELL 14?

10 A YOU KNOW, ALL IN ALL, I WOULD SAY -- AND I
11 AM POINTING TO THE BLUE LINE, THE STATIC WATER LEVEL
12 LINE. THEY GO UP AND DOWN, BUT THEY ALWAYS RECOVER TO A
13 HIGH LEVEL. THESE WATER LEVELS ALL IN ALL ARE
14 RELATIVELY STABLE.

15 Q AND WHAT SIGNIFICANCE IF ANY DOES THE RED
16 LINE PROVIDE TO YOU WHEN VALUED IN WELL 14'S PRODUCTION
17 AS ILLUSTRATED IN EXHIBIT 35?

18 A I DON'T TYPICALLY PUT A LOT OF STOCK AND
19 ANALYSIS IN PUMPING GROUNDWATER LEVELS UNLESS I KNOW
20 MORE DETAILS ABOUT WHAT THE PUMPING IS, AND IN THIS CASE
21 I DON'T. SO MY EVALUATION WOULD BE SOLELY ON THE BLUE
22 LINE WHICH IS THE STATIC GROUNDWATER LEVEL.

23 Q DOES EXHIBIT 35 PRESENT ANYTHING ELSE OF
24 SIGNIFICANCE TO YOU?

25 A NOT THAT I CAN THINK OF.

26 Q LET'S MOVE TO THE NEXT IN ORDER, PLEASE,
27 EXHIBIT 36. PLEASE EXPLAIN WHAT EXHIBIT 36 MEANS TO
28 YOU, MR. HARDER.

1 A THIS IS A PAGE OUT OF THE SUMMARY EXPERT
2 REPORT. IT'S SECTION 4.3.1.4. THE SUBSECTION IS
3 ENTITLED EAST ANTELOPE VALLEY. AND THERE IS TEXT
4 HIGHLIGHTED IN THAT PARAGRAPH WHICH TALKS ABOUT
5 GROUNDWATER LEVEL CONDITIONS OR GROUNDWATER LEVELS IN
6 THE EAST ANTELOPE VALLEY.

7 Q AND ON EXHIBIT 36 FOR THIS PARTICULAR PAGE
8 FROM THE SUMMARY EXPERT REPORT THERE IS PARTICULAR
9 LANGUAGE THAT IS HIGHLIGHTED IN YELLOW; CORRECT?

10 A THAT'S CORRECT.

11 Q DID YOU HIGHLIGHT THAT LANGUAGE?

12 A I DID.

13 Q WHY?

14 A WELL, I ACTUALLY HIGHLIGHTED THIS EARLY ON
15 IN OUR REVIEW OF THE SUMMARY EXPERT REPORT. BUT WHAT IT
16 SAYS IS FROM THE EARLY 1950'S THROUGH THE MID 1970'S --
17 I GUESS. I'M SORRY.

18 Q THERE IS THE HARD COPY IN FRONT OF YOU AS
19 WELL IF YOU WOULD LIKE TO READ IT.

20 A YEAH, ALLOW ME TO READ IT. THE AREA
21 INCLUDES THE EASTERN PORTION OF THE LANCASTER SUB BASIN
22 AND THE BUTTES AND PEARLAND SUB BASINS. GROUNDWATER
23 ELEVATIONS IN THIS AREA SHOW SIMILAR TRENDS OF
24 GROUNDWATER LEVEL DECLINE FROM THE EARLY 1950'S TO THE
25 MID 1970'S FOLLOWED BY STABILIZING AND/OR INCREASING
26 GROUNDWATER ELEVATIONS THROUGH APPROXIMATELY THE MID TO
27 LATE 1990'S.

28 AND TOWARD THE BOTTOM: IN GENERAL

1 GROUNDWATER LEVELS IN THE BUTTES AND PEARLAND SUB BASINS
2 HAVE NOT CHANGED SIGNIFICANTLY SINCE 1951 AND IN SOME
3 CASES HAVE RISEN. AND THEY CITE WELL SIX NORTH, TEN
4 WEST, 22 D-1.

5 I HAVE LEFT IN THERE HIGHLIGHTED AS WELL
6 THAT GROUNDWATER FLOW DIRECTION IN THIS AREA IS
7 GENERALLY TO THE WEST AND HAS NOT CHANGED SIGNIFICANTLY
8 SINCE 1951.

9 Q IS THE WELL THAT IS REFERENCED IN THIS
10 HIGHLIGHTED LANGUAGE, THE SIX NORTH, TEN WEST WELL, IS
11 THAT ONE OF THE WELLS THAT YOU HAD LOOKED AT IN YOUR
12 EVALUATION OF THE BUTTE SUB-UNIT?

13 A IT'S ONE OF THE WELLS THAT IS ON ONE OF
14 THE EARLIER EXHIBITS. YES.

15 Q IS THAT A MONITORING WELL, DO YOU KNOW,
16 OFFHAND?

17 A TO MY KNOWLEDGE, YES.

18 Q SO WHY IS IT THAT YOU HIGHLIGHTED THIS
19 PARTICULAR LANGUAGE FROM THE SUMMARY EXPERT REPORT?

20 A WELL, I HIGHLIGHTED IT BECAUSE THEY CAME
21 TO THE SAME CONCLUSION THAT I DID, AND MAYBE IT'S JUST
22 SUPPORTING INFORMATION THAT IS CONSISTENT WITH THE
23 SUMMARY EXPERT REPORT'S CONCLUSION ABOUT THE CONDITION
24 OF THE GROUNDWATER'S LEVELS IN THE BUTTES SUB-UNIT.

