

1 **DECLARATION OF LEAH S. GOLDBERG AUTHENTICATING DEPOSITIONS OF**
2 **ANNE L. OLSON, WENDY WYELS, AND HOWARD HOLD**

3 I, Leah S. Goldberg, if called upon to testify will competently testify as follows:

4 1. I am Senior of Counsel with the law firm of Meyers, Nave, Riback, Silver &
5 Wilson, attorneys of record herein for Stanislaus County ("County").

6 2. I make this declaration to authenticate that the deposition transcripts
7 attached hereto are true and correct copies of the rough transcripts of Ms. Anne Olson,
8 Mr. Howard Hold and Ms. Wendy Wyels.

9 3. In my role as Senior of Counsel on this case and pursuant to Meyers,
10 Nave's representation of the County, I personally attended the deposition of Anne L.
11 Olson (attached hereto as Exhibit 30). Ms. Olson's deposition was taken on Friday,
12 February 4, 2011.

13 4. In my role as Senior of Counsel on this case and pursuant to Meyers,
14 Nave's representation of the County, I personally attended the deposition of Wendy
15 Wyels (attached hereto as Exhibit 31). Ms. Wyels's deposition was taken on Friday,
16 February 4, 2011.

17 5. In my role as Senior of Counsel on this case and pursuant to Meyers,
18 Nave's representation of the County, I personally attended the deposition of Howard Hold
19 (attached hereto as Exhibit 32). Mr. Hold's deposition was taken on Friday, February 4,
20 2011.

21 6. In my role as Senior of Counsel on this case and pursuant to Meyers,
22 Nave's representation of the County, while I did not attend the Deposition of Howard Hold
23 on February 8, 2011, on information and belief, I believe it to be a true and correct copy
24 of the rough deposition transcript of Howard Hold's deposition on that date (attached
25 hereto as Exhibit 33).

26 7. In my role as Senior of Counsel on this case and pursuant to Meyers,
27 Nave's representation of the County, while I did not attend the Deposition of Ms. Wyels'
28 on February 8, 2011, on information and belief, I believe it to be a true and correct copy

1 of the rough deposition transcript of Wendy Wyels' deposition on that date (attached
2 hereto as Exhibit 34).

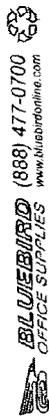
3 8. In my role as Senior of Counsel on this case and pursuant to Meyers,
4 Nave's representation of the County, I personally assembled the exhibits, numbers 1
5 through 12, to the Depositions of Anne L. Olson, Wendy Wyels, and Howard Hold
6 (attached hereto as Exhibit 35).

7 I declare under penalty of perjury under the laws of the State of California that the
8 foregoing is true and correct, and that this declaration was executed on this ____ day of
9 February, 2011, in Oakland, California.

10
11 
12 Leah S. Goldberg

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Deposition of ANNE L. OLSON - 2/4/11

1 BEFORE THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 2 CENTRAL VALLEY REGION
 3
 4 In Re:
 5 Proposed Cease and Desist Order,
 6 Geer Road Class III Landfill,
 7 Stanislaus County,
 8 _____
 9
 10
 11
 12 DEPOSITION OF ANNE L. OLSON
 13
 14 DATE: Friday, February 4, 2011
 15 TIME: 9:37 a.m. through 12:32 p.m.
 16 PLACE: California Regional Water Quality Control Board
 17 11020 Sun Center Drive, Suite 200
 18 Rancho Cordova, California
 19 PURSUANT TO: Notice
 20 REPORTED BY: ROSE M. GONI
 21 CRR/RMR, CSR NO. 8760
 22 _____
 23 DAWN SUE STEFKO
 24 CERTIFIED SHORTHAND REPORTERS
 25 2012 Easton Drive
 Burlingame, California 94010
 BUS/FAX (650) 685-1795
 dawnstefko@aol.com

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1 **APPEARANCES:**
 2 For the Stanislaus County Department of Environmental Resources: MEYERS, NAVE, RIBACK, SILVER & WILSON
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 10
 11 For the CRWQCB Central Valley Region: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
 12 STATE WATER RESOURCES CONTROL BOARD
 13 OFFICE OF CHIEF COUNSEL
 14 BY: PATRICK E. PULUPA,
 15 STAFF COUNSEL
 16 1001 I Street
 17 22nd Floor
 18 Sacramento, California 95814
 19 (916) 341-5189
 20
 21 Also present: JOSH TOSNEY, Extern
 22 State Water Resources Control Board
 23
 24
 25

1 --o0o--
 2 **ANNE L. OLSON,**
 3 having been first duly affirmed by
 4 the Certified Shorthand Reporter
 5 to tell the truth, the whole truth
 6 and nothing but the truth testified
 7 as follows:
 8 **EXAMINATION BY MR. NEWMARK:**
 9 Q. Would you please state and spell your name for the record.
 10
 11 A. My name is Anne Lenore Olson. That's A-n-n-e,
 12 L-e-n-o-r-e, O-l-s-o-n.
 13 Q. And, Ms. Olson, do you understand that the oath that was just administered has the same force and effect of an oath that would be administered in a court of law and that the penalties of perjury apply equally?
 14
 15 A. Yes.
 16 Q. Have you ever had your deposition taken before?
 17
 18 A. No.
 19 Q. I'll run through kind of the explanation of how it works. It's a little different in this situation from a normal deposition, but I've been saying this for too long and I'll just tell you the admonitions that I always use.
 20
 21 The woman sitting to my right is a court
 22
 23
 24
 25

Deposition of ANNE L. OLSON - 2/4/11

1 reporter. She's going to be taking down everything that
 2 we say today. When we're finished, it's going to be
 3 prepared and bound in a booklet called a transcript.
 4 You've probably seen transcripts from board proceedings,
 5 so it's very similar to that.
 6 Unlike in board hearings, we have to try not to
 7 talk at the same time because it's very difficult for
 8 the court reporter to take down accurately what's
 9 happening if we're both talking over each other. That's
 10 especially hard for lawyers, but I'll do my best. And
 11 when I'm talking, try to let me finish the question.
 12 And I'll try to not interrupt you and let you finish the
 13 answer.
 14 **A. Okay.**
 15 **Q.** If I ask you a question and you don't
 16 understand it, I need you to tell me that you don't
 17 understand it. If you don't ask for that clarification,
 18 we'll be entitled to assume down the road that you did
 19 understand the question.
 20 Because this is all being taken down, we're not
 21 taking a video or anything like that, we need to get an
 22 audible response. So nodding or saying uh-huh or nuh-uh
 23 don't show up well on the transcript. That doesn't keep
 24 me from doing it myself, but I'll ask you to try to
 25 refrain from doing that.

1 When we're finished Patrick and I, Mr. Pulupa
 2 and I, your counsel, will talk about how quickly we're
 3 going to try to have the court reporter prepare the
 4 transcript. When it's done, it will be provided to you.
 5 You'll have an opportunity to review it and make any
 6 corrections that you may need to make.
 7 However, I have to tell you that you need to
 8 give me the best testimony you can today. If you
 9 correct typos or a misspelled name, no one will really
 10 notice that. But if you make a substantive change, such
 11 as a yes to a no, that, we will be entitled to comment
 12 upon that later and it may reflect poorly on your
 13 credibility.
 14 Is there any reason you can't give your best
 15 testimony today, like you're on cold medicine or
 16 something impairing your ability?
 17 **A. No.**
 18 **Q.** I don't think we'll get into this too much
 19 today, but we're entitled to get your best testimony,
 20 but we don't want you to guess or speculate.
 21 So to explain the difference between your best
 22 estimate or your best testimony and a wild guess, the
 23 example that lawyers use is if I asked you to estimate
 24 the length of this conference room table, you'd be able
 25 to look at it and give me your best estimate. If I

1 asked you to describe my table in my kitchen, you have
 2 never seen it so you'd have to guess.
 3 Do you understand the difference?
 4 **A. Yes.**
 5 **Q.** Okay. And then, finally, you're not a prisoner
 6 here. If you need to take a break or leave, want to
 7 talk to your lawyer, that's fine. If you want to talk
 8 to your lawyer with a question pending, we may, you
 9 know, comment on that. But it's up to you and your
 10 lawyer, if you need to leave or take a break for any
 11 reason.
 12 **A. Okay.**
 13 **Q.** Are there any questions you have before we get
 14 rolling?
 15 **A. No.**
 16 MR. NEWMARK: Off the record a moment.
 17 (Discussion off the record.)
 18 (Whereupon Exhibit Number 1 was marked for
 19 identification.)
 20 BY MR. NEWMARK:
 21 **Q.** I'm going to ask that the court reporter mark
 22 this document entitled "Amended Notice of Deposition" as
 23 Exhibit 1. And I'll ask you to take a look at that
 24 document and tell me if you've seen that document
 25 before.

1 **A. Yes.**
 2 **Q.** And do you understand that you are here to
 3 provide testimony today in response to that notice of
 4 deposition?
 5 **A. Yes.**
 6 **Q.** And do you understand that the Regional Water
 7 Quality Control Board, Central Valley Region, has
 8 designated you as a witness to testify on certain of
 9 those categories on behalf of the Regional Board?
 10 **A. Yes.**
 11 **Q.** I'm going to use my copy of this document that
 12 I received from your counsel. I'll ask that the court
 13 reporter mark this as Exhibit 2.
 14 (Whereupon Exhibit Number 2 was marked for
 15 identification.)
 16 BY MR. NEWMARK:
 17 **Q.** Have you ever seen this document?
 18 **A. Yes.**
 19 **Q.** And that document appears to me to be a list of
 20 the categories or summary of the categories in the
 21 amended notice of deposition, with Xs to indicate which
 22 Regional Board witness is going to be most knowledgeable
 23 on the particular categories. Is that a fair
 24 description of the document?
 25 **A. I'm not sure. Can you repeat that?**

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1 MR. NEWMARK: Can you read that back.
 2 (Record read.)
 3 THE WITNESS: Yes.
 4 BY MR. NEWMARK:
 5 Q. Okay. And there are certain categories where
 6 the X is underneath your name indicating you are the
 7 witness to be most knowledgeable on those categories; is
 8 that correct?
 9 A. Yes.
 10 Q. And you're prepared to give testimony on those
 11 categories as indicated?
 12 A. Yes.
 13 Q. Thank you.
 14 Could you please -- you work for the California
 15 Regional Water Quality Control Board, Central Valley
 16 Region, do you not?
 17 A. Yes.
 18 Q. If we refer to that as the "Regional Board,"
 19 we'll all understand what we're talking about?
 20 A. Yes.
 21 Q. What is your title and position with the
 22 Regional Board?
 23 A. My title is senior water resource control
 24 engineer. And my position is that of a supervisor of a
 25 unit of compliance and enforcement staff.

1 Q. And what institution did you obtain that
 2 bachelor's degree from?
 3 A. University of California at Berkeley.
 4 Q. And what year did you obtain that degree?
 5 A. 1988.
 6 Q. And are you a registered professional engineer
 7 with the State of California?
 8 A. Yes.
 9 Q. And have you maintained that certification
 10 essentially since you graduated from college?
 11 A. No.
 12 Q. Very good not to volunteer information.
 13 Patrick did a good job preparing.
 14 When did you not maintain that certification?
 15 A. I did not obtain that certification until after
 16 I had graduated from college.
 17 Q. Okay. When were you first certified by the
 18 state?
 19 A. I'm not entirely sure. I can estimate.
 20 Q. I would appreciate that.
 21 A. I would estimate that it was 1993.
 22 Q. Since 1993 have you been continuously certified
 23 as a professional engineer by the State of California?
 24 A. Yes.
 25 Q. And I already forgot. Was it in civil

1 Q. And how many people do you supervise?
 2 A. Five.
 3 Q. And how does the supervisory chain go above
 4 you?
 5 A. Wendy Wyels is my immediate supervisor. Her
 6 immediate supervisor is Rick Moss, and he reports to
 7 Pamela Creedon.
 8 Q. How long have you worked for the Regional
 9 Board?
 10 A. A little over 11 years.
 11 Q. And can you give me a brief summary of the
 12 positions you've held during those 11 years?
 13 A. Yes.
 14 I was a staff engineer in the Title 27 exempt
 15 waste discharge to land program until November of 2009,
 16 when I was promoted to senior engineer.
 17 Q. Were there any other positions you held before
 18 the one you described in 2009, or that was for the eight
 19 years that you worked for the Regional Board you were in
 20 that same position?
 21 A. Correct.
 22 Q. Would you describe your educational background
 23 for me?
 24 A. Yes. I have a bachelor's degree in civil
 25 engineering.

1 engineering?
 2 A. Yes.
 3 Q. Thank you.
 4 Did you have any particular type of engineering
 5 that was the focus of your coursework at Cal?
 6 A. Yes.
 7 Q. Can you tell me what that was?
 8 A. Structural engineering.
 9 Q. Is that like bridges and buildings and things
 10 like that?
 11 A. Yes.
 12 Q. How would you describe the type of engineering
 13 that you were doing when you were in the Title 27 exempt
 14 unit? Is that still civil engineering?
 15 A. Yes.
 16 Q. Would it still fall within the umbrella of
 17 structural engineering or is it a different type of
 18 civil engineering?
 19 A. It's different.
 20 Q. How would you describe that category of civil
 21 engineering?
 22 A. I would say the closest description would be
 23 environmental engineering.
 24 Q. Did you get training in environmental
 25 engineering as you were working at the Regional Board or

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1 before then?
 2 **A. Yes.**
 3 **Q.** Could you summarize that training for me?
 4 **A. My first position out of college I worked for a**
 5 **consulting firm for ten years, working almost**
 6 **exclusively in environmental engineering and**
 7 **geotechnical engineering.**
 8 **Q.** What consulting firm was that?
 9 **A. Dames & Moore.**
 10 **Q.** And where were you located?
 11 **A. Sacramento.**
 12 **Q.** And did you work on any landfill sites when you
 13 were at Dames & Moore?
 14 **A. Yes.**
 15 **Q.** Do you recall which landfill sites?
 16 **A. Yes.**
 17 **Q.** Would you please tell me what they were?
 18 **A. The City of Ukiah Municipal Landfill and the**
 19 **Altamont Landfill.**
 20 **Q.** And both of those are landfills within the
 21 Central Valley Region?
 22 **A. No.**
 23 **Q.** Which regional boards?
 24 **A. I'm sorry, the question was?**
 25 **Q.** I didn't finish my question because I didn't

13

1 figure out how to finish that sentence.
 2 Which regional board regulates those landfills?
 3 **A. The Altamont Landfill is regulated by the**
 4 **Central Valley Regional Water Quality Control Board.**
 5 **The City of Ukiah landfill, I'm not certain.**
 6 **Q.** Okay. We talked about the fact that our copies
 7 of the tentative Cease and Desist Order seem to have
 8 disappeared, but I believe you have a clean copy that
 9 you volunteered to allow us to use as an exhibit. Is
 10 that correct?
 11 **A. Yes.**
 12 **Q.** May I borrow that for a second to have the
 13 court reporter mark this as Exhibit 3?
 14 **A. Yes.**
 15 (Whereupon Exhibit Number 3 was marked for
 16 identification.)
 17 BY MR. NEWMARK:
 18 **Q.** Would you please describe Exhibit 3 for the
 19 record.
 20 **A. Exhibit 3 is a copy of a draft Cease and Desist**
 21 **Order that was issued to the County of Stanislaus for**
 22 **review and comment.**
 23 **Q.** And if during this deposition I refer to the
 24 County of Stanislaus as "the County," will you
 25 understand that I'm referring to the County of

14

1 Stanislaus?
 2 **A. Yes.**
 3 **Q.** Did you play a role in the preparation of that
 4 draft Cease and Desist Order?
 5 **A. Yes.**
 6 **Q.** Would you describe the role you played in the
 7 preparation of that document?
 8 **A. I provided guidance to Howard Hold on the**
 9 **content of the findings and how they should be written**
 10 **from an editorial standpoint. I assisted in the**
 11 **preparation of the scope of work that's contained in the**
 12 **ordering paragraphs of the document. And I provided**
 13 **editorial work on the entire draft document before it**
 14 **was issued.**
 15 **Q.** When did you first become involved in issues
 16 related to the Geer Road Landfill?
 17 **A. I can't give you a specific date, but I can**
 18 **estimate it.**
 19 **Q.** Thank you.
 20 **A. I would estimate it as July 2010.**
 21 **Q.** And what was the nature of your involvement in
 22 approximately July 2010 with regard to the Geer Road
 23 Landfill?
 24 **A. Howard Hold told me that he had some concerns**
 25 **about the situation at the landfill.**

15

1 **Q.** And is Howard Hold an employee whom you
 2 supervise?
 3 **A. Yes.**
 4 **Q.** And would you please be able to describe to me,
 5 to the best of your recollection, what his concerns were
 6 in July of 2009 [sic]?
 7 **A. Yes. He told me that the landfill had had a**
 8 **release of waste constituents to groundwater and that**
 9 **the facility was in corrective action but that it**
 10 **appeared to him that the corrective action was not**
 11 **adequate to comply with Title 27.**
 12 **Q.** Did he say anything else, or is that a good
 13 summary of what he told you?
 14 **A. I would say that's the gist of it. I don't**
 15 **recall too many details from the conversation.**
 16 **Q.** And did you give him any direction as a result
 17 of this conversation?
 18 **A. Yes.**
 19 **Q.** What was your direction to Mr. Hold?
 20 **A. I asked him to perform a compliance evaluation**
 21 **in consideration of the waste discharge requirements and**
 22 **Title 27 and to report his findings to me.**
 23 **Q.** And is a compliance evaluation a procedure that
 24 you use at the Regional Board that Mr. Hold would have
 25 understood what that entails?

16

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1 **A. I believe he understood what it entails. There**
2 **is not a written procedure.**
3 **Q.** Would it be fair to say that when you directed
4 Mr. Hold to conduct a compliance evaluation, basically
5 that meant look at Title 27, look at the applicable
6 waste discharge requirements and determine whether this
7 facility is in compliance with those legal provisions?
8 Is that correct?
9 **A. Yes.**
10 **Q.** And at that time, could you describe for me in
11 whatever way you think is the most effective, what were
12 the applicable waste discharge requirements?
13 **A. The waste discharge requirements that were**
14 **issued in 2009 are applicable.**
15 **Q.** Were you involved at all in the proceedings
16 leading up to the issuance of those waste discharge
17 requirements?
18 **A. No.**
19 **Q.** Are you aware of who was? Strike that.
20 Are you aware of which Regional Board staff
21 were primarily responsible for the development and
22 issuance of those waste discharge requirements?
23 **A. I have a hard time with that. I'm not sure who**
24 **was primarily responsible. I'm aware of a particular**
25 **person that I believe worked on them.**

17

1 **Q.** And who was that person?
2 **A. Mary Boyd.**
3 **Q.** And is Mary Boyd still an employee of the
4 Regional Board?
5 **A. Yes.**
6 **Q.** And what is her -- is she in a different unit
7 from you?
8 **A. No. She actually works for me.**
9 **Q.** And what's her title?
10 **A. She is a water resource control engineer.**
11 **Q.** Is there -- strike that.
12 After you directed Mr. Hold to conduct a
13 compliance evaluation for the Geer Road Landfill, when
14 was the next time this landfill came back to your
15 attention?
16 **A. Boy, I'm going to have to give you to the best**
17 **of my recollection type answer. It would have been**
18 **within six to eight weeks, I believe.**
19 **Q.** And within approximately six to eight weeks
20 what happened that brought the landfill back to your
21 attention?
22 **A. Howard had completed his compliance evaluation**
23 **and we discussed what his findings were.**
24 **Q.** Did he provide you with a written summary of
25 that compliance evaluation?

18

1 **A. There was not a single written compliance**
2 **evaluation at that time.**
3 **Q.** Maybe I should ask a broader question as to how
4 did Mr. Hold present you with the results of his
5 compliance evaluation?
6 **A. He had prepared kind of a list or a memorandum,**
7 **if you will, describing his particular evaluation of**
8 **conditions at the site.**
9 **Q.** And was it a formal memorandum or was it more
10 an outline of issues?
11 **A. I don't recall. I just recall it as being, you**
12 **know, a written document.**
13 **Q.** The memorandum I've seen in the records for
14 this facility -- and I don't know if this is what you're
15 referring to -- is a memorandum from Mr. Hold to you
16 dated 18 November 2010 entitled "Technical Evaluation of
17 Landfill Gas and Groundwater, Corrective Action Systems,
18 Geer Road Landfill, Stanislaus County."
19 I'll ask the court reporter to mark that as --
20 I think we're up to 4 now.
21 (Whereupon Exhibit Number 4 was marked for
22 identification.)
23 BY MR. NEWMARK:
24 **Q.** Is Exhibit 4 the memorandum that you're
25 referring to?

19

1 **A. It is not the exact memorandum, but it is the**
2 **culmination of Howard's technical evaluation.**
3 **Q.** So at the time -- I've lost track. You said it
4 was six to eight weeks from July 2009 when the Geer Road
5 Landfill came up, so that would be approximately
6 mid-August/September 2009? Am I doing my math correctly
7 there?
8 **A. Yes.**
9 **Q.** So that would have been before, several months
10 before this Exhibit 4, correct?
11 MR. PULUPA: You said 2009. Do you mean 2009
12 or 2010?
13 MR. NEWMARK: I did misspeak.
14 **Q.** So the September/October 2009, when Mr. Hold
15 provided you with a preliminary compliance assessment
16 memorandum, was actually more than a year before?
17 **A. No, no.**
18 **Q.** No?
19 **A. I'm sorry. This case first came to my**
20 **attention in 2010, approximately July of 2010.**
21 **Q.** Okay.
22 **A. So everything subsequent to that is 2010.**
23 **Q.** Okay. So just to make sure that I've got the
24 time frame right, when I asked you about your first
25 involvement in the case -- and I could leave this just

20

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1 for you to correct in the transcript -- as a matter of
 2 fact, let's go off the record.
 3 (Discussion off the record.)
 4 BY MR. NEWMARK:
 5 Q. So consulting with everybody in the room,
 6 including the court reporter, I'm the one that misspoke
 7 and put the wrong date. So your involvement was in
 8 2010?
 9 A. Yes.
 10 Q. And the preliminary discussions about
 11 Mr. Hold's conclusions of his compliance assessment
 12 would have been a couple of months before that
 13 compliance assessment culminated in the memorandum we've
 14 marked Exhibit 4; is that correct?
 15 A. Yes.
 16 Q. After you -- strike that.
 17 Was the preliminary memorandum that Mr. Hold
 18 provided to you in August or September/late summer 2010,
 19 do you know if that was included in the documents that
 20 were provided for Ms. Goldberg to review?
 21 A. It is not on the evidence list. I'm sorry. I
 22 do not believe so.
 23 Q. Okay. Do you recall enough about the content
 24 of that preliminary assessment to be able to tell me
 25 whether it differed in any material way from Exhibit 4?

21

1 A. It did not differ in any material way from
 2 Exhibit 4.
 3 Q. When was the last time you recall reviewing the
 4 preliminary memorandum?
 5 A. I don't recall.
 6 Q. Can you summarize for me what evidence or
 7 documents you reviewed to prepare for this deposition
 8 today?
 9 A. Yes. I reviewed the waste discharge
 10 requirements that were adopted in 2009 and the Cease and
 11 Desist Order draft version that was issued to the
 12 county. And I also reviewed some plans of the site that
 13 include the locations of groundwater monitoring wells
 14 and landfill gas wells.
 15 Q. And other than Mr. Pulupa, did you speak with
 16 anyone to prepare for this deposition?
 17 A. I'm not sure how to answer. I have spoken with
 18 other people about the deposition, but I don't know
 19 what...
 20 Q. Yeah, I think not to clear your schedule or
 21 figure out when. If you needed to get information to
 22 enable you to be the person most knowledgeable, I would
 23 like to know who you had to talk to to either confirm or
 24 to get the information.
 25 A. I did not.

22

1 Q. Okay. Maybe I can ask you to sort of fill in
 2 the gap of time for me between, you know, September
 3 approximately 2010 and the November 2010 memorandum we
 4 have as Exhibit 4 and what was your involvement in the
 5 development of the Regional Board action on the Geer
 6 Road Landfill?
 7 A. I supervised Howard Hold's work and edited his
 8 work.
 9 Q. Did you give him direction on changes to make
 10 or things to do to formalize that preliminary
 11 memorandum?
 12 A. This memorandum?
 13 Q. Well, when I refer to the "preliminary
 14 memorandum," I was intending to mean the preliminary
 15 memorandum he delivered to you in August or September of
 16 2010.
 17 A. I don't believe so.
 18 Q. Is the document we've marked as Exhibit 4 the
 19 best record of the culmination of the compliance
 20 assessment that you directed for the Geer Road Landfill?
 21 A. I believe so.
 22 Q. After you received the November 18th memorandum
 23 attached as Exhibit 4, what did you do with regard to
 24 the Geer Road Landfill?
 25 A. After this?

23

1 Q. Yes.
 2 A. I can't recall the exact date the draft Cease
 3 and Desist Order was issued, but at some point we issued
 4 the draft Cease and Desist Order. And since then we've
 5 met with the county and their consultant several times
 6 to discuss it.
 7 MR. NEWMARK: Can we go off the record.
 8 (Discussion off the record.)
 9 BY MR. NEWMARK:
 10 Q. Prior to the issuance of the November 18, 2010,
 11 memorandum attached as Exhibit 4, did you participate in
 12 any meetings with the county regarding the Geer Road
 13 Landfill?
 14 A. Yes.
 15 Q. Do you have a recollection of approximately how
 16 many meetings?
 17 A. I'm not sure if it was one or two.
 18 Q. Okay. But that's your best estimate is one or
 19 two?
 20 A. Yes.
 21 Q. Do you have a recollection of the time frame in
 22 which those meetings would have occurred?
 23 A. Yes. It would have been subsequent to Howard's
 24 initial findings or review of the compliance and prior
 25 to this memorandum. I'm going to estimate September.

24

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1 Q. Do you recall if that meeting was requested by
2 the county?
3 A. I believe we requested it.
4 Q. Was that meeting requested at your direction?
5 A. I don't recall.
6 Q. Do you recall why the Regional Board requested
7 that meeting?
8 A. Yes.
9 Q. Would you tell me the reason.
10 A. We had become aware of issues with regard to
11 the inadequacy of the corrective action at the Geer Road
12 Landfill. We had become aware that the county was not
13 fully complying with the waste discharge requirements
14 and we wanted to discuss it with county staff.
15 Q. And what was the reason that you wanted to
16 discuss it with county staff?
17 A. We wanted to explain our concerns and let them
18 know that we wanted them to come into compliance with
19 the waste discharge requirements.
20 Q. When I asked you to describe your concerns, the
21 reasons that you called the meeting with the county, you
22 said that you identified an inadequacy of the corrective
23 action and alleged violations of the waste discharge
24 requirements. And I don't know if those are two ways of
25 saying the same thing or are they two separate concerns.

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1 A. I'm sorry, can you repeat that?
2 Q. When I asked you why the meeting was called
3 with the county -- and I'm paraphrasing what you said --
4 I heard you say that you were concerned about the
5 apparent inadequacy -- and I'm also adding things like
6 "apparent" and "alleged" -- the apparent inadequacy of
7 the corrective action and the apparent, from the
8 Regional Board's perspective, noncompliance with the
9 waste discharge requirements.
10 And so those could be two different things or
11 they could be the same thing, in that the inadequacy of
12 the corrective action is part and parcel of failure to
13 comply with the waste discharge requirements. So I'm
14 asking if you can tell me whether those, from your
15 perspective, are two different questions that you had or
16 whether they're really just two different ways of saying
17 the same thing.
18 A. They might be two different ways of saying the
19 same thing.
20 Q. When you give me an answer like "They might be
21 two different ways of saying the same thing" --
22 A. I apologize.
23 Q. -- that's fine, but I just have to -- can you
24 give me a more definite answer than that?
25 A. I guess I could say they are two different ways

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1 of saying the same thing.
2 Q. Okay, thank you.
3 If we go to Exhibit 2, which includes the areas
4 that you've been designated to testify -- and if I can
5 peek with you since I volunteered my copy -- one of the
6 things you're testifying about is Category 2, the
7 factual and technical basis for the board's -- I'm
8 sorry, strike that whole question.
9 Looking at Exhibit 2, one of the categories
10 that you're designated to testify on is Category 1, "The
11 factual and technical basis for the Board's
12 determination that the County violated the WDRs." Is
13 that correct?
14 A. Yes.
15 Q. And so I'm going to run through some questions
16 about your evaluation of various issues with the WDRs.
17 A. Okay.
18 Q. And the landfill.
19 To your knowledge, did the county discharge
20 anything other than treated groundwater to the
21 infiltration trenches at the Geer Road Landfill?
22 A. No.
23 Q. To your knowledge, has the discharger complied
24 with the notification requirements in the Waste
25 Discharge Requirements section C(1)? And if you need to

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1 refer to those, that's fine.
2 A. Can you repeat the question?
3 MR. NEWMARK: Can you read back the question.
4 (Record read.)
5 THE WITNESS: No.
6 BY MR. NEWMARK:
7 Q. Can you explain to me your understanding of how
8 the discharger -- the county -- has failed to comply
9 with those notification requirements?
10 A. I'm sorry, I misspoke. I'm not aware of any
11 reason to believe that they have not complied with those
12 requirements.
13 Q. Okay, thank you.
14 A. I apologize.
15 Q. That's fine.
16 And I'll go ahead and ask that the court
17 reporter mark as Exhibit 5 a copy of the Waste Discharge
18 Requirements, Order Number R5-2009-0051.
19 (Whereupon Exhibit Number 5 was marked for
20 identification.)
21 BY MR. NEWMARK:
22 Q. And I'll show you this copy we're marking as
23 Exhibit 5 so you can confirm that's an accurate copy of
24 the waste discharge requirements.
25 A. I'm sorry, was there a question?

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1 Q. I'm asking you to confirm that that's, to the
2 best of your abilities -- to make a determination that's
3 an accurate copy of the waste discharge requirements.
4 A. It appears to be.
5 Q. Do you know if the county has maintained the
6 final cover on the landfill?
7 A. No.
8 Q. Does the Regional Board contend there have been
9 any violations of the WDR's monitoring and reporting
10 program?
11 A. I don't know.
12 Q. In the context of the proceedings on the draft
13 Cease and Desist Order that have been initiated, that
14 are part of this deposition, does the Regional Board
15 contend that there have been any violations of the
16 monitoring and reporting program?
17 A. May I take a moment?
18 Q. Sure. You're going to refer to Exhibit 3?
19 A. Exhibit 3.
20 I'm not sure how to answer that, and I would
21 like to consult with counsel.
22 MR. NEWMARK: Sure. I think we've been going
23 about an hour, so it's a fine time to take a five-minute
24 break.
25 MR. PULUPA: If we can also go off line to

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1 double-check one of the --
2 MR. NEWMARK: Let's go off the record.
3 (Discussion off the record.)
4 (Break taken.)
5 (Record read.)
6 (Discussion off the record.)
7 BY MR. NEWMARK:
8 Q. Are you able to answer the question?
9 A. I'm not sure if I fully am able to. I'm not
10 aware that we are alleging violations of the monitoring
11 and reporting program.
12 Q. Is there another witness that would be able to
13 speak to that, to your knowledge?
14 A. Perhaps Howard Hold.
15 Q. Okay. I previously asked you if you were aware
16 or something like if you know the discharger maintained
17 final cover on the landfill. I'm going to ask you that
18 question framed more similarly to the last one I just
19 asked.
20 In the context of the Cease and Desist Order
21 proceedings, does the Regional Board contend the county
22 has failed to maintain final cover on the landfill?
23 A. No.
24 Q. Did the county submit a cost estimate for
25 corrective action financial assurances to the Regional

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1 Board by June 30, 2009?
2 A. I need to refresh my memory.
3 MR. NEWMARK: Off the record.
4 (Discussion off the record.)
5 THE WITNESS: I believe Ms. Wyels might be
6 better able to answer that question.
7 MR. NEWMARK: Okay. Thank you.
8 Q. Can you tell me how it was determined that the
9 form of enforcement in this action would be a Cease and
10 Desist Order and not some other form of enforcement?
11 A. I'm not sure. Some of that might be
12 privileged.
13 MR. PULUPA: You can certainly say that it was
14 in consultation with the board's attorney.
15 THE WITNESS: In consultation with the board's
16 attorney.
17 BY MR. NEWMARK:
18 Q. Can you tell me what other enforcement options
19 were considered?
20 A. I don't recall specifically, but I believe that
21 we also considered a cleanup and abatement order.
22 Q. Did you consider a notice of violation?
23 A. I don't believe so.
24 Q. Who would have been the person to make the
25 determination on what form of enforcement is

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1 appropriate?
2 A. I believe Wendy Wyels in consultation with the
3 attorney and the head of the prosecution team.
4 Q. Okay. So if I wanted to ask questions about
5 different enforcement alternatives that may or may not
6 have been considered, those would be better directed to
7 Ms. Wyels?
8 A. I believe so.
9 MR. NEWMARK: And, Mr. Pulupa, you seem to be
10 indicating the affirmative as well?
11 MR. PULUPA: Yes. Wendy has a better overall
12 view of the options that are traditionally used for
13 these type of things.
14 BY MR. NEWMARK:
15 Q. Would it be accurate to say that, Ms. Olson,
16 you were directed to prepare a Cease and Desist Order?
17 A. Yes.
18 Q. And would that direction come from Ms. Wyels?
19 A. Yes.
20 Q. Do you recall when that direction was given?
21 A. I don't recall the precise date. At some point
22 after the meeting with county staff, which occurred in
23 the fall of 2010. I believe the fall.
24 Q. And who was in attendance at that meeting, to
25 the best of your recollection?