25 Q MR. HARDER, IF I CAN DIRECT YOU TO THE
26 NEXT IN ORDER EXHIBIT 37, PLEASE. EXPLAIN WHAT EXHIBIT
27 37 ILLUSTRATES TO YOU.

28 A THIS AGAIN IS OUT OF THE SUMMARY EXPERT

1 REPORT APPENDIX E. THESE ARE GROUNDWATER LEVEL
2 HYDROGRAPHS THAT THEY IDENTIFIED IN THEIR ANALYSIS OF
3 STORAGE CHANGE. AND THE REASON THAT I LOOKED AT THIS,
4 FIRST OFF, THEY HAVE SHOWED THE SUB-UNITS ON HERE. AND
5 YOU CAN SEE THE NORTHWEST BOUNDARY OF THE BUTTES
6 SUB-UNIT.

7 I AM POINTING WITH MY LASER POINTER ONTO
8 THE MAP, THE NORTHWEST BOUNDARY, THE BUTTES SUB-UNIT.
9 AND IMMEDIATELY SOUTHEAST OF THAT BOUNDARY IS THE 22 D-1
10 WELL WHICH IS THE HYDROGRAPH THAT THEY WERE REFERRING TO
11 IN THE TEXT AND THE ONE THAT WE REFERRED TO EARLIER ON
12 IN OUR REVIEW OF THE HYDROGRAPHS.

13 THAT HYDROGRAPH IS SHOWN OVER HERE TO THE
14 RIGHT SHOWING RISING OR STABLE GROUNDWATER LEVELS.
15 THERE IS ALSO ANOTHER HYDROGRAPH WITHIN THE BUTTES
16 SUB-UNIT HERE 11 AND 1 WHICH ALSO SHOWS AT LEAST
17 INITIALLY DECLINING GROUNDWATER LEVELS BUT LATER STABLE
18 OR RISING. I BROUGHT THIS UP IN OUR ANALYSIS,
19 BECAUSE BY COMPARISON IF YOU LOOK AT WELLS THAT ARE
20 OUTSIDE THE BUTTES SUB-UNIT IN THE LANCASTER SUB-UNIT
21 AND NOW I AM POINTING TO -- IT'S REFERRED TO AS 19 E-6.
22 I'M POINTING TO IT. IT'S IMMEDIATELY NORTHWEST OF THE
23 BUTTES SUB-UNIT BOUNDARY. AND THAT HYDROGRAPH SHOWS A
24 SIGNIFICANT DECLINE FROM 1970'S ALL THE WAY THROUGH
25 1990.

26 THE HYDROGRAPH SIGNATURE IS MARKEDLY
27 DIFFERENT THAN THE HYDROGRAPH SIGNATURES FROM THE WELLS
28 THAT ARE ON THE OTHER SIDE OF THE BUTTES SUB-UNIT

1 BOUNDARY AND WITHIN THE BUTTES SUB-UNIT.

2 Q IS THAT TO SAY THAT THE HYDROGRAPH
3 SIGNATURES OF THOSE HYDROGRAPHS FOR WELLS LOCATED WITHIN
4 THE BUTTE SUB-UNIT ARE MARKEDLY DIFFERENT FROM THOSE
5 HYDROGRAPH SIGNATURES FROM WELLS OUTSIDE OF THE BUTTES
6 SUB-UNIT?

7 A YES. AND SPECIFICALLY IN THE LANCASTER
8 SUB-UNIT.

9 Q DO YOU HAVE ANY UNDERSTANDING AS TO WHY
10 THE SUMMARY EXPERT REPORT AUTHORS UTILIZE THIS
11 INFORMATION -- LET ME WITHDRAW THAT.

12 YOU HAD REFERENCED IN THE EXHIBIT BEFORE A
13 PAGE FROM THE SUMMARY EXPERT REPORT IN WHICH YOU
14 HIGHLIGHTED CERTAIN LANGUAGE. DO YOU KNOW OR HAVE AN
15 UNDERSTANDING AS TO WHETHER THIS IS SOME OF THE DATA
16 THAT SUPPORTS THE CONCLUSION THAT THEY CAME TO AS WHAT
17 YOU INDICATED WITHIN EXHIBIT 36, THE HIGHLIGHTED
18 LANGUAGE?

19 MR. DUNN: OBJECTION. LACK OF FOUNDATION.
20 SPECULATION.

21 THE COURT: SUSTAINED.

22 Q BY MR. MILIBAND: MR. HARDER, DO YOU SEE
23 EXHIBIT 37 AS SUPPORTING THE CONCLUSION THAT YOU
24 MENTIONED THAT IS CONTAINED WITHIN EXHIBIT 36 THAT
25 EXCERPT FROM THE SUMMARY EXPERT REPORT?

26 MR. KUHS: OBJECTION; RELEVANCE. IT'S REALLY
27 IMPROPER TESTIMONY.

28 THE COURT: I WILL SUSTAIN THE OBJECTION. GO

1 AHEAD. NEXT QUESTION.

2 Q BY MR. MILIBAND: MR. HARDER, WHAT
3 SIGNIFICANCE, IF YOU COULD EXPLAIN A BIT, DOES EXHIBIT
4 37 PRESENT TO YOU AS IT RELATES TO BUTTE SUB-UNIT OR
5 MATTERS OUTSIDE OF THE BUTTE SUB-UNITS?