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1 **A. I believe it was Jami Aggers of the Stanislaus**
2 **County Department of Environmental Resources and Wayne**
3 **Pearce of SCS Engineers.**
4 **Q. And who attended representing the Regional**
5 **Board?**
6 **A. Wendy Wyels and Howard Hold and myself. I**
7 **don't recall if Patrick Pulupa was present.**
8 **Q. Okay. But to the best of your recollection**
9 **there was no one else in attendance at that meeting?**
10 **A. Yes.**
11 **Q. Can you describe for me what happened at that**
12 **meeting?**
13 **A. Yes. We explained our perspective in terms of**
14 **the evaluation of compliance that Howard Hold had done,**
15 **explained the deficiencies in the investigation of**
16 **groundwater impacts and deficiencies and corrective**
17 **action that we were concerned about and explained that**
18 **there was a report that had been submitted under the**
19 **WDRs that had proposed not to submit a subsequent report**
20 **that was due under the WDR. And we explained that that**
21 **was not acceptable and that we needed the county to**
22 **comply with the WDRs.**
23 **Q. Can you be more specific about which report you**
24 **were referring to that -- I think you said that the**
25 **county -- well, I can't remember. There was something**

1 about a subsequent report.
2 **A. Yes.**
3 **Q. Can you elaborate on that topic for me?**
4 **A. Yes. Can you be a little more specific about**
5 **what you want to know?**
6 **Q. Well, which report are we talking about?**
7 **A. Let me refresh my memory.**
8 **Q. I think you testified there was a report**
9 **submitted under the WDRs that proposed not to submit it a**
10 **subsequent report due under the WDRs.**
11 **A. That's correct.**
12 **Q. I guess I want to know which report was the**
13 **report that said they wouldn't submit the subsequent**
14 **report and which one was that.**
15 **A. The report that I referred to is in**
16 **Provision G.12.f of the waste discharge requirements, an**
17 **evaluation and monitoring report documenting the nature**
18 **and extent of groundwater contamination at the north end**
19 **of the landfill. The county submitted that report and**
20 **in the conclusions of the report or the transmittal**
21 **letter -- I'm not sure which -- stated that it was not**
22 **necessary to submit the next report, which is required**
23 **under Provision G.12.g of the waste discharge**
24 **requirements. That report was to be a corrective action**
25 **plan for the remediation of contaminated groundwater at**

1 **the north area of the landfill.**
2 **MR. NEWMARK: I've got a document here that I'm**
3 **going to ask the court reporter to mark as Exhibit 6.**
4 **(Whereupon Exhibit Number 6 was marked for**
5 **identification.)**
6 **BY MR. NEWMARK:**
7 **Q. I'll ask you to describe this document for the**
8 **record.**
9 **A. It is a document entitled "Evaluation of**
10 **Impacted Groundwater in North Area, Geer Road Landfill."**
11 **The publication date is October 30th, 2009.**
12 **Q. Is Exhibit 6 the report you were just referring**
13 **to?**
14 **A. I believe that it is.**
15 **Q. Can you identify for me the portion of this**
16 **report that, from the Regional Board's perspective,**
17 **stated that the county did not intend to submit a**
18 **subsequent report?**
19 **A. It appears to be found in Section 6 of the**
20 **report.**
21 **Q. Section 6, beginning on page 22, entitled**
22 **"Conclusions and Recommendations"?**
23 **A. Yes.**
24 **Q. And if you don't mind, if you could read**
25 **relatively slowly, so that the court reporter can keep**

1 up, the most pertinent couple of sentences, if you can
2 identify those?
3 **A. Yes.**
4 **The fourth paragraph on page 22 says that:**
5 **"Based on the facts that VOC impacts to**
6 **groundwater in the northern area of the site**
7 **appear to be limited to areas immediately**
8 **surrounding the landfill; have been caused by**
9 **prior landfill gas impacts that are now being**
10 **controlled; have relatively low concentrations**
11 **and concentrations have declined since the**
12 **implementation of the landfill gas control**
13 **systems; and greater corrective action measures**
14 **are planned and are currently being tested for**
15 **the landfill, there appears to be no reason to**
16 **further study this area or to implement**
17 **additional corrective action measures specific**
18 **to the area."**
19 **And then on page 23, the first paragraph**
20 **states:**
21 **"Since the nature and extent of groundwater in**
22 **the northern area has already been investigated**
23 **and defined, and since remedial activities have**
24 **been effective and additional system**
25 **improvements are underway, additional work to**

1 investigate the northern area does not appear
 2 to be warranted at this time."
 3 And subsequently, in paragraph 2, on page 23,
 4 it states:
 5 "Groundwater extraction and treatment in the
 6 northern area of the site is not recommended as
 7 it may cause greater problems by drawing higher
 8 VOC concentrations upgradient, away from the
 9 planned enhanced collection and treatment
 10 system."
 11 Q. Are there any other portions of this report
 12 that you wanted to call out?
 13 A. No.
 14 Q. At the September 2010 meeting, did the Regional
 15 Board disagree with any of the conclusions that you just
 16 read from the report?
 17 A. Yes.
 18 Q. Would it be fair to say the Regional Board --
 19 strike that.
 20 Of the conclusions that you discussed on
 21 page 22 of the report, can you identify for me of those
 22 things that you just read which of the conclusions the
 23 Regional Board disagreed with? You may say all of them.
 24 A. I believe that we were in disagreement as to
 25 evidence that would support the conclusions that were

1 made.
 2 Q. Would another way of saying that be the
 3 Regional Board contended that these conclusions were not
 4 adequately justified?
 5 A. That's correct.
 6 Q. And who at the meeting from the Regional Board
 7 perspective was in charge of making that determination?
 8 A. In charge of making that determination?
 9 Q. If there was somebody, yeah.
 10 A. I would say the person most knowledgeable would
 11 be Howard Hold.
 12 Q. And so on this issue as to whether or not the
 13 county's conclusions were justified, would you have
 14 deferred to Mr. Hold's assessment of that?
 15 A. Yes.
 16 Q. And to the best of your recollection, was the
 17 Regional Board's concerns about the justification for
 18 these conclusions communicated to the county at the
 19 September 10, 2010, meeting?
 20 A. Yes.
 21 Q. Can you remember who told the county about
 22 those concerns?
 23 A. No.
 24 Q. So can you remember what was said with regard
 25 to communicating those concerns to the county?

1 A. I can remember the gist of what was said.
 2 Q. Would you tell me what the gist of it was?
 3 A. That the proposal was not acceptable, that we
 4 could not authorize the county to not comply with the
 5 waste discharge requirements and that they needed to
 6 move forward and come into compliance with the
 7 provisions of the WDRs.
 8 Q. Was the problem that the Regional Board didn't
 9 believe that the county's conclusions were technically
 10 and factually justified, or was the concern that
 11 Regional Board staff lacked authority to allow the
 12 county to not comply with the waste discharge
 13 requirements?
 14 A. Primarily the first.
 15 Q. Did anyone at the meeting articulate the basis
 16 for the Regional Board's contention that there was a
 17 lack of technical and factual justification?
 18 A. I believe so.
 19 Q. Do you recall what that would be, or is that
 20 something I should ask Mr. Hold?
 21 A. I'm sorry, what's the question?
 22 Q. The communication -- strike that.
 23 I want to know what the Regional Board's basis
 24 for saying that there was a lack of technical and
 25 factual justification for the conclusions that we have

1 been talking about on page 22 of Exhibit 6. And if you
 2 can tell me, I'd like to hear it. But if that's
 3 something Mr. Hold needs to testify about...
 4 A. I guess the basis is review of the technical
 5 reports provided by the county and review of the waste
 6 discharge requirements.
 7 Am I not getting the question?
 8 Q. I think so. I was primarily focusing on the
 9 former, which would have been what about the technical
 10 reports did the Regional Board find inadequate on
 11 technical or factual grounds. That's an issue we need
 12 to hear about today. And I don't know whether you'd
 13 like to defer that to Mr. Hold or whether you feel
 14 comfortable telling me what was deficient about the
 15 justification in those reports.
 16 A. I feel comfortable telling you, based on the
 17 conclusions that I read to you with regard to those
 18 conclusions, in general what's missing.
 19 Q. Okay. I'd like to hear that.
 20 A. In the fourth paragraph of page 22, it says
 21 that, "...impacts to groundwater in the northern area of
 22 the site appear to be limited to areas surrounding the
 23 landfill..." That has not been demonstrated through
 24 groundwater monitoring.
 25 It says further, the next clause says,

1 "...have been caused by prior landfill gas impacts that
 2 are now being controlled..." There is not evidence that
 3 the landfill gas impacts are being completely
 4 controlled.
 5 And further down -- pardon me. I'll go to the
 6 next page, I think.
 7 On page 23, the first paragraph says, "Since
 8 the nature and extent of groundwater in the northern
 9 area has already been investigated and defined..." It
 10 has not been adequately investigated.
 11 "...and since remedial activities have been
 12 effective..." We don't have enough evidence to show
 13 that they have been effective.
 14 Q. Are there any other portions of these two pages
 15 you would like to identify as lacking justification from
 16 the Regional Board's perspective?
 17 A. I think it's possible that Howard might provide
 18 additional insights.
 19 Q. In the second paragraph on page 23, the last
 20 sentence reads:
 21 "Groundwater extraction and treatment in the
 22 northern area of the site is not recommended as
 23 it may cause greater problems by drawing higher
 24 VOC concentrations upgradient, away from the
 25 planned enhanced collection and treatment

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1 system."
 2 Do you see that?
 3 A. Yes.
 4 Q. It appears to me from that sentence that the
 5 northern area of the site that we've just been talking
 6 about and that appears to be the focus of this report is
 7 upgradient from the landfill. Is that your
 8 understanding as to the location of the northern area of
 9 the site?
 10 A. The northern area of the site is part of the
 11 landfill.
 12 Q. Is it the upgradient side of the landfill?
 13 A. Not necessarily.
 14 MR. NEWMARK: I think we're going to need a
 15 couple of maps today, so I'm not going to feel bad if I
 16 don't choose exactly the right one the first time.
 17 I'll ask that the court reporter mark this map
 18 as Exhibit 7.
 19 (Whereupon Exhibit Number 7 was marked for
 20 identification.)
 21 BY MR. NEWMARK:
 22 Q. Can you give us a good identification for this
 23 map?
 24 A. It's a plan that's dated July 24th, 2008. The
 25 title is "Landfill Gas Recovery Well Locations,

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1 Extraction Well Installation, Geer Road Landfill,
 2 Modesto, California."
 3 Q. Okay. And I'll represent to you I've been
 4 informed by SCS Engineers that this version of the map
 5 that we're looking at today has sort of been continually
 6 updated, with, for example, new well sites. So it's my
 7 understanding that this is not what we're looking at
 8 circa 2008. It's relatively current. I think we'll
 9 just refer to it as the Exhibit 7 map for now. It has
 10 been adequately identified.
 11 Can you indicate for me what we're talking
 12 about as the north area of the site on this map?
 13 A. When I talk about the north area of the site, I
 14 refer to the northernmost portion of the landfill that
 15 is approximately from Jantzen Road north, bounded on the
 16 south by Jantzen Road, bounded on the east by Geer Road
 17 and bounded to the north and west by what appears to be
 18 a site access road.
 19 MR. NEWMARK: Can we go off the record a
 20 second.
 21 (Discussion off the record.)
 22 MR. NEWMARK: I've got a document entitled
 23 "Second Semiannual and Annual 2010 Detection, Evaluation
 24 and Corrective Action Monitoring Report, Geer Road
 25 Landfill," dated January 31st, 2011, prepared by

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1 SCS Engineers. And I've discussed with your attorney
 2 that due to the size of this report, we're not going to
 3 attach the whole thing as an exhibit.
 4 Q. I'm going to show you this report and see if
 5 you can find for me an isoconcentration map that we
 6 could use to talk about the groundwater gradient in the
 7 north area of the landfill.
 8 A. It appears that they're contained in
 9 Appendix I. Do you want me to pull them out?
 10 Q. Yes, please. Or whichever one you think is the
 11 best to look at.
 12 A. There appears to be one for each. There are
 13 several.
 14 There are several isoconcentration maps.
 15 Q. Well, I guess we can start with the first one.
 16 A. (Hands to counsel.)
 17 Q. And you've taken some what we're calling
 18 isoconcentration maps from Appendix I?
 19 A. Yes.
 20 Q. To the -- we can call that the second 2010
 21 semiannual report?
 22 A. Yes.
 23 Q. And the top sheet here is entitled "1,1
 24 Dichloroethane Deep Wells, May 2010, Contour Interval
 25 Equals 0.4 Micrograms Per Liter." Is that correct?

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1 A. Yes.
 2 Q. Does this map show us what people would call
 3 the groundwater gradient?
 4 A. No.
 5 Q. Does one of the other maps that we pulled out
 6 show us that?
 7 A. No. These are isoconcentration maps.
 8 Q. Oh, I'm using the wrong thing.
 9 Since we're looking at the isoconcentration
 10 maps, can you show me whether either of these maps
 11 reflects the VOC impacts to groundwater in the north
 12 area of the site that the Regional Board was concerned
 13 about?
 14 A. There are numerous maps here, but the
 15 particular first page, the 1,1 deep wells
 16 dichloroethane, indicates there are no impacts in the
 17 north area of the landfill for that constituent in the
 18 deep wells.
 19 Q. I presume that there will, as you -- for
 20 certain constituents in certain aquifers, are going to
 21 be addressing things other than what we're talking about
 22 right now.
 23 A. Correct.
 24 Q. So if you want to take a moment to flip through
 25 those and identify some of the maps that are pertinent

1 of the pages in each pile qualify as showing impacts?
 2 I guess this is your pile that shows impacts,
 3 right?
 4 A. Yes.
 5 Q. Do both sides?
 6 A. In this particular case, both sides of the
 7 documents show impacts in the north area of the
 8 landfill.
 9 In the case of the pile that -- the other pile,
 10 I believe the same is true, although there is a little
 11 -- the pile that I designated as not showing impacts in
 12 the north area of the landfill, as I defined my
 13 understanding of the north area of the landfill,
 14 technically you could say that these also show some
 15 impacts, but I consider them to be substantially lower
 16 than the other pile.
 17 Q. So this is, I guess, the primary pile of
 18 documents that you've identified as indicating impacts,
 19 correct?
 20 A. Correct.
 21 MR. NEWMARK: So I'll ask that the court
 22 reporter identify this packet of maps as Exhibit 8.
 23 (Whereupon Exhibit Number 8 was marked for
 24 identification.)
 25 MR. PULUPA: Can we read off the titles of

1 to the VOC -- the alleged VOC impacts in the north area
 2 of the site, that would be great.
 3 A. They're all pertinent. There are different
 4 constituents, different zones, different monitoring
 5 events represented in these drawings.
 6 Q. I thought you just explained that the top page
 7 showed, because it's for a particular constituent in the
 8 deep zone and a particular deep well, it doesn't
 9 particularly show impacts in the north area of the site.
 10 A. It does not indicate impacts in the north area
 11 of the site.
 12 Q. Okay.
 13 MR. PULUPA: I think we're trying to look for
 14 maps that do indicate impacts in the north site.
 15 MR. NEWMARK: Right.
 16 THE WITNESS: Can you repeat your question,
 17 please?
 18 BY MR. NEWMARK:
 19 Q. Well, I asked you to identify the maps that
 20 depict or indicate VOC impacts in the north area of the
 21 site. And it looks like you've collected some.
 22 A. I separated them out into two piles, those
 23 which do not appear to indicate impacts of VOCs and
 24 those which do.
 25 Q. And since these are double sided, do both sides

1 those maps?
 2 MR. NEWMARK: I was trying to avoid that.
 3 MR. PULUPA: There is a lot of them.
 4 MR. NEWMARK: We can go off the record.
 5 (Discussion off the record.)
 6 BY MR. NEWMARK:
 7 Q. You've said that at the September 2010 meeting
 8 it was communicated to the county that there was, from
 9 the Regional Board's perspective, inadequate
 10 justification for the conclusions and recommendations in
 11 Exhibit 6; is that correct?
 12 A. I believe so, yes.
 13 Q. Were those concerns ever communicated to the
 14 county in writing?
 15 A. I don't know.
 16 Q. Do you know who would be the best witness for
 17 me to ask that question to?
 18 A. Howard Hold, I believe.
 19 Q. To your knowledge, did the Regional Board ever
 20 provide formal written comments on this corrective
 21 action, on this -- strike that.
 22 To the best of your knowledge, did the Regional
 23 Board ever provide written comments to the report that
 24 we've attached as Exhibit 6?
 25 A. No.

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1 Q. Did the Regional Board direct the county at the
 2 September 2010 meeting to prepare and submit a
 3 corrective action plan for the north area of the site,
 4 notwithstanding the county's conclusions in this report
 5 that such corrective action was not appropriate?
 6 (Discussion off the record between the
 7 witness and Mr. Pulupa.)
 8 MR. PULUPA: "Direct" may be a term of art.
 9 Would it be appropriate to rephrase that as asked?
 10 MR. NEWMARK: Or "tell." Let me restate the
 11 question.
 12 Q. Did the Regional Board tell the county at the
 13 September 2010 meeting to prepare and submit a
 14 corrective action plan for the north area of the site,
 15 notwithstanding the county's conclusion in Exhibit 6
 16 that such corrective action was not appropriate?
 17 A. I believe so.
 18 MS. GOLDBERG: Can we take a break for a
 19 second?
 20 MR. NEWMARK: Sure.
 21 (Break taken.)
 22 BY MR. NEWMARK:
 23 Q. I'm going to hand you the documents that you've
 24 collected and that we've marked as Exhibit 8 and ask if
 25 you can identify which of these maps depict VOC impacts

1 in the north area of the site that exceed maximum
 2 contaminant levels.
 3 A. I will not be able to tell you that because I
 4 do not have the maximum contaminant levels memorized.
 5 Q. Is that something we should direct to Mr. Hold?
 6 A. He might be able to tell you. There are a
 7 great number of constituents of concern here. And
 8 maximum contaminant levels is just one of potential
 9 regulatory levels. It's a lot to -- most people don't
 10 keep it in their memory, I don't think, so I don't
 11 necessarily expect that he would be able to come out
 12 with it in that way.
 13 MR. PULUPA: Would it be safe to say these are
 14 all background levels?
 15 THE WITNESS: Yes. There is no -- or I should
 16 say background should be zero. These are all manmade
 17 constituents.
 18 BY MR. NEWMARK:
 19 Q. Doesn't that presume there is no upgradient
 20 sources of these constituents?
 21 A. Does what presume?
 22 Q. Well, if you're saying there's no background --
 23 why don't you tell me what "background" means as you're
 24 using it.
 25 A. Background would be the naturally occurring

1 groundwater quality can be -- it's usually upgradient of
 2 a site, but it also could be crossgradient, if it's
 3 reliably crossgradient, the same groundwater that
 4 represents what the conditions would be under the
 5 landfill if the landfill were not there.
 6 Q. But if there is an upgradient source of these
 7 contaminants, then background for purposes of the
 8 landfill would include whatever contaminants are in the
 9 upgradient groundwater for the site, correct?
 10 A. I'm sorry, I'm having a hard time understanding
 11 your question. Can you repeat it, please?
 12 MR. NEWMARK: Could you read it back.
 13 (Record read.)
 14 THE WITNESS: Yes.
 15 BY MR. NEWMARK:
 16 Q. Do you know whether there are any of these
 17 contaminants in the upgradient groundwater from the Geer
 18 Road Landfill?
 19 A. I'm sorry, can you clarify that, please?
 20 Q. What part of my question do you not understand?
 21 A. You seem to be asking whether the Geer Road
 22 Landfill has caused groundwater impacts upgradient of
 23 the site. Is that correct?
 24 Q. That's not what I'm trying to ask.
 25 You seem to testify that the background level

1 for all of these contaminants at the Geer Road Landfill
 2 is zero.
 3 A. To the best of my knowledge, it is.
 4 Q. And so I'm wondering how you know that.
 5 A. Because the data that we have in our records
 6 shows that there are no significant impacts that can't
 7 be attributed to the Geer Road Landfill.
 8 Q. Can you tell me what data that is that you're
 9 referring to?
 10 A. The groundwater monitoring data.
 11 Q. And is there a well that you've identified as a
 12 background well?
 13 A. There are several wells that are upgradient of
 14 the landfill. MW-16S comes to mind specifically, which
 15 is located on Jantzen Road, approximately 300 feet east
 16 of Geer Road.
 17 Q. And it's your testimony that the groundwater
 18 monitoring data for MW-16S demonstrates essentially
 19 non-detect for all the constituents?
 20 A. It's my belief it's the lowest and most likely
 21 non-detect, but not necessarily for every constituent.
 22 MR. NEWMARK: Can we go off the record.
 23 (Discussion off the record.)
 24 MR. NEWMARK: I'm going to ask the court
 25 reporter to --

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1 Go off the record.
 2 (Discussion off the record.)
 3 MR. NEWMARK: We'll mark this as Exhibit 9.
 4 (Whereupon Exhibit Number 9 was marked for
 5 identification.)
 6 BY MR. NEWMARK:
 7 Q. You have a copy of the document that the court
 8 reporter has marked as Exhibit 9.
 9 (Discussion off the record.)
 10 BY MR. NEWMARK:
 11 Q. It's entitled "Engineering Feasibility Study,
 12 Geer Road Landfill," prepared by SCS Engineers, dated
 13 February 13th, 2009.
 14 Do you see that?
 15 A. Yes.
 16 Q. And if you would turn to Figure 2-9, which is
 17 identified as "Water Level Contour Map, Shallow Wells,
 18 June 2008." Do you see that?
 19 A. Yes.
 20 Q. Does this map depict the groundwater gradient
 21 site?
 22 A. **It depicts the groundwater gradient in June of**
 23 **2008.**
 24 Q. In the shallow zone?
 25 A. **Correct.**

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1 Q. In June 2008, in the shallow zone, was the
 2 north area of the site the upgradient side of site?
 3 A. **Portions of it are, those that -- the**
 4 **northeastern portion would be considered upgradient.**
 5 Q. Do you know what portion of the north area of
 6 the site the Regional Board contends corrective action
 7 is needed?
 8 A. Yes.
 9 Q. Can you indicate that on the map we're looking
 10 at?
 11 A. **Yes. There is a big data gap between the MW-17**
 12 **and MW-3. There is no groundwater monitoring at all in**
 13 **that space of approximately 1500 feet. There is,**
 14 **therefore, no evidence to show the groundwater**
 15 **conditions in that area at all.**
 16 MR. NEWMARK: Can you read back my question.
 17 (Record read.)
 18 MR. NEWMARK: I don't think you answered the
 19 question.
 20 THE WITNESS: I'm sorry. Based on the data we
 21 have today, we know that there are detections of
 22 volatile organic constituents in the wells that are
 23 along the upgradient edge of the northern area of the
 24 landfill. Those require corrective action.
 25 In addition, the downgradient extent of those

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1 impacts has not been defined. So additional corrective
 2 action may be necessary further downgradient of that
 3 area.
 4 BY MR. NEWMARK:
 5 Q. I had understood your testimony earlier to
 6 state that the Regional Board contended specifically
 7 corrective action in the north was required, separate
 8 and apart from any other corrective action downgradient.
 9 Is that correct?
 10 A. **I don't believe so. I don't think you're**
 11 **understanding it.**
 12 MR. PULUPA: In addition to.
 13 THE WITNESS: So when I look at this site, I
 14 see, A, landfill site. And when I look at the
 15 deficiencies in groundwater monitoring and/or corrective
 16 action, I may refer to a portion of the site.
 17 In this particular case, we are concerned --
 18 you've been asking, I should say, about the northern
 19 portion of the site. And in the northern portion of the
 20 site, we do not have adequate corrective action, as
 21 evidenced by the ongoing detections of VOCs in the
 22 upgradient monitoring wells. And we have not defined
 23 the downgradient extent of the groundwater impacts in
 24 the northern portion of the landfill.
 25 ///

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1 BY MR. NEWMARK:
 2 Q. When I look at Exhibit 5, the waste discharge
 3 requirements, Provision G.12.g, to submit a corrective
 4 action plan for remediation of contaminated
 5 groundwater at the north area of the landfill, and
 6 Provision 12.h, to submit a well installation report for
 7 corrective action at the north area of the landfill, I
 8 understood that to be separate installation of wells and
 9 separate corrective action than what's referred to in
 10 Provision 12.i of the waste discharge requirements,
 11 discussing installation of potentially 20
 12 dual-completion groundwater extraction wells.
 13 A. **I believe that's correct.**
 14 Q. So what I'm asking is: Where did the Regional
 15 Board envision the wells that were supposed to be
 16 reported in Provision 12.h for corrective action in the
 17 north landfill would be generally?
 18 A. **That would have come out of the corrective**
 19 **action plan pursuant to Provision G.12.g. That would**
 20 **have been determined in that report, which they did not**
 21 **submit.**
 22 Q. Because the county concluded, among other
 23 things, in Exhibit 6, on page 23, "Groundwater
 24 extraction and treatment in the northern area of the
 25 site is not recommended as it may cause greater problems

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1 by drawing higher VOCs upgradient, away from the planned
 2 enhanced treatment and collection system."
 3 Is that a correct statement of the county's
 4 conclusion?
 5 **A. I believe so.**
 6 **Q.** And that was not one of the conclusions or
 7 recommendations that you identified as something the
 8 Regional Board disputed, correct?
 9 **A. I don't recall.**
 10 MR. PULUPA: I think she said the opposite,
 11 that they dispute that conclusion.
 12 BY MR. NEWMARK:
 13 **Q.** Do you have an understanding as to why that
 14 conclusion would be disputed, why it would be
 15 appropriate to do extraction and treatment on the
 16 upgradient side of the site?
 17 **A. It would be appropriate if they had completely**
 18 **characterized the groundwater impacts as required by the**
 19 **WDRs and pursuant to that characterization if they had**
 20 **determined that groundwater extraction would be the most**
 21 **appropriate means of corrective action, then, yes, I**
 22 **would disagree with that conclusion.**
 23 **There is no evidence in the record to support**
 24 **that claim.**
 25 **Q.** The "Evaluation of Impacted Groundwater in

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1 North Area" of the landfill, Exhibit 6, was submitted to
 2 the Regional Board in October 2009, was it not?
 3 **A. We have a date stamp of 30 October 2009, yes.**
 4 **Q.** To your knowledge, was the county notified of
 5 the Regional Board's concerns about this report that
 6 we've just been talking about before the September 2010
 7 meeting?
 8 **A. I don't believe so.**
 9 **Q.** Do you have an understanding as to why there
 10 was approximately an 11-month period between when the
 11 Regional Board received the report and when these
 12 criticisms of it were delivered to the county?
 13 **A. Yes.**
 14 **Q.** And what is your understanding?
 15 **A. We have more work than we can actually do at**
 16 **any given time.**
 17 **Q.** Did the Regional Board consider providing the
 18 county with an opportunity to respond to the Regional
 19 Board's concerns about this report?
 20 **A. Yes.**
 21 **Q.** And what was the conclusion of that
 22 consideration?
 23 **A. That we should meet with them and discuss it**
 24 **with them, which we subsequently did.**
 25 **Q.** And so the county was given an opportunity to

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1 orally respond to the Regional Board's oral concerns at
 2 that time?
 3 **A. Yes.**
 4 **Q.** And what was the county's response?
 5 **A. The county's response was that they seemed to**
 6 **agree to disagree on technical grounds.**
 7 **Q.** And did the Regional Board inform them that it
 8 intended to take enforcement as a result of that
 9 position by the county?
 10 **A. I don't believe that we informed them of any**
 11 **intent to take enforcement action.**
 12 **Q.** Do you believe the county left that
 13 September 2010 meeting with the understanding that this
 14 agreement to disagree on technical grounds that you've
 15 just described was an acceptable position to the
 16 Regional Board?
 17 **A. I'm sorry, kind of a complex question. Can you**
 18 **repeat it, please?**
 19 MR. NEWMARK: Can you read it back, please.
 20 (Record read.)
 21 MR. PULUPA: You do realize that's --
 22 THE WITNESS: I do believe they knew it was not
 23 acceptable to us.
 24 MR. PULUPA: It's tough for her to comment on
 25 the state of minds.

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1 MR. NEWMARK: That's why I asked her if she had
 2 a belief.
 3 Let's take a break.
 4 (Break taken.)
 5 BY MR. NEWMARK:
 6 **Q.** After the September 2010 meeting with the
 7 Regional Board -- strike that.
 8 At the September 2010 meeting between the
 9 county and the Regional Board, did the Regional Board
 10 say anything to let the county know that the Regional
 11 Board might ultimately accept the county's proposal with
 12 regard to corrective action in the north area of the
 13 landfill?
 14 **A. I don't believe so.**
 15 **Q.** In the Cease and Desist Order it is asserted,
 16 is it not, that the county violated the requirement in
 17 section G.12.g to submit a corrective action plan for
 18 remediation of contaminated groundwater at the north
 19 area of the landfill by 29 January 2010?
 20 **A. The Cease and Desist Order states that the**
 21 **discharger did not submit the required corrective action**
 22 **plan for groundwater impacts at the north end of the**
 23 **landfill, in compliance -- to comply with**
 24 **Provision G.12.g of the waste discharge requirements.**
 25 **Q.** On January 29, 2010, when the corrective action

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1 plan was due, the Regional Board had not responded to
 2 the county's proposal; is that correct?
 3 **A. To the best of my knowledge, that is correct.**
 4 **Q.** So at the time that corrective action plan was
 5 due, you're not aware of any indication that the county
 6 should have known that its proposal would be rejected;
 7 is that correct?
 8 **A. I'm sorry, that's -- any indication that the**
 9 **county should have known that its proposal was not**
 10 **acceptable?**
 11 **Q.** Any evidence.
 12 MR. PULUPA: Its proposal to not do anything?
 13 MR. NEWMARK: The proposal in Exhibit 6 with
 14 regard to the north area.
 15 THE WITNESS: I'm not sure if this is going to
 16 respond properly, but the county was aware of the waste
 17 discharge requirements and I believe of the obligation
 18 to submit a corrective action plan by January 29th,
 19 2010.
 20 BY MR. NEWMARK:
 21 **Q.** But the county informed you in Exhibit 6 and
 22 presumably orally that it did not believe that
 23 corrective action -- further corrective action in the
 24 north area of the landfill was technically justified; is
 25 that correct?

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1 **A. I'm not aware of any oral notification of their**
 2 **intent to violate the WDRs. We already acknowledged**
 3 **that the report submitted under Provision G.12.f of the**
 4 **WDRs presented the county's position that corrective**
 5 **action was not needed for the north area of the**
 6 **landfill.**
 7 **Q.** Is it your position that the county should
 8 have, notwithstanding its submission of a report
 9 recommending no further action in the north, which was
 10 never rejected by the Regional Board, it should have
 11 gone ahead and spent the money to take corrective action
 12 anyway?
 13 **A. Yes.**
 14 **Q.** In your opinion, that would be a cost-effective
 15 use of county resources, when there was still the
 16 possibility that the county's recommendation would be
 17 accepted?
 18 **A. There is no reason to believe we would have**
 19 **accepted their recommendation. The WDRs require it. It**
 20 **would not be within staff's purview to allow them to**
 21 **violate the WDRs.**
 22 **Q.** Would it be within staff's purview to direct
 23 the county to submit a new report of waste discharge if
 24 that's what they believed were appropriate waste
 25 discharge requirements?

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1 **A. We could request that they submit a report of**
 2 **waste discharge, but that would not give them permission**
 3 **to violate the valid WDRs that are in place.**
 4 **Q.** But if you issued a 13260 order in November of
 5 2009 to submit a report of waste discharge, including
 6 justification for the county's proposed action, there
 7 was plenty of time for the waste discharge requirements
 8 to be modified before the January deadline; is that
 9 correct?
 10 MR. PULUPA: There is no such thing as a 13260
 11 order. There is a 13260 request, but the onus is on
 12 dischargers to submit that.
 13 MR. NEWMARK: I've had clients receive
 14 Section 13260 orders to submit reports of discharge.
 15 MR. PULUPA: It's formally a request. It's a
 16 formal request, just to get the pariance down.
 17 MR. NEWMARK: Okay.
 18 **Q.** The Regional Board could have issued a
 19 Section 13260 request in November of 2009 for the county
 20 to submit a report of waste discharge, including
 21 justification for the proposed action in the north area
 22 of the landfill, and there would have been plenty of
 23 time to modify the waste discharge requirements before
 24 the January deadline, correct?
 25 **A. That's two questions. Can we have them one at**

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1 **a time, please?**
 2 **Q.** Usually Patrick will do the objections.
 3 **A. I'm sorry, it's difficult when the questions**
 4 **are this and that and I'm getting a little tired.**
 5 **Q.** I didn't figure the first one was
 6 controversial.
 7 The county could have issued a request under
 8 13260 of the Water Code to submit a new report of waste
 9 discharge?
 10 MR. PULUPA: You're saying the county?
 11 THE WITNESS: The Regional Board staff could
 12 have --
 13 MR. NEWMARK: Strike that question. See, I
 14 like the compound questions.
 15 THE WITNESS: Regional water board staff could
 16 have made a request pursuant to Section 13260 of the
 17 California Water Code to request a new report of water
 18 discharge at any time.
 19 BY MR. NEWMARK:
 20 **Q.** And had the Regional Board done so in or about
 21 November or December of 2009, there would have been
 22 plenty of time to get new waste discharge requirements
 23 adopted before the January 2010 deadline for corrective
 24 action -- I'm sorry --
 25 **A. No, there would not.**

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1 Q. Did the Regional Board issue a notice of
 2 violation to the county about not submitting a
 3 corrective action report for the north area of the
 4 landfill?
 5 A. I don't recall.
 6 Q. Who would be the witness to testify on that?
 7 A. Probably Howard Hold or Wendy Wyels.
 8 Q. Did the county submit a work plan for
 9 installation of either an expanded landfill gas system
 10 or an expanded groundwater extraction and treatment
 11 system?
 12 A. Yes, they did.
 13 Q. Did they make that submission before
 14 October 31st, 2010?
 15 A. I believe it was right around that date, but
 16 I'm not certain as to whether it was prior to the 31st.
 17 Q. In Exhibit 3, the tentative Cease and Desist
 18 Order, paragraph 9(c) on page 7, one of the alleged
 19 violations of the waste discharge requirements that you
 20 identified was the "Submittal of inadequate corrective
 21 action plan for additional landfill gas and dual zone
 22 groundwater extraction wells."
 23 A. Yes.
 24 Q. However, you just testified that the county
 25 submitted the report, correct?

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1 A. Correct.
 2 Q. And I expect that your contention is that while
 3 the report was submitted, it was inadequate?
 4 A. Correct.
 5 Q. Did the Regional Board provide written comments
 6 on that corrective action plan?
 7 A. I don't believe so.
 8 Q. Did the Regional Board provide oral comments on
 9 that corrective action plan?
 10 A. I don't believe so.
 11 Q. Is the alleged inadequacy of the corrective
 12 action plan mentioned in paragraph 9(c) of Exhibit 3
 13 summarized in paragraph 23 of the Cease and Desist
 14 Order?
 15 A. Yes.
 16 Q. And can you summarize for me what the
 17 inadequacy was?
 18 A. The WDRs were very specific as to what elements
 19 were required in the corrective action work plan. And
 20 the discharger's proposal deviated significantly from
 21 that requirement, and they did not demonstrate that they
 22 were going to capture both the shallow zone and the
 23 deeper zone impacts.
 24 And, furthermore, they were -- although they
 25 submitted a work plan, they explicitly stated that they

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1 did not intend to implement the work plan.
 2 Q. And is your assessment of the alleged
 3 inadequacy of that submission, is that based upon the
 4 work that Mr. Hold provided to you? Or did you make
 5 this independent assessment?
 6 A. Mr. Hold provided that information.
 7 Q. Beginning on page 6 of Exhibit 3 is a section
 8 in the Cease and Desist Order entitled "Violations of
 9 the Waste Discharge Requirements." And paragraph 8
 10 articulates some deadlines, although that paragraph
 11 doesn't specifically seem to describe violations itself.
 12 Is that accurate?
 13 A. That is correct.
 14 Q. Is it correct to say that the violations of the
 15 waste discharge requirements are set forth in
 16 paragraph 9 of the Cease and Desist Order?
 17 A. It begins in paragraph 9. There is additional
 18 details provided in paragraphs 21 through 24.
 19 And I'll stipulate or make a note that
 20 beginning on that page of the draft Cease and Desist
 21 Order the paragraph numbering is in error. What is
 22 marked as paragraph 8 should actually be paragraph 21.
 23 So 9 should be 22.
 24 Q. Okay. We might as well be specific about
 25 exactly what you're referring to.

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1 Is it in paragraph 9(d), where there is a
 2 reference to the waste discharge requirements, that
 3 you're making correction?
 4 A. I apologize. If you look on page 5 of the
 5 draft order, you'll see the last paragraph on that page
 6 is numbered 20.
 7 Q. Okay.
 8 A. And if you flip the page, you see 8 should have
 9 been 21. 9 should have been 22.
 10 Q. Okay.
 11 A. It's an obvious error in paragraph numbering.
 12 I just wanted to call that to your attention, in case it
 13 gets puzzling later.
 14 Q. Okay.
 15 A. In any event, I'll reiterate that paragraphs 9
 16 and 21 through 24 of the draft Cease and Desist Order
 17 describe the violations of the WDRs.
 18 Q. Is it fair to say that paragraphs 21 and 22, 23
 19 and 24 amplify or provide further explanation of the
 20 violations summarized in paragraph 9?
 21 A. Yes.
 22 Q. So is it correct that other than those
 23 violations identified in paragraph 9 and further
 24 explained in paragraphs 21 through 24, there are no
 25 other violations of the Cease and Desist Order -- of the

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Deposition of ANNE L. OLSON - 2/4/11

1 waste discharge requirements alleged in the Cease and
 2 Desist Order?
 3 **A. That are alleged in the Cease and Desist Order,**
 4 **I believe not.**
 5 **Q.** You believe there are not other violations
 6 alleged?
 7 **A. In the Cease and Desist Order.**
 8 **Q.** Do you intend to make any amendments to the
 9 Cease and Desist Order to add additional violations
 10 prior to the hearing?
 11 **A. We have not discussed that.**
 12 **Q.** Paragraph 9(a) of the Cease and Desist Order
 13 alleges a "Failure to completely define vertical and
 14 lateral extend of VOCs in groundwater as required by
 15 Provisions G.7 and G.12.f." Is that correct?
 16 **A. Yes.**
 17 **Q.** Then if we go to the waste discharge
 18 requirements, which are Exhibit 5, how is there a
 19 violation of Section G.7 of the waste discharge
 20 requirements?
 21 **A. G.7 states:**
 22 **"The Discharger shall take all reasonable steps**
 23 **to minimize any adverse impacts to the waters**
 24 **of the State resulting from noncompliance with**
 25 **this Order. Such steps shall include**

1 **accelerated or additional monitoring as**
 2 **necessary to evaluate the nature, extent, and**
 3 **impact of the noncompliance."**
 4 **The discharger has violated Provision G.7 by**
 5 **not minimizing adverse impacts to the environment**
 6 **resulting from noncompliance with this order. Any**
 7 **failure to comply with the schedule contained in the**
 8 **provisions of the WDRs would not be minimizing adverse**
 9 **impacts to the waters of the State.**
 10 **Q.** But I note that there is not a mention of
 11 defining the lateral and vertical extend anywhere in
 12 Provision G.7 of the waste discharge requirements. Is
 13 that correct?
 14 **A. Not specifically.**
 15 **Q.** What part of paragraph g(7) do you read to
 16 refer to a requirement to delineate the lateral and
 17 vertical extend of the contamination?
 18 **A. The second sentence: "Such steps shall include**
 19 **accelerated or additional monitoring as necessary to**
 20 **evaluate the nature, extent, and impact of the**
 21 **noncompliance."**
 22 **Q.** It's possible, is it not -- strike that.
 23 The allegation in paragraph 9(a) is that the
 24 county has not completely defined the vertical and
 25 lateral extend of VOCs in groundwater, correct?

1 **A. Yes.**
 2 **Q.** However, if the county has defined the vertical
 3 and lateral extend, the Regional Board contends that
 4 it's not complete; is that fair?
 5 **A. No.**
 6 **Q.** There has been no delineation of the lateral
 7 and vertical extend?
 8 **A. That is correct.**
 9 **Q.** Well, Exhibit 8 appears to show data on
 10 concentrations of constituents of concern in the
 11 groundwater, correct?
 12 **A. Yes.**
 13 **Q.** Doesn't that give an indication of the lateral
 14 and vertical extend?
 15 **A. No. It's inadequate and incomplete. It's**
 16 **based on incomplete data. We do not know what's**
 17 **downgradient, further downgradient of the landfill in**
 18 **groundwater, in both the shallow and deep zone.**
 19 **Q.** So it's your testimony that anything short of a
 20 complete delineation of lateral and vertical extend is
 21 essentially no delineation of lateral and vertical
 22 extend?
 23 **MR. PULUPA:** You can certainly reference your
 24 comments earlier about the huge data gap.
 25 **THE WITNESS:** As I've said, you know, there are

1 big data gaps. It's not that there is no delineation,
 2 but I wouldn't call it a delineation unless it's a
 3 complete one.
 4 **BY MR. NEWMARK:**
 5 **Q.** And how are you able to determine when the
 6 delineation was complete?
 7 **A. Generally when we have identified monitoring**
 8 **locations where the constituents of concern are not**
 9 **detected. Or if they're naturally occurring**
 10 **constituents, that they're not detected at above**
 11 **background levels.**
 12 **Q.** And getting to the other WDR provision
 13 mentioned in that paragraph, on 12(f), which requires a
 14 report documenting the nature and extent of groundwater
 15 contamination at the north area of the landfill?
 16 **A. Yes.**
 17 **Q.** It is your testimony that a report that
 18 identifies the constituents that are causing
 19 contamination and a general description of their
 20 distribution -- for example, which aquifer they
 21 impact -- does not document the nature and extent of
 22 groundwater contamination as required by Provision 12.f
 23 of the waste discharge requirements; is that correct?
 24 **A. I'm sorry?**
 25 **MR. NEWMARK:** It's a long question. Let me

Deposition of ANNE L. OLSON - 2/4/11

1 read it back.
 2 (Record read.)
 3 THE WITNESS: That is correct.
 4 BY MR. NEWMARK:
 5 Q. We've already talked about Provisions 9.b and
 6 9.c of the Cease and Desist Order, correct, regarding
 7 the corrective action plan for remediation of the north
 8 and the corrective action plan for additional landfill
 9 gas and dual-zone extraction wells?
 10 A. Yes.
 11 Q. Paragraph 9(d) of the Cease and Desist Order
 12 alleges a violation stemming from the failure to make
 13 upgrades to the corrective action systems as required by
 14 Provisions G.12, H and K; is that correct?
 15 A. Yes.
 16 Q. However, the deadline to do that under the
 17 waste discharge requirements is October 31st, 2011; is
 18 that not true?
 19 A. For the second part, it is true.
 20 Q. And for the first part?
 21 A. It has a deadline of October 31st, 2010 --
 22 whoops, I'm sorry.
 23 H was due on 30 August 2010. They should have
 24 by now been a little over six months into corrective
 25 action at the north area.

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1 Q. Right. That's the north area of the landfill
 2 again, correct?
 3 A. Correct.
 4 Q. But the corrective action systems required
 5 under Provisions G.12.k actually isn't due yet, correct?
 6 A. That is correct.
 7 Q. How is it that the county is in violation of a
 8 requirement that isn't yet due?
 9 A. I would say that it's an impending violation.
 10 Q. Even though the county was never given a notice
 11 of violation or a written notification of the Regional
 12 Board's intent to take enforcement action, correct?
 13 A. Correct.
 14 Q. Under paragraph 9(f), the Cease and Desist
 15 Order alleges a failure to protect the underlying
 16 aquifer from contaminants emanating from the landfill as
 17 required by Provisions E.5 and G.8 of the waste
 18 discharge requirements, correct?
 19 A. I believe you're referring to 9.E. Am I right?
 20 Q. Yes.
 21 A. I believe you said 9.F., but I believe you're
 22 referring to 9.E.
 23 Q. That's correct.
 24 A. Yes, it does say that.
 25 Q. In Provision E.5 of the waste discharge

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1 requirements is a requirement that concentrations of the
 2 constituents of concern in waters passing the point of
 3 compliance shall not exceed the concentration limits
 4 established pursuant to the monitoring and reporting
 5 program, correct?
 6 A. Yes.
 7 Q. And Provision G.8 states that the owner of a
 8 waste management facility shall have the continuing
 9 responsibility to assure protection of waters of the
 10 State from discharged wastes and from gases and from
 11 leachate generated by the discharged waste; is that
 12 correct?
 13 A. Yes.
 14 Q. Did you independently analyze whether the
 15 county was in violation of those two provisions, or did
 16 you rely on Mr. Hold's assessment of that?
 17 A. I relied on Mr. Hold's assessment.
 18 Q. And for paragraph 9(f) of the Cease and Desist
 19 Order, alleging a failure to construct a groundwater
 20 monitoring system that meets the standards in Title 27,
 21 did you also rely on Mr. Hold's assessment of compliance
 22 with that?
 23 A. Yes.
 24 Q. And you made no independent assessment of that
 25 yourself?

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1 A. No.
 2 Q. Other than the waste discharge requirement
 3 provisions that we've discussed, are there any other
 4 provision of the waste discharge requirements that the
 5 Regional Board contends in these Cease and Desist Order
 6 proceedings were violated?
 7 A. Not that I'm aware of.
 8 MR. NEWMARK: Can we go off the record.
 9 (Discussion off the record.)
 10 (Break taken.)
 11 EXAMINATION BY MS. GOLDBERG:
 12 Q. We're pretty much close to the end, and these
 13 questions are simply related to some findings, some of
 14 the background in the CDO and trying to get a grasp on
 15 making sure that we fully understand the Regional
 16 Board's concerns.
 17 One of the issues that's mentioned on page 10
 18 of Exhibit 3, paragraph (g), 32(g), the very last part,
 19 "The Discharger," do you want to read that, the last
 20 portion?
 21 A. "The Discharger has not proposed a
 22 concentration limit greater than background for any
 23 constituent of concern at this facility."
 24 Q. Has the Regional Board ever discussed
 25 concentrations greater than background with the county?

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Deposition of WENDY WYELS - 2/4/11

1 BEFORE THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 2 CENTRAL VALLEY REGION
 3
 4 In Re:
 5 Proposed Cease and Desist Order,
 6 Geer Road Class III Landfill,
 7 Stanislaus County,
 8 _____
 9
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 12 DEPOSITION OF WENDY WYELS
 13
 14 DATE: Friday, February 4, 2011
 15 TIME: 1:23 p.m. through 2:48 p.m.
 16 PLACE: California Regional Water Quality Control Board
 17 11020 Sun Center Drive, Suite 200
 18 Rancho Cordova, California
 19 PURSUANT TO: Notice
 20 REPORTED BY: ROSE M. GONI
 21 CRR/RMR, CSR NO. 8760
 22 _____
 23 DAWN SUE STEFKO
 24 CERTIFIED SHORTHAND REPORTERS
 25 2012 Easton Drive
 Burlingame, California 94010
 BUS/FAX (650) 685-1795
 dawnstefko@aol.com

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8 (None marked)

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3

1 **APPEARANCES:**

2 For the Stanislaus MEYERS, NAVE, RIBACK, SILVER & WILSON
 County Department of BY: GREGORY J. NEWMARK,
 3 Environmental LEAH S. GOLDBERG,
 Resources: ATTORNEY AT LAW
 4 333 South Grand Avenue
 Suite 1670
 5 Los Angeles, California 90071
 (213) 626-2906
 6
 7

8 For the CRWQCB CALIFORNIA ENVIRONMENTAL PROTECTION
 Central Valley Region: AGENCY
 9 STATE WATER RESOURCES CONTROL BOARD
 OFFICE OF CHIEF COUNSEL
 10 BY: PATRICK E. PULUPA,
 STAFF COUNSEL
 11 1001 I Street
 22nd Floor
 12 Sacramento, California 95814
 (916) 341-5189
 13

14 Also present: JOSH TOSNEY, Extern
 State Water Resources Control Board
 15
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1 --o0o--

2 **WENDY WYELS,**

3 having been first duly affirmed by

4 the Certified Shorthand Reporter

5 to tell the truth, the whole truth

6 and nothing but the truth testified

7 as follows:

8 **EXAMINATION BY MR. NEWMARK:**

9 Q. Would you state and spell your name for the

10 record, please.

11 A. Wendy Wyels, W-y-e-l-s.

12 Q. Ms. Wyels, have you been deposed before?

13 A. No.

14 Q. I'll try to run through the admonitions quickly

15 so you know how the process works.

16 The woman to my right is a court reporter.

17 She's going to be typing everything we say up, taking it

18 down stenographically. It will be prepared into a

19 booklet when we're all done, just like you've probably

20 seen from board hearings.

21 Because she's taking down everything that we

22 say, it's important that we try not to talk at the same

23 time and that we give an audible response. So uh-huh

24 and nuh-uh don't work.

25 When we're all done you'll get a copy of the

4

Deposition of WENDY WYELS - 2/4/11

1 transcript to review. You can correct any mistakes. If
 2 you correct a substantive -- or you make a substantive
 3 correction, such as changing a yes to a no, I'll be able
 4 to comment upon that and it might reflect upon your
 5 credibility later.
 6 If you don't understand a question -- which
 7 believe it or not actually happens, because I ask some
 8 funny ones sometimes -- I need you to tell me. Because
 9 if you don't tell me, we will be entitled to assume down
 10 the road you did understand the question.
 11 I am entitled to get your best testimony today
 12 and your best estimate, but I don't want you to
 13 speculate or guess. So the difference between a best
 14 estimate and a guess is you can give me your best
 15 estimate of the length of this conference room table
 16 because you can look at it. You'd have to guess at the
 17 dimensions of my kitchen table because you've never seen
 18 it.
 19 Do you understand the oath that was
 20 administered to you has the same force and effect as an
 21 oath administered to you in a court of law and that the
 22 penalties of perjury apply equally?
 23 **A. Yes.**
 24 **Q.** Is there any reason that you cannot give your
 25 best testimony today, such as you're on cold medication

5

1 or something?
 2 **A. No.**
 3 **Q.** If you look in front of you there is a document
 4 marked Exhibit 1, an Amended Deposition Notice. Have
 5 you ever seen that document before?
 6 **A. No, I haven't.**
 7 **Q.** Please take a moment to review it.
 8 **A. I believe this was in an email sent to me.**
 9 **Q.** Do you understand that you're sitting for a
 10 deposition today in response to this deposition notice?
 11 **A. Yes.**
 12 **Q.** If you'll look at the document marked
 13 Exhibit 2, it lists categories of information and there
 14 are red Xs to indicate witnesses that correspond as most
 15 knowledgeable for those categories. And you'll see that
 16 there is "Wendy," which is you, correct?
 17 **A. Yes.**
 18 **Q.** You're designated as the most knowledgeable
 19 witness for some of those categories, correct?
 20 **A. Yes.**
 21 **Q.** And you understand you're here to provide
 22 testimony on behalf of the Regional Board for those
 23 categories?
 24 **A. Yes.**
 25 **Does this match what we sent you?**

6

1 **MR. PULUPA:** Yes.
 2 **THE WITNESS:** Okay. Yes.
 3 **BY MR. NEWMARK:**
 4 **Q.** I guess I should also say as we get going that
 5 if you need to take a break at any time, you're free to
 6 do so. You're not a prisoner here. If you want to talk
 7 to your lawyer, you can do that.
 8 If you need to talk to your lawyer while a
 9 question is pending, that can reflect upon your
 10 credibility. But he's at your disposal. He's here to
 11 work with you.
 12 Would you state your position with the Regional
 13 Board?
 14 **A. I'm an environmental program manager.**
 15 **Q.** Are you a supervisor?
 16 **A. Yes.**
 17 **Q.** And can you describe the unit or units under
 18 your supervision?
 19 **A. I supervise the compliance and enforcement**
 20 **section in the Sacramento office. I have three units**
 21 **under me.**
 22 **Q.** Can you tell me what those units are?
 23 **A. NPDES compliance, Title 27 and non-15, and then**
 24 **a unit that does industrial stormwater/construction**
 25 **stormwater enforcement.**

7

1 **Q.** And when we refer to the "Regional Board"
 2 during this deposition, you'll understand that to mean
 3 the California Regional Water Quality Control Board,
 4 Central Valley Region?
 5 **A. Correct.**
 6 **Q.** When you say the "Sacramento office," you mean
 7 the Sacramento office of that Regional Board, correct?
 8 **A. That's correct.**
 9 **Q.** Approximately how many people do you supervise?
 10 **A. Right now there are 15 staff and eight**
 11 **students. We have a couple of vacancies too.**
 12 **Q.** How long have you worked at the Regional Board?
 13 **A. Since April 1st, 1986.**
 14 **Q.** Did you hold any employment prior to that
 15 that's relevant to your work at the Regional Board?
 16 **A. I was a student intern at the State Water Board**
 17 **prior to that.**
 18 **Q.** You've been at the Regional Board for a long
 19 time. I don't know if it would take a long time for you
 20 to tell me every position you've held since you started
 21 working here, so I'll just ask if you could give me sort
 22 of a succinct description of where you started in the
 23 Regional Board and the positions you held to get where
 24 you are today.
 25 **A. Do you want the names of the positions or what**

8

Deposition of WENDY WYELS - 2/4/11

1 I did? I'm not sure of the question.
 2 Q. Both. But I don't want to take 20 minutes. So
 3 I leave it to your discretion to describe it in a
 4 reasonably succinct way.
 5 MR. PULUPA: A general description of the
 6 nature of your work.
 7 THE WITNESS: When I was first hired I worked
 8 in the well investigation program, in which there were
 9 contaminated drinking water wells. We needed to find
 10 the source of the contamination and initiated cleanup,
 11 an investigational cleanup of those wells.
 12 I have worked on the dairy discharge program.
 13 I have worked in the rice pesticide program. I was
 14 promoted to be a senior -- excuse me. Before that I
 15 spent ten years doing groundwater investigations and
 16 cleanups for fertilizer sites, pesticide sites, pipeline
 17 type and other spills and leaks types of sites.
 18 Then in 1999 I was promoted to be a senior for
 19 the Title 27 unit. After about a year I was transferred
 20 to be a senior for the non-15 unit. And then in 2004 I
 21 was promoted to be a supervisor for both Title 27 and
 22 non-15 programs. And at that point we did all
 23 permitting, compliance and enforcement.
 24 In 2008 the office was reorganized. So, now,
 25 my section does only compliance and enforcement. We no

9

1 longer do the permitting aspects.
 2 BY MR. NEWMARK:
 3 Q. Could you summarize your educational background
 4 for me?
 5 A. I have a Bachelor's of Science in water science
 6 from UC Davis. I have a Master's of Science in soil
 7 science with an emphasis in soil chemistry, also from
 8 UC Davis.
 9 Q. And when did you earn those degrees?
 10 A. The Bachelor's degree was 1983. The Master's
 11 degree was 1986.
 12 I've also taken a number of upper division
 13 geology classes at Sac State.
 14 Q. When did you take those upper division geology
 15 classes?
 16 A. I believe it was about 2005 to 2007, somewhere
 17 in that time period.
 18 Q. Is there any other training relevant to what
 19 you do at the Regional Board that you've received?
 20 A. Our office does send us to training classes.
 21 In 25 years I've been to a lot of training classes.
 22 Q. So if you can sort of describe the training
 23 class program. I guess there is a program that you
 24 would go to on --
 25 A. I've been to week-long trainings on groundwater

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1 hydrology, on site cleanups. I've been to programs on
 2 determining the water quality criteria to use for
 3 cleanups. I've been to programs on managing
 4 supervisors -- I mean, managing staff. So there is a
 5 variety.
 6 But as far as this context, I've gone to a
 7 number of training classes on site cleanups.
 8 Q. Okay. And just to make clear the context for
 9 the record, the deposition we're having today is
 10 basically a part of proceedings initiated by the
 11 enforcement team at the Regional Board on a tentative
 12 Cease and Desist Order against the County of Stanislaus
 13 with regard to the Geer Road Landfill, correct?
 14 A. Correct.
 15 Q. If I refer to "the County," you'll understand
 16 that to mean the County of Stanislaus. If we refer to
 17 the "tentative CDO" or "CDO," you'll understand what I'm
 18 talking about what's in front of you as Exhibit 3. Is
 19 that correct?
 20 A. This is not the most recent version that we've
 21 given to the county.
 22 MR. NEWMARK: Can we go off the record a
 23 second.
 24 (Discussion off the record.)
 25 MR. NEWMARK: We're going to release you from

11

1 your oath.
 2 THE WITNESS: Thank you.
 3 MR. NEWMARK: And we'll adjourn your deposition
 4 and you'll be resworn when we resume. Thank you.
 5 Off the record.
 6 (Whereupon, the deposition proceedings
 7 adjourned at 2:48 p.m.)
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 12 WENDY WYELS
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Deposition of WENDY WYELS - 2/4/11

1 **CERTIFICATE OF WITNESS**
 2 I, WENDY WYELS, the deponent, in re Proposed CDO,
 Geer Road Landfill, Stanislaus County, DO HEREBY CERTIFY
 3 under penalty of perjury that the foregoing deposition taken
 2/4/11 was read by or to me and that I approved of same as a
 4 true and correct record of my testimony with changes
 hereinbelow, Sheet ___ of ___.

5
 6 PAGE/LINE ANSWER CHANGED TO (OR ADD OR DELETE WORDS):
 7 /_ /_ _____
 8 /_ /_ _____
 9 /_ /_ _____
 10 /_ /_ _____
 11 /_ /_ _____
 12 /_ /_ _____
 13 /_ /_ _____
 14 /_ /_ _____
 15 /_ /_ _____
 16 /_ /_ _____
 17 /_ /_ _____
 18 /_ /_ _____
 19 /_ /_ _____
 20 /_ /_ _____
 21 /_ /_ _____

22 IN WITNESS WHEREOF, I have hereunto
 subscribed my name at _____, California,
 23 this ___ day of _____, 2011.

24
 25 _____
 WENDY WYELS, Deponent

DAWN SUE STEFKO
CERTIFIED SHORTHAND REPORTERS
 2012 Easton Drive
 Burlingame, California 94010
 BUS/FAX 650-685-1795
 dawnstefko@aol.com

February 9, 2011

WENDY WYELS
 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 CENTRAL VALLEY REGION
 11020 Sun Center Drive
 Suite 200
 Rancho Cordova, California 95670

IN RE PROPOSED CDO, GEER ROAD LANDFILL, STANISLAUS COUNTY
 YOUR DEPOSITION ON FEBRUARY 4, 2011

Enclosed herein is the original transcript of your deposition
 as referenced above for you to read, correct the form or
 substance of your answers, and sign for approval thereof.
 Please use pages 12 and 13 of the transcript when making any
 changes/corrections and to sign your transcript.

Pursuant to stipulation of counsel, if you fail to approve
 your transcript on or before February 17, 2011, the
 deposition, which may be used at a subsequent proceeding,
 shall be given the same effect as though it had been approved,
 subject to any changes made timely by you.

ROSE M. GONI, CERTIFIED SHORTHAND REPORTER

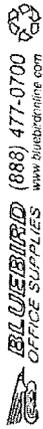
cc: Original Transcript
 Gregory J. Newmark/Leah S. Goldberg
 Patrick E. Pulupa

1 **CERTIFICATE OF CERTIFIED SHORTHAND REPORTER**
 2 I, ROSE M. GONI, a Certified Shorthand Reporter duly
 3 authorized to administer oaths pursuant to California Code of
 4 Civil Procedure Section 2093(b)(1), do hereby certify that the
 5 deponent in the foregoing deposition was by me duly affirmed;
 6 that this transcript is a true record of the testimony given
 7 and of any changes made by said deponent who was sent written
 8 notice herein required by Code Section 2025.520(1); that I am
 9 not financially interested in the action and not a relative or
 10 employee of any of the parties or of any attorney of the
 11 parties; and that the original transcript was produced on
 12 paper purchased as recycled.

13 IN WITNESS WHEREOF, I have hereunto set my hand
 14 this ___ day of _____, 2011.

15
 16
 17
 18
 19
 20 _____
 21 ROSE M. GONI, CRR/RMR, CSR No. 8760

22
 23
 24
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Deposition of HOWARD HOLD - 2/4/11

1 BEFORE THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 2 CENTRAL VALLEY REGION
 3
 4 In Re:
 5 Proposed Cease and Desist Order,
 6 Geer Road Class III Landfill,
 7 Stanislaus County,
 8 _____/
 9
 10
 11
 12 DEPOSITION OF HOWARD HOLD
 13
 14 DATE: Friday, February 4, 2011
 15 TIME: 3:05 p.m. through 6:19 p.m.
 16 PLACE: California Regional Water Quality Control Board
 17 11020 Sun Center Drive, Suite 200
 18 Rancho Cordova, California
 19 PURSUANT TO: Notice
 20 REPORTED BY: ROSE M. GONI
 21 CRR/RMR, CSR NO. 8760
 22
 23 DAWN SUE STEFKO
 24 CERTIFIED SHORTHAND REPORTERS
 25 2012 Easton Drive
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1 APPEARANCES:
 2 For the Stanislaus MEYERS, NAVE, RIBACK, SILVER & WILSON
 County Department of BY: GREGORY J. NEWMARK,
 3 Environmental LEAH S. GOLDBERG,
 Resources: ATTORNEY AT LAW
 4 333 South Grand Avenue
 Suite 1670
 5 Los Angeles, California 90071
 (213) 626-2906
 6
 7
 8 For the CRWQCB CALIFORNIA ENVIRONMENTAL PROTECTION
 Central Valley Region: AGENCY
 9 STATE WATER RESOURCES CONTROL BOARD
 OFFICE OF CHIEF COUNSEL
 10 BY: PATRICK E. PULUPA,
 STAFF COUNSEL
 11 1001 I Street
 22nd Floor
 12 Sacramento, California 95814
 (916) 341-5189
 13
 14 Also present: JOSH TOSNEY, Extern
 State Water Resources Control Board
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1 --oOo--
 2 **HOWARD HOLD,**
 3 having been first duly affirmed by
 4 the Certified Shorthand Reporter
 5 to tell the truth, the whole truth
 6 and nothing but the truth testified
 7 as follows:
 8 **EXAMINATION BY MR. NEWMARK:**
 9 Q. Would you state and spell your name for the
 10 record, please.
 11 A. Howard Hold, H-o-w-a-r-d, H-o-l-d.
 12 Q. And, Mr. Hold, have you ever had your
 13 deposition taken before?
 14 A. No, I have not.
 15 Q. Okay. So I'll run through the admonitions that
 16 these folks have heard a couple of times today already
 17 to explain the process.
 18 The woman to my right is a court reporter.
 19 She's taking down everything we say stenographically.
 20 It's all written down and prepared into a booklet, much
 21 like the transcript of proceedings you've seen from
 22 board meetings.
 23 Because she's taking down what we're saying, we
 24 have to try not to talk over each other. So I need you
 25 to let me finish my question and I'll let you finish

Deposition of HOWARD HOLD - 2/4/11

1 your answer before I start talking again.
 2 We need to have an audible response, so nodding
 3 your head or saying uh-huh or nuh-uh is difficult to
 4 interpret on the transcript.
 5 If I ask you a question and you don't
 6 understand it, I need you to tell me you don't
 7 understand it so I can clarify it. If you don't ask for
 8 clarification and you go ahead and answer it, we'll be
 9 entitled to assume later on you did understand the
 10 question.
 11 After this is finished the transcript will be
 12 prepared. It will be given to you and your counsel to
 13 review. You'll be able to make changes, if necessary.
 14 If you make substantive changes, such as changing a yes
 15 to no, we'll be able to comment upon that later during
 16 court proceedings or whatever other kind of proceedings
 17 there are. It could reflect negatively on your
 18 credibility.
 19 Is there any reason you can't give your best
 20 testimony today, such as you're on medication or you're
 21 sick, you're not able to think clearly?
 22 **A. No.**
 23 **Q.** Have you seen this document in front of you
 24 marked as Exhibit 1, entitled "Amended Notice Of
 25 Deposition"?

5

1 **A. Yes.**
 2 **Q.** And do you understand that you're appearing for
 3 this deposition today in response to that deposition
 4 notice?
 5 **A. Yes.**
 6 **Q.** And would you look at the document in front of
 7 you marked Exhibit 2. You'll see that it lists
 8 categories of information, and there are red Xs to
 9 indicate particular people who are designated as the
 10 persons most knowledgeable on those topics?
 11 **A. Yes.**
 12 **Q.** Do you see that you are indicated with some red
 13 Xs as the person most knowledgeable for certain of those
 14 topics?
 15 **A. Yes.**
 16 **Q.** And do you understand that you are going to be
 17 giving testimony today on behalf of the Regional Board
 18 as the person most knowledgeable for those designated
 19 topics?
 20 **A. Yes.**
 21 **Q.** I'm entitled to your best testimony today.
 22 That includes giving me a best estimate, but I don't
 23 want you to speculate or guess. The difference between
 24 speculation and a guess is I could ask you to estimate
 25 the length of this table and that would be giving me

6

1 your best estimate because you can see it and judge the
 2 length. You would have to guess at the length of the
 3 table in my kitchen because you have never seen it. So
 4 estimation is okay. We don't want you to guess.
 5 Do you understand that the oath that was
 6 administered to you by the court reporter has the same
 7 force and effect as an oath administered in a court of
 8 law and the penalties of perjury apply equally?
 9 **A. Yes.**
 10 **MR. PULUPA:** I'll go over one thing.
 11 **MR. NEWMARK:** Should we go off the record for
 12 that?
 13 **MR. PULUPA:** Yes.
 14 (Discussion off the record.)
 15 **BY MR. NEWMARK:**
 16 **Q.** Would you state your position with the Regional
 17 Board.
 18 **A. I'm an engineering geologist for the Central
 19 Valley Water Board. I work in the compliance and
 20 enforcement group for Title 27.**
 21 **Q.** When we refer to the "Regional Board" during
 22 this deposition, you understand that I mean the
 23 California Regional Water Quality Control Board, Central
 24 Valley Region?
 25 **A. Yes.**

7

1 **Q.** And when we refer to the "Cease and Desist
 2 Order," you would understand that I'm referring to the
 3 document in front of you marked as Exhibit 3, which is
 4 actually a draft Cease and Desist Order, correct?
 5 **A. Yes.**
 6 **Q.** And if we talk about "the County," we're
 7 talking about the County of Stanislaus, who's the
 8 operator of the Geer Road Landfill, right?
 9 **A. Yes.**
 10 **Q.** How long have you worked with the Regional
 11 Board?
 12 **A. I've been at the Regional Board for 11 years.**
 13 **Q.** Could you tell me, did you start with the
 14 Regional Board at a different position from the one that
 15 you hold today?
 16 **A. The entire time I've been at the Regional Board
 17 I've worked in this unit, in the same capacity.**
 18 **Q.** Did your title change at all or did you have
 19 the same title?
 20 **A. Originally it was the associate engineering
 21 geologist. And they changed our titles to engineering
 22 geologist.**
 23 **Q.** Would you summarize for me your educational
 24 background.
 25 **A. I graduated from Cal State Sacramento in 1992**

8

Deposition of HOWARD HOLD - 2/4/11

1 with a Bachelor's in geology. In 1995 I returned to
 2 graduate school at Boise State for two years to take
 3 graduate courses in hydrogeology.
 4 Q. So you did two years of graduate coursework.
 5 Did you end up going to get a Master's degree out of
 6 that or just did the coursework?
 7 A. I did the coursework.
 8 Q. Is there any other training that relates to
 9 your job at the Regional Board that you've taken?
 10 A. Can you define "training"?
 11 Q. Yeah. I would include like if the Regional
 12 Board sends you to a program on something about site
 13 cleanup or a kind of continuing education program.
 14 A. Originally at the board there was a class on
 15 how to prepare waste discharge requirements.
 16 And I did attend a conference in San Diego on
 17 enforcement, but I cannot recall the year that occurred.
 18 Q. Would you be able to give me an estimate of if
 19 it was five years ago, ten years ago?
 20 A. Estimate would be four years ago.
 21 Q. Do you recall who provided that enforcement
 22 training?
 23 A. The State Water Resources Control Board.
 24 Q. And so the faculty were employees of the
 25 various water boards?

9

1 A. That's correct.
 2 Q. In your training in geology and hydrogeology,
 3 could you describe any specific coursework or
 4 educational or training background with regard to
 5 investigating groundwater contamination?
 6 A. At Boise State I took courses in groundwater
 7 flow, groundwater movement, also in aquifer
 8 characterization, pump test analysis, stratigraphic
 9 correlations.
 10 Q. If that's pretty much it, that's fine.
 11 Did you have any other jobs relative to geology
 12 or hydrogeology before you started working with the
 13 Regional Board?
 14 A. Yes. From 1994 to '95 I worked for Burns &
 15 McDonnell, an engineering firm out of Kansas City. And
 16 I worked as a field geologist on the groundwater
 17 investigation of the San Francisco International
 18 Airport.
 19 After the time in Boise I got a job here in
 20 Sacramento with Radiant International from 1997 to 1999,
 21 again, working as a field geologist, which entailed
 22 working on the investigation of the DOD bases here in
 23 the Air Force Base at McClellan, Tracy Army Depot, Sharp
 24 Army Depot. Also, I did quite a bit of work on Alaska
 25 military sites as a field geologist.