6 A WELL, I THINK IT ILLUSTRATES, AND WE
7 POINTED THIS OUT EARLIER THAT REALLY THE HYDROGEOLOGICAL
8 CONDITIONS WITHIN THE BUTTE SUB-UNIT ARE DIFFERENT THAN
9 THE LANCASTER SUB-UNIT TO THE NORTHWEST WHICH I AM
10 POINTING TO WITH MY LASER POINTER.

11 THERE IS A SECOND WELL HERE, 19 D-1 WHICH
12 IS ALSO NORTHWEST OF THE BUTTE SUB-UNIT BOUNDARY AGAIN
13 SHOWING A VERY DISTINCT DROP IN GROUNDWATER LEVELS. IT
14 COMES BACK UP AND REBOUNDS, BUT THE SIGNATURE OF THESE
15 GROUNDWATER LEVEL CHANGES ARE DIFFERENT THAN THE
16 GROUNDWATER LEVEL CHANGES OBSERVED IN THE WELLS IN THE
17 BUTTES SUB-UNIT THAT BASICALLY ILLUSTRATES THAT THE
18 CONDITIONS WITHIN THE BUTTES SUB-UNIT ARE DISTINCT
19 HYDROGEOLOGICALLY FROM THE CONDITIONS IN THE LANCASTER
20 SUB-UNIT.

21 Q FOR THE PEARLAND SUB-UNIT THERE IS WELL
22 SIX NORTH ONE; IS THAT CORRECT?

23 A YES.

24 Q WHAT DOES THE HYDROGRAPH FOR THAT
25 PARTICULAR WELL ILLUSTRATE TO YOU?

26 A I AM POINTING TO SIX NORTH, SIX N-1. THIS
27 IS THE PEARLAND SUB-UNIT. THE HYDROGRAPH IS IN THE
28 LOWER RIGHT OF THIS EXHIBIT AND IT ALSO IS RELATIVELY

1 STABLE. ALTHOUGH TOWARD THE END THERE IS A DECLINE IN
2 GROUNDWATER LEVELS. BUT IN GENERAL IT'S ALSO RELATIVELY
3 STABLE.

4 Q IN EXHIBIT 37 A FEW MOMENTS AGO YOU
5 INDICATED THERE IS A BUTTE SUB-UNIT IDENTIFIED. DOES
6 THE BUTTE SUB-UNIT AS DEPICTED WITHIN EXHIBIT 37 MATCH
7 THE BUTTE SUB-UNIT AS ILLUSTRATED WITHIN EXHIBIT 27?

8 A YES. THEY ARE CONSISTENT.

9 Q IF I CAN DIRECT YOU TO EXHIBIT 38, PLEASE.
10 WHAT DOES THAT ILLUSTRATE TO YOU, MR. HARDER?

11 A THIS IS FIGURE E2-16, AGAIN, FROM
12 APPENDIX E OF THE SUMMARY EXPERT REPORT. THIS IS AN
13 ILLUSTRATION OF TOTAL SUBSIDENCE THAT HAS BEEN MEASURED
14 BETWEEN 1930 AND 1992 WITHIN THE ANTELOPE VALLEY
15 GROUNDWATER BASIN.

16 Q WHAT SIGNIFICANCE DOES EXHIBIT 38 PRESENT
17 TO YOU?

18 A WELL, IF YOU LOOK ON THIS MAP YOU CAN SEE
19 IN FAINT THE BOUNDARY OF THE BUTTE SUB-UNIT ALONG HERE.
20 I AM POINTING TO IT WITH THE LASER POINTER. TO THE
21 SUBSIDENCE AREA IS SOLELY TO THE NORTHWEST OF THE BUTTE
22 SUB-UNIT. THERE IS NO SUBSIDENCE THAT HAS BEEN
23 IDENTIFIED WITHIN THE BUTTE SUB-UNIT, AND THAT IS THE
24 SIGNIFICANCE OF THAT.

25 Q ANYTHING ELSE, MR. HARDER?

26 A I WOULD SAY JUST, AGAIN, IT ILLUSTRATES
27 THAT THE CONDITIONS WITHIN THE BUTTE SUB-UNIT ARE
28 HYDROGEOLOGICALLY DIFFERENT THAN THE NEIGHBORING

1 SUB-UNIT TO THE NORTHWEST.

2 Q MOVING TO THE NEXT IN ORDER EXHIBIT 39.
3 MR. HARDER, PLEASE TURN TO THAT EXHIBIT.

4 WHAT DOES EXHIBIT 39 ILLUSTRATE TO YOU,
5 MR. HARDER?

6 A THIS IS AN ILLUSTRATION OF THE GROUNDWATER
7 BASINS, THE ANTELOPE VALLEY GROUNDWATER BASIN, THE
8 EL MIRAGE BASIN AND THE UPPER MOJAVE RIVER VALLEY
9 GROUNDWATER BASIN. WE HAVE SHOWN THE PHELAN'S SERVICE
10 AREA IS THE YELLOW LINE HERE I AM POINTING TO THAT IS
11 ALSO THE COUNTY BOUNDARY.

12 THE AREA TO THE EAST OF THE COUNTY
13 BOUNDARY AND BETWEEN THE COUNTY BOUNDARY AND THE
14 EL MIRAGE VALLEY GROUNDWATER BASIN, THESE POLYGONS THAT
15 ARE SHOWN IN THAT AREA ARE PARCELS WITH ACTIVE WATER
16 CONNECTIONS.

17 Q POLYGONS WHERE THERE ARE BLACK SQUARES?

18 A THEY ARE PARCELS.

19 Q OKAY. CAN YOU EXPLAIN A LITTLE BIT. I
20 DON'T WANT TO HAVE YOU RE-EXPLAIN HOW YOU PREPARED THIS.
21 BUT, ESSENTIALLY, EXHIBIT 39 WAS PREPARED BY YOU OR
22 DIRECTION FROM YOU TO YOUR STAFF; IS THAT CORRECT?

23 A THAT'S CORRECT.

24 Q EXHIBIT 39 CONTAINS SOME SIMILAR
25 ILLUSTRATIONS FROM EARLIER EXHIBITS THAT WE TALKED ABOUT
26 THIS MORNING; IS THAT CORRECT?

27 A THAT'S CORRECT.

28 Q DO YOU AGREE THAT THE MOST SIGNIFICANT

1 ADDITION TO EXHIBIT 39 ARE THESE SHAPES OR POLYGONS
2 REFLECTING PARCELS?

3 A THAT'S THE MAJOR DIFFERENCE.

4 Q WHAT INFORMATION DID YOU UTILIZE TO
5 ESSENTIALLY MAP OUT ON EXHIBIT 39 THESE PARCELS?

6 A WELL, THE PARCEL MAP WE RECEIVED FROM
7 PHELAN'S STAFF. THEY WERE REGISTERED AND GEOGRAPHICALLY
8 REGISTERED. SO WE JUST BROUGHT THEM IN TO GIS AND
9 OVERLAID THEM ON TOP OF THE MAP OF THE GROUNDWATER
10 BASINS ALONG WITH THEIR PHELAN'S SERVICE AREA BOUNDARY
11 AND THE COUNTY BOUNDARY.

12 THE PARCEL MAP SHAPEFILE IS MUCH LARGER
13 THAN THIS. WE CROPPED THE FILE SO THAT IT MATCHES
14 ROUGHLY THE BOUNDARY. LET ME BACK THAT UP. WE CROPPED
15 ANYTHING THAT WAS NOT WITHIN THE ANTELOPE VALLEY
16 GROUNDWATER BASIN PORTION THAT WAS OVERLYING PHELAN'S
17 SERVICE AREA.

18 Q AND WHY DID YOU DO THAT?

19 A BECAUSE THOSE WERE THE PARCELS THAT WE
20 ARE INTERESTED IN IN TERMS OF RETURN FLOW.

21 Q WHY WERE YOU ONLY INTERESTED IN THOSE
22 PARCELS IN TERMS OF THE RETURN FLOW?

23 A WELL, GOING BACK TO THE GROUNDWATER
24 CONTOUR MAP, BASED ON OUR INTERPRETATION OF THE CONTOUR
25 MAP, THE EASTERN BOUNDARY OF THE ANTELOPE VALLEY
26 GROUNDWATER BASIN IS THE GROUNDWATER FLOW DIVIDE SUCH
27 THAT ANY FLOW THAT OCCURS IN THIS PORTION OF ANTELOPE
28 VALLEY GROUNDWATER BASIN.

1 I AM POINTING TO THE PORTION BETWEEN THE
2 COUNTY BOUNDARY AND THE EASTERN ANTELOPE VALLEY
3 GROUNDWATER BASIN BOUNDARY FLOWS NORTH AND ULTIMATELY
4 FLOWS TOWARD THE ANTELOPE VALLEY ADJUDICATION AREA.

5 Q WHAT SIGNIFICANCE WOULD YOU SUMMARIZE
6 EXHIBIT 39 PROVIDES TO YOU IN TERMS OF RETURN FLOW?

7 A IT'S A BASIS FOR OUR RETURN FLOW
8 CALCULATION.

9 Q HOW DOES IT SERVE AS A BASIS FOR YOUR
10 RETURN FLOW CALCULATION SPECIFICALLY?

11 A WE MEASURED -- NOT MEASURED. WE UTILIZED
12 THE WATER DELIVERY RECORDS TO ALL OF THOSE PARCELS SO AS
13 A BASIS FOR KNOWING HOW MUCH WATER WAS DELIVERED TO THE
14 HOMES. AND THEN USING A FACTOR OF RETURN FLOW, WE
15 ESTIMATED RETURN FLOW IN THAT AREA LINE OVER THE
16 ANTELOPE VALLEY GROUNDWATER BASIN.

17 Q IS IT YOUR UNDERSTANDING THAT THESE
18 PARCELS AS DEPICTED ON EXHIBIT 39 ARE PARCELS FOR
19 RESIDENTIAL HOMES?

20 A ALMOST ALL OF THEM.

21 Q ARE YOU ABLE TO QUANTIFY HOW MANY WHEN YOU
22 SAY "ALMOST ALL OF THEM"?

23 A I CAN. I DON'T HAVE THAT INFORMATION WITH
24 ME.

25 Q ARE YOU ABLE TO GIVE A PERCENTAGE?

26 A 99-PLUS PERCENT. I BELIEVE THAT THERE IS
27 ONE -- THERE MIGHT BE ONE PARK OR SCHOOL THERE.

28 Q ANYTHING OF ANY OTHER SIGNIFICANCE TO YOU

1 AS IT RELATES TO EXHIBIT 39?

2 A NO.

3 Q PLEASE GO TO THE NEXT EXHIBIT IN ORDER,
4 EXHIBIT 40. EARLIER IN EXHIBIT 28 WE WERE LOOKING AT
5 GROUNDWATER CONTOURS. DOES EXHIBIT 40 DIFFER FROM
6 EXHIBIT 28 AS BEST AS YOU CAN TELL?