10

1 After that I went to a small company in Auburn
 2 called Aegis for I believe it was two months and then
 3 came to work for the Water Board in January of 2000.
 4 Q. And who had retained Burns McDonnell for the
 5 groundwater investigation at SFO?
 6 A. United Airlines was the client.
 7 Q. And who were your clients with regard to the
 8 DOD sites when you were at Radiant?
 9 A. Well, for the Air Force bases, it would be
 10 actually the Air Force cleanup program. And I believe
 11 it was the Corps of Engineers for the Army depots.
 12 Q. Who were your clients when you were at Aegis?
 13 A. It was a small firm. I believe it was Tom's
 14 Sierra. It was gas stations.
 15 Q. At any of those jobs -- Burns McDonnell,
 16 Radiant, or Aegis -- did you prepare groundwater
 17 investigation work plans?
 18 A. Yes.
 19 Q. Was it at all of them or some of them?
 20 A. All of them.
 21 Q. Did you prepare groundwater monitoring reports?
 22 A. Yes.
 23 Q. Did you supervise the installation of
 24 groundwater monitoring wells?
 25 A. Could you define "supervise"?

11

1 Q. Were you out there in the field with the
 2 drilling rig?
 3 A. Yes, in all of those I would be the geologist
 4 responsible at the rig.
 5 Q. And did you oversee the sampling and analysis
 6 of groundwater monitoring wells in any of those
 7 positions?
 8 A. Yes, in all of those.
 9 Q. Did you prepare maps showing isoconcentration
 10 lines of constituents in groundwater?
 11 A. Yes.
 12 Q. Did you prepare maps showing groundwater
 13 elevation?
 14 A. Yes.
 15 Q. Were you involved in the preparation of
 16 conceptual groundwater models?
 17 A. Not at those -- not for those consulting firms.
 18 Q. Not when you're in private practice basically?
 19 A. Right.
 20 Q. Have you been involved in the development of
 21 conceptual groundwater models since you've joined the
 22 Regional Board?
 23 A. Can you define "conceptual"?
 24 Q. Not really. I was hoping you would be able to
 25 help me with that. As I understand, it's different from

12

Deposition of HOWARD HOLD - 2/4/11

1 a numerical model.
 2 **A. That was my question. So conceptual.**
 3 **Q.** And "conceptual" is just sort of defining the
 4 pieces; the aquifer, porosity, and the transmissivity
 5 and all those fancy terms?
 6 **A. Yes, conceptually you have to develop a**
 7 **conceptual model of the site.**
 8 **Q.** And have you been involved in the development
 9 of numerical models?
 10 **A. Not numerical models, no.**
 11 **Q.** It's my understanding sometimes that a modeler
 12 is kind of a different type of job than the geologist,
 13 who does the types of things that we've all been talking
 14 about.
 15 First of all, is that a correct understanding?
 16 Is that your understanding as well, that groundwater
 17 modeling is kind of a different skill set?
 18 **A. Yes.**
 19 MR. PULUPA: There is some overlap, right?
 20 THE WITNESS: Yes, there is some overlap. The
 21 modeler will take the data that the geologist collected
 22 in the field to put in their numerical model.
 23 BY MR. NEWMARK:
 24 **Q.** And could you summarize your experience with
 25 numerical groundwater modeling?

13

1 **A. Numerical modeling I've done in graduate**
 2 **school.**
 3 **Q.** Have you had any regulatory oversight of
 4 numerical models at sites you're involved in when you
 5 worked at the Regional Board?
 6 **A. No, none of the sites that I oversee have done**
 7 **the numerical model.**
 8 **Q.** Are you familiar with the document that we've
 9 identified as Exhibit 3, as the draft Cease and Desist
 10 Order?
 11 **A. Yes.**
 12 **Q.** Did you participate in the development of that
 13 document?
 14 **A. Yes, I did.**
 15 **Q.** Could you describe your role in the development
 16 of that Cease and Desist Order?
 17 **A. I prepared the findings for the draft version**
 18 **of the Cease and Desist Order.**
 19 **Q.** And who was supervising your work as you were
 20 doing that?
 21 **A. It would be Anne Olson and Wendy Wyels.**
 22 **Q.** And did Ms. Olson ask you to prepare a
 23 compliance assessment for the Geer Road Landfill?
 24 **A. Yes.**
 25 **Q.** And I saw you looking down at the memorandum

14

1 marked as Exhibit 4, which is a memorandum from you to
 2 Ms. Olson dated 18 November 2010.
 3 **A. That's correct.**
 4 **Q.** Is that memorandum a culmination of your
 5 compliance assessment?
 6 **A. Yes, it is.**
 7 **Q.** I asked Ms. Olson if there are any violations
 8 of the monitoring and reporting program in the county's
 9 waste discharge requirements alleged in the Cease and
 10 Desist Order. And she said she wasn't sure, that that's
 11 something she would have to ask you about.
 12 So I'd like to ask you, in the context of these
 13 Cease and Desist Order proceedings, does the Regional
 14 Board assert that the county has violated any of the
 15 obligations of the monitoring and reporting program set
 16 forth in Exhibit 5?
 17 **A. No, they didn't violate the monitoring and**
 18 **reporting program. At this time there is a well that**
 19 **has been destroyed out there that is part of the**
 20 **monitoring and reporting program that they've said they**
 21 **would address, but we have not issued a notice of**
 22 **violation for that, which would be Monitoring 14-S.**
 23 **Q.** And I'm trying to couch my question somewhat
 24 carefully to address the violations that we're going to
 25 be dealing with in the Cease and Desist Order

15

1 proceeding. And I understand there may be some things
 2 you just don't know about. There may be other things
 3 that are of concern more generally.
 4 But just for purposes of the Cease and Desist
 5 Order proceeding, it's my understanding from your
 6 testimony just now that those proceedings are not going
 7 to be addressing any alleged violations of the
 8 monitoring and reporting program, correct?
 9 **A. Yes.**
 10 **Q.** Thank you.
 11 In the tentative Cease and Desist Order in
 12 Exhibit 3, it's my recollection that there are
 13 statements to the effect that the --
 14 Can we go off the record? I'll just start my
 15 question again.
 16 In the tentative Cease and Desist Order,
 17 Exhibit 3, there is a statement on page 3 -- strike that
 18 again. I have the pages mixed up.
 19 On page 2 of the Cease and Desist Order,
 20 Exhibit 3, in paragraphs 5 and 6, there are statements
 21 that the landfill is in hydraulic communication with the
 22 river in the deeper zones and communication with the
 23 shallow zone in the river. So I'll take those one at a
 24 time.
 25 In paragraph five there is a statement that:

16

Deposition of HOWARD HOLD - 2/4/11

1 "This indicates that the shallow groundwater beneath the
2 landfill is in hydraulic communication with the river."
3 Do you see that?
4 **A. Yes.**
5 **Q.** Do you know if that statement in the Cease and
6 Desist Order came from the analysis that you performed?
7 **THE WITNESS:** Can I ask you a question?
8 **MS. GOLDBERG:** You want us to leave?
9 **THE WITNESS:** Yes.
10 (Break taken.)
11 **MR. NEWMARK:** Can you read back the question.
12 (Record read.)
13 **THE WITNESS:** That is correct.
14 **BY MR. NEWMARK:**
15 **Q.** Okay. And what did you use to base your
16 analysis on to reach that conclusion?
17 **A. I used the groundwater monitoring reports as**
18 **well as the engineering feasibility study by**
19 **Kleinfelder.**
20 **Q.** The 2002?
21 **A. Uh, yeah. I thought I saw it.**
22 **Q.** We brought the 2002.
23 **A. Yes, this one.**
24 **Q.** I'd like to see where exactly in the documents
25 you're finding a basis for that statement.

17

1 Let's go off the record.
2 (Discussion off the record.)
3 **THE WITNESS:** So on Plate 2-10 of the
4 Kleinfelder two thousand --
5 **MR. NEWMARK:** Yes, let's go ahead and identify
6 exactly what.
7 **THE WITNESS:** The 2002 Evaluation, Monitoring,
8 Engineering Feasibility Study, it identifies borings,
9 these green borings in the legend of the figure itself,
10 it tells you the depths to the bottom of the waste.
11 So they drilled through the waste to tag where
12 the waste truncated, so where you're going to start
13 hitting native material, the underlying sediments.
14 So these are all surveyed elevations of the
15 different depths. You can see, it kind of varies around
16 the site.
17 **MR. PULUPA:** By "these," you're talking the
18 green-lettered locations?
19 **THE WITNESS:** The green-lettered locations
20 identified as exploratory boring.
21 So down here toward the southwest corner of the
22 landfill, near Monitoring Well 8-S, 14-S, and 4-S, kind
23 of in between those, I see boring EB-4 with an elevation
24 of 55 feet. At 55 feet means at sea level they hit
25 native material.

18

1 So with that information I'm going back to --
2 this is the Second Semiannual 2010 Detection,
3 Evaluation, and Corrective Action Monitoring Report. I
4 turn to the hydrograph in Appendix G, which shows you
5 historical elevations from the time they installed the
6 well, in 1988, through its current level. And these are
7 measured every quarter.
8 So this is 55 feet.
9 **BY MR. NEWMARK:**
10 **Q.** And you're indicating on the Kleinfelder?
11 **A. Yeah. Again, I'm pointing to --**
12 **Q.** The exploratory boring, EB-4, right?
13 **A. Yes. That's correct, of 55 feet.**
14 **So when I go to the same data point of the**
15 **adjacent well, I see 55 feet. The blue line indicates**
16 **the elevation of the groundwater. And I see periods of**
17 **time at which the groundwater is above that 55-foot**
18 **elevation. The highest point marked, about 69 feet.**
19 **Q.** Are there any other portions of these reports
20 that you relied upon to determine that the landfill is
21 in hydraulic communication with the river?
22 **A. The report --**
23 **Q.** Let me strike that actually, because your
24 statement was -- strike that.
25 Are there any other things you're relying on

19

1 for the statement in paragraph 5 of the Cease and Desist
2 Order that the shallow groundwater beneath the landfill
3 is in hydraulic communication with the river?
4 **A. I relied on the same report --**
5 **Q.** You're indicating the Kleinfelder report?
6 **A. -- the Kleinfelder 2002 report, where the**
7 **report itself quoted, and I quote:**
8 **"County workers interviewed for preparation of**
9 **Kleinfelder EFS stated that the base of the**
10 **landfill was excavated down to groundwater and**
11 **at times waste was floating in the pits."**
12 **Also the report stated:**
13 **"Some waste may be immersed in groundwater,**
14 **either constantly or periodically as**
15 **groundwater rises or falls over time. When**
16 **immersed in water, the waste releases VOCs some**
17 **depth beneath groundwater. This may be the**
18 **reason for the increase in VOC concentrations,**
19 **with depth discovered immediately**
20 **downgradient of the landfill."**
21 **Q.** Is there any other data that you're relying
22 upon for your statement in the Cease and Desist Order
23 that groundwater beneath the landfill is in hydraulic
24 communication with the river?
25 **MR. PULUPA:** Can we go off for one second so we

20

Deposition of HOWARD HOLD - 2/4/11

1 can clarify something?
 2 MR. NEWMARK: Sure.
 3 (Discussion off the record.)
 4 BY MR. NEWMARK:
 5 Q. So as I just stated in our off-the-record
 6 conversation, I'm just trying to get all the pieces of
 7 data or information you relied upon for the statement in
 8 the Cease and Desist Order. And then I'm going to ask
 9 you to explain how they fit together.
 10 So, right now, you've identified several
 11 pieces; the exploratory boring data in the Kleinfelder
 12 report, statements in your memorandum, which is
 13 Exhibit 4, identified as quotations from the 2002
 14 Kleinfelder report, and a hydrograph in the second
 15 semiannual report from 2010.
 16 Did we identify the exact hydrograph you were
 17 looking at? I think it was for MW-8 Shallow?
 18 A. Yes.
 19 Q. Are there any other pieces to this puzzle that
 20 you relied upon that we haven't talked about yet for the
 21 statement that the shallow groundwater beneath the
 22 landfill is in hydraulic communication with the river?
 23 A. It would be the groundwater elevations and the
 24 monitoring program. And they also take elevation data
 25 of the river.

21

1 Q. "They" meaning the county?
 2 A. "They" being Kleinfelder -- I'm sorry --
 3 SCS Engineers.
 4 Q. Can you point to where that information is in
 5 the semiannual report?
 6 A. This report was just submitted, so I haven't
 7 had a chance to flip through everything.
 8 Q. Okay. You know what? Maybe it would be better
 9 for us to use the one you were actually looking at and
 10 use the first semiannual. Would that help you?
 11 A. Yes.
 12 MR. NEWMARK: So I'm giving to the witness a
 13 document entitled "First Semiannual 2010 Detection,
 14 Evaluation, and Corrective Action Monitoring Report,
 15 Geer Road Landfill, Stanislaus County, California,"
 16 prepared by SCS Engineers, dated July 30, 2010.
 17 Q. If you'd like, we can go off the record again,
 18 if you prefer.
 19 A. Sure.
 20 MR. NEWMARK: Okay. Off the record.
 21 (Discussion off the record.)
 22 THE WITNESS: Okay. The last paragraph on
 23 page 12 of the First Semiannual 2010 Detection,
 24 Evaluation and Corrective Action Monitoring Report,
 25 prepared by SCS Engineers:

22

1 "Surface water elevations of the Tuolumne River
 2 were observed to be approximately .5 to 3 feet
 3 higher than adjacent groundwater wells during
 4 the first quarter event and approximately 2.5
 5 to 3.5 feet lower than groundwater in adjacent
 6 groundwater wells during the second quarter
 7 event."
 8 That statement is significant because the river
 9 is either gaining water or receiving water. So when
 10 that water is below the water table in the well, you
 11 still have water flowing to the river. The groundwater
 12 is going into the river.
 13 BY MR. NEWMARK:
 14 Q. I appreciate the explanation. Just to make
 15 sure I have all the pieces --
 16 A. Okay.
 17 Q. -- we've talked about several data points, from
 18 the Kleinfelder report and from the semiannual reports
 19 that the county prepares. Are there any other data
 20 points you're relying on for the statement that the
 21 water underneath the landfill is in hydraulic
 22 communication with the river?
 23 A. It would be their groundwater flow maps, the
 24 groundwater, the maps themselves. Let's see.
 25 So as you can see in this area --

23

1 Q. And you're indicating?
 2 A. I'm sorry. On Figure 6-3 of the First
 3 Semiannual 2010 Detection, Evaluation, and Corrective
 4 Action Monitoring Report, Geer Road Landfill, prepared
 5 by SCS Engineers, Figure 6-3, which is the water level
 6 contours, shallow wells, on the map they show they are
 7 lines of equal potential, which is the elevation of the
 8 water table. What they're showing is that water is
 9 moving down this direction --
 10 Q. And you're indicating to the -- from the
 11 northeast to the southwest?
 12 A. Right.
 13 What's also significant in the preparation of
 14 their map is they've continued the lines of equal
 15 potential into the river, suggesting it's the same
 16 system, that these elevations are equivalent to the
 17 elevations in the river. So water is just -- and water,
 18 the flow of water is perpendicular to these potential
 19 lines.
 20 Q. So understanding what you're saying, if I go
 21 to -- I'm indicating now what I believe to be the
 22 60-foot contour?
 23 A. That's correct.
 24 Q. And then what is the contour? Is it one-foot
 25 contour intervals?

24

Deposition of HOWARD HOLD - 2/4/11

1 **A. Yes.**
2 **Q.** So the 60-foot contour actually does not go
3 over to the river. The 59 -- 58-foot contour -- looks
4 like we have to go down to the 57-foot contour before it
5 is drawn to actually intersect the river?
6 **A. That's correct.**
7 **Q.** So you understand this map to mean that at the
8 point towards the southern portion shown in this map,
9 where the 57-foot contour goes out into the river, the
10 surface water elevation at the southern end of that
11 contour line is 57 feet?
12 **A. It should be equivalent to that line.**
13 **Q.** And then when we go to the 56-foot contour, at
14 the point where that contour line goes into the blue,
15 indicating the river, surface water elevation should be
16 56 feet, under your interpretation?
17 **A. It's saying that the river is receiving**
18 **groundwater. If the river was acting as a barrier,**
19 **these lines would not be drawn this way. It would be**
20 **drawn back toward the landfill.**
21 **Q.** I'm trying to get sort of a smaller piece of
22 this, where -- from what I understand you to be saying
23 is the surface water elevation, where I'm indicating the
24 end of the 57-foot contour in the blue, surface water
25 should be 57 feet there. The southern boundary of the

25

1 56-foot contour should be 56 feet. And where the
2 55-foot contour crosses the blue, surface water should
3 be 55 feet. Is that correct?
4 **A. Yes.**
5 **Q.** And those are the only contours on this map
6 that are drawn to intersect the river; is that correct?
7 **A. That's how they portrayed it.**
8 **Q.** Does that indicate anything about locations of
9 equal groundwater and surface water indication? Strike
10 that.
11 Are the places in this map where the
12 groundwater elevation contours intersect the blue river
13 the only places where the groundwater and surface
14 elevations match?
15 **A. That's how they prepared their map with their**
16 **data. That's what it shows.**
17 **Q.** I'm just trying to get your interpretation of
18 the map. I know you didn't prepare the map or collect
19 the data. I'm just trying to make sure I'm getting your
20 interpretation of the map.
21 So your interpretation of the map is that only
22 these contour lines that intersect the blue are the
23 places where the groundwater elevation matches the
24 surface water elevation, correct?
25 **A. Yes.**

26

1 **Q.** Does that mean as you interpret this map that
2 at those locations there is communication between the
3 groundwater and the surface water?
4 **A. Yes.**
5 **Q.** I probably should have asked this before, but
6 can you define for me what you mean when you say
7 "hydraulic communication"? What does that term mean?
8 **A. That the groundwater under the landfill will**
9 **continue to move toward the river.**
10 **Q.** Does it just mean moving toward the river or
11 does it mean actually making it into the river?
12 **A. That depends on where it is. If it's a deep**
13 **zone, it may not go into the river; it may go under the**
14 **river, depending on which aquifer it's moving in.**
15 **MR. PULUPA:** I don't think he's asking whether
16 the groundwater is making it into the river, just what
17 the term "in communication" means.
18 **BY MR. NEWMARK:**
19 **Q.** Yeah. I just want to make sure those are your
20 words from the Cease and Desist Order. And I want to
21 understand what those words mean. What does "hydraulic
22 communication with the river" mean, from your technical
23 perspective?
24 **A. That when the river changes its elevation, that**
25 **the elevations in the adjoining wells also change.**

27

1 **There is a notable effect. When one rises, the other**
2 **one rises. When the other one drops, the other one**
3 **drops.**
4 **Q.** I think you pointed to a location in the 2010
5 semiannual report, there was an indication that surface
6 water measurements, surface water elevation measurements
7 were taken. Is that right?
8 **A. That's correct.**
9 **Q.** Is that data from the surface water
10 measurements set forth in the report?
11 **A. Set forth?**
12 **Q.** Is there a table that shows surface water
13 elevation at point X was so many feet, surface water
14 elevation at point Y was so many feet?
15 **A. Yeah. Here's their Table 6.4.**
16 **Q.** Table 6.4 in the second 2010 semiannual.
17 Can you explain some of the terminology in
18 table 6.4 to me? If you don't mind, I'll just walk
19 around to your side of the table so we can both look.
20 There is an indication of the monitoring point
21 on the left-hand column. It says "Tuolumne River" at
22 the top and then "Monitoring Wells, 15 deep shallow,
23 23 deep shallow," right?
24 **A. Yes.**
25 **Q.** And then the next column over is "Survey

28

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1 Elevation."
 2 "FT MSL," is that for feet meeting sea level?
 3 **A. That's correct.**
 4 **Q.** And I guess that's what the asterisk here says.
 5 Or feet above meets sea level, right?
 6 **A. Right.**
 7 **Q.** And then in the first column of the Tuolumne
 8 River, is it 54.36 feet above meeting sea level, right?
 9 **A. That's correct.**
 10 **Q.** And I guess what I'm trying to get at is when
 11 we look at the figure, like, for example, the
 12 groundwater contour map, where are these river
 13 elevations taken? How do we know where the river
 14 elevations were taken?
 15 **A. It says right here, they surveyed a stake.**
 16 **Q.** So you're looking at the double asterisk at the
 17 bottom of Table 6.4?
 18 **A. That's correct, river level measured above or**
 19 **below survey stake. A positive value, the water level**
 20 **is below the top of the survey stake. A negative value**
 21 **indicates the water level was above the top of the**
 22 **survey stake.**
 23 **Q.** That seems backwards to me.
 24 MR. PULUPA: Yeah.
 25 THE WITNESS: Yeah.

1 BY MR. NEWMARK:
 2 **Q.** Do you have an understanding, is the survey
 3 stake next to the river or is the survey stake -- I
 4 don't understand where the survey stake is.
 5 **A. "During each event the Tuolumne River surface**
 6 **water level was measured in relation to the**
 7 **survey point located at the edge of the**
 8 **Tuolumne River in inches using a standard tape**
 9 **measure."**
 10 **Q.** And you're reading from page 12 of the 2010
 11 semiannual report?
 12 **A. Correct:**
 13 **Q.** Can we go back to the table again, Table 6.4.
 14 Is there only one river level elevation
 15 measured on each date? There is two dates shown in
 16 Table 6.4. Is there only one river level data point for
 17 February 18 in this table?
 18 **A. Yes.**
 19 **Q.** And for February 18 it's shown as zero, and
 20 then for May 17 it's shown as a negative 1.13?
 21 **A. That's the difference in elevation from the top**
 22 **of the stake.**
 23 **Q.** Right. So it was right at the stake on
 24 February 18, and on May 17, I guess if it's a negative
 25 value, that means it was above the stake, if I

1 understand the asterisk correctly?
 2 **A. That's how they've written it here.**
 3 **Q.** And then there is a comparison between these
 4 adjacent monitoring wells on this table?
 5 **A. Yes.**
 6 **Q.** I'm going to ask one more time. Do we have all
 7 the pieces of the puzzle now before I ask you to help me
 8 put all the pieces together? Are there any other data
 9 points you're looking at to support your conclusion that
 10 the shallow groundwater under the landfill is in
 11 hydraulic communication with the river?
 12 THE WITNESS: Can I ask you a question?
 13 MR. NEWMARK: Off the record.
 14 (Break taken.)
 15 MR. NEWMARK: Can you read back the question.
 16 (Record read.)
 17 THE WITNESS: No.
 18 BY MR. NEWMARK:
 19 **Q.** No. Now I'm going to ask you to help me put
 20 the puzzle together. How do all the things we just
 21 talked about just now tell you, in your own words, that
 22 the shallow groundwater underneath the landfill is in
 23 hydraulic communication with the river?
 24 **A. Well, the first would be the data points that**
 25 **we used in Figure 2-10 of the Kleinfelder 2002 report,**

1 **with the elevations.**
 2 **Q.** Of EB-4?
 3 **A. Of EB-4, which is the base of the waste.**
 4 **Q.** How does that tell us about hydraulic
 5 communication with the river?
 6 **A. First you have to get groundwater into the**
 7 **waste. So at this point, when the groundwater is higher**
 8 **than the base of the waste, your water is in your waste.**
 9 **Q.** Okay. I think where you're going with that is
 10 to the hydrograph you showed me for I think it was MW-8;
 11 is that correct?
 12 **A. Yes.**
 13 **Q.** Could you turn to that so we can look at it?
 14 **A. (Indicating.)**
 15 **Q.** I guess you're saying if EB-4 shows waste
 16 elevation at 55, and you're pointing to the 55 mark on
 17 the Y-axis of the hydrograph for Monitoring Well 8
 18 Shallow in -- which report is this?
 19 **A. Does it have a heading? The "Second Semiannual**
 20 **and Annual 2010 Detection, Evaluation, and Corrective**
 21 **Action Monitoring Report, Geer Road Landfill,' prepared**
 22 **by SCS Engineers.**
 23 **Q.** So the hydrograph for MW-8.
 24 **A. So anytime you have an elevation greater than**
 25 **55 feet, you have groundwater in the waste.**

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1 So now that you have groundwater in the waste,
2 you have to -- the water is going to be moving. There
3 is going to be a flow to groundwater. And groundwater
4 at this site has been defined by all the groundwater
5 flow maps would be toward the river.

6 Q. Can I ask, are you making an assumption that
7 the groundwater elevation in MW-8S is indicative of
8 groundwater elevation at the location of EB-4?

9 A. Yes.

10 Q. And what's the basis for that being a valid
11 assumption?

12 A. The proximity to the well.

13 Q. What is the proximity between those, between
14 EB-4 and MW-8?

15 A. I don't have a scale on me. So if I'm to
16 estimate --

17 Q. Please do.

18 A. -- from the scale on the map, you're talking
19 perhaps 200 feet from the well.

20 Q. Is it your opinion that's not significant
21 enough distance to make that an invalid correlation
22 between the groundwater elevations observed in MW-8S and
23 what you would expect to see at the location of EB-4?

24 A. I don't believe it's going to be a significant
25 difference. There is going to be a gradient to the

33

1 water table. So this is upgradient according to the
2 maps.

3 Q. "This," you're indicating EB-4?

4 A. EB-4.

5 Q. Is upper?

6 A. Yes, it will be somewhat higher. I don't have
7 a definite mark at that point, but --

8 Q. Higher than MW-8S?

9 A. Yeah, the elevation of the water table.

10 Q. Okay.

11 A. But if I look at the map, the gradient such
12 that across the entire site, you know, we don't see more
13 than a seven-foot difference across a 160-acre site, so
14 I'm only talking 200 feet.

15 Q. And how does that show -- the fact that you
16 have concluded that water periodically inundates the
17 waste -- can we go back to the hydrograph -- how does
18 that demonstrate there is hydraulic communication with
19 the river?

20 A. Well, the other important point -- so that was
21 only one piece of evidence.

22 The other important, I have to rely on what the
23 county employees were quoted in the EFS, because that
24 would be the only time this particular or somewhere in
25 the landfill was exposed to the subsurface. They said

34

1 they'd trenched down and water would fill, the waste
2 would be floating in the water. And it was common
3 practice for trench-and-fill landfills to dig down in
4 the warmer months, in the summer months, and then they'd
5 fill until...

6 Q. But I guess I don't understand. You could get
7 the same sorts of groundwater elevations or see the
8 waste floating in water, and if this was a concrete
9 impervious canal next to it, I don't see how water
10 inundating the waste tells you there is hydraulic
11 communication with the river.

12 A. Okay. So the groundwater elevations, if there
13 was no communication to the river, you would have a
14 barrier. It would be like the river is not there. So
15 the water is going somewhere. You have a cube, the flow
16 into the cube has to equal the flow going out of the
17 cube. Otherwise, you're going to have this big backup
18 or mound of water.

19 And their data from the groundwater elevation
20 maps, there is no suggestion of a mound, mounding
21 condition occurring. It's showing that all the water is
22 the same system. It's going to the river.

23 Q. You mentioned in your testimony earlier that
24 the -- I can't remember if you said it was the Tuolumne
25 River was a gaining or losing stream. Do you have an

35

1 opinion on whether it's a gaining or losing river?

2 A. I think that's something that's dependent on
3 the day, because there is a couple factors. The
4 releases from the reservoir upstream. You could have
5 high flows because of flood control, where they pull off
6 water.

7 This is an agricultural area. You have large
8 ag wells in the area that could be drafting or
9 changing --

10 Q. I would normally just let you completely finish
11 your answer, but we're getting towards the end of the
12 day and I kind of heard that as like a you don't know
13 whether it's a gaining or losing stream and it kind of
14 depends. Is that fair?

15 A. That's fair.

16 Q. Going back to Table 6.4 in -- I think this is
17 the first semiannual report of 2010, right? -- I think
18 you had talked about there being a correlation between
19 groundwater elevations observed in the monitoring wells
20 and surface water elevations in the river. Is that
21 another aspect of your analysis regarding hydraulic
22 communication?

23 A. The report stated that when one rose the other
24 one was affected and when the other one dropped the
25 other one was affected.

36

Deposition of HOWARD HOLD - 2/4/11

1 Q. Where was that?
 2 And I have to ask you for the court reporter's
 3 sake when you read, there is a natural tendency to go
 4 quickly because we want to get through the reading. But
 5 that just kills the court reporter.
 6 A. "The surface water elevations for the Tuolumne
 7 River were observed to be approximately .5 to
 8 3 feet higher than groundwater in adjacent
 9 groundwater wells during the first quarter
 10 event and approximately 2.5 to 3.5 feet lower
 11 than groundwater in the adjacent groundwater
 12 wells during the second quarter event."
 13 Q. Well, that doesn't say there is a correlation.
 14 That's just reporting the data, right?
 15 A. Again, if there was no communication between
 16 the river and the wells, you would see a different
 17 pattern of equal potential lines on their groundwater
 18 flow map. The water has to go somewhere. So it's
 19 either going, communicating with the river, eventually
 20 getting to the river, or it's mounding up. And they
 21 don't show that.
 22 Q. I'm used to seeing -- when I've reviewed
 23 technical reports and someone is trying to say there is
 24 a correlation between one data set and another, I'm used
 25 to seeing a statistical analysis to show it's a

37

1 significant correlation. Have you performed any
 2 statistical analysis like that between the river levels
 3 and the monitoring well levels?
 4 A. No, I have not.
 5 Q. Are you aware of anyone having performed a
 6 statistical analysis to demonstrate that correlation?
 7 A. No, I'm not.
 8 Q. In your memorandum, Exhibit 4, you identified
 9 on page 4, you mentioned today there is two bullet
 10 points in the middle of page 4 are in quotation marks.
 11 And that indicates to me that those are direct
 12 quotations from text in the Kleinfelder report. Is that
 13 fair to say?
 14 A. That's fair to say, yes.
 15 Q. We're getting towards the end of the day so I'm
 16 just going to cut to the chase and tell you that we have
 17 this report through an optical character recognition
 18 software. I searched for these exact quotes and could
 19 not find them. That could be an error in the optical
 20 recognition software. So if you could point me to where
 21 in the Kleinfelder report you got these quotes, I'd
 22 appreciate it.
 23 I'll tell you that I think there is a
 24 discussion of county observation of workers in the
 25 beginning of the Kleinfelder report, but I didn't find

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1 this exact statement. I'll just point you to where I
 2 was.
 3 I can't find it actually. If you can look
 4 through it, that would be great.
 5 A. This might take a minute.
 6 (Break taken.)
 7 BY MR. NEWMARK:
 8 Q. Howard, you've been looking through some of the
 9 documents. Can you tell us what you found and what you
 10 weren't able to find?
 11 A. I was not able to find this exact quote. I
 12 didn't have a chance to look through that report.
 13 Q. Your welcomed to.
 14 A. I think it's paraphrased from there.
 15 It's probably this report here.
 16 MR. PULUPA: Looks like there is a 2007
 17 Kleinfelder report cited in the bibliography here.
 18 MR. NEWMARK: Okay. I'll see if I can move
 19 this along.
 20 Q. You've looked at the documents we have here.
 21 And is it fair to say that the citation to the 2002
 22 Kleinfelder evaluation, monitoring, and engineering
 23 feasibility study on page 4 of your November 2010
 24 memorandum may not actually be the source for the two
 25 quotations bulleted on that page of the memorandum?