7 ACTUALLY, I WOULD SUBMIT, YOUR HONOR, I
8 THINK THEY ARE IDENTICAL. I THINK WE HAVE A DUPLICATE
9 EXHIBIT HERE.

10 A THEY ARE THE SAME.

11 Q LET'S MOVE AHEAD TO EXHIBIT 41, PLEASE.
12 MR. HARDER, WHAT IS EXHIBIT 41?

13 A THIS IS APPENDIX D OF THE SUMMARY EXPERT
14 REPORT AND THE SPECIFIC SECTION OF APPENDIX B THAT TALKS
15 ABOUT HISTORICAL, MUNICIPAL AND INDUSTRIAL RETURN FLOWS.

16 Q WHY WAS THIS PAGE, THE SUMMARY EXPERT
17 REPORT, SIGNIFICANT TO YOU?

18 A WELL, THIS IS THEIR ASSUMPTIONS ON THE
19 PERCENTAGES OF INDOOR AND OUTDOOR WATER USE FOR HOMES IN
20 THE LANCASTER/PALMDALE AREA AND THE PERCENT OF OUTDOOR
21 WATER USE THAT BECOMES RETURN FLOW. WE USE THIS AS A
22 BASIS FOR OUR RETURN FLOW ESTIMATES.

23 Q WHEN YOU SAY YOU HAVE USED THAT AS A
24 BASIS, WERE THERE OTHER BASIS THAT YOU HAVE USED FOR
25 CALCULATING RETURN FLOW? I AM JUST TRYING TO UNDERSTAND
26 WHAT YOU MEAN BY THAT WHEN YOU SAY AS A BASIS FOR
27 CALCULATING RETURN FLOW.

28 A THE PERCENTAGE OF OUTDOOR WATER USE THAT

1 OCCURS AND THE PERCENTAGE OF THAT OUTDOOR WATER USE THAT
2 BECOMES RETURN FLOW, WE WANTED TO BE CONSISTENT WITH THE
3 SUMMARY EXPERT REPORT IN TERMS OF ESTIMATING WHAT OUR
4 RETURN FLOW WOULD BE.

5 Q AND HERE ON EXHIBIT 41 THERE IS SOME
6 HIGHLIGHTED LANGUAGE. WAS THAT HIGHLIGHTED BY YOU?

7 A YES.

8 Q DOES THAT HIGHLIGHTED LANGUAGE REFLECT --
9 WELL, WHY DON'T YOU TELL US WHAT THAT LANGUAGE REFLECTS.

10 A BASICALLY, FOR WATER DELIVERED TO HOMES IN
11 THE PALMDALE/LANCASTER AREA, THEY ARE ASSUMING THAT
12 45 PERCENT OF THE WATER DELIVERED IS USED INDOORS AND 55
13 PERCENT IS USED OUTDOORS.

14 AND IF YOU MOVE ON DOWN, THEY ARE ASSUMING
15 THAT OF THE PERCENTAGE USED OUTDOORS, 20 PERCENT OF THAT
16 BECOMES RETURN FLOW. SO IN THE LAST SENTENCE AS IT
17 SAYS, THIS EQUATES TO 11 PERCENT OF THE TOTAL MUNICIPAL
18 AND INDUSTRIAL WATER REQUIREMENT BECOMES RETURN FLOW
19 FROM MUNICIPAL AND INDUSTRIAL IRRIGATION.

20 Q DID YOU EVALUATE THESE ASSUMPTIONS?

21 A I HAVE DONE RETURN FLOW ESTIMATES IN MANY
22 AREAS IN SOUTHERN CALIFORNIA AND THE CENTRAL VALLEY.
23 THE PERCENTAGE OF INDOOR AND OUTDOOR WATER USE IS
24 CONSISTENT WITH URBAN WATER MANAGEMENT PLANS FROM OTHER
25 AGENCIES, CITIES AND MUNICIPALITIES.

26 MR. KUHS: OBJECTION. NONRESPONSIVE.

27 THE COURT: I WILL LET IT STAY IN. OVERRULED.

28 Q BY MR. MILIBAND: MR. HARDER, SO BASED

1 UPON THE RETURN FLOW WORK THAT YOU WERE JUST DESCRIBING
2 THAT YOU HAVE DONE IN SOUTHERN CALIFORNIA AND IN LIGHT
3 OF WHAT YOU SEE HERE WITHIN EXHIBIT 41, WERE THESE
4 FIGURES AS DEPICTED WITHIN EXHIBIT 41 REASONABLE TO YOU
5 IN TERMS OF CALCULATING RETURN FLOWS?

6 A YES.

7 Q DO YOU HAVE ANYTHING TO ADD OR ELABORATE
8 UPON WHY THESE FIGURES APPEAR REASONABLE TO YOU FOR
9 CALCULATING RETURN FLOWS?

10 A WELL, I WOULD SAY THEY ARE SPECIFIC TO THE
11 LANCASTER AND PALMDALE AREA, AND THEY ARE TYPICAL. IN
12 TERMS OF PHELAN'S AREA, THE ACTUAL OUTDOOR WATER USE IS
13 QUITE A BIT LESS. SO WE HAVE RELIED ON THESE, BECAUSE
14 IT WAS CONSISTENT WITH THE SUMMARY EXPERT REPORT AND TO
15 BE CONSISTENT WITH THAT DOCUMENT. BUT I WOULD SAY IN
16 PHELAN'S AREA, THE ACTUAL OUTDOOR WATER USE IS PROBABLY
17 QUITE A BIT LESS.

18 Q SO IF THE OUTDOOR USE IN THE PHELAN AREA
19 IS LESS, HOW WOULD THAT IMPACT THE OUTDOOR IRRIGATION
20 FIGURES THAT ARE ILLUSTRATED WITHIN EXHIBIT 41?

21 A THE OUTDOOR IRRIGATION WOULD BECOME QUITE
22 A BIT LESS. THE RETURN FLOW ASSOCIATED WITH OUTDOOR
23 IRRIGATION WOULD BECOME LESS.

24 Q FOR THE RETURN FLOW CALCULATIONS THAT YOU
25 DID IN THIS CASE AS IT RELATES TO PHELAN, WHAT DOES THAT
26 MEAN FOR THOSE CALCULATIONS IN TERMS OF BEING HIGHER OR
27 LOWER IF PHELAN'S OUTDOOR IRRIGATION USE IS, IN FACT,
28 LOWER THAN THE LANCASTER/PALMDALE AREA?

1 A WELL, IN PHELAN' S CASE, THEY ARE, AS I
2 UNDERSTAND IT, 100 PERCENT INDIVIDUAL SEPTIC SYSTEMS AS
3 THEIR MODE OF WASTE WATER DISPOSAL. AND THE SUMMARY
4 EXPERT REPORT' S ASSUMPTION FOR WASTE WATER DISPOSAL IN
5 SEPTIC SYSTEMS IS THAT 100 PERCENT OF THAT BECOMES
6 RETURN FLOW.

7 SO IN PHELAN' S AREA IF WE WERE TO RELY ON
8 THIS, IT WOULD BE THE 45 PERCENT OF WATER USED INDOORS.
9 100 PERCENT OF THAT WOULD BECOME RETURN FLOW. ADDED TO
10 THE 11 PERCENT OF OUTDOOR WATER USE, THAT WOULD BE
11 56 PERCENT. HOWEVER, IF THE OUTDOOR WATER USE IS LESS
12 AND A HIGHER PERCENTAGE OF DELIVERED WATER IS USED
13 INDOORS, THE RETURN FLOW ACTUALLY WOULD BECOME MORE IN
14 PHELAN' S AREA IF WE ACCOUNTED FOR THAT.

15 Q MR. HARDER, I WOULD LIKE TO DIRECT YOU TO
16 THE NEXT IN ORDER, PLEASE, EXHIBIT 42 WHICH I BELIEVE IS
17 THE NEXT PAGE FROM THE SUMMARY EXPERT REPORT D-22; IS
18 THAT CORRECT, SIR?

19 A YES.

20 Q AGAIN, HIGHLIGHTED LANGUAGE BY YOU; IS
21 THAT RIGHT?

22 A YES.

23 Q WHAT IS THE LANGUAGE THAT YOU HIGHLIGHTED
24 THERE WITHIN EXHIBIT 42?

25 A IT SAYS: AS ABOVE, AN ESTIMATED
26 45 PERCENT OF TOTAL MUNICIPAL WATER REQUIREMENTS WOULD
27 BE UTILIZED INDOORS. AND FOR CONTEXT I WILL SAY HERE
28 THAT THEY ARE -- WELL, LET ME JUST CONTINUE.

1 AS ABOVE, AN ESTIMATED 45 PERCENT OF TOTAL
2 MUNICIPAL WATER REQUIREMENTS WOULD BE UTILIZED INDOORS.
3 AND 100 PERCENT OF WATER DISPOSED ON SITE WOULD PRODUCE
4 RETURN FLOWS. THEY ARE REFERRING TO HOMES WITH
5 INDIVIDUAL SEPTIC SYSTEMS.

6 Q IS THAT THE CONTEXT YOU WANTED TO PROVIDE
7 TO THAT HIGHLIGHTED LANGUAGE?

8 A YES.

9 Q AND IS IT YOUR UNDERSTAND THAT WITHIN
10 PHELAN THE HOMES ARE ALL SEPTIC?

11 A YES.

12 Q IS THAT INCLUDING FOR THOSE PARCELS THAT
13 HAVE BEEN IDENTIFIED WITHIN EXHIBIT 39?

14 A YES. THAT'S CORRECT?

15 Q THESE FIGURES WITHIN 42 APPEAR REASONABLE
16 TO YOU BASED UPON YOUR TRAINING AND EXPERIENCE?

17 A THEY DO.

18 Q PLEASE TURN TO THE NEXT IN ORDER, EXHIBIT
19 43. WHAT DOES EXHIBIT 43 INDICATE TO YOU?

20 A IT'S A SIMILAR VIEW TO THE PREVIOUS
21 EXHIBIT WHICH SHOWS PHELAN SERVICE AREA, THEIR ENTIRE
22 SERVICE AREA OVERLAID ON THE GROUNDWATER BASINS. WE
23 HAVE SHOWN ON THIS THE BLACK WATER LINES INDICATE
24 PHELAN'S WATER DISTRIBUTION SYSTEM PIPELINES. WE HAVE
25 HIGHLIGHTED IN BLUE THE PIPELINES THAT OCCUR OVER THE
26 ANTELOPE VALLEY GROUNDWATER BASIN.