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1 A. Right. Yes.
 2 Q. That may be a mistaken citation?
 3 A. Yes.
 4 Q. And you know that you saw these quotations
 5 somewhere, but you can't pinpoint it right now?
 6 A. That's correct.
 7 Q. The first quotation says that:
 8 "County workers interviewed for the preparation
 9 of the Kleinfelder EFS stated that the base of
 10 the landfill was excavated down to groundwater
 11 and at times waste was floating in the pits."
 12 How does that -- strike that.
 13 In your November 2010 memorandum, it seems that
 14 you were including that quotation to support the
 15 statement that "Without a protective liner system that a
 16 modern landfill has, leachate and landfill gas from this
 17 landfill will freely drain to the underlying
 18 groundwater."
 19 That seems to me to be a different statement
 20 from the Cease and Desist Order statement we've been
 21 talking about, about an indication that shallow
 22 groundwater beneath the landfill is in hydraulic
 23 communication with the river.
 24 How does the waste floating in the pits mean
 25 that there is hydraulic communication in the shallow

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Deposition of HOWARD HOLD - 2/4/11

1 groundwater under the landfill into the river?
 2 **A. Well, as depicted on the hydrographs and the**
 3 **annual monitoring reports, we see the elevation rise and**
 4 **fall. So at the time that this county employee was**
 5 **working at the site, they observed groundwater or what**
 6 **they surmised to be groundwater at the bottom of the**
 7 **pit.**
 8 **So there is only one water table from all the**
 9 **data that has been presented in these monitoring**
 10 **reports. There is only one water table, so I have**
 11 **communication there with the water and the waste. And**
 12 **the fact that the flow direction is towards the river,**
 13 **the water -- there is a gradient toward the river, and**
 14 **their maps show no sort of boundary or mounding at the**
 15 **river. So it's communicating with the river.**
 16 **Q. You said just now that the observation, sort of**
 17 **I guess third-hand observation of a county worker as**
 18 **were recounted in some of these reports, were what they**
 19 **surmised to be groundwater. Would you agree this could**
 20 **be called an anecdotal bit of evidence?**
 21 **A. I don't know...**
 22 **Q. Anecdotal means this is observations of a**
 23 **county worker, what they thought was groundwater.**
 24 **A. Right.**
 25 **Q. It's not based on a technical evaluation; is**

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1 that correct?
 2 **A. That's correct.**
 3 **Q. Are you aware of the characteristics of cannery**
 4 **waste?**
 5 **A. I have not worked with cannery waste at my**
 6 **sites.**
 7 **Q. Are you aware that cannery waste is often**
 8 **highly liquid?**
 9 **A. It's highly liquid and it's -- yeah, it's**
 10 **liquid.**
 11 **Q. Is there any evidence to indicate that the**
 12 **reason the waste was floating at the bottom of these**
 13 **pits in these anecdotal observations wasn't floating in**
 14 **liquid cannery waste as opposed to groundwater?**
 15 **A. I don't know how I would answer that.**
 16 **MR. NEWMARK: Can you read back the question.**
 17 **(Record read.)**
 18 **THE WITNESS: I just have a quick question for**
 19 **you. It will just be a 30-second thing.**
 20 **MR. NEWMARK: Sure, that's fine.**
 21 **MR. PULUPA: If you don't know, you don't know.**
 22 **(Discussion off the record.)**
 23 **BY MR. NEWMARK:**
 24 **Q. Do you want the question read back?**
 25 **A. I don't need the question read back.**

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1 **Q. Okay.**
 2 **A. So I don't know if it was the cannery waste**
 3 **that you suggested.**
 4 **Q. So you don't know whether it was cannery waste**
 5 **or groundwater? You don't know either way; is that**
 6 **correct?**
 7 **A. That is correct.**
 8 **Q. We also don't know what area of the landfill**
 9 **these observations occurred in, correct?**
 10 **A. That is correct.**
 11 **Q. Because you focused on your discussions in the**
 12 **area around, was it, EB-4 in the Kleinfelder report and**
 13 **MW-8 Shallow?**
 14 **A. Yeah.**
 15 **Q. So we don't have any idea whether these**
 16 **observations of wet things in the bottom of the pits**
 17 **were anywhere near that location, correct?**
 18 **A. That's correct.**
 19 **Q. Are you aware of any sites upriver from the**
 20 **landfill that have VOC contamination?**
 21 **A. No, I don't.**
 22 **Q. Are you aware of any monitoring data downriver**
 23 **from the landfill with detections of the constituents of**
 24 **concern at this landfill?**
 25 **MR. PULUPA: Can you clarify "downriver"?**

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1 Downriver could be all the way to the Delta. Coming
 2 from the landfill?
 3 **MR. NEWMARK: All right. We'll strike that**
 4 **question.**
 5 **Q. Would you expect the VOCs from the landfill to**
 6 **degrade in surface water?**
 7 **A. Can you define the VOCs that you're...**
 8 **Q. I believe the constituents of concern listed in**
 9 **the Cease and Desist Order and the waste discharge**
 10 **requirements include vinyl chloride, PCE, TCE, cis 1,2,**
 11 **DCE.**
 12 **A. I don't know the breakdown of those products in**
 13 **surface water.**
 14 **Q. Do you know if volatile organic compounds have**
 15 **a propensity to volatilize when exposed to air or**
 16 **oxygen?**
 17 **A. The ones identified on page 5 of the memo --**
 18 **Q. Exhibit 4?**
 19 **A. -- Exhibit 4, the methane would volatilize.**
 20 **The methane does that. But the TCE, PCE, the 1,1**
 21 **dichloroethane, the cis, and the vinyl chloride, those**
 22 **don't volatilize very easily. So they may eventually**
 23 **dilute if you're talking about the surface water.**
 24 **Q. But a molecule of vinyl chloride -- strike**
 25 **that.**

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Deposition of HOWARD HOLD - 2/4/11

1 Do you have any expertise in the fate and
 2 transport of volatile organic compounds in surface
 3 water?
 4 **A. No.**
 5 **Q.** Do you feel qualified to testify about fate and
 6 transport of volatile organic compounds in surface
 7 water?
 8 **A. No.**
 9 **Q.** Do you feel qualified to testify about the fate
 10 and transport of volatile organic compounds in
 11 groundwater?
 12 **A. Yes.**
 13 **Q.** Do you have an understanding as to whether any
 14 of the constituents listed on page 5 of Exhibit 4 will
 15 naturally attenuate in groundwater?
 16 **A. No.**
 17 **Q.** You don't have an understanding of that?
 18 Read back the question.
 19 (Record read.)
 20 THE WITNESS: No, from my experience, they're
 21 not going to naturally attenuate.
 22 BY MR. NEWMARK:
 23 **Q.** So the answer is yes, you have an understanding
 24 and that understanding is that they won't naturally
 25 attenuate in groundwater?

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1 **A. That's correct.**
 2 **Q.** Under any conditions?
 3 **A. The conditions that I've observed in my**
 4 **landfill cases.**
 5 **Q.** Is it the Regional Board's contention in the
 6 Cease and Desist Order proceedings that VOCs from the
 7 Geer Road Landfill present a threat to beneficial uses
 8 in the Tuolumne River?
 9 **A. Yes.**
 10 **Q.** Could you explain to me how VOCs from the Geer
 11 Road Landfill present a threat to beneficial uses in the
 12 Tuolumne River?
 13 **A. The Tuolumne River isn't a flat surface. There**
 14 **is a deep channel there. The channel depth, I don't**
 15 **have any measurements of how deep the channel goes, but,**
 16 **again, the water is flowing to the river channel. So it**
 17 **may not be getting in at the surface of the river, but**
 18 **the flow, the flow nets of the groundwater system could**
 19 **be coming up underneath the river itself.**
 20 **Q.** Specifically which beneficial uses of the river
 21 does the Regional Board contend are threatened by VOCs
 22 from the Geer Road Landfill?
 23 **A. Can you rephrase the question or restate it?**
 24 **I'm sorry.**
 25 MR. NEWMARK: Can you read it back, please.

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1 (Record read.)
 2 MR. PULUPA: And if you don't know --
 3 THE WITNESS: I don't know.
 4 BY MR. NEWMARK:
 5 **Q.** Is there another witness that would be
 6 qualified to answer those questions that you're aware
 7 of? I'll ask your counsel actually. I can let you off
 8 the hook on that.
 9 MR. PULUPA: I think Wendy would be better
 10 versed to answer that. I don't think, you know, this
 11 is -- I don't think that the WDRs which the Cease and
 12 Desist Order is designed to enforce necessarily -- I
 13 don't think that -- the WDRs did not contemplate there
 14 was an ongoing release of VOCs to surface waters that
 15 presented a threat to any beneficial uses. I think
 16 that's something that came through -- or something
 17 that's part of the WDRs.
 18 I think that if there is hydraulic
 19 communication, then that is something that the board is
 20 concerned with, but I don't think it's one of the -- I
 21 do think that's something that the board is concerned
 22 with, and Wendy would probably be the person to answer
 23 those questions.
 24 MR. NEWMARK: Mr. Hold testified exactly that,
 25 I asked, is it the Regional Board's contention in the

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1 Cease and Desist Order proceedings that VOCs from the
 2 Geer Road Landfill present a threat to beneficial uses
 3 in the Tuolumne River. And the answer was yes.
 4 MR. PULUPA: Yes.
 5 MR. NEWMARK: So we will absolutely need a
 6 witness to testify about that contention. And I need to
 7 know whether Ms. Wyels would be able to testify about
 8 all of that; is she going to testify as to fate and
 9 transport, degradation, which beneficial uses will be
 10 impaired, environmental threat, public health threat,
 11 what exactly we're talking about.
 12 So she's going to be the person for the
 13 Regional Board and not Mr. Hold; is that correct?
 14 MR. PULUPA: I think that's correct. I think
 15 that some of those topics -- I think some of those
 16 concerns that you have can be resolved in the settlement
 17 context in terms of what the board is interested in
 18 looking at. Because I think we've got a couple of
 19 issues on the table here.
 20 MR. NEWMARK: Okay.
 21 Can we go off the record.
 22 (Break taken.)
 23 MR. NEWMARK: We're going to leave your
 24 memorandum for a moment.
 25 **Q.** On page 6 of the Cease and Desist Order, which

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1 is Exhibit 3, in paragraph 9 there is an allegation,
 2 9(b), of a failure to submit a corrective action for
 3 groundwater remediation at the north end of the
 4 landfill.
 5 Do you see that?
 6 **A. I'm sorry, which page?**
 7 **Q. Page 6.**
 8 MR. PULUPA: That's the misnumbering.
 9 THE WITNESS: Okay.
 10 BY MR. NEWMARK:
 11 **Q. Do you see that?**
 12 **A. At the bottom of the page?**
 13 **Q. Yes.**
 14 **A. Okay.**
 15 **Q. Did you prepare that part of this draft Cease**
 16 **and Desist Order?**
 17 **A. Yes.**
 18 **Q. And I'll show you a document we marked as**
 19 **Exhibit 6, entitled an "Evaluation of Impacted**
 20 **Groundwater in North Area of the Geer Road Landfill."**
 21 **Are you familiar with this document?**
 22 **A. Yes.**
 23 **Q. Were you responsible for reviewing that**
 24 **document on behalf of the Regional Board?**
 25 **A. Yes.**

1 **Q. When did you receive that document from the**
 2 **county?**
 3 **A. It came into our office on 30 October 2009.**
 4 **Q. And when did you commence your review of that**
 5 **document?**
 6 **A. I don't recall.**
 7 **Q. Did you provide the county with written**
 8 **comments on that document?**
 9 **A. No, I did not.**
 10 **Q. Why didn't you provide the county with written**
 11 **comments on Exhibit 6?**
 12 **A. I think the comments are in the Cease and**
 13 **Desist Order.**
 14 **Q. Does the Regional Board have a standard**
 15 **practice for reviewing technical reports submitted by**
 16 **dischargers?**
 17 **A. My priorities are set by my supervisor, so that**
 18 **would be...**
 19 **Q. Sounds like, no, there is not a standard**
 20 **practice; it's just case-by-case, depending on the**
 21 **priority that your supervisor puts on a particular site**
 22 **or particular report. Would that be fair to say?**
 23 **A. Correct. Yes.**
 24 **Q. And so the way that worked out for the Geer**
 25 **Road Landfill is that this report wasn't given priority**

1 to prepare a comment letter; is that fair to say?
 2 **A. No, because it is important that we review all**
 3 **the report. If we have time to draft a detailed**
 4 **response for every report, no. It's a workload issue.**
 5 **Q. Are you aware of any other cases where the**
 6 **first written comments that the Regional Board has**
 7 **provided on a technical report has been in the form of a**
 8 **cease and desist order?**
 9 **A. No.**
 10 **Q. On other sites have you provided written**
 11 **comments in letter form to technical reports submitted**
 12 **by dischargers?**
 13 **A. Yes.**
 14 **Q. Did those letters often direct the discharger**
 15 **to submit a revised report to comply with your comments?**
 16 **A. Yes.**
 17 **Q. Can you explain to me why that wasn't the**
 18 **procedure used for the submission and review of**
 19 **Exhibit 6?**
 20 **A. On page 23 of the Geer Road Landfill Evaluation**
 21 **and Impact on Groundwater Impact in the North Area**
 22 **prepared by SCS Engineers for Stanislaus County, it says**
 23 **here:**
 24 **"Since the nature and extent of groundwater in**
 25 **the northern area has already been investigated**

1 **and defined, and since remedial activities**
 2 **have been effective and additional system**
 3 **improvements are underway, additional work to**
 4 **investigate the northern area does not appear**
 5 **warranted at this time."**
 6 **Q. I was going to get to the substance of the**
 7 **reports and the substance of your comments. Right now**
 8 **I'm kind of directed to the procedure, as to why the**
 9 **comments in your report were in the form of a cease and**
 10 **desist order instead of a letter.**
 11 **A. I think they're the same.**
 12 **Q. The letter that you would issue providing**
 13 **comments on a technical report is issued under your**
 14 **signature, is it not?**
 15 **A. It depends on how it goes out, how my senior**
 16 **wants to send it out. I've had comment letters go out**
 17 **with Wendy's signature on it.**
 18 **Q. But a letter providing comments on a technical**
 19 **report goes out under a staff signature, correct?**
 20 MR. PULUPA: Well, I think he answered that
 21 question.
 22 MR. NEWMARK: I don't believe so.
 23 MR. PULUPA: Depends on how his supervisor is
 24 set.
 25 MR. NEWMARK: But I'm asking a different

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1 question.
2 **Q.** Whatever your supervisor says, it's not going
3 out as a Regional Board order; it's going out under
4 staff signature, right?
5 **A.** Yeah, if they want me to sign the letter and
6 there is no major objections to the conclusions of the
7 report.
8 **Q.** And if it's just a technical comment letter,
9 signed by staff, telling the discharger to resubmit the
10 report or whatever, there is no ability to assess civil
11 penalties against the discharger for not complying with
12 that letter, are there?
13 **A.** It depends on the type of letter it is. If I
14 have to draft a letter as a 13267, there is penalties
15 associated for not submitting a complete and accurate
16 report.
17 **Q.** But that would be signed by the executive
18 officer or the assistant executive officer, right? No?
19 It could be signed by you? You've signed 13267 letters?
20 **A.** No.
21 **Q.** I'm sorry, just to get a clear record, because
22 I think I talked over you, have you signed 13267
23 letters?
24 **A.** No.
25 **Q.** No?

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1 **A.** Absolutely not.
2 **Q.** Who signs 13267 letters?
3 **A.** I believe it's the assistant executive officer.
4 **Q.** Are you familiar with the Water Quality
5 Enforcement Policy adopted by the State Water Resources
6 Control Board in 2009?
7 **A.** Yes.
8 **Q.** Are you familiar with kind of the end of that
9 policy that describes the different levels of
10 enforcement that are available?
11 **A.** Yes.
12 **Q.** And a letter from staff is described as an
13 informal enforcement, informal notification, right?
14 **A.** Yes.
15 **Q.** A cease and desist order is formal enforcement,
16 correct?
17 **A.** Yes.
18 **Q.** So I don't understand, in light of that fact,
19 how you can say that providing comments to a discharger
20 in the form of a staff comment letter and a cease and
21 desist order are the same thing.
22 **A.** Well, they're violating the waste discharge
23 requirements. Violation of the waste discharge
24 requirements, one of the tools that we have at our
25 discretion would be a cease and desist order.

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1 **MR. NEWMARK:** Can we go off the record.
2 (Discussion off the record.)
3 **BY MR. NEWMARK:**
4 **Q.** Did you ever convey orally your comments on
5 Exhibit --
6 **MR. PULUPA:** On October 2009?
7 **MR. NEWMARK:** Yes.
8 **Q.** -- on Exhibit 6 to the county?
9 **A.** I don't recall.
10 **Q.** Did you attend a September 2009 meeting between
11 Regional Board representatives and county
12 representatives regarding the Geer Road Landfill?
13 **A.** I don't recall.
14 **Q.** Could you go to Exhibit 4, which are the waste
15 discharge requirements, I hope?
16 While you're doing that, I should have said did
17 you attend a September 2010 meeting with Regional Board
18 representatives and county representatives regarding the
19 Geer Road Landfill.
20 If you still don't recall, that's okay. I just
21 need to ask my question completely.
22 **A.** Yes. Yes.
23 **MR. PULUPA:** The meeting in September?
24 **THE WITNESS:** Yeah.
25 ///

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1 **BY MR. NEWMARK:**
2 **Q.** Do you recall what transpired at that meeting?
3 **A.** I believe they were --
4 **MR. PULUPA:** "They" meaning the county?
5 **THE WITNESS:** Right.
6 I think Wendy presented our concerns with the
7 site.
8 **BY MR. NEWMARK:**
9 **Q.** Do you recall if those concerns included
10 comments on Exhibit 6, the "Evaluation of Impacted
11 Groundwater in the North Area of the Geer Road
12 Landfill"?
13 **A.** No.
14 **MR. PULUPA:** They didn't or you don't remember?
15 **THE WITNESS:** I don't remember.
16 **BY MR. NEWMARK:**
17 **Q.** Okay. So please go to Exhibit 5, which is the
18 WDRs. And please go to page 19.
19 To make sure we're on the same page, under
20 paragraph 12(f), the requirement to submit an evaluation
21 monitoring report documenting the nature and extent of
22 groundwater contamination at the north area of the Geer
23 Road Landfill by 30 October 2009, that's the requirement
24 to submit Exhibit 6, correct?
25 **A.** That's correct.

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1 Q. And then paragraph 12(g) is a requirement to
 2 submit a corrective action plan for remediation of
 3 contaminated groundwater at the north area of the
 4 landfill by January 29, 2010, correct?
 5 A. That's correct.
 6 Q. But when that January 29 deadline arrived --
 7 MR. PULUPA: There is no January 29, 2010?
 8 MR. NEWMARK: Yes.
 9 MR. PULUPA: You said 2009.
 10 THE REPORTER: You said 29.
 11 MR. NEWMARK: I said 29.
 12 MR. PULUPA: You said 29, January 2009.
 13 MR. NEWMARK: No, I didn't. I'm looking at the
 14 screen. I messed up the date a lot, but not that time.
 15 I'll read it again.
 16 Q. When that January 29, 2010, deadline to submit
 17 a corrective action plan for the north area of the
 18 landfill arrived, you'd still not provided in the
 19 comments to the Regional Board on their technical
 20 report -- comments to -- strike that question.
 21 You had not provided any technical comments on
 22 the Evaluation of Impacted Groundwater in the North Area
 23 at the Geer Road Landfill technical report by the time
 24 the January 29, 2010, deadline to submit a corrective
 25 action plan for that area arrived, correct?

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1 A. That's correct.
 2 MR. PULUPA: Is that written? You're talking
 3 written?
 4 MR. NEWMARK: Any comments.
 5 THE WITNESS: That's correct.
 6 BY MR. NEWMARK:
 7 Q. And you still had not provided any comments
 8 regarding the Evaluation of Impacted Groundwater in the
 9 North Area of the Geer Road Landfill by the time the
 10 August 30, 2010, deadline to submit a well installation
 11 report for that corrective action arrived, correct?
 12 A. That's correct.
 13 Q. Is it the Regional Board's contention that the
 14 county should have gone ahead and installed the
 15 corrective action in the north area of the landfill even
 16 though it hadn't received your comments on its
 17 recommendation that that corrective action was not
 18 required?
 19 A. So the recommendation was not to do anymore
 20 because they felt it was complete, so I'm not going to
 21 see any of the other reports because they're telling me
 22 they don't have to do anything else.
 23 Q. The county -- they, the county, didn't feel
 24 that corrective action was technically necessary or
 25 justified?

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1 A. That's correct.
 2 Q. So was it reasonable in your estimation for the
 3 county to not install the wells and submit the
 4 completion report while awaiting your approval of that
 5 recommendation?
 6 A. Well, I don't have any control over the dates
 7 in the waste discharge requirements. If that's what's
 8 in the order, that's what they have to do, regardless if
 9 they get a response back or not. It's clearly a drafted
 10 order and approved by the board, so they have to -- they
 11 have to do it.
 12 Q. So is it your contention that -- strike that.
 13 Could you have granted the county an extension
 14 of the deadline to submit the well installation report
 15 and to take corrective action?
 16 A. You know what: I do not have that authority,
 17 granting the extension in these orders.
 18 Q. Is there anything that the county could have
 19 done to obtain an extension?
 20 A. They could have submitted a letter.
 21 Q. A letter to you?
 22 A. It would have gone up the chain, up the chain
 23 of command.
 24 Q. And then what would happen -- how high up would
 25 it have to go to provide that extension?

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1 A. It's my understanding if you're going to change
 2 a date in a board-adopted item, you need the board to
 3 agree to it.
 4 Q. And you don't have the authority to grant that
 5 extension?
 6 A. Absolutely not.
 7 MR. NEWMARK: I'm going to ask the court
 8 reporter to mark this document as Exhibit 10.
 9 (Whereupon Exhibit Number 10 was marked for
 10 identification.)
 11 BY MR. NEWMARK:
 12 Q. Have you seen this document before today?
 13 A. Yes.
 14 Q. And let's describe it first. Is it fair to
 15 describe this document as a financial assurance cost
 16 estimate for the Geer Road Landfill submitted by
 17 SCS Engineers on behalf of -- strike that.
 18 Is it fair to describe this document as a
 19 financial assurance cost estimate prepared by
 20 SCS Engineers on behalf of the county for the Geer Road
 21 Landfill dated June 19, 2009?
 22 A. Yes.
 23 Q. Were you responsible for reviewing this
 24 submittal?
 25 A. Yes.

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1 Q. And do you know or can you tell from this
2 document when you received it?
3 MR. PULUPA: If you can't read it, you can't
4 read it.
5 THE WITNESS: I can't read it.
6 BY MR. NEWMARK:
7 Q. If we go back to the waste discharge
8 requirements, Exhibit 5, on page 19, is there a
9 requirement under paragraph 12(c) -- strike that.
10 MR. PULUPA: Looks like we have about
11 15 minutes left today. How much more do you need?
12 MR. NEWMARK: Let's go off the record, I guess.
13 (Discussion off the record.)
14 BY MR. NEWMARK:
15 Q. In paragraph 12(b) of the waste discharge
16 requirements we've marked as Exhibit 5, there is a
17 requirement to submit a cost estimate by June 30th,
18 2009, correct?
19 A. That's correct.
20 Q. So it's your understanding that this memorandum
21 we marked as Exhibit 10 was submitted in compliance with
22 that paragraph 12(b) requirement of the waste discharge
23 requirements?
24 A. Yes.
25 Q. And then there is also paragraph 12(e) of the

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1 waste discharge requirements that imposes an
2 October 30th, 2009, deadline to submit a copy of
3 correspondence with the California Integrated Waste
4 Management Board requesting to establish financial
5 assurances, correct?
6 A. Yes.
7 Q. Would you describe to me the process that
8 happens between those two deadlines for your evaluation
9 of this memorandum, this memorandum being Exhibit 10?
10 A. I don't understand the question.
11 Q. The Regional Board is supposed to review and
12 approve the financial assurance cost estimate before
13 it's submitted to the Integrated Waste Management Board,
14 correct?
15 A. Yes.
16 Q. So before the October 30, 2009, deadline, the
17 county needed to have the Regional Board's approval of
18 Exhibit 10?
19 A. And I gave them my response in a letter.
20 Q. Do you recall what the nature of that response
21 was?
22 A. That the financial assurance cost estimate was
23 incomplete.
24 Q. That was a letter to the county?
25 A. Yes.

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1 Q. Do you recall the date of the letter that you
2 provided to the county stating that the financial
3 assurance cost estimate was incomplete?
4 MR. PULUPA: Can I just -- if I could pause for
5 one second.
6 MR. NEWMARK: We can go off the record.
7 (Discussion off the record.)
8 MR. NEWMARK: I'll ask the court reporter to
9 mark this as Exhibit 11 and show it to you and ask if
10 this is the letter you were referring to.
11 (Whereupon Exhibit Number 11 was marked for
12 identification.)
13 (Record read.)
14 THE WITNESS: Yes.
15 BY MR. NEWMARK:
16 Q. So would you please identify for the record
17 what Exhibit 11 is.
18 A. "Review of Financial Assurance Cost Estimate,
19 Groundwater Remediation For Known Release, Geer Road
20 Landfill, Stanislaus County."
21 Q. And what's the date of that letter?
22 A. Dated 27 October 2009.
23 Q. So that's three days before the October 30,
24 2009, deadline to submit correspondence to the
25 integrated waste board that the financial assurances

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1 were approved, correct?
2 A. That's correct.
3 Q. At the time you prepared this October 27th
4 letter attached as Exhibit 11, did you believe it was
5 essentially impossible for the county to comply with
6 that October 30th, 2009, deadline to submit a copy of
7 correspondence with the waste board?
8 A. No.
9 Q. You believe that it was possible for the county
10 to comply -- to submit a new report three days later
11 with correspondence with the waste board?
12 A. So we asked for a copy of correspondence. It
13 could be in the form of an email with the waste board.
14 Q. Why did you establish a new deadline in
15 Exhibit 11 to submit a revised report of December 1,
16 2009?
17 A. Because this report was incomplete. The
18 requirement for financial assurance is an annual thing,
19 so just because this report isn't complete doesn't mean
20 they still don't have the annual requirement to converse
21 and update their requirements with the waste board.
22 This only addresses a cost estimate. The waste board
23 are to keep the records of their financial assurance
24 accounts.
25 Q. So you believe that the county still would have

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Deposition of HOWARD HOLD - 2/4/11

1 been able to comply with the October 30, 2009, deadline
2 in paragraph 12(e) of the waste discharge requirements
3 at the time you sent Exhibit 11; is that correct?
4 **A. Yes.**
5 **MR. NEWMARK:** Would you please mark this as
6 Exhibit 12.
7 (Whereupon Exhibit Number 12 was marked for
8 identification.)
9 **BY MR. NEWMARK:**
10 **Q.** Would you please review this document we've
11 marked as Exhibit 12. For the record, this is an email
12 thread. The bottom email in the thread is identified as
13 being from Howard Hold to Troy Weber sent on
14 October 28th at 10:13 a.m., 2009.
15 **A. Yeah, that's me.**
16 **Q.** So you're testifying you did send the email at
17 the bottom of Exhibit 12?
18 **A. Yes.**
19 **Q.** And do you see where it says in the second
20 sentence: "However, there is a 30 October deadline in
21 our WDRs to provide the CIWMB with that estimate. I
22 wanted you to be aware that they will miss that
23 deadline."
24 Do you see that?
25 **A. Yes.**

1 **Q.** Did you write that?
2 **A. Yes.**
3 **Q.** So do you want to correct your earlier
4 testimony about what your belief was about the county's
5 ability to comply with the paragraph 12(e) requirement
6 in the WDRs?
7 **A. Back on?**
8 **Q.** October 27th, 2009.
9 **A. I had concerns that they couldn't comply.**
10 **Q.** Well, you knew they couldn't comply, right?
11 Because under paragraph 12(e), the last sentence says
12 that they had to submit correspondence about using the
13 approved financial assurances mechanism.
14 So they had to have your approval before they
15 could correspondence with the waste board as required,
16 right?
17 **A. For 2009.**
18 **Q.** Right.
19 So you're essentially excusing compliance with
20 the WDR deadline in your October 27 letter marked as
21 Exhibit 11 and your October 28 email to the waste board
22 marked as Exhibit 12, right?
23 **MR. PULUPA:** I don't think that's a conclusion
24 that you can necessarily draw from the two. You've got
25 two different dates and two different items that we're

1 talking about.
2 Go ahead and answer.
3 **THE WITNESS:** Can you reread the question.
4 (Record read.)
5 **THE WITNESS:** So on 28 October I stated that
6 there was a date of compliance that they had issues with
7 that I thought the waste board should be aware of. But
8 it's still our WDR -- it doesn't excuse them from the
9 requirement. All I'm saying is heads up, this is coming
10 in.
11 **MR. NEWMARK:** Can we go off the record.
12 (Break taken.)
13 **MR. NEWMARK:** I'll propose the stipulation that
14 the deposition of Mr. Hold and Ms. Wyels are adjourned
15 and will be continued at a date to be agreed upon by the
16 parties soon.
17 The transcripts for the depositions today will
18 be prepared by the court reporter. And the originals
19 will be delivered to Mr. Pulupa, at his office, by
20 February 10th.
21 **MR. PULUPA:** That's okay, yeah.
22 **MR. NEWMARK:** And the Regional Board will have
23 until February 17th to notify the county, through
24 counsel --
25 **MR. PULUPA:** Yeah, send them here actually,

1 because they can get lost for multiple days coming to my
2 office. Send them here to the attention of the deposed
3 parties.
4 **MR. NEWMARK:** Each individual transcript will
5 be sent to the deponent, at this address.
6 The Regional Board will have until
7 February 17th to notify counsel for the county of any
8 changes to the transcript or that no changes have been
9 made.
10 **MR. PULUPA:** Yes.
11 **MR. NEWMARK:** If no notification of changes is
12 received by close of business on February 17th, the
13 county will be entitled to assume that no changes were
14 made.
15 And an unsigned original may be used for all
16 purposes in case of loss of the original, and a
17 certified copy may be used in place of the original for
18 all purposes.
19 The original signed transcripts will be
20 returned to counsel for the county -- me -- no later
21 than February 24th.
22 **MR. PULUPA:** Yes, that works.
23 **MR. NEWMARK:** In consideration of this schedule
24 and not requiring the Regional Board witnesses to
25 quickly review the transcripts, the prosecution team

Deposition of HOWARD HOLD - 2/4/11

1 stipulates to not object to the submission of the signed
2 originals after the February 14th comment deadline.
3 Anything else we need to add?
4 MR. PULUPA: Agreed.
5 MR. NEWMARK: And we don't need to relieve you
6 of your duties because it's not under the code.
7 So stipulated?
8 MR. PULUPA: So stipulated.
9 MR. NEWMARK: And thank you.
10 (Whereupon, the deposition proceedings
11 adjourned at 6:19 p.m.)

12 --o0o--

15 _____
16 HOWARD HOLD

1 CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

2 I, ROSE M. GONI, a Certified Shorthand Reporter duly
3 authorized to administer oaths pursuant to California Code of
4 Civil Procedure Section 2093(b)(1), do hereby certify that the
5 deponent in the foregoing deposition was by me duly affirmed;
6 that this transcript is a true record of the testimony given
7 and of any changes made by said deponent who was sent written
8 notice herein required by Code Section 2025.520(1); that I am
9 not financially interested in the action and not a relative or
10 employee of any of the parties or of any attorney of the
11 parties; and that the original transcript was produced on
12 paper purchased as recycled.

13 IN WITNESS WHEREOF, I have hereunto set my hand
14 this ___ day of _____, 2011.

21 _____
22 ROSE M. GONI, CRR/RMR, CSR No. 8760

1 CERTIFICATE OF WITNESS

2 I, HOWARD HOLD, the deponent, in re Proposed CDO,
3 Geer Road Landfill, Stanislaus County, DO HEREBY CERTIFY
4 under penalty of perjury that the foregoing deposition taken
5 2/4/11 was read by or to me and that I approved of same as a
6 true and correct record of my testimony with changes
7 hereinbelow, Sheet ___ of ___.

6 PAGE/LINE ANSWER CHANGED TO (OR ADD OR DELETE WORDS):
7 / / _____
8 / / _____
9 / / _____
10 / / _____
11 / / _____
12 / / _____
13 / / _____
14 / / _____
15 / / _____
16 / / _____
17 / / _____
18 / / _____
19 / / _____
20 / / _____
21 / / _____

22 IN WITNESS WHEREOF, I have hereunto
23 subscribed my name at _____, California,
24 this ___ day of _____, 2011.

25 _____
HOWARD HOLD, Deponent

DAWN SUE STEFKO
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dawnstefko@aol.com

February 9, 2011
HOWARD HOLD
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
11020 Sun Center Drive
Suite 200
Rancho Cordova, California 95670

IN RE PROPOSED CDO, GEER ROAD LANDFILL, STANISLAUS COUNTY
YOUR DEPOSITION ON FEBRUARY 4, 2011

Enclosed herein is the original transcript of your deposition
as referenced above for you to read, correct the form or
substance of your answers, and sign for approval thereof.
Please use pages 69 and 70 of the transcript when making any
changes/corrections and to sign your transcript.

Pursuant to stipulation of counsel on the record, if you fail
to approve your transcript on or before February 17, 2011, the
deposition, which may be used at a subsequent proceeding,
shall be given the same effect as though it had been approved,
subject to any changes made timely by you.

ROSE M. GONI, CERTIFIED SHORTHAND REPORTER

cc: Original Transcript
Gregory J. Newmark/Leah S. Goldberg
Patrick E. Pulupa



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APPEARANCES

For the Stanislaus
County Department
of Environmental
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Also Present:

Sonya Harrigfeld

--oOo--

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Mr. Newmark

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M. J. LYNN COMPANY -- (916/973-1081)

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M. J. LYNN COMPANY -- (916/973-1081)

†

1 BE IT REMEMBERED that on Tuesday, the 8th day
2 of February, 2011, at the hour of 10:43 a.m. of said
Page 4

3 day, at the offices of California Regional Water
4 Quality Control Board, 11020 Sun Center Drive, Suite
5 200, Rancho Cordova, California, by me Kathy A. Walter,
6 a Certified Shorthand Reporter, personally appeared
7 HOWARD HOLD who was examined as a witness in said
8 cause.

9 --oOo--

10 HOWARD HOLD

11 The witness, called on behalf of the Stanislaus County
12 Department of Environmental Resources being duly sworn
13 to state the truth, the whole truth, and nothing but
14 the truth, testified on his oath as follows:

15 --oOo--

16 EXAMINATION BY MR. NEWMARK

17 Q. BY MR. NEWMARK: would you please state and
18 spell your name for the record?

19 A. Howard Hold, H-o-w-a-r-d, H-o-l-d.

20 Q. Mr. Hold, I know you have been deposed before,
21 right, because we were here on Friday, and this is
22 actually the continuation of the deposition that we
23 began last week, and you graciously, along with your
24 counsel, agreed to come back and let us ask you a few
25 more questions, correct?

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M. J. LYNN COMPANY -- (916/973-1081)

1 A. Yes.

2 Q. First of all, I will ask you during the
3 deposition last time we were discussing some citations

4 that you had made in your memorandum that we attached
5 as Exhibit 4.

6 MR. PULUPA: If I could, quickly before, Howard
7 has one more thing that he'd like to add when we were
8 talking about his qualifications at the onset.

9 THE WITNESS: Yeah.

10 What I didn't include in my earlier deposition
11 is that I am a registered professional geologist, State
12 of California, No. 7466.

13 Q. BY MR. NEWMARK: Okay. Did I -- are you also
14 a professional engineer?

15 A. No.

16 Q. Okay. So, those were your qualifications is
17 you are a professional geologist?

18 A. Yes.

19 Q. When did you first get certified as
20 a professional geologist?

21 A. 2003, I believe.

22 Q. Okay. And have you continuously maintained
23 that certification --

24 A. Yes.

25 Q. -- since 2003?

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M. J. LYNN COMPANY -- (916/973-1081)

‡

1 A. Yes.

2 Q. Are you -- do you have any similar registration
3 in any other states?

4 A. No.

5 Q. Let's see. So, I was in the middle of a
6 question. I will just try to pull it back and ask it
7 again.

8 Last week we had some discussions about the
9 memorandum you prepared for Ms. Olson in November 2010,
10 and we have marked as Exhibit 4, and there were some
11 citations to a 2002 Kleinfelder report that when you
12 were looking at that report we weren't able to quite
13 track them down.

14 Have you done any more homework on that since
15 Friday?

16 A. Not that issue.

17 Q. Are there any other clarifications that you
18 wanted to make with regard to your testimony last
19 week?

20 A. Yes, there is.

21 That would be the question about is the river
22 connected to the ground water table underneath the
23 landfill, and -- let's see.

24 Q. Just so -- before you start talking about that,
25 just if I remember the line of questioning you are

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M. J. LYNN COMPANY -- (916/973-1081)

‡

1 talking about -- and I believe where I was jumping off
2 from were findings on page 28 of the draft cease and
3 desist order we spent most of our time talking about
4 the final sentence of finding five saying, "This
5 indicates that the shallow ground water beneath the

6 landfill is in hydraulic communication with the river."

7 Is that the finding that you were thinking
8 of?

9 A. Yes.

10 Q. Okay. What is the clarification you wanted to
11 make to your testimony on that point?

12 A. One would be on -- this is the February 13,
13 2009, engineer feasibility study Geer Road Landfill.

14 Q. Remember you got to go slow when you read.

15 A. Sorry.

16 Q. That is okay. Everyone does it?

17 A. Report prepared by SCS Engineers.

18 Q. Exhibit 9, correct?

19 A. Exhibit 9. Figure 2.5 or 2-5 cross-section AA
20 prime depicts the shallow ground water table. It is
21 labeled as the blue line on -- on the cross-section,
22 and it extends unobstructed by this presentation on the
23 cross-section all the way to the river, and there is a
24 slight gradient flowing towards the river.

25 Then --

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 Q. Before you leave that figure --

2 A. Okay.

3 Q. Specifically with regard to the statement that
4 the shallow ground water beneath the landfill is in
5 hydraulic communication with the river, the salient
6 point from this figure, as I understand it, is that

7 there's -- it depicts a ground water gradient flowing
8 towards the river; is that correct?

9 A. Flowing toward river and going to the river.

10 Q. Okay. We also talked about inundation of the
11 waste, which I think is a somewhat different point;
12 but, does this cross-section tell you anything about
13 whether the waste is inundated by ground water?

14 A. They did not place a bottom of waste figure on
15 this one, and I am still working on that answer.

16 Q. Okay. Thanks. You were going to go to another
17 figure.

18 A. Cross-section BB prime, again, shows the ground
19 water table moving across the site and again
20 discharging into the river.

21 Q. In cross-section BB prime it looks like it
22 shows the ground water elevation.

23 Is that 52.01?

24 A. Yes. Yes, it is.

25 Q. And then this sort of vertical dotted line

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 coming up from 52.01, is that the side of the channel
2 of the Tuolumne River?

3 A. That is how they depicted it because this is
4 the land surface.

5 Q. When you say this is the land surface. You're
6 indicating sort of the top dotted line --

7 A. Dotted line.

8 Q. -- on this figure?

9 A. That's correct.

10 Q. Okay.

11 A. Then. One other. This is page 16, engineering
12 feasibility study, Geer Road Landfill.

13 Q. Exhibit 9?

14 A. Exhibit 9. "It is likely that the shallow
15 ground water at the site is in delayed equilibrium
16 with the Tuolumne River. This means as the river
17 fluctuation would occur, the interaction between the
18 ground water and the river may change.

19 When the river is at a higher flow condition,
20 the river may be slightly effluent (losing stream) to
21 ground water. When the river is at the lowest flow
22 stages, shallow ground water is probably effluent to
23 the river, (gaining stream.)

24 In November 2008, the river was running higher
25 than during the summer months. The Tuolumne River

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M. J. LYNN COMPANY -- (916/973-1081)

‡

1 gaging station at Modesto showed an average flow in
2 2008 to be about 190 cubic feet per second, (CFS).
3 However, in October this jumped to over 300 CFS on two
4 dates.

5 On the measuring date of November 17th flow was
6 about 215 CFS. The assumption that the Tuolumne River
7 is a losing stream at higher flows and a gaining stream
8 at lower flows is seen in the permanent rivers." And

9 they go on to quote other sites.

10 Q. What is the permanent rivers system? What does
11 that mean?

12 A. They talk about at the American River and
13 Sacramento.

14 Q. So, that is a comparison to other permanent
15 rivers -- a characterization of a type of river?

16 A. I -- I haven't heard of it called that before;
17 but, I think that is what he is getting at.

18 Q. It seems to me like the gist of the passage
19 that you just read is that, depending upon seasonal
20 flow variations, the Tuolumne River adjacent to the
21 Geer Road Landfill may sometimes be a gaining stream
22 and sometimes a losing stream; is that correct?

23 A. Correct.

24 Q. Do you concur with that conclusion of SCS?

25 A. Yes.

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M. J. LYNN COMPANY -- (916/973-1081)

1 Q. Okay. It looks like you want to talk about
2 some more.

3 A. I was just seeing if there was -- it says the
4 same statement.

5 Q. You are looking at the following page of
6 Exhibit 9 which is 17?

7 A. Page 17, the hydraulic connection with aquifer,
8 section 2.5.2.

9 Q. Do you have an opinion as to what portion of
Page 11

10 the year the Tuolumne River is a gaining river?

11 A. No. I don't because of the -- it is a
12 regulated flow. There is an upstream damn on the
13 river, and I just don't know the flows out of the damn.

14 And, also, the adjacent agricultural wells are
15 going to be drawing on it as well.

16 Q. So, you also wouldn't have an opinion as to
17 when during the year the Tuolumne River is a losing
18 river; is that correct?

19 A. That's correct. I only have the data that, you
20 know, they are giving me on the reports.

21 So, it is a snapshot.

22 Q. During the times of year when the Tuolumne
23 River is a losing river, what impact would that
24 condition have on the migration of contaminants from
25 the landfill?

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 A. It may change the direction of flow of
2 contaminants.

3 Q. Would it -- when you say, "Change the direction
4 of flow," does that mean send them flowing backwards
5 toward the landfill?

6 A. I don't believe so, because I don't -- I
7 don't -- I haven't seen that in any of the data. They
8 haven't presented any flow map showing the direction
9 going back toward the landfill with their high -- or
10 the ground water flow maps.

11 Q. Okay. But I suppose at minimum would you agree
12 that when the Tuolumne River is in a losing condition,
13 VOCs coming off the landfill won't effectively go
14 uphill into the river, correct?

15 A. Right.

16 Q. Were there any other clarifications you wanted
17 to make?

18 A. Not at this time.

19 Q. Going back to the draft cease and desist order
20 which I believe we marked as Exhibit 3?

21 A. Yes.

22 Q. And the list of alleged violations of the waste
23 discharge requirements begin on page 6.

24 A. Okay.

25 Q. Last week I believe it was Ms. Olson who

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 testified that, although a corrective action work plan
2 was submitted in compliance with provision G-12-I of
3 the waste discharge requirements as explained in
4 finding 23 -- and we stipulate that the numbering of
5 these findings will be updated, but in this draft it is
6 finding 23 -- that there were essentially two problems
7 that the Regional Board had with the corrective action
8 work plan.

9 One, I believe was that Ms. Olson did not
10 believe the corrective action work plan was consistent
11 with the scope identified in the previous plan.

12 Do you have any opinion on that issue?

13 A. No, I don't.

14 Q. Thank you.

15 From your perspective, is the only thing that
16 was wrong with the corrective action work plan is that,
17 as stated in the last sentence of finding 23, that the
18 cover letter included a statement that quote, "we are
19 not recommending implementation of this system at this
20 time," end quote?

21 A. Can you clarify the date of -- we are talking
22 about the October -- is it the October 29?

23 MR. PULUPA: I think you are confusing some of
24 the components here.

25 MR. NEWMARK: Okay. Help me out.

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M. J. LYNN COMPANY -- (916/973-1081)

‡

1 MR. PULUPA: well, there is -- the 30 October
2 2009 was the -- and you just said 2009. That is 12
3 F -- the 12- I mentioned here is the 31 October 2010
4 corrective action work plan.

5 MR. NEWMARK: That is what I was intending to
6 refer to. So, if I confused the issue by having a
7 wrong year, I guess I am being consistent with what I
8 was doing last week.

9 Q. But -- so, yes. What I am asking you to
10 confirm that the only deficiency with the corrective
11 action work plan submitted in 2010 from the Regional
12 Board's perspective is that the transmittal letter

13 included the statement quoted at the bottom of finding
14 23?

15 MR. PULUPA: And that is one you identified as
16 the person most knowledgeable about that review of the
17 10/23/10, October 23, 2010.

18 MR. NEWMARK: Okay. I hadn't --

19 MR. PULUPA: Number 14.

20 MR. NEWMARK: Okay. And, I guess, maybe I am
21 getting the witnesses confused. I thought that when we
22 were -- that Ms. Olson was originally identified as the
23 person who was going to testify about what is alleged
24 to be a violation in the cease and desist order, and
25 then she identified I thought at various times both

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 Mr. Hold and Ms. Wyels. But if you prefer that I ask
2 Ms. Wyels that question --

3 MR. PULUPA: I think she will be able to tell
4 you about the review of that, the 2010.

5 MR. NEWMARK: Okay. It is a little difficult
6 because Mr. Hold is identified under category ten with
7 regard to the objective of and water quality benefits
8 to be obtained from the expanded ground water expansion
9 system.

10 So, I was -- those seem to be a little
11 difficult to separate out.

12 So, what can I ask Mr. Hold about?

13 MR. PULUPA: Yeah. Inasmuch as your questions
Page 15

14 are geared towards the Regional Board's review of that
15 corrective action work plan, I think Wendy is the
16 person identified to answer those questions.

17 In terms of the ground water extraction system
18 that was proposed in the WDRs and that we're trying to
19 implement in the CDO, just the mechanics of that, I
20 think Howard would be the person to talk to about the
21 benefits achieved from that.

22 MR. NEWMARK: That is kind of where I was
23 going. I wanted to confirm that the proposal on the
24 corrective action work plan is exactly what is being
25 ordered to be implemented in the cease and desist

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M. J. LYNN COMPANY -- (916/973-1081)

‡

1 order.

2 So, would Mr. Hold be the witness to answer
3 that question?

4 MR. PULUPA: Yeah. Inasmuch as your question
5 is about the review and the Regional Board's issues
6 with that, I think that would be best for Wendy.

7 If you want to talk about the mechanics of what
8 is being required in the work plan, that is certainly
9 Howard.

10 MR. NEWMARK: The question that I just
11 described, can we pose that to Mr. Hold?

12 MR. PULUPA: Ask it again.

13 I mean, it touches on the review of the work
14 plan. Was there any issues outside of that component

15 of it?

16 I think the proposal that you are talking about
17 not implementing, you know, that single phrase, am I
18 correct that I think that came from the 2009 proposal.

19 MR. NEWMARK: I guess we can just look at the
20 cease and desist order and see.

21 MR. PULUPA: Yeah. Your question was premised
22 on that last paragraph that no further action required
23 at this time?

24 MR. NEWMARK: I was skipping past. I will
25 leave that to Ms. Wyeles, but what I also wanted to ask

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M. J. LYNN COMPANY -- (916/973-1081)

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1 was in the tentative cease and desist order that the
2 board -- that your prosecution team will be presenting
3 to the board, is the corrective action requested there
4 exactly what is described in the 2010 corrective
5 action?

6 MR. PULUPA: That is a perfect question.

7 when it gets intermixed with the problems with
8 the 2009 in that single paragraph no further actions
9 required at this time, that is something left to Wendy.

10 If you want to talk -- just ask that question
11 over again, Howard is certainly the person to talk to
12 about that.

13 MR. NEWMARK: Okay.

14 Q. Mr. Hold, are you familiar with the corrective
15 action work plan referenced in finding 23 of the cease

16 and desist order attached as Exhibit 3? Exhibit 3 is
17 the CTO.

18 A. Oh. I apologize.

19 Again, it would -- we are talking the 2010,
20 October.

21 Q. Yes.

22 Do you need me to see if I have a copy of it
23 because I probably do?

24 I am showing you a document entitled,
25 "Corrective Action Work Plan, Geer Road Landfill,

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 Stanislaus County, California," prepared by SCS
2 Engineers dated October 29th, 2010.

3 Is this the document referenced in finding 23
4 of the cease and desist order?

5 A. Yes.

6 Q. Then going to page 12 of the cease and desist
7 order, Exhibit 3, in the ordered provisions, provision
8 number three directs the discharger to submit an
9 interim ground water extraction and treatment system
10 expansion plan.

11 It appears to be directing the implementation
12 of the ground water remedy described in this corrective
13 action work plan we have just been talking about; is
14 that correct?

15 A. Can I ask you a question?

16 MR. PULUPA: Yeah. Do you want to ask outside?

17 THE WITNESS: Yes.
18 MR. PULUPA: One second.
19 (Short break taken.)
20 MR. PULUPA: We just -- we wanted -- this can
21 be on the record. We want to -- the question revolved
22 around the exact drafting of this. Anne Olson drafted
23 this portion. But Howard definitely can comment on
24 whether this work plan contains the corrective action
25 that was generally envisioned by that provision.

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M. J. LYNN COMPANY -- (916/973-1081)

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1 MR. NEWMARK: Could you read back the question,
2 please?
3 (The Reporter read back.)
4 THE WITNESS: Yes.
5 Q. BY MR. NEWMARK: Are you familiar with the
6 ground water remediation proposal described in the 2010
7 corrective action work plan?
8 A. Yes.
9 Q. And do you have an opinion as to the
10 effectiveness of the ground water remedy proposed in
11 that 2010 corrective action work plan?
12 A. Yes, I do.
13 Q. What is your opinion?
14 A. That without defining the plume there, they
15 may be in the same boat as not being able to design a
16 system large enough.
17 So, until we know how big the area is, this
Page 19

18 is -- this is -- would fall under cutting off the
19 source, and the cleanup policy that -- you know, you
20 first want to cut off the source.

21 So, I think that is a good attempt at that,
22 cutting off the contaminants at the point of
23 compliance; but, as far as the overall remedy and
24 capturing the plume that is past the point of
25 compliance, I don't know if this is going to be capable

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M. J. LYNN COMPANY -- (916/973-1081)

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1 of that because the fundamental question is how big is
2 the plume.

3 Q. Do you have an opinion as to whether the ground
4 water remedy proposed in the 2010 corrective action
5 work plan will be effective as you described of cutting
6 off the source?

7 A. They used the -- I just think they need more
8 wells. Until -- until they are in and pumping, it is
9 hard to say.

10 Q. Is it fair to say that your opinion is that you
11 are not convinced that the remedy proposed in the
12 corrective action work plan submitted in 2010 will be
13 effective even at cutting off the source?

14 A. It -- it comes -- that's correct.

15 It comes down to is there enough radius of
16 influence around the wells, and that is generated by
17 how much you pump. How much water you are removing
18 from the aquifer at one time, and I just don't believe

19 that they are pumping enough. They are going to pump
20 enough.

21 Q. Under the remedy proposed in the 2010
22 corrective action work plan, you don't believe that
23 there will be enough water pumped; is that correct?

24 A. That's correct. It can be an interim measure
25 where they're starting.

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M. J. LYNN COMPANY -- (916/973-1081)

1 I think right now they are pumping at 40
2 gallons a minute, which on a landfill that has such
3 a long point of compliance, all the way around the
4 waste, that is not very -- very much water being
5 removed.

6 Q. So, why is the Regional Board ordering the
7 discharger to implement a remedy that you don't believe
8 is going to work?

9 A. I think it is a phased approach. They are
10 going to start with this and cut off the source, and
11 they may have to upgrade this in the future if this
12 doesn't work.

13 Q. And how will you determine whether it has
14 worked or not?

15 A. We go by installing a corrective action
16 monitoring network. Some of the wells in place may
17 already satisfy that requirement.

18 The MW-23 was shallow that sits right on the
19 river. That could be a compliance point for further

20 corrective action system.

21 Q. So, do I understand you to say that you will
22 determine the effectiveness of the ground water remedy
23 by watching the levels of constituents of concern in
24 samples collected from downgrading of monitoring
25 wells?

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M. J. LYNN COMPANY -- (916/973-1081)

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1 A. I believe that is the data I would have.

2 Q. Well, is that the data you would need to
3 determine the effectiveness of the remedy?

4 A. Yes.

5 Q. And that is the data you would use to determine
6 the effectiveness of the remedy, correct?

7 A. Yes.

8 There would be -- there would be two sets of
9 data coming from the one well. One would be the
10 chemical, the water quality data, knowing that if I
11 have constituents reaching that well.

12 The other data would be the elevation. Is the
13 water now flowing back toward -- toward the system such
14 that it's actually capturing the contamination.

15 Q. Would your questions about whether or not the
16 remedy proposed in the corrective action work plan
17 submitted in 2010 would be effective, could those
18 questions be answered through the development of a
19 model?

20 A. I believe it would, yes.

21 Q. And with the development of a model, then you
22 would either be able to determine whether the
23 corrective action work plan remedy is likely to work or
24 whether it needs to be modified; is that correct?
25 A. That's correct.

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M. J. LYNN COMPANY -- (916/973-1081)

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1 Q. You don't anticipate, however, that the
2 discharger would be able to develop such a model by
3 March 30, 2011, correct?
4 A. Are we discussing the date in the cease and
5 desist order?
6 Q. I chose that date of March 30, 2011, because
7 that is the cease and desist order deadline for
8 submitting a plan for how this ground water remedy in
9 the corrective action work plan would be implemented.
10 A. I think we are in a disadvantage because these
11 are the older dates.
12 MR. PULUPA: You can just answer the question.
13 Say "yes" or "no." If it is too short, it is too
14 short.
15 THE WITNESS: Oh, yes.
16 Q. BY MR. NEWMARK: Yes. It would be too short of
17 a time period to prepare a model before --
18 A. I am sorry.
19 Q. -- before March 30, 2011?
20 A. No. I believe they have the data from the
21 years of gathering studies and evidence on the site to

22 put together a model.

23 So, I think they can do it.

24 MR. PULUPA: I would just note that these -- he
25 is correct that these dates -- that the March 2011

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1 dates are the dates in the draft order.

2 The draft order was premised on this being
3 issued in February. I think the board would be
4 flexible at least to move those out a couple of months.
5 Perhaps more if they -- if the discharger demonstrated
6 it was infeasible.

7 But I think the March 2011 deadline is again
8 premised on the February 4th issuance of the CEO.

9 Q. BY MR. NEWMARK: Do you have an opinion as to
10 how long it would take a modeler to construct a model
11 of this site using the data that is already
12 available?

13 A. No, I don't.

14 Q. And you have not ever constructed such a model
15 yourself, correct?

16 A. Not -- not like this, no.

17 Q. And you have never directed the development of
18 such a model, correct?

19 A. Not as a director, no.

20 Q. And I was going to ask you why in the cease and
21 desist order there are requirements to both implement
22 the ground water remedy in the 2010 corrective action

23 work plan, and then to also submit under order seven
24 and thereafter studies and plans for an additional
25 ground water remedy.

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M. J. LYNN COMPANY -- (916/973-1081)

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1 From your testimony I understand that your
2 answer to that is probably that you don't believe that
3 the corrective action work plan remedy from 2010 will
4 necessarily even be sufficient to cut off the source,
5 and you don't believe that it will be sufficient to
6 treat contaminants that may have already migrated
7 downgradient past where the extraction network would be
8 set up; is that correct?

9 A. That's correct.

10 Q. And, so, even if we were to assume that the
11 proposal in the 2010 corrective action work plan were
12 effective at cutting off the source, at minimum, these
13 subsequent ground water remedy submittals are designed
14 to require the county to propose a remedy for
15 contaminants that are downgradient of that extraction
16 system; is that correct?

17 A. Yes.

18 Q. Is there anything else that these subsequent
19 ground water submittals beginning in order provision
20 seven are designed to achieve?

21 A. Can you reread the question? I am sorry.

22 (The Reporter read back.)

23 THE WITNESS: well, it is my understanding that
Page 25

24 we are going to go find the extent of the plume, and if
25 it is in areas that we don't know at this time, then

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M. J. LYNN COMPANY -- (916/973-1081)

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1 this would -- this remedy or this updated engineer's
2 feasibility would address those off-site contaminants
3 because you are going to have to, perhaps, put wells
4 further out from the landfill to address other issues.

5 Or I shouldn't even -- I -- other corrective
6 action measures.

7 Q. BY MR. NEWMARK: what other types of corrective
8 action measurements would you contemplate other than
9 additional extraction wells?

10 A. I don't know. I don't know what else they
11 would propose.

12 Q. And is one of the reasons that you believe
13 these additional corrective actions are necessary,
14 because, as you testified last week, in your opinion,
15 conditions in ground water in and around the Geer Road
16 Landfill are not conducive to natural degradation of
17 the constituents of concern?

18 A. That's correct.

19 Q. So, essentially the subsequent ground water
20 submittals would be to have corrective action chase the
21 plume downgradient, correct?

22 A. No.

23 So, this ground water submittal is going to
24 take care of the problem the best of its ability at the

25 point of compliance.

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M. J. LYNN COMPANY -- (916/973-1081)

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1 Q. You are indicating "this" being the 2010
2 corrective action plan?

3 A. Yes.

4 And this updated feasibility study will address
5 contaminants that have moved past that, that are
6 adjacent to the river, and that -- in that orchard
7 out in front of the landfill that we already know that
8 there is contaminants there.

9 Q. How is that different from my question?

10 I asked you if the additional ground water
11 submittals were designed to chase the plume
12 downgradient from the extraction network proposed in
13 the 2010 corrective action work plan; and, if I
14 understood your answer correctly, it sounded like you
15 said exactly that.

16 A. No. You are saying that this is to address the
17 point of compliance.

18 Q. It is my understanding from your testimony that
19 the corrective action work plan is designed to cut off
20 the source -- the additional contamination flowing past
21 the point of compliance, and the subsequent ground
22 water submittals beginning in order provision seven are
23 designed to have corrective action chase the plume
24 downgradient; is that correct?

25 So, I am trying to get at the second point.

M. J. LYNN COMPANY -- (916/973-1081)

1 what are the subsequent ground water submittals
2 supposed to do, and then getting you to confirm that
3 the subsequent submittals are supposed to chase the
4 plume downgradient?

5 MR. PULUPA: Point of clarification. I think
6 you are both correct that Howard maybe also. It would
7 include updates to this if this wasn't successful.

8 So, if your question is --

9 MR. NEWMARK: Counsel, you are indicating the
10 correct --

11 MR. PULUPA: If your question is premised off
12 if the October 29, 2010, I think he -- you would agree
13 with that question then.

14 THE WITNESS: That's right.

15 MR. PULUPA: Got you.

16 So, if the October 29, 2010 ground water remedy
17 was effective at cutting off the source --

18 MR. NEWMARK: Oh, yes.

19 MR. PULUPA: -- the remaining obligations under
20 hereby ordered number seven would be to identify other
21 areas where ground water extractions may need to be
22 implemented to address contamination in the ground
23 water.

24 Q. BY MR. NEWMARK: Maybe the confusion was you
25 were thinking, "well, those subsequent submittals would

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♀

1 also include any additional measures necessary to
2 succeed in cutting off the source if the 2010
3 corrective action work plan doesn't work in doing
4 that;" is that correct?

5 A. Right. Correct.

6 Q. Now we got it.

7 A. Sorry.

8 Q. We have sort of circled around this question,
9 but I am going to ask it sort of in a 30,000 foot
10 level.

11 Could you describe for me the goals and
12 objectives of the ground water remedy provisions of the
13 cease and desist order?

14 A. It would be to prevent contaminants from
15 migrating past the point of compliance at the landfill,
16 and to clean up what's off-site.

17 MR. NEWMARK: And, Counsel, would Mr. Hold be
18 the witness to ask specifically which WDR provisions or
19 other legal provisions the ground water remedies are
20 designed to enforce?

21 MR. PULUPA: That probably would be Wendy would
22 be the person to talk about that. Likely be a
23 discussion involving both the WDRs and the beneficial
24 uses of the underlying ground water.

25 Q. BY MR. NEWMARK: Mr. Hold, you were the primary

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1 staff person with the responsibility to evaluate and
2 develop from a technical perspective the ground water
3 remedies proposed to be ordered in the cease and desist
4 order, correct?

5 A. That's correct.

6 Q. Are you familiar with State Water Resources
7 Control Board Resolution 92-49?

8 A. The cleanup policy. Cleanup and abatement.

9 Q. And investigation?

10 A. And investigation.

11 Q. Yes. Sounds like you are familiar with it.

12 That is a "yes"?

13 A. I have read it. I have not memorized it.

14 Q. Is it your opinion that resolution 92-49, and
15 the policies set forth therein, are applicable to the
16 investigation and remedies that would be imposed under
17 the cease and desist order?

18 A. Is that a legal question?

19 MR. PULUPA: Certainly answer if you
20 consulted -- if the policy questions are in
21 consultation with somebody else, or somebody else talks
22 about those, then you can answer it that wendy makes
23 those determinations.

24 THE WITNESS: I think wendy would be a better
25 one to answer that.

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1 Q. BY MR. NEWMARK: Okay. So, in developing the
2 ground water remedies therein in the cease and desist
3 order you did not consult or consider the policies in
4 resolution 92-49, correct?

5 A. I did try to implement it in the sense of
6 cutting off the source, defining the extent of the
7 plume, and then cleaning it up, which I think is the,
8 you know, kind of the broad scope of that resolution.

9 Q. Are you aware that resolution 92-49 generally
10 recommends that both investigation and corrective
11 action should be done in phases where appropriate?

12 A. Yes.

13 Q. Did you consider that policy provision of
14 resolution 92-49 in developing the ground water
15 remedies proposed in the cease and desist order?

16 A. Yes.

17 Q. And how did the phasing component of the policy
18 inform your development of these ground water
19 remedies?

20 A. Well, again, we cut off the source. That is
21 the idea behind installing the extraction wells, and we
22 have asked them to define the extent of the plume so we
23 know if there are any additional remedies necessary,
24 and then additional feasibility study would clean up
25 the -- anything they find in their -- in the

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♀

1 investigation.

2 I think the resolution also says, "Remove the
3 waste." So, I can't remove the waste -- you know, get
4 the waste out of their. Remove the source.

5 Q. In terms of phasing of remedies, you have just
6 testified that you believe that looking at ground water
7 remedies alone -- strike that, because that is not your
8 testimony. That is my glossing of on your testimony.

9 You have described how the ground water
10 remedies in the cease and desist order are phased from
11 your perspective?

12 A. Uh-huh.

13 Q. You have to give a "yes" or "no."

14 A. Yes. Sorry.

15 Q. Did you consider phasing the ground water
16 remedies in conjunction with the landfill gas
17 remedies?

18 A. No. I focused on the ground water.

19 Q. Are you aware that resolution 92-49 contains
20 provisions designed to allow cost effective remedial
21 action?

22 A. I believe it is in the resolution.

23 Q. Did you undertake any analysis of the cost
24 effectiveness of the ground water remedies described in
25 the tentative cease and desist order?

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♀

1 A. No, I did not.

2 Q. Did you undertake any effort to assess the cost
3 of the ground water remedies in the cease and desist
4 order?

5 A. Unfortunately, at this time there is not enough
6 data to know what the cost is. I don't know how big
7 the plume is. So, how would I ever forecast the -- how
8 much it is going to cost if I don't know the problem?

9 MR. PULUPA: I think we are getting back to the
10 same issue where he is viewing it as two sets of ground
11 water remedies and you may be viewing this as the
12 ground water remedy.

13 MR. NEWMARK: No. My question was about the
14 ground water remedies in the cease and desist order.

15 MR. PULUPA: Okay.

16 MR. NEWMARK: So, I am asking it broadly to
17 find out whether there was any consideration, and it
18 sounds like there was not. If there was some, then we
19 can drill down, but it sounds like there was not.

20 MR. PULUPA: Perhaps not at Howard's level.

21 MR. NEWMARK: So, I have to ask all the -- I
22 mean, Mr. Hold is the witness as to the cost
23 effectiveness of the ground water extraction -- wait.
24 No, he is not. That is Wendy.

25 MR. PULUPA: Yes.

1 MR. NEWMARK: Excuse me. I could have sworn
2 that it was the other way, but you are correct.

3 Q. The cease and desist order also contains
4 numerous provisions directing county to conduct
5 additional investigation, correct?

6 A. That is correct.

7 Q. And to submit additional technical reports,
8 correct?

9 A. That is correct.

10 Q. Do you understand those provisions of the cease
11 and desist order to be subject to water code section
12 13267?

13 MR. PULUPA: If you don't know, you don't
14 know.

15 THE WITNESS: I don't know.

16 Q. BY MR. NEWMARK: Did you undertake any effort
17 to assess the burden, including costs of the additional
18 investigation, into the lateral and vertical extent of
19 the contamination?

20 A. Can you restate the question? I am sorry.

21 MR. NEWMARK: would you read it back, please.

22 (The Reporter read back.)

23 THE WITNESS: I didn't do a detailed economic
24 analysis on it.

25 I understand it will cost the county money. I

2 reports; but, other than that, I didn't do any other
3 economic analysis on it.

4 Q. BY MR. NEWMARK: Do you have any idea what the
5 burden, including the cost of conducting the
6 investigation and preparing the reports -- separate and
7 apart from the corrective action -- but just doing the
8 investigation and preparing the reports would be?

9 A. I don't have that information. I mean, it's
10 also dependent upon the consultant, too. I mean,
11 there is -- I mean, I understand Stanislaus County has
12 a contract with SCS Engineers, but there are other
13 firms out there as well if cost is an issue.

14 I don't -- I don't know what they charge. I
15 really don't. So --

16 Q. So, you are not putting forth an opinion that
17 SCS Engineers is too expensive, correct?

18 A. No. I don't know their --

19 Q. Sonya would probably be the witness on that.

20 A. The -- when they award a bid or, you know, I am
21 sure they get more than one bid for the job.

22 Q. Since you don't have any knowledge of the
23 burden including costs of the investigation and
24 reporting obligations, you, I take it, did not make any
25 effort to ensure that those burdens bore a reasonable

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M. J. LYNN COMPANY -- (916/973-1081)

♀

1 relationship to the benefits you are hoping to get out
2 of the investigation and reports, correct?

3 A. Yes.

4 Q. Is it -- are you familiar -- if I refer to the
5 north area of the landfill, would you be familiar with
6 what I am talking about?

7 A. Yes, I would.

8 Q. Do you have an opinion as to whether additional
9 corrective action is required in the north area of the
10 landfill?

11 A. I believe there are impacts in the north area
12 of the landfill. Unfortunately, there is no point of
13 compliance well in the north area.

14 So, I don't know how -- you know, if they're
15 moving off-site.

16 I know from the 2001 feasibility study that
17 Kleinfelder did that they did find VOC contaminants in
18 their direct push sampling in the point of compliance,
19 and I don't understand why a well hasn't been put in
20 there, and why that area hasn't been investigated.

21 Q. However, would I be correct in stating the
22 tentative Cease and desist order does not direct
23 further corrective action in the north area of the
24 landfill; is that correct?

25 A. I believe the -- the cease and desist order

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1 was -- is addressing the landfill as a whole.

2 I wasn't the staff person when they came up
3 with these labels of south area and north area.

4 For me, it is my understanding it is one
5 landfill. I don't understand where the differences --
6 where they are.

7 Q. Do you understand the north area of the
8 landfill to be essentially upgradient of all the
9 treatment systems?

10 A. There is treatment going on right now in the
11 north area with their landfill gas; but, it is
12 upgradient in the ground water as far as any extraction
13 wells.

14 Q. Okay. I am trying to get a handle on this.
15 So, forgive me if I already asked this; but, is it your
16 intent as the witness on ground water remedy in the
17 cease and desist order, that this cease and desist
18 order requires the county to undertake additional
19 corrective action for ground water in the north area of
20 the landfill?

21 A. Again, this is written for the landfill as a
22 whole. So, the point of compliance is for the entire
23 landfill, the downgradient edge of the landfill.

24 So, if that includes however they want to call
25 it -- north, south -- if that includes that area, then

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1 it needs to be addressed.

2 Q. Is that a "yes"?

3 A. Yes.

4 Q. Which of these deliverables in the order

5 section of the cease and desist order would include
6 those remedial proposals to address the north area of
7 the landfill?

8 A. This is a question I have to ask Patrick on.

9 MR. NEWMARK: Well, he can't answer on the
10 record. So, if you --

11 MR. PULUPA: Yeah.

12 MR. PULUPA: Yeah.

13 MR. NEWMARK: Patrick, I think he wants to talk
14 to you.

15 MR. PULUPA: Do you want to talk outside?

16 THE WITNESS: Well, okay. Off the record then.
17 I don't know if I am allowed to do that.

18 MR. NEWMARK: Actually I am the only one that
19 is allowed to do that; but, Patrick, if you want me to
20 go off the record, I will.

21 MR. PULUPA: Yeah, we can.

22 MR. NEWMARK: Would you go off the record,
23 please?

24 (An off-the-record discussion was had.)

25 Q. BY MR. NEWMARK: We will go back on the

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M. J. LYNN COMPANY -- (916/973-1081)

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1 record.

2 I think we can just basically move on from that
3 question in light of our conversations.

4 If you go back to Exhibit 3, the cease and
5 desist order, page 10, see the last sentence of

2811-1.txt
6 paragraph 32 says, "The discharger has not proposed a
7 concentration limit greater than background for any
8 constituent of concern at this facility."

9 Do you see that?

10 A. Yes.

11 Q. Did you draft that portion of the cease and
12 desist order?

13 A. No, I did not.

14 Q. You don't have any opinion, one way or the
15 other, as to whether the county proposed concentration
16 limits greater than background?

17 A. That's correct.

18 MR. NEWMARK: Okay. Patrick, who would have
19 been the witness on that? Was that Anne? Would that
20 be Wendy?

21 MR. PULUPA: Who drafted that?

22 THE WITNESS: Anne, I believe, drafted this.

23 Q. BY MR. NEWMARK: Okay. Since we are done with
24 Ms. Olson, I am going to go ahead and ask you to please
25 look at Exhibit 9 on page 38, that is the feasibility

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1 study, and tell me if that looks like a proposal by the
2 county for concentration limits greater than
3 background?

4 A. So, can you repeat the question so I answer it
5 correctly?

6 MR. NEWMARK: Sure.

2811-1.txt
(The Reporter read back.)

THE WITNESS: On page 38, Section 5.2.1, it proposes a revised water quality protection standard.

I have -- without -- Title 27, which they refer here, has a very extensive list of requirements for achieving concentration level greater than background.

So, I'd have to review this with the regulations.

Q. BY MR. NEWMARK: Well, I am not asking you to right here tell me that it seems like a good proposal, and it would comply with the regulations. I am just trying to get you to say, yes, the county did request concentration limits greater than background.

A. Yes.

Q. In talking about the ground water remedies that are proposed in the cease and desist order, is one of your objectives to obtain hydraulic control of the plume?

A. At the point of compliance.

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Q. Could you give me a definition of what you mean by "hydraulic control?" I understand that is a term of art for folks in your profession.