27 Q AND SIMILARLY THIS WAS PREPARED BY YOU OR
28 AT YOUR DIRECTION TO STAFF; IS THAT CORRECT?

1 A IT WAS PREPARED AT MY DIRECTION. YES.

2 Q AND FOR THE BLUE AND BLACK LINES DEPICTED
3 ON THERE, THAT IS ESSENTIALLY THE PHELAN WATER
4 DISTRIBUTION SYSTEM AS YOU UNDERSTAND IT; IS THAT
5 CORRECT?

6 A THAT'S CORRECT.

7 Q WHAT DATA DID YOU UTILIZE TO BE ABLE TO
8 MAP OUT THE PHELAN WATER DISTRIBUTION SYSTEM AS
9 ILLUSTRATED ON EXHIBIT 43?

10 A WE WERE PROVIDED A SHAPEFILE, A GIS
11 SHAPEFILE FROM PHELAN'S STAFF.

12 Q WHAT DID THAT SHAPEFILE CONTAIN?

13 A IT CONTAINED THEIR PIPELINE, THE LOCATIONS
14 AND DISTRIBUTION OF THEIR PIPELINE.

15 Q WHY DID YOU UNDERTAKE THIS EFFORT TO MAP
16 OUT THE PHELAN DISTRIBUTION SYSTEM AS ILLUSTRATED IN
17 EXHIBIT 43?

18 A AS PART OF OUR ANALYSIS OF RETURN FLOW, WE
19 NOTED THAT WHEN WE LOOKED AT THE TOTAL GROUNDWATER
20 PRODUCTION FROM THE WELLS AND COMPARED THAT TO WATER
21 DISTRIBUTED TO THE HOMES THERE WAS A DIFFERENCE. IN
22 REVIEWING THAT INFORMATION WITH PHELAN'S STAFF THEY HAVE
23 WATER LOSSES IN THEIR SYSTEM, LOSSES IN THEIR PIPELINES,
24 LEAKS OR WHATNOT.

25 IN ORDER TO ACCOUNT FOR THAT WE WANTED TO
26 EVALUATE THE AMOUNT OF PIPELINE THAT MIGHT CONTRIBUTE
27 OSIS AS RETURN FLOW TO THE GROUNDWATER SYSTEM.

28 Q DOES EXHIBIT 43 PROVIDE ANYTHING ELSE OF

1 SIGNIFICANCE TO YOU?

2 A NO.

3 Q PLEASE TURN TO THE NEXT IN ORDER,
4 EXHIBIT 44. WAS EXHIBIT 44 PREPARED BY YOU, MR. HARDER?

5 A IT WAS.

6 Q FOR WHAT PURPOSE?

7 A FOR ESTIMATING RETURN FLOW IN THE PORTION
8 OF THE PHELAN'S SERVICE AREA THAT LIE OVER THE ANTELOPE
9 VALLEY GROUNDWATER BASIN.

10 Q WOULD YOU PLEASE EXPLAIN WHAT THE COLUMNS
11 AND THE ROWS ARE IN EXHIBIT 44. WHAT INFORMATION ARE
12 YOU PROVIDING?

13 A WE HAD WATER DELIVERY RECORDS FOR THE
14 PERIOD OF TIME BETWEEN 2009 AND 2013. SO THE FIRST
15 COLUMN IS THE CALENDAR YEAR FOR THOSE YEARS.

16 THE SECOND COLUMN IS THE DELIVERED WATER
17 TO THE CONNECTIONS IN THAT AREA IN ACRE-FEET.

18 THE THIRD COLUMN IS THE RETURN FLOW
19 FACTOR; THIS IS 56 PERCENT, WHICH IS THE 45 PERCENT OF
20 WATER USED INDOORS, PLUS THE 11 PERCENT OF RETURN FLOW
21 THAT OCCURS ON OUTDOOR LANDSCAPED IRRIGATION.

22 THE FOURTH COLUMN IS RETURN FLOW THAT'S
23 CALCULATED IN THE ANTELOPE VALLEY GROUNDWATER BASIN.
24 THAT IS THE PORTION OF THE ANTELOPE VALLEY GROUNDWATER
25 BASIN WITHIN PHELAN'S SERVICE AREA, AND IT'S SIMPLY
26 MULTIPLYING THE DELIVERED WATER TIMES THE RETURN FLOW
27 FACTOR.

28 THE FIFTH COLUMN IS THE TOTAL SYSTEM

1 LOSSES THAT WERE ESTIMATED THROUGHOUT PHELAN' S ENTIRE
2 SERVICE AREA.

3 THE SIXTH COLUMN IS THE PERCENTAGE OF
4 DISTRIBUTION LINES THAT OCCUR IN THE ANTELOPE VALLEY
5 GROUNDWATER BASIN PORTION OF PHELAN' S SERVICE AREA.

6 AND THE SEVENTH COLUMN IS THE ESTIMATED
7 LOSSES THAT OCCURRED IN THE ANTELOPE VALLEY GROUNDWATER
8 BASIN PORTION OF PHELAN' S SERVICE AREA WHICH IS
9 MULTIPLYING THE SYSTEM LOSSES BY THE PERCENTAGE OF
10 PIPELINES. WE ADDED THE SYSTEM LOSSES TO THE RETURN
11 FLOW AND TO ACHIEVE THE LAST COLUMN WHICH IS THE TOTAL
12 RETURN FLOW. AND WE PROVIDED AN AVERAGE THERE AT THE
13 BOTTOM OF THE FIVE YEARS BETWEEN 2009 TO 2013.