A. It would mean preventing contaminants from moving past the point of compliance, or where you have your approved corrective action system.

Q. And does that mean sort of preventing every

8 molecule? Does hydraulic control necessarily mean
9 complete hydraulic control, or are there shades of gray
10 where you can call it good enough for hydraulic control
11 even though some molecules or contaminants are moving
12 past the corrective action?

13 A. I believe those have to be proposed. The
14 cleanup numbers, I don't believe are proposed.

15 So, until --

16 MR. PULUPA: The question is just regarding
17 hydraulic control.

18 And, so, if your answer is that they rely on
19 the discharger to propose something and that there are
20 shades of gray, you can certainly say that.

21 THE WITNESS: Yes.

22 So, at this time it would be the lowest
23 applicable water quality standard at the point of
24 compliance for whatever constituent it is.

25 Q. BY MR. NEWMARK: Okay. So, I guess if I -- you

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1 are focusing on concentration limits or concentration
2 levels of particular constituents in response to my
3 questions about hydraulic controls.

4 And the way I am interpreting that is if I
5 could have levels of constituents up to some level but
6 greater than zero downgradient of the corrective
7 action, I am interpreting that to mean that yes, you
8 can have some molecules move through the corrective

9 action, and you will consider hydraulic control as long
10 as it is good enough that those concentrations
11 downgradient don't exceed whatever is the applicable
12 regulatory standard.

13 would that be fair?

14 A. Yes.

15 MR. NEWMARK: Can we go off the record? Off
16 the record.

17 (Brief recess taken.)

18 MR. NEWMARK: I don't have more questions for
19 you, Mr. Hold.

20 Mr. Pulupa, you indicated you don't have any
21 questions?

22 MR. PULUPA: No, I don't.

23 MR. NEWMARK: So, we are done. Thank you very
24 much.

25 THE WITNESS: Thank you.

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1 MR. NEWMARK: So, we will adjourn until or
2 start the deposition of Ms. Wyels when she gets here.

3 12:04 PM.

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2811-1.txt

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DAWN SUE STEFKO*CERTIFIED SHORTHAND REPORTERS*650/685-1795

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1 BE IT REMEMBERED that on Tuesday, the 8th day
2 of February, 2011, at the hour of 12:15 p.m. of said
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3 day, at the Offices of California Regional water
4 Quality Control Board, 11020 Sun Center Drive, Suite
5 200, Rancho Cordova, California, by me, Kathy A.
6 Walter, a Certified Shorthand Reporter, personally
7 appeared WENDY WYELS, who was examined as a witness in
8 said cause.

9 --oOo--

10 WENDY WYELS

11 The witness, called on behalf of the Stanislaus County
12 Department of Environmental Resources, being duly sworn
13 to state the truth, the whole truth, and nothing but
14 the truth, testified on her oath as follows:

15 --oOo--

16 EXAMINATION BY MR. NEWMARK

17 Q. By MR. NEWMARK: would you please state and
18 spell your name for the record?

19 A. Wendy Wyels, w-y-e-l-s.

20 Q. Ms. Wyels, you understand that this is the
21 continuation of your deposition that we started last
22 week. You are providing testimony on behalf of the
23 Regional Board in connection with a cease and desist
24 order proceedings for the Geer Road Landfill, and that
25 you are designated as the person most knowledgeable for

20

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1 the categories marked with x's in Exhibit 2.

2 A. Yes.

3 Q. When I was examining Ms. Olson last week, she

4 was designated in Exhibit 2 as the person to provide
5 the factual and technical basis for the Board's
6 determination that the county violated the WDRs. That
7 is category number one in Exhibit 2.

8 There were a couple of things, however, where
9 Ms. Olson didn't feel qualified or comfortable
10 answering.

11 And, so, if you go to page 6 of Exhibit 3 it
12 looked to me like all of the WDR violations alleged in
13 the cease and desist order are pretty much cataloged in
14 paragraph nine with some expansion of or explanation of
15 those alleged violations in paragraphs 21 through 24.

16 So, I was walking through the subparts of
17 paragraph nine with Ms. Olson. I think that we got as
18 far as 9-E and F; but, let me give you a moment to just
19 review those provisions.

20 A. I am just looking -- the numbering is messed
21 up.

22 Q. Well, the numbering is messed up, too.

23 A. What would you like me to do? What was your
24 question?

25 Q. Well, what I need to do is make sure that

1 today, you are the last witness, that I have a precise
2 understanding of exactly what violations the
3 prosecution team is asserting for the WDRs.

4 And when I read the cease and desist order, it
Page 6

5 looks like those are listed in paragraph nine, which
6 goes from pages six to seven of Exhibit 3. And, of
7 course, there are WDR provisions cross-referenced in
8 there.

9 And then paragraphs 21 through 24 on page 7
10 barreling onto page 8 in Exhibit 3 seem to me to be a
11 further explanation of the alleged violations listed in
12 paragraph nine.

13 A. There is one more violation that is not in page
14 8.

15 Q. Nine.

16 A. Eight. It shows eight.

17 Q. Well, the way I read paragraph eight is that
18 this is just a listing of the deadlines.

19 A. I am sorry. Those were deadlines, right, and
20 nine was violations. Okay. So, one is not listed
21 in -- well, in eight or nine, and that was the item
22 12-E of the waste discharge requirements about
23 financial assurance. We were going to take care of
24 that outside the cease and desist order.

25 Q. Okay. That's -- my question is not what is

22

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1 every violation of the WDRs that you can think of or
2 that there might be. I am really focused on what I
3 need to defend against in the cease and desist order
4 proceedings.

5 So, I don't understand you to be seeking

6 enforcement with regard to the financial assurances
7 in --

8 A. In the cease --

9 Q. -- in the cease and desist order.

10 A. That's correct. So, I wasn't clear on your
11 question then. Is your question --

12 Q. My question is: I want to make sure that
13 paragraph nine lists every violation that the county
14 has to be worried about in the context of this cease
15 and desist order proceeding.

16 A. There is also the overall violation of failure
17 to comply with Title 27. We didn't list that
18 specifically, but these are subheadings of the failure
19 to comply with Title 27.

20 Q. I had thought that -- let's just look. I
21 thought E and F might have captured that. So, let's
22 just look and compare.

23 So, you will see paragraph 9-E alleges a
24 failure to protect the underlying aquifer from
25 contaminants emanating from the landfill as required by

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1 and it lists two provisions; but, I am just going to do
2 these one at a time. The first one is provision E-5 of
3 the waste discharge requirements.

4 And then you are looking at the waste discharge
5 requirements, as I am, and those are marked as
6 Exhibit 5, correct? Is that what is written on the

7 front of that?

8 A. Yes.

9 Q. And provision E-5 of the waste discharge
10 requirements states, "The concentrations of the
11 constituents of concern in waters passing the point of
12 compliance shall not exceed the concentration limits
13 established pursuant to the monitoring and reporting
14 program number R5-2009-0051."

15 Does that provision capture one of the
16 important Title 27 provisions that you were
17 referencing?

18 A. It captures one of them.

19 Q. That was my question. One of them.

20 A. Yeah. I am looking -- if you asked -- you
21 asked --

22 MR. NEWMARK: Would you read back the question?
23 (The Reporter read back.)

24 THE WITNESS: That answers your question; but,
25 the previous question you had asked was whether or not

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1 this is the entirety of the violations of the
2 landfill.

3 Q. BY MR. NEWMARK: well, I thought we would
4 just --

5 A. I am just saying that there is one more
6 provision here that we did not specifically quote, that
7 provision G-2 here.

8 Q. But that is mentioned in paragraph 9-F of the
9 cease and desist order. And that provision G-2 is
10 the -- now I am looking at Exhibit 5, page 17,
11 provision G-2 is kind of a catch-all, "The discharge
12 shall comply with all applicable provisions of Title 27
13 and 40 Code of Federal Regulations part 258 (Subtitle
14 D) that are not specifically referred to in this
15 order."

16 A. Uh-huh.

17 Q. So, that is an interesting point.

18 Are you alleging any violations of Title 27 or
19 40 CFR part 258 that are not specifically referred to
20 in the WDRs?

21 A. What I am trying to say is that items 9-A
22 through F are specific things that the discharger was
23 ordered to do to comply with provision G-2; but, there
24 are other things that could be done that could comply
25 with these two. That is why this cease and desist

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1 order.

2 It tries to encompass what is needed to comply
3 with Title 27.

4 Q. What I am trying to do with my line of
5 questioning right now, it's not directed as a sort of a
6 remedies that's the order part of the cease and desist
7 order. I am just trying to make sure that I have all
8 the violations enumerated so that I know what all those

9 are.

10 So, you have actually called to my attention an
11 interesting one, which is G-2, which is kind of a, like
12 I say, a catch-all.

13 So, if you are going to be alleging a violation
14 of that one -- if you are going to be alleging in the
15 cease and desist order proceedings that we, the county,
16 violated provisions of these regulations that weren't
17 specified in the order, now is the time I need to know
18 what those are.

19 A. I am looking at -- well, I am looking at things
20 differently than you are. I am not looking at -- I am
21 looking at what's the cease and desist order attempt to
22 do?

23 If you want me to answer are these the specific
24 violations at this point in time of this order, then,
25 yes, that is correct.

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1 what's the cease and desist order want to do?
2 The cease and desist order tried to get compliance of
3 the entire WDR compliance.

4 Q. I think that they are kind of linked, though,
5 right? Like the reason you take an enforcement action
6 is because you have identified from the Water Board's
7 prospective a situation of noncompliance, correct?

8 A. Correct.

9 Q. And the cease and desist order is your

10 enforcement mechanism to bring about compliance with
11 those things you identified as being noncompliant,
12 right?

13 A. When the waste discharge -- when the waste
14 discharge requirements were written, that was two years
15 ago, and we have learned other things since then the
16 county has done. Submitted the reports, done continued
17 monitoring.

18 And, so, we don't just write enforcement order
19 on an order that is two years old. We look at the site
20 as a whole, a holistic enforcement. Are there other
21 actions out there that need to be?

22 These WDRs have limited requirements in it to
23 achieve -- comply with Title 27. In a certain point we
24 are trying to achieve compliance overall.

25 We don't want to have to rewrite the WDRs the

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1 next set of baby steps. We want a full compliance with
2 the cease and desist order.

3 Q. Well, maybe it will help if I ask the
4 question -- two questions, in two parts, about
5 compliance with provisions G-2 of the WDRs. And maybe
6 the way I should ask it so it fits into your framework
7 is are there -- the first question will be: Are there
8 any alleged violations of provision G-2 that the
9 prosecution team is going to be arguing to the board
10 have been identified and justify enforcement?

11 And then the second question would be: Are
12 there provisions of WDR provision G-2 that are being
13 identified kind of as a finish line that you want to
14 get the landfill to with the injunctive provisions of
15 the cease and desist order?

16 If I ask it in those two ways -- you are
17 rolling your eyes so I think that's not helping.

18 A. No. I'm rolling my eyes because I think that
19 is too much to process.

20 The first question was --

21 Q. The first question is: Are you going to be
22 telling the board when you make your staff
23 presentation, "We have identified violations of the
24 waste discharge requirement. I can see that you are
25 going to be arguing a failure to define vertical

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1 lateral extent. The other things cataloged in
2 paragraph nine, finding nine, of the cease and desist
3 order?"

4 Are you also going to be arguing a violation of
5 WDR provision G-2?

6 A. I would be arguing that items 9-A through F are
7 violations of provision G-2 and of the WDR violation --
8 violations of the WDRs.

9 Q. Okay. So, getting back to provision G-2, which
10 applies only to Title 27 and part 258 provisions not
11 specifically referred to in the WDRs, which applicable

12 provisions of those regulations are we talking about
13 when you are going to argue to the board?

14 A. I will be arguing to the board that this
15 proposed order requires compliance with all aspects of
16 the Title 27.

17 So, the specific violations that are listed are
18 violations of Title 27, and they are violations of the
19 WDRs.

20 But this order -- the cease and desist order is
21 looking to ensure that the county complies with Title
22 27 as a whole.

23 Q. Are you aware of any applicable provisions of
24 Title 27 or 40 CFR, part 258, subtitle D, that are not
25 specifically referred to in the waste discharge

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1 requirements?

2 A. You are asking if I am aware of violations of
3 those?

4 Q. Are there any applicable provisions?

5 A. There could be. There could be. I don't -- I
6 don't --

7 MR. NEWMARK: Could we go off the record?

8 (An off-the-record discussion was had.)

9 Q. BY MR. NEWMARK: From this line of questioning
10 and your answers, I understand your testimony to be
11 that while the prosecution team does not allege any
12 existing violations of WDR provision G-2, it is the
Page 14

13 prosecution team's position that the injunctive
14 portions of the cease and desist order will require
15 compliance with provision G-2?

16 A. Yes.

17 Q. Is that correct?

18 A. Yes.

19 Q. Thank you.

20 And the way that we started down this road is
21 we were going through the things listed in paragraph
22 nine, and I think with the cross-reference to the very
23 broad WDR provisions like G-2 that essentially
24 incorporate all of Title 27, can we agree that all of
25 the WDR violations alleged in the cease and desist

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1 order are listed in paragraph nine?

2 A. Yes.

3 Q. Thank you.

4 Ms. Wyels, you are identified as the person
5 most knowledgeable for category 11 in Exhibit 2, which
6 is the objective of and water quality benefits to be
7 obtained from the tentative cease and desist order's
8 requirements to implement a landfill gas optimization
9 plan.

10 And, also, category 12, which is essentially
11 the same thing but about requirements to add additional
12 landfill gas extraction.

13 Is that correct?

- 14 A. That's correct, but number 12 is inaccurate.
15 Q. How is category number 12 inaccurate?
16 A. Number 12, the order is not required. It is
17 only if certain things cannot be done, then something
18 else is required.
19 Q. Under the cease and desist order?
20 A. Yeah.
21 Q. Can you walk me through that?
22 A. Sure.
23 Page 11 of the draft cease and desist order.
24 Q. You know, you don't have to walk me through
25 that. I know what you are talking about.

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- 1 I think we will just talk about the landfill
2 gas remedies generally for right now and see if that
3 works.
4 Can you tell me generally what the objective of
5 the landfill gas remedies in the cease and desist order
6 are?
7 A. The county has a landfill gas extraction system
8 currently in place. Our review of the monitoring
9 reports show that it did not seem to be extracting gas
10 at all times, and we wanted to ensure that it was being
11 operated in the most efficient manner possible. So,
12 that is why we asked for this optimization plan of the
13 current system.
14 Q. So, the objective is to make sure the system is
Page 16

15 extracting as much gas as possible at all times; is
16 that correct?

17 A. It is operating in the manner designed, yes.

18 Q. Okay. Then you mentioned there is sort of a
19 contingency in the cease and desist order where -- I
20 think we may as well just refer to the order provisions
21 of the cease and desist order -- paragraph -- beginning
22 with paragraph 1-C, the idea is that if the current
23 system cannot be optimized then the county will be
24 required to expand LFG system; is that correct?

25 A. Yes. Although in our discussions we have

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1 further refined what this term continuous negative
2 pressure means apparently, according to SCS Engineers,
3 you cannot always have continuous pressure in the
4 landfill.

5 So, there are periods of time where you can
6 have individual extraction wells down or turned off
7 half throttle.

8 So, we have other language to define this.

9 Q. Assuming that the expanded LFG system were to
10 be necessary, could you describe for me what the
11 objective of the remedial requirements of the
12 prosecution team are for landfill gas?

13 A. The objective is to prevent landfill gas from
14 entering the ground water.

15 Q. That sounds like a good overall objective.

16 The whole objective of the prosecution team's
17 focus on landfill gas is to prevent landfill gas from
18 entering the ground water; is that correct?

19 A. Yes.

20 Q. And the other portion of these categories in
21 the deposition notice are -- I asked you about the
22 objectives of these programs, but then I wanted to ask
23 what the quality benefits would be.

24 Could you -- I know these are closely related,
25 especially given your answer. Could you describe for

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1 me the water quality benefits that the prosecution team
2 is trying to obtain by imposing landfill gas
3 remedies?

4 A. We are trying to prevent landfill gas from
5 entering the ground water and contaminating ground
6 water, and the benefit is complying with water quality
7 regulations in Title 27.

8 Q. Would you agree that extraction and treatment
9 of landfill gas is the most efficient way to prevent
10 VOC impacts in ground water from landfills?

11 A. In theory, yes. But my understanding from SCS
12 is, in the practicality, you cannot capture all the
13 landfill gas just the way the systems operate or have
14 to be operated. They cannot be sure that they are
15 capturing all the landfill gas.

16 Q. Can you elaborate on your -- exactly what SCS

17 told you in that regard?

18 A. Their overall concern is to prevent fires
19 within the waste; and, if an extraction well is pulling
20 in too much oxygen, that has the -- it can start a
21 landfill gas -- it can start a fire within the waste.

22 Landfill gas is not produced homogeneously
23 throughout the waste. There is pockets of gas. There
24 can be gas here, there can be gas there. And, so, the
25 different extraction wells at different times are

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1 pulling different amounts. It is not like a ground
2 water extraction system where you have -- you can tell
3 your radius of influence of the ground water extraction
4 wells with these gas extraction wells. Your radius of
5 influence is dependent on that particular point in
6 time.

7 Around the sides of the landfill, you are going
8 to be pulling in more oxygen, because this particular
9 landfill only has a clay cap on the sides, where the
10 top has a geomeric membrane cover, and the clay allows
11 more oxygen to come in.

12 They are also monitoring the gas extraction
13 wells for methane as a surrogate for the landfill that
14 we are interested in. So, we are assuming that by
15 pulling in methane, they are pulling in the landfill
16 gas, but unless you do a lot of expensive testing, you
17 cannot show for certain that you are.

18 Their monitoring reports show that when they
19 first find oxygen in a well, they shut it down for a
20 long period -- for a week or two, and they will slowly
21 bring it back up.

22 Oxygen helps promote the formation of landfill
23 gas. So, extraction well is not pulling landfill gas.
24 You are getting landfill gas moving down into the
25 ground water.

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1 There is -- the bottom line that I heard from
2 SCS Engineers is that operating a landfill gas
3 extraction system is an art, not a science. They
4 cannot show to us definitively that they are capturing
5 all the gas coming out of that landfill.

6 Q. I am going to start off with the very first
7 part of your question, and we are going to -- I
8 appreciate you giving me that general rundown. I want
9 to talk about specific portions of it.

10 I asked you if you agreed that landfill gas
11 extraction is the most efficient way to prevent
12 landfill contaminants from entering the ground water,
13 and you said in theory, yes, but then you had a whole
14 bunch of qualifications.

15 I would like you to just sort of explain the
16 "in theory" part separate from the qualifications.

17 Why, in theory, is landfill gas extraction the
18 most efficient way to prevent ground water impacts from

19 the landfill?

20 A. Well, the theory is that you can capture all
21 the landfill gas with an extraction system. But my
22 understanding is that is not possible.

23 MR. PULUPA: I think, to clarify the question,
24 I think separately the issue of whether you can capture
25 all of the landfill gas, if you are capturing landfill

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1 gas, what -- why is that more efficient than other
2 remediation?

3 THE WITNESS: Okay.

4 MR. NEWMARK: Can you answer that? I like
5 Patrick's question. If you could answer it.

6 THE WITNESS: For this particular landfill, my
7 understanding is it is more efficient to capture
8 landfill gas than to run a ground water extraction
9 system for the particular landfill.

10 Q. BY MR. NEWMARK: Is it necessary to capture all
11 of the landfill gas to achieve compliance with the
12 waste discharge requirements in Title 27?

13 A. The waste discharge requirements say that there
14 shall be no constituents of concern passing through the
15 point of compliance -- concentrations above the water
16 quality protection standard.

17 There is constituents of concern that are not
18 captured by the landfill gas system at this particular
19 landfill that will have no effect on those

20 constituents.

21 If the landfill gas system cannot capture all
22 the landfill gas, then you are going to have other
23 constituents of concern that will exceed the water
24 quality protection standards at the point of
25 compliance.

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1 Q. What are the water quality protection
2 standards?

3 A. They are found in the waste discharge
4 requirements.

5 Q. Can you tell me where, and you are consulting
6 Exhibit 5, correct?

7 A. Yes.

8 Q. I believe they are on page 27?

9 A. They are on page 27.

10 Q. It looks to me on page 27 of Exhibit 5 that the
11 first six constituents have numerical concentration
12 limits. The next two, total alkalinity and total
13 organic carbon, are listed as TBD.

14 Do I understand that to be "to be determined?"

15 A. Yes.

16 Q. There is another two, carbonate and alkalinity
17 bicarbonate, which have numerical concentration limits,
18 correct?

19 A. Yes.

20 Q. Then beginning with VOCs, there are several

- 21 constituents indicated with concentration limit of MDL,
22 which footnote one indicates to be the laboratory
23 method detection limit; is that correct?
24 A. That's correct.
25 Q. Could you describe what the laboratory method

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- 1 detection limit is?
2 A. That is the lowest the laboratory can reliably
3 analyze or precisely analyze the concentrations.
4 Q. Do you happen to know what the method detection
5 limit is for VOCs under EPA 8260B?
6 A. I believe this order says that.
7 It says, "The concentration limits proposed by
8 the discharger are listed in table seven." That is the
9 table we looked at.
10 Q. I am sorry. The portion of Exhibit 5 you were
11 just reading from was what page?
12 A. Page 4 under concentration limits. It says --
13 so these concentration limits were proposed by the
14 discharger, which is our standard process. The
15 discharger proposes and staff approves under -- through
16 the order.
17 Q. I am sorry. I am jumping. which finding --
18 A. In the monitoring and reporting program,
19 page 4.
20 Q. Page 4 of the monitoring and reporting
21 program?

22 A. Yeah.
23 Under three, concentration limits.
24 Q. I see.
25 But it doesn't actually list the method

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1 detection limit in there?
2 A. I believe it does in here because -- let me
3 keep looking.
4 Here it is. Table five on page 19 has the
5 constituents listed in the VOC analysis.
6 Table six has approved method.
7 I believe it is in here somewhere. I
8 haven't -- do you want me to take the time to find it
9 or come back to it?
10 Q. Well, I would like to know what it is.
11 A. Okay.
12 Q. I presume we will take a break. So, at some
13 point --
14 A. Okay.
15 Q. -- before we lose you. So, maybe we can
16 come back to that. So, I will make a note.
17 A. Sure.
18 Q. Is it your understanding that the method
19 detection limit for VOCs is something greater than zero
20 micrograms per liter?
21 A. Yes. It is actually the method detection limit
22 because this is an EPA test. EPA has the actual method
Page 24

23 detection limits of any labs that perform this
24 particular test. So, we can get you those numbers.

25 Q. Okay. But, for the purposes of the rest of my

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1 examination, we can agree that the method detection
2 limit is some value greater than zero micrograms per
3 liter?

4 A. Yes.

5 Q. And presume -- or do you know if for VOCs the
6 method detection limit is lower than the maximum
7 contaminant level?

8 A. It is, yes.

9 Q. Significantly lower?

10 A. I recall that the method detection limit for
11 most of the VOCs is around 0.5 or less. 0.5 micrograms
12 per liter or less, and I think significantly less for
13 some of those.

14 It is not -- it is not the exact same for every
15 single VOC in the 8060 analysis.

16 Q. Nor is the MCL the same?

17 A. That is correct.

18 Q. For each one.

19 You stated that the reason you didn't believe
20 that the landfill gas system would be most efficient
21 for this site was because it couldn't capture all the
22 landfill gas, and the reason that it needed to capture
23 all of the landfill gas, in your opinion, was because

24 there can't be any VOCs at the point of compliance?

25 A. To comply with Title 27.

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1 Q. To comply with Title 27.

2 A. It cannot exceed the water quality protection
3 standard, right.

4 Q. That is where I am going because it seems to me
5 you don't have to capture every single molecule of VOCs
6 with the landfill gas system to achieve compliance with
7 Title 27, correct?

8 A. That is probably correct.

9 Q. You could have some number of parts per billion
10 passing the point of compliance, and as long as it is
11 below the method detection limit or whatever the water
12 quality protection standard is for that constituent, it
13 would still be compliant with Title 27, correct?

14 A. That's correct.

15 Q. So, you may have been speaking in generalities
16 before. So, I would like to be a bit more precise.

17 A landfill gas system doesn't have to capture
18 all, as in every single molecule of VOCs, in order to
19 be effective; is that correct?

20 A. Effective in compliance with Title 27,
21 correct.

22 Q. Yes.

23 A. However, there are constituents out here that
24 are not captured. They are not part of landfill gas.

25 They are not captured on a landfill gas system. So,

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1 you need to keep that in mind, too.

2 Q. Could we group those as inorganic
3 constituents?

4 A. Inorganics and metals.

5 Q. Inorganics and metals.

6 You were the staff person responsible for
7 deciding what enforcement mechanism was appropriate for
8 this site, correct?

9 A. I'm part of the prosecution team as a whole. I
10 don't make the -- I am not -- I don't make a decision
11 by myself.

12 Q. I had understood that -- all of this is one of
13 those things where all the people we have deposed
14 before are pointing up the chain to you. I asked Anne
15 Olson, "why did you not do an NOV, or an informal
16 enforcement or something other than a cease and desist
17 order?"

18 She said, "I don't know. Ask Wendy," and
19 Howard had even less to say.

20 So --

21 A. I can tell you why as a prosecution team we
22 decided to do a cease and desist order; but, I do not
23 make that decision on my own. We need legal. We need
24 legal counsel input. We need executive officer, and
25 executive officer input. We are all part of the

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1 prosecution team.

2 Q. Okay.

3 MR. PULUPA: I think you can ask Wendy why she
4 would make that recommendation over something else, and
5 ask what her thought process is in that. It is a joint
6 effort.

7 Q. BY MR. NEWMARK: Okay. I think you pretty much
8 sketched out what the process was in explaining your
9 answer, but just to make sure I didn't miss anything,
10 could you give me a thumbnail sketch of exactly how the
11 prosecution team worked together to come up with what
12 we have as the proposed enforcement mechanism here and
13 why it was selected over other potential responses?

14 A. We look at the history of compliance or
15 noncompliance at a site.

16 At this particular facility, there has been
17 ground water contamination for over 25 years. There
18 was -- let me pull these out.

19 There's been a number of reports that have been
20 done throughout the years at this site.

21 And the south area ground water investigation
22 report which was submitted in May of 2007 showed a
23 number of issues with the existing ground water
24 extraction system and the landfill gas system.

25 Q. For the record you appear to be reading from a

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1 report.

2 Can you identify that report?

3 A. This is a letter dated January 30th, 2008, that
4 Water Board staff wrote to the county as a review of
5 the south area ground water investigation report, and
6 it's got four pages of findings of issues with the
7 current remediation system at the facility.

8 And staff asked that the county do a number of
9 items to upgrade the corrective action measures in
10 compliance with Title 27.

11 And we asked for certain work to be done under
12 a certain time line. That was not done and then --

13 Q. Can you be a little -- first of all, should we
14 attach this -- may we have that copy --

15 A. Yes. This is for you.

16 Q. -- that you brought?

17 And I will ask the Court Reporter to mark this
18 as Exhibit 13.

19 (Exhibit No. 13 was marked.)

20 Q. BY MR. NEWMARK: Can you identify for me what
21 work requested in Exhibit 13 was not done?

22 A. We requested a corrective action work plan.

23 Q. You are looking at page 4?

24 A. Looking at page 4, item number I.

25 Q. Your testimony is that a corrective action work

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1 plan was not done?

2 A. We asked for that by April 14, 2008, and it'
3 was not done, no.

4 We asked for upgrades to the existing landfill
5 gas extraction treatment system. We asked for the
6 county to implement its recommended sparge system to
7 control VOCs.

8 We asked them to implement their recommendation
9 to design and install multi-depth piezometers adjacent
10 to the Tuolumne.

11 We said they had to design a mechanism to treat
12 the hot spot of PCE, TCE, and Freon and MW-12.
13 We had said they had upgrade the ground water
14 extraction treatment system, and increase the capacity
15 of that so that it maintains a hydraulic barrier.

16 We asked them to look at alternative discharge
17 methods and discharge points.

18 And we asked for a corrective action
19 installation report by April of 2009.

20 Q. Is it your testimony that all of those things
21 you just enumerated were not done?

22 A. They were not done by April 2009.

23 Q. Did the county respond to Exhibit 13 in any
24 way?

25 A. I would need to look at the case file; but

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1 if -- the bigger question you asked was how we got to
2 doing a cease and desist order.

3 The next document from our staff in the case
4 file is nine months later, September 2008. It is a
5 review of the ground water aquifer test, and this
6 document says at the very end, "Due to the serious
7 nature of the plume at this site, if the county cannot
8 meet its proposed schedule, then staff will recommend
9 adoption of a cleanup and abatement order."

10 So, cleanup and abatement order. So, you are
11 welcome to have this.

12 MR. NEWMARK: Okay. We will ask that the Court
13 Reporter mark this as Exhibit 14.

14 (Exhibit No. 14 was marked.)

15 Q. BY MR. NEWMARK: And it will be fair to
16 describe this as a September 18, 2008, letter to
17 Ms. Jami Aggers from Steve Rosenbaum?

18 A. He was the senior -- he -- he was the senior of
19 the unit at the time.

20 So, to continue the history of the site,
21 instead of preparing a cleanup and abatement order, our
22 staff worked extensively with the county in the new
23 waste -- to prepare and write the new waste discharge
24 requirements, and all the -- the majority of the items
25 that were requested in these two letters were included

1 in the cleanup -- in the waste discharge requirements.

2 so, because the county did not comply with the
3 waste discharge requirements, it was appropriate to go
4 to cease and desist order because we have a three-year
5 history of trying to get improvements at the site.

6 Q. Is this cease and desist order that is pending
7 now the -- is that the first formal enforcement on this
8 site?

9 A. On this site, yes.

10 Q. And since adoption of the waste discharge
11 requirements, have there been any notices of
12 violation?

13 A. No.

14 Q. And I asked you to articulate the process
15 for --

16 A. Uh-huh.

17 Q. -- determining the appropriate enforcement, and
18 you described some of the things that were consulted in
19 the case file.

20 Could you give me a thumbnail sketch of the
21 process in terms of how staff worked together with
22 legal counsel, because I had thought you were the
23 person calling the shot, and that is not right.

24 A. We discussed which type of formal enforcement
25 would be most appropriate at the site. Stop me if I

1 say too much, but there is abatement orders, cease and
2 desist order, and ACL, and I recommended against an ACL
3 because I would prefer that the county spend its
4 limited resources in cleaning up this plume.

5 But we do have the basis to do an ACL, but I
6 recommended against it.

7 we could have written a cleanup and abatement
8 order, but those are more typically used when we will
9 not -- we do not believe we will be going to a board
10 hearing.

11 And, in this case, given the two previous
12 meetings between board staff and county staff, I did
13 not think we could reach a settlement in a cleanup and
14 abatement order. So, I recommended a cease and desist
15 order.

16 Q. And it sounds like informal enforcement was not
17 considered as an option at this stage; is that correct?

18 A. Given the fact that the county had been warned
19 in this 2008 letter that cleanup and abatement letter
20 or some sort of formal enforcement if they didn't do
21 the work, no, we thought the county had prior
22 knowledge, and that the waste discharge requirements
23 were in lieu of an enforcement order.

24 Q. In your testimony you identified, as I
25 understand it, two broad groups of constituents of

1 concern. There is the volatile organics, and then what
2 you said we could label as inorganics/metals,
3 correct?

4 A. Correct.

5 Q. If we were to take the volatile organics away,
6 and they are not in the equation, they are not at issue
7 at this site and all you had were the levels of the
8 inorganics and metals, would you be looking at the same
9 type of enforcement, same type of issues at this
10 site?

11 MR. PULUPA: If you don't know, you don't
12 know.

13 THE WITNESS: I am sorry.

14 MR. PULUPA: If you don't know, you don't
15 know.

16 THE WITNESS: Well, should I say my
17 understanding?

18 MR. PULUPA: Absolutely.

19 THE WITNESS: My understanding is that the
20 current ground water extraction system is ineffective,
21 does not capture the plume, and that is based on the
22 county's reports to us.

23 And, so, the site does not comply with the
24 Title 27 requirements of no constituents of concern
25 passing -- past the point of compliance at

2 protection standard.

3 So, I do believe we would be requiring the
4 county to upgrade its ground water extraction system,
5 and these documents from 2008 forward had asked the
6 county to do that.

7 So, I do believe that we would be at the same
8 point.

9 Q. BY MR. NEWMARK: And you testified earlier that
10 the inorganics/metals are not susceptible to treatment
11 through an extraction system?

12 A. That is my understanding. They're not gas.
13 They wouldn't be pulled up through vapor.

14 Q. So, is it your understanding that the
15 corrective action associated with that would be a
16 ground water extraction system?

17 A. The first corrective action the county did was
18 to cover the landfill, and that hasn't been sufficient.

19 So, yes. The next action is probably a ground
20 water extraction treatment system, although the county
21 did evaluate other things like air sparging in lieu of
22 ground water extraction, and they decided against
23 that.

24 Q. The volatile organic compounds -- well, strike
25 that.

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1 volatile organic components are not naturally
2 occurring in the environmental, correct?

- 3 A. Correct.
- 4 Q. In contrast, the inorganics and metals are
5 naturally occurring in the environment, correct?
- 6 A. Correct.
- 7 Q. And I see at the top of the list of table seven
8 in Exhibit 5 of the waste discharge requirements
9 specific conductance.
- 10 would that be a regulated constituent in the
11 inorganic/metals group?
- 12 A. Yes.
- 13 Q. There is a lot of different things that could
14 cause specific conductance in ground water, correct?
- 15 A. I suppose. I don't know.
- 16 I mean, are you asking what is specific
17 conductance or what causes it?
- 18 Q. It is my understanding that you could have a
19 bunch of chlorides that would cause specific
20 conductance and nothing else, and you can have a bunch
21 of sodium and nothing else that could cause specific
22 conductance. I imagine there is other things.
- 23 A. Specific conductance is made up of a number of
24 salts. It is a sum of the number of different types of
25 salts.

- 1 Q. I thought that it is sort of a different
2 quantification method as opposed to measuring the
3 amount of chloride by an EPA method. It was my

4 understanding of specific conductance is basically you
5 take an instrument and see how much electricity or how
6 well it conducts electricity.