14 Q WHAT IS THAT AVERAGE?

15 A THE AVERAGE IS 426 ACRE-FEET.

16 Q IS THAT TO SAY 426 ACRE-FEET OF RETURN
17 FLOW GENERATED BY THE PHELAN CUSTOMERS WITHIN THAT
18 PORTION OF THE SERVICE AREA THAT LIES OVER THAT PORTION
19 OF THE ANTELOPE VALLEY GROUNDWATER BASIN PLUS SYSTEM
20 LOSSES FROM THAT PORTION OF THE SYSTEM THAT IS WITHIN
21 THAT SAME SERVICE AREA? I MIGHT NEED TO BREAK THAT UP A
22 LITTLE BIT.

23 DOES THAT MAKE SENSE TO YOU?

24 A THAT DOES MAKE SENSE, YES.

25 Q TO TRY TO ILLUSTRATE THAT A LITTLE BIT
26 MORE CLEARLY, I WILL ASK YOU TO TURN BACK, MR. HARDER,
27 TO EXHIBIT 39 PLEASE. IT' S ESSENTIALLY THE PARCEL MAP;
28 IS THAT CORRECT?

1 A YES.

2 Q WHEN YOU SAY AN AVERAGE OF 426 ACRE-FEET
3 ON AVERAGE OF RETURN FLOW IS GENERATED, ARE YOU SAYING
4 THAT'S RETURNED FLOW THAT IS GENERATED BY THE PHELAN
5 CUSTOMERS AS DEPICTED ON THESE PARCELS WITHIN THIS
6 PARTICULAR EXHIBIT, EXHIBIT 39?

7 A IT'S THE RETURN FLOW THAT OCCURS IN THE
8 ANTELOPE VALLEY GROUNDWATER BASIN PORTION OF PHELAN'S
9 SERVICE AREA WHICH IS THE AREA BETWEEN THE COUNTY
10 BOUNDARY AND THE EASTERN PORTION OF THE ANTELOPE VALLEY
11 GROUNDWATER BASIN BOUNDARY AND BENEATH THESE PARCELS
12 DEPICTED HERE.

13 Q "THESE PARCELS" WHICH YOU ARE HIGHLIGHTING
14 WITH YOUR LASER?

15 A WHICH I AM HIGHLIGHTING WITH MY LASER.

16 Q THE POLYGONS; CORRECT?

17 A YES.

18 Q IN ADDITION TO THE PARCELS/POLYGONS, YOUR
19 426 ACRE-FOOT NUMBER IS ALSO INCLUDING SYSTEM LOSSES
20 FROM THAT PORTION OF THE PHELAN DISTRIBUTION SYSTEM THAT
21 IS WITHIN THAT SAME PORTION OF THE SERVICE AREA OF THE
22 ANTELOPE VALLEY GROUNDWATER BASIN?

23 A THAT'S CORRECT.

24 Q TURNING BACK TO EXHIBIT 44, MR. HARDER,
25 YOUR RETURN FLOW CHART. BEFORE WE LEAVE THIS EXHIBIT,
26 IS THERE ANYTHING ELSE OF SIGNIFICANCE THAT YOU WOULD
27 LIKE TO MENTION?

28 A I DON'T HAVE ANYTHING FURTHER.

1 Q ONE QUESTION COMES TO MY MIND. ON THE
2 FIFTH COLUMN FOR THE PPH-CSD WATER DISTRIBUTION
3 PIPELINES AND THE AVGWB, IN PARENTHESES YOU HAVE THE
4 PERCENTAGE SYMBOL. WILL YOU EXPLAIN, PLEASE, HOW YOU
5 CALCULATED THAT PERCENTAGE THAT SHOWS AS 21 PERCENT AND
6 ALL FIVE ROWS FOR YEARS 2009 TO 2013.

7 A IF I CAN DIRECT YOU TO THE PREVIOUS
8 EXHIBIT THAT WE JUST HAD UP SHOWING THE PARCELS.

9 Q SURE. LET'S TURN BACK TO EXHIBIT 43.

10 A I AM POINTING TO A PORTION, SOME LANGUAGE
11 THAT IS RIGHT BELOW THE MAP FEATURES WHICH IS THE
12 DESCRIPTION OF THE FEATURES ON THE MAP. THAT SHOWS THE
13 LENGTH OF PIPELINE THAT IS WITHIN THE ANTELOPE VALLEY
14 GROUNDWATER BASIN PORTION OF PHELAN'S SERVICE AREA.
15 IT'S THE LENGTH OF PIPELINE REPRESENTED BY THE BLUE
16 PIPELINE HERE.

17 THAT IS 21 PERCENT BY LENGTH OF THE TOTAL
18 PIPELINE THAT EXISTS THROUGHOUT THE ENTIRE SERVICE AREA.
19 SO WE JUST BASICALLY SAID THERE IS A TOTAL AMOUNT OF
20 LENGTH OF PIPELINE IN THE SERVICE AREA. 21 PERCENT OF
21 THAT PIPELINE OCCURS WITHIN THE ANTELOPE VALLEY
22 GROUNDWATER BASIN.

23 THE COURT: SO YOU ARE ASSUMING THE LEAKING IS
24 CONSTANT?

25 THE WITNESS: WE ARE ASSUMING THE LEAKING IS
26 CONSISTENTLY DISTRIBUTED, YES. THAT IS PART OF THE
27 ASSUMPTION.

28 THE COURT: I GOT YOU.