7 A. That is true. But sodium chloride, they
8 altogether can be part of specific conductance.

9 Q. That -- constituents is probably a very
10 loose --

11 A. Loose.

12 Q. Loosely categorized as a constituent at all.
13 It is really a testing method, right?

14 A. Uh-huh.

15 Q. Under that testing method doesn't care what the
16 constituents is. It is just whether the electricity
17 can get through it?

18 A. That is correct.

19 Q. But those salts that we have talked about are
20 all naturally occurring, correct?

21 A. Correct.

22 Q. And are they naturally occurring in ground
23 water in the Central valley?

24 A. Yes.

25 Q. So, there would be background values of those

1 constituents?

2 A. Are you familiar with how water quality
3 protection standards are developed, because you do take
4 background concentrations into consideration when you

5 develop water quality protection standards?

6 Q. well, why don't you walk me through how you
7 develop these water quality protection standards.

8 A. Okay. It is in the waste discharge in the
9 monitoring and reporting program. Section C-1 talks
10 about the water quality protection standard report on
11 page 3.

12 So, the discharge as required under Title 27 is
13 to propose a water quality protection standard.
14 Stanislaus County submitted a report in October 1992
15 and then updated in 1999.

16 And this order requires the county to update
17 this report every I think it is five years. It is the
18 normal time period.

19 And when you update the report you look at the
20 background concentrations to determine what
21 background -- I look at the background monitoring wells
22 to see how in this case the specific conductance has
23 varied over those monitoring periods to help determine
24 whether your current water quality protection standard
25 is reflective of the background or whether that

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1 background has changed and that value needs to change
2 also.

3 Q. Is it fair to generalize that unless there's a
4 proposal for concentration limits greater than
5 background, the water quality protection standard would

6 be set at the background value?

7 A. That is what Title 27 says, yes.

8 Q. So, when we are going back to table seven,
9 page 27, of the monitoring reporting program in
10 Exhibit 5, if we just look at total resolved solids at
11 739 milligrams per liter, we can infer from that that
12 there was a determination that the background level of
13 total dissolved solids was 739 milligrams per liter?

14 A. Right. Title 27 gives methods for determining
15 what background is. There is different statistical
16 methods that can be used. And, so, the county used
17 some sort of method in conformance with Title 27, and
18 our staff reviewed it and approved it and put it in
19 this order.

20 Q. It is not your contention, is it, that all of
21 the inorganics and metals listed in table seven are
22 exceeding the water quality protection standards at the
23 Geer Road Landfill, is it?

24 A. I do not know how our permitting staff decided
25 what constituents to put in here. So, I am not certain

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1 why all these are listed.

2 Q. Okay. This sorts of gets back to what are the
3 allegations in the cease and desist order. I don't
4 understand the Regional Board to be saying every single
5 one of these is over the water quality protection
6 standard.

7 A. I don't believe we are saying that.

8 I believe we are saying that if cobalt was
9 found in a downgrade at a monitoring well, we would
10 look for the water quality protection standard for
11 that. It has not been determined that --

12 Q. You didn't find one for that?

13 A. Or if an organophosphorus compound were found
14 in a downgrade monitoring well, then my staff could
15 look at this order and say, "Look, the method
16 protection limit is your concentration method. It's
17 already been determined," and we can determine if it
18 was a violation or not.

19 I believe this order --

20 Q. If we go to page 5 of the cease and desist
21 order there is a table listing inorganic constituents
22 in downgrading of monitoring well pairs.

23 Do you see that?

24 A. I do.

25 Q. Does that table list the inorganics/metals that

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1 the prosecution team is concerned about when you were
2 talking about constituents of concern that aren't
3 susceptible to treatment of the landfill gas system?

4 A. No. We need to update this table.

5 I believe that there is also arsenic,
6 manganese, and iron, I believe, that exceed the water
7 quality protection standards.

8 Q. Do you -- in addition to arsenic, manganese,
9 and iron, do you remain concerned about specific
10 conductance, chloride and bicarbonate, things listed on
11 page 5 of the cease and desist order?

12 A. Yes.

13 This finding number 16 of the cease and
14 decision order does not attempt to list all the
15 inorganics and metals that exceed the water quality
16 protection standard. This was just an example of some
17 of the problems at the site.

18 Q. Do you know if the background values listed for
19 any of these inorganics/metals are lower than the
20 applicable water quality objectives?

21 A. Can you repeat that?

22 (The Reporter read back.)

23 THE WITNESS: When you say "background values,"
24 you are talking about the water quality protection
25 standards?

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1 Q. BY MR. NEWMARK: Yes. I understood them to be
2 essentially the same thing.

3 A. Okay. The ground water concentration. I am
4 sorry.

5 I do not know if they are lower or not. I do
6 know though that Title 27 -- this is what is required
7 by Title 27 for compliance.

8 Title 27 does not look at water quality --

9 human health or water protection centers. Title 27
10 requires cleanup to background.

11 Q. Unless there are concentration limits greater
12 than background proposed and approved?

13 A. Right. There is a process for doing. That has
14 not happened.

15 Q. It is my understanding that the water quality
16 protection objective is kind of a ceiling for
17 concentration limits created in the background; is that
18 correct?

19 A. I do not know. I would have to look at Title
20 27.

21 Q. Page 10 of the cease and desist order,
22 paragraph 32-E.

23 A. 32-E?

24 Q. It is entitled a CLGB ceiling.

25 If you could review that, I am sure the county

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1 would be happy to have concentration limits greater
2 than background that are higher than water quality
3 objective, but I want to understand what your position
4 on that is.

5 A. Well, I read two different ceilings in this
6 paragraph. One is that it can't exceed what is
7 technologically and economically achievable, and the
8 other is that it can't achieve an NCL or other -- or
9 under other applicable statutes or regulations.

10 Q. I was sort of generalizing that NCL/or other
11 applicable statutes or regulations, I think in water
12 board parlance that would be equivalent to both water
13 quality objective, correct?

14 A. I --

15 Q. Because you are going to enforce the lowest
16 standard?

17 A. Appropriate standard.

18 Q. Like if the -- if there is an ag beneficial
19 use, as we have discussed before?

20 A. Yeah.

21 Q. It may be way below the NCL. You are not going
22 to let someone comply with the NCL?

23 A. Right. The most applicable water quality
24 criterion, but then it also has to be -- the discharger
25 has to show that it cannot be a technical or economical

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1 issue. So, it is a two-prong thing.

2 Q. Do you -- are you qualified to testify about
3 what treatment technologies are effective at treating
4 these inorganics/metals?

5 A. Yes.

6 Q. I didn't mean that to be insulting.

7 A. I am trying to figure out what you meant.

8 Q. Because it is --

9 MR. PULUPA: Do you have enough background to
10 comment on that?

- 11 Q. BY MR. NEWMARK: I don't want to launch into
12 questions --
- 13 A. I oversaw ground water cleanup for 12 years.
14 So, I have some knowledge.
- 15 Q. What treatment technologies would be effective
16 at reducing the constituents listed on page 5 of the
17 cease and desist order, specific conductance chloride
18 and bicarbonate?
- 19 A. Ground water extraction and treatment.
- 20 Q. What sort of treatment technology?
- 21 A. I know there's been some -- I understand
22 currently that the pre-filter is removing a lot of
23 these inorganics and metals right now before it runs
24 through the carbon system.
- 25 Q. When you are indicating -- well, while you are

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- 1 testifying there, you were pointing at the table on
2 page 5?
- 3 A. Yes.
- 4 Q. So, you understand that the current treatment
5 system is providing some treatment for specific
6 conductance, chloride and bicarbonate?
- 7 A. That is what SCS reports say that the
8 pre-filter is removing some sediment, and that arsenic
9 and metals are removed with that; and, therefore,
10 there's no need to treat for that before it is put into
11 the infiltration trenches.

12 Q. Go ahead.

13 A. No.

14 Q. What is the treatment technology that is
15 currently deployed for the ground water system at the
16 landfill?

17 A. It goes through filters, and then it goes
18 through granulated activated carbon.

19 Q. It is the filter portion of it that is
20 providing treatment for these inorganic/metals; is that
21 correct?

22 A. It's provided some treatment. It is not full
23 treatment, but the amount of treatment that is needed
24 depends on the concentrations in the ground water or
25 surface water where you are going to discharge the

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1 treated water.

2 So, it is -- the Board doesn't say that you
3 have to treat these down to non-detect. It depends on
4 where you are going to discharge it.

5 Q. When I first asked you about the effectiveness
6 of the landfill gas system you described that, in
7 theory, it is an effective way of preventing landfills
8 from contaminating ground water. You had a number of
9 caveats. We have talked about some of them.

10 One of the other things you mentioned is you
11 said there is no way to know about the radius of
12 influence of the landfill gas extraction well; is that

13 correct?

14 A. That is not quite accurate.

15 what I was told by SCS was that you can
16 determine the radius of influence at a particular point
17 in time, but that radius changes over time, depending
18 on gas formation and gas that is being pulled and other
19 conditions in the subsurface.

20 So, my understanding from SCS was that, for
21 example, if you -- if they said that we need 23 more
22 gas extraction wells, and we are going to space them
23 out here and we are going to capture the plume, it may
24 or may not work because at different points in time
25 it is capturing different amounts.

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1 The radius of influence changes, and one reason
2 it also changes is because they have to turn off
3 individual gas extraction points when too much oxygen
4 is coming in. So, when they turn it off, it isn't
5 capturing anything at all.

6 Q. That would be true at any landfill with a
7 landfill gas extraction system, correct?

8 A. That is my understanding.

9 Q. And is your understanding about the -- what we
10 have been talking about, the radius of influence of
11 landfill gas wells, based upon anything other than your
12 conversations with SCS Engineers?

13 A. From talking with previous board staff who used

14 to design these sort of systems, yes. It is not part
15 of the action.

16 Q. Was that part of your working up this
17 enforcement action, or is that just in your experience
18 in all the years you have worked at the board?

19 A. It is in my experience in working at the
20 board.

21 Q. Are there currently any board employees on
22 staff who have designed landfill gas extraction and
23 treatment systems?

24 A. I don't recall if Howard Hold has or not, or if
25 he's only designed ground water extraction systems.

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1 Q. Mr. Hold is not designated as the person most
2 knowledgeable on the landfill gas remedies in
3 Exhibit 2, correct?

4 A. Correct.

5 Q. You have not ever designed an LFG collection
6 system, correct?

7 A. Correct.

8 Q. You have not ever built an LFG correction
9 system?

10 A. Correct.

11 Q. Or operated one, correct?

12 A. Correct.

13 MR. PULUPA: You are not a hobbist.

14 THE WITNESS: No. In my back yard.

15 MR. NEWMARK: I think there is a general WDR
16 that can cover back yard landfills.

17 MR. PULUPA: It is called septic systems.

18 Q. BY MR. NEWMARK: Other than your conversations
19 during your years at the water board with these other
20 water board employees, the basis for your statement
21 about the radius of influence of landfill gas wells is
22 conversations with SCS in this case.

23 And anything else?

24 A. Well, it is conversations with SCS when they
25 were telling us why what we had written is impossible

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1 to comply with and why we needed to change it.

2 Q. Okay. Anything else other than conversations
3 with SCS and the water board staff you mentioned?

4 A. No. That is it.

5 Q. You also mentioned that it is your
6 understanding that methane is used as a good surrogate
7 for constituents of concern -- and I am going to just
8 try to paraphrase because this is probably 20 minutes
9 ago now -- but it is not necessarily the same thing as
10 testing for the constituents of concern, and that is an
11 expensive thing to test for.

12 Is that generally a fair paraphrasing?

13 A. SCS says that they optimized or they determine
14 how to operate the landfill gas system based on methane
15 readings.

16 Q. And then the part about methane being a
17 surrogate?

18 A. So, they consider methane to be a surrogate
19 for the volatile organic compounds within landfill gas.
20 They assume that if they are capturing methane, they
21 are capturing the PSAs.

22 Q. Where I am going with this, is your basis for
23 that testimony solely your conversations with SCS?

24 A. It is based on the quarterly monitoring reports
25 from SCS. They show us the methane concentration,

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1 oxygen concentration, nitrogen concentration at the
2 wells.

3 Q. Did they offer an analysis or statements about
4 those constituents being good surrogates for the
5 constituents of concern?

6 A. I don't believe so.

7 Q. Okay.

8 A. That part was from the conversation with
9 them.

10 Q. That is part I'm kind of trying to drill on.
11 That is just conversation with SCS?

12 A. Uh-huh.

13 Q. The testimony about it being expensive to test
14 for the actual VOC is also from conversations with
15 SCS?

16 A. I believe more accurately said we could test

17 for it but it costs more money.

18 Q. But, again, the basis --

19 A. Yes.

20 Q. Whatever your prior testimony --

21 A. Yes, yes.

22 Q. Do you have an opinion as to whether a landfill
23 gas extraction system at this landfill could be
24 effective enough to achieve levels of constituents of
25 concern below the water quality of protection standards

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1 at the point of compliance?

2 A. Based on the documents in the record, I have no
3 basis for believing that.

4 Q. Can you tell me which documents in the record
5 you are referring to?

6 A. The engineering feasibility study. I guess
7 this is Exhibit 9. Is that why this tag says nine?

8 Q. Yes.

9 A. So, in this -- let me explain more.

10 Q. I would like to get the whole universe of
11 documents first down. If there is any other documents
12 that you relied on or anything that is not a document
13 that you relied on, I would like to get the whole list
14 of what the basis for your opinion is, and then we
15 can -- if this is it, we will talk about this. If
16 there are other things, we will go through them.

17 A. Do you have a listing of all the documents that

18 have been submitted in the last three or four years?

19 Q. I do not.

20 A. Okay. There's been a lot.

21 MR. NEWMARK: Well, actually I may have your
22 evidence list. And I don't -- why don't we take a
23 break because I need to get more --

24 (Short break taken.)

25 Q. BY MR. NEWMARK: We were talking about what

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1 other evidence you referred to to support your opinion
2 that the landfill gas system at this site basically
3 couldn't achieve compliance with Title 27, to try to
4 truncate it a little bit, and you have identified
5 Exhibit 9, and then you were thinking about whether
6 there was any other evidence you were relying on for
7 that opinion.

8 Did you think of any other evidence that you
9 were relied upon for your opinion?

10 A. I thought we agreed on we relied on this. I am
11 fine with just using this.

12 Q. Fine. If that is pretty much it, that is fine.
13 "That" meaning Exhibit 9?

14 A. Uh-huh.

15 Q. Can you explain to me what in Exhibit 9
16 indicates to you that the landfill gas system won't be
17 able to achieve -- strike that.

18 I guess what I want to get at is not just the

2811-2-001.txt
19 current landfill gas system.

20 My question is any landfill gas system at this
21 site expanded, optimized.

22 I want to know whether you think there is any
23 landfill gas system at the Geer Road Landfill that
24 would be able to achieve constituent of concern levels
25 that would comply with Title 27?

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1 A. I don't think I have the knowledge to answer
2 that question directly.

3 I thought your question was what has been
4 submitted and proposed by the county, would it achieve
5 the objective of no landfill gas in the ground water.

6 Q. That definitely wasn't my question because I
7 wouldn't have used the objective being no landfill gas
8 in ground water.

9 A. Okay.

10 Q. Because I don't think that we -- as we talked
11 about, I think we agreed that that is not actually the
12 Title 27 finish line. There can be some, but the
13 requirement is not zero molecules.

14 We can ask this a couple of different ways;
15 but, I understand you to not have an opinion as to
16 whether there is any landfill gas system that could be
17 developed at the Geer Road landfill that could achieve
18 compliance with Title 27; is that correct?

19 A. Correct.

20 Q. You do have an opinion as to whether the
21 current landfill gas system could achieve compliance
22 with Title 27; is that correct?
23 why don't you tell me what your opinion is with
24 regard to that?
25 A. I am getting mixed up from before the break of

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1 what you are asking.

2 I thought you wanted to know about what the
3 consultants reviewed and proposed as far as landfill
4 gas as far as upgrading the current landfill gas
5 system.

6 Is that what you are interested in?

7 MR. PULUPA: I think there is three things, if
8 I may. The -- any landfill gas system presumes that
9 a -- maybe you can spend a billion dollars and get a
10 landfill gas extraction system with a probe every foot.

11 Your opinion is you don't have the technical
12 background to say whether that is possible or not.

13 THE WITNESS: Right.

14 MR. PULUPA: Then there is two other scenarios
15 that we have identified. One is the current system,
16 which is what Greg -- is the last question Greg asked,
17 and then presumably there will be a system currently
18 proposed.

19 So, taking the first, anything, any gas system
20 off the table, we are left talking about the other two,

21 correct?

22 MR. NEWMARK: Right.

23 Q. Do you have an opinion as to whether a landfill
24 gas system could be deployed at the Geer Road Landfill
25 that would be effective enough that an expanded ground

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1 water extraction system would not be justified?

2 A. My understanding is that the county could not
3 show -- would not have the ability to show to us ahead
4 of time that an expanded gas system could capture
5 enough landfill gas to not need an expanded ground
6 water treatment system.

7 And, in addition, the gas system will not
8 mitigate the metals and the inorganics.

9 Q. Is that a requirement that a discharger
10 demonstrate ahead of time that one remedy will
11 absolutely be effective?

12 A. We need to have reasonable assurance that the
13 remedy will work within a specified time frame.

14 Q. But if the county were able to provide
15 reasonable assurance that it could deploy a landfill
16 gas system at the Geer Road Landfill and there is
17 reasonable assurance that that landfill gas system will
18 achieve compliance with the water quality protection
19 standards at the point of compliance, within a
20 reasonable period of time, then it would be appropriate
21 for staff to -- board staff to not require further

22 ground water remedy; is that correct?

23 A. There is still the issue of the inorganics and
24 metals.

25 Q. Okay. Let me -- can I take a peek at my

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1 question?

2 Setting aside inorganics and metals and
3 focusing only on VOCs, if the county could provide
4 reasonable assurances -- I think those were your
5 words -- that a proposed landfill gas system would
6 achieve compliance with the VOC water quality
7 protection standards, would the board staff be
8 justified in recommending no further ground water
9 remedy?

10 A. I believe so; but, based on what SCS has told
11 me, I don't see how that could happen.

12 Q. Can you think of a way to describe for me what
13 "reasonable assurances" would mean? I take it it is
14 something less than an absolute guarantee?

15 A. Can I tell you what it is not?

16 Q. Please answer -- if you can answer the
17 question. If you really can't answer the question --

18 MR. PULUPA: You can certainly define it in the
19 negative.

20 THE WITNESS: A reasonable assurance would be a
21 study performed by a registered professional that says
22 based on these site conditions I believe that this sort

23 of system would do this sort of work, and here is how I
24 would monitor and show the success of this system.

25 For what has been proposed by SCS for the next

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1 phase of landfill gas extraction, none of that work was
2 done.

3 Q. BY MR. NEWMARK: You are familiar with State
4 Water Resources Control Board resolution 92-49,
5 correct?

6 A. Yes.

7 Q. And while it addresses a great number of
8 policies and a pretty detailed approach to
9 investigation and remediation of contaminated sites,
10 one of the things that it includes is a recommendation
11 for a phased approach to remedy where appropriate,
12 correct?

13 A. Yes.

14 Q. So, dischargers where appropriate are allowed
15 to try a remedy, as long as there is reasonable
16 assurances that it will work, before throwing the
17 kitchen sink at a site, correct?

18 A. Yes.

19 Q. Because from the regulator's standpoint you
20 could always say, "well, I am not convinced that your
21 remedy is going to work. You should excavate, do vapor
22 extraction, encircle the site in ground water,
23 extraction and that is probably going to work," and

24 that is not a phased approach, and it might not be
25 cost effective?

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1 A. This county has been doing a phased approach
2 for 20 years. The cover was part of the phasing.
3 The initial landfill gas extraction was part of the
4 phasing.

5 The additional landfill gas extraction, the
6 first ground water extraction system, all that is
7 different phases of this cleanup.

8 Q. When you were testifying before about the
9 selection of the enforcement mechanism and you
10 explained why you recommended against an administrative
11 civil liability complaint, one of the reasons that you
12 listed was you wanted the county to use its limited
13 resources on a remedy as opposed to paying a civil
14 penalty, correct?

15 A. That was my personal recommendation.

16 Q. Right.

17 A. Yes.

18 Q. Do you understand the county to have -- strike
19 that.

20 I understand from that testimony that you
21 understand the county has limited resources?

22 A. I know the county does not have infinite
23 resources. No county has infinite resources, correct.

24 Q. They are limited to a degree that you were

25 concerned that remedial action would be impaired by a

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1 civil penalty, correct?

2 A. Sure, yes.

3 Q. Do you have an opinion with regard to the cost
4 effectiveness of treating VOC impacts on ground water
5 from a landfill with landfill gas extraction?

6 A. I have not seen any documents comparing that
7 effectiveness.

8 The cost effectiveness?

9 Q. Yes.

10 A. I haven't seen documents relating to that.

11 Q. So, you don't have an opinion on the cost
12 effectiveness of landfill gas extraction at the Geer
13 Road Landfill?

14 MR. PULUPA: As opposed to --

15 Q. BY MR. NEWMARK: I think that -- well, it is an
16 interesting question.

17 Is cost effectiveness always a comparative
18 question, or can you -- certainly that is a component
19 of it, but I think that before we get to comparing
20 remedies, I think you can also just look at something
21 is cost effective in isolation.

22 A. This seems awfully broad to me. I don't --

23 Q. If you don't feel comfortable talking about
24 cost effectiveness of one remedy without comparing it
25 to another alternative, I will accept that.

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1 I just wanted to start on that narrow point and
2 see if you have an opinion just with regard to landfill
3 gas because I imagine there is some things like when we
4 talk about reverse osmosis, that is just not cost
5 effective most of the time.

6 Forget about comparing it to anything else. It
7 is just not cost effective, and it is not feasible. I
8 am using that as a example. That is my opinion. You
9 don't have to agree with that.

10 MR. PULUPA: Yeah.

11 Q. BY MR. NEWMARK: I am using it as an example.
12 There are certain things -- it is probably not cost
13 effective for me to construct a nuclear reactor in my
14 back yard to provide electricity to my house.

15 A. Greg, I am just going back to the instructions
16 that you gave on Friday trying to remember about like
17 you said I can estimate the size of this table but I
18 couldn't estimate something.

19 Q. I don't want you to guess.

20 A. That is where I am not sure what to say. I
21 have no opinion.

22 MR. PULUPA: Yeah. One of the future
23 technologies that nuclear institute is exploring is
24 back yard small nukes.

25 MR. NEWMARK: Small nukes.

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1 MR. PULUPA: Nuclear reactors.

2 MR. NEWMARK: I am glad we had this discussion
3 on the record.

4 MR. PULUPA: I am just saying, I mean, I think
5 Wendy is essentially saying that from our perspective
6 we do compare.

7 MR. NEWMARK: Cost effectiveness is a
8 comparative.

9 MR. PULUPA: Absolutely.

10 MR. NEWMARK: I will just ask that question.

11 Q. Do you understand resolution 92-49 to, among
12 other things, allow dischargers to implement cost
13 effective remedies?

14 A. Do you have a copy of it, or is that --

15 Q. Okay. Did you consider cost effectiveness of
16 remedial strategies at all in the preparation of the
17 cease and desist order?

18 A. We looked at violations of the waste discharge
19 requirements.

20 In preparing the waste discharge requirements,
21 the staff took the county's proposals and incorporated
22 into the waste discharge requirements.

23 So, we are just requiring the county to do what
24 it had proposed to do.

25 Q. Cost effectiveness didn't enter into the

1 equation?

2 A. The county should have looked at this as part
3 of its proposal to us. And they did. There is the
4 engineer feasibility study and the work plan. The
5 county looked at that.

6 Q. But board staff didn't do any evaluation of
7 cost effectiveness in the development of the cease and
8 desist order, correct?

9 A. That is not part of --

10 MR. PULUPA: well, I think you could answer the
11 question of whether you evaluated the cost
12 effectiveness analysis that was provided by the county.

13 THE WITNESS: Okay. we evaluated the county's
14 documents and their cost effective analysis, and we
15 looked at what their registered professional said would
16 be appropriate to remediate the site, and our
17 registered professionals agreed with the county.

18 Q. BY MR. NEWMARK: You concurred with the
19 county's assessment of the cost effectiveness of
20 remedies?

21 A. Yes.

22 Q. Has the county informed you that it does not
23 believe the ground water corrective action described in
24 the 2010 corrective action work plan is cost
25 effective?

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1 A. I believe the county's cover letter from the
2 county staff said that.

3 Q. Did you concur in that assessment of cost
4 effectiveness?

5 A. No. That is why we wrote the cease and desist
6 order.

7 Q. Well, what was the basis for disagreeing with
8 the county's assessment of cost effectiveness for the
9 ground water repair?

10 A. The basis for disagreement is that the county
11 in its cover letter said it would not implement this
12 remedial measure. And, as staff, we cannot allow a
13 discharger to violate a WDR in Title 27.

14 Q. So, you didn't take into account the cost
15 effectiveness of the ground water remedy?

16 A. The county staff did not propose any other
17 method for complying with the WDR Title 27.

18 The county's consultants a year previous had
19 said here is a cost effective way to comply, and then
20 this 2010 report was just the rest of the actual prep
21 work basically to figure out how to put the system
22 in.

23 Q. I think when you just testified you indicated
24 Exhibit 9 as a document where the county had identified
25 cost effective ways to comply; is that correct?

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1 A. This document does contain analysis of cost of
2 different methods, and it proposes a method -- it
3 proposes two different methods, yes. As part --

4 Q. For this record, this document refers to
5 Exhibit 9, correct?

6 A. Yes. Exhibit 9.

7 Q. Can you show me where in Exhibit 9 the county
8 concluded that a ground water remedy is cost
9 effective?

10 A. Section 8.2 talks about phase enhancement to
11 the existing ground water treatment system, and they
12 look at a lot of different options there.

13 Section 8.3 talks about an alternative ground
14 water treatment system using institute treatment with
15 chemical oxidation, and they talk about different
16 options.

17 Section 9 is a comparative analysis of
18 alternatives, and there is -- tables 8-4 to 8-8 have
19 all the different costs for the -- I am sorry -- 8-1
20 through 8-13 have all the different costs for the
21 different options, and the county gives a
22 recommendation here of which way to go.

23 Q. Does it specifically say in there anywhere that
24 the county concluded a ground water remedy was cost
25 effective?

1 A. I think it is implied.

2 Q. But it doesn't specifically say that?

3 A. Let me look.

4 "Recommendations based on cost effectiveness,"
5 section 9.3.

6 Q. What is that recommendation?

7 A. "Install Phase One of the landfill gas
8 enhancement," which the county has done.

9 Other corrective actions may be implemented to
10 either expand the landfill gas system or the ground
11 water extraction system, ground water pumping and
12 treatment."

13 Q. May I see that?

14 A. Uh-huh.

15 Q. I think that is a little bit of a selective
16 reading of this paragraph.

17 You are reading section 9.3 of recommendations
18 based on cost effectiveness on page 67 in Exhibit 9,
19 and it says, "Based on the effectiveness criteria and
20 estimated costs, the best option for corrective action
21 is to continue with installation of Phase One of the
22 LFG enhancement."

23 So, the county's recommendation for phased
24 approach was to pursue landfill gas, correct?

25 A. And that Phase One was installed.

1 Q. Right.

2 They also -- this report, Exhibit 9, then
3 states, "After installation, this system enhancement
4 needs to be evaluated to determine if it is effective
5 at reducing VOCs in ground water. Depending on that
6 evaluation, other corrective actions may be
7 implemented," correct?

8 A. That is what it reads, yes.

9 Q. So, the county was putting out an expanded
10 ground water remedy as a potential option if the
11 landfill gas system wasn't effective at reducing VOCs,
12 correct?

13 A. Correct.

14 Q. So, it didn't say that a ground water remedy is
15 just cost effective, period?

16 A. No. It also evaluated ground water remedy if
17 the landfill gas wasn't effective.

18 Q. Is the county's proposal to see if the landfill
19 gas remedies are effective at reducing VOCs before
20 pursuing enhanced ground water remedies consistent with
21 the phasing policies in resolution 92-49?

22 A. It is consistent with that portion of 92-49.

23 Q. Going back to Exhibit 3, the ordered section of
24 the proposed cease and desist order, which begins on
25 page 11, collectively that order section requires the

1 county to both at least optimize the landfill gas
2 system and install the ground water remedy identified
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3 in this 2010 corrective action work plan, correct?

4 A. Correct.

5 Q. So, that is no longer a phased approach,
6 correct?

7 A. The county has had years of phased approach.

8 Q. I understand that you --

9 A. So, that is my point, that there's been years
10 of phased approach.

11 Q. So, now, is it your position that a phased
12 approach is no longer appropriate, and that requiring
13 implementation of both the landfill gas remedy and
14 ground water remedy is appropriate?

15 A. Given the site conditions, yes.

16 Q. Okay. What are all the site conditions that
17 make it appropriate to abandon a phased approach at
18 this point?

19 A. The fact that there is a plume that extends an
20 unknown distance that has not been designed. The fact
21 that there is VOCs above NCLs.

22 The fact that the ground water -- the shallow
23 ground water is in connection with the river according
24 to the county's reports.

25 The fact that the county can't or didn't

1 propose anything to show us or any method of showing us
2 that the landfill gas extraction was sufficient to
3 capture all the landfill gas, and we know it is not

4 capturing all the landfill gas because there continues
5 to be VOCs in the ground water. And the fact that
6 there is inorganics in the ground water that is not
7 remediated by the landfill gas system.

8 Q. Are there any other site conditions that, in
9 your opinion, justify a de-abandonment of a phased
10 approach?

11 MR. PULUPA: I think you are misstating what
12 she said a bit. I don't think that abandoning the
13 phased approach when she said it is the very latter
14 phase of the phased approach.

15 MR. NEWMARK: I think -- what was my two
16 questions ago?

17 (The Reporter read back.)

18 MR. NEWMARK: So, I am just asking if there is
19 anything else she wants to list into that answer.

20 THE WITNESS: There has been a phased approach
21 for many years is part of my answer.

22 So, we are not abandoning it. We are saying
23 this phased approach has not been sufficient to capture
24 and remediate the plume, and it is time to
25 accelerate.

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1 Q. BY MR. NEWMARK: Do you understand resolution
2 92-49 to require the Regional Board to consider the
3 financial and technical resources available to the
4 discharger?

5 A. I would prefer to be able to look at it if you
6 are asking me questions about it.

7 MR. NEWMARK: We can go off the record.

8 (An Off-the-record discussion was had.)

9 Q. BY MR. NEWMARK: We should go back on the
10 record.

11 So, you had a chance to flip through resolution
12 92-49, and I believe the question was: Doesn't the
13 Regional Board have an obligation to consider the
14 financial and technical resources available to the
15 discharger?

16 A. That is one of four items that we have the
17 obligation to consider.

18 Q. Has the Regional Board considered the financial
19 and technical resources available to the county in
20 connection with this cease and desist order
21 proceeding?

22 A. The Regional Board has required the county to
23 have a corrective action financial assurance account
24 and a post-closer maintenance financial assurance
25 account since at least 1995. The board order is going

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1 to at least that point require the county to have those
2 funds available.

3 The county as part of Title 27 is supposed to
4 estimate what is needed to obtain compliance and make
5 sure there is adequate funds in those two financial

6 assurance accounts.

7 I know from the record in 2003 there is a
8 letter from the county saying there is six million
9 dollars in the post-closer maintenance account.

10 I have not seen other documents from the
11 county, other than that, as to what the county has
12 spent the funds on, or how much is put into that
13 account; but, my understanding under Title 27 is the
14 county is responsible for insuring that there are funds
15 there, and my understanding was the funds come from the
16 Geer Road Landfill.

17 Q. So, other than your understanding that Title 27
18 requires landfill operators to have financial
19 assurances, and your general familiarity with the
20 county's compliance activities under those provisions
21 of Title 27, there was no other consideration of the
22 financial resources available to the county in issuing
23 the cease and desist order?

24 A. No. There is also the board orders that
25 require the county to have it; but, other than that,

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1 no.

2 Q. And is it your position that that type of
3 consideration of financial resources fulfills the
4 obligations in resolution 92-49?

5 A. The county is required to follow Title 27. If
6 they follow Title 27 appropriately, then there would

7 not be this issue that you are bringing up.

8 Q. Did the Regional Board consider the technical
9 resources available to the county in developing the
10 cease and desist order?

11 A. Yes, we did.

12 Q. How were the county's technical resources
13 considered?

14 A. The county -- as part of the negotiations for
15 the waste discharge requirements, the county proposed
16 to do all these actions.

17 So, if the county could do it in and 2009 when
18 the WDRs were adopted, we assume the county could do it
19 in 2011..

20 Q. The requirements in the cease and desist order
21 were not exactly the same as what is set forth in the
22 waste discharge requirements, correct?

23 A. That is correct.

24 Q. They are different both in terms of substance
25 and in terms of timing, correct?

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1 A. They have to be different in terms of timing
2 because the county didn't follow through with the WDRs.

3 So, yes. We are giving the county more time to
4 do the work in the cease and desist order than the WDRs
5 gave the county.

6 Q. Did the prosecution team consider the technical
7 resources available to the county in deciding the

8 schedule of deliverables in the cease and desist
9 order?

10 A. As part of our discussions -- technical
11 discussions with the county, we asked for information
12 from the county. If they contend that they cannot meet
13 the schedule, we need to know why not, and then what
14 the schedule is that they propose.

15 we have not seen that yet, and we will consider
16 that when it comes in.

17 Q. I want to just go back to your testimony about
18 your understanding that the landfill gas system at the
19 landfill now cannot capture all of the landfill gas.

20 I believe you mentioned that you relied on SCS
21 statements about -- it sounded like essentially
22 variability and what the gas extraction loss were able
23 to get, correct?

24 A. Correct. There is more information in this
25 Exhibit 9 also on that matter.

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1 Q. Last week Mr. Hold testified that he believed
2 a portion of the waste in the landfill would
3 periodically be inundated with ground water, and he
4 believed that that was a significant consideration with
5 regard to the landfill's contribution of -- alleged
6 contribution of volatile organics to the ground water.

7 Do you share his position on that?

8 A. I do.

9 And SCS in this report also -- Exhibit 9 also
10 talks about a contribution from the waste that are in
11 the ground water, and I can pull it out if you would
12 like me to show you.

13 Q. Okay. Thanks.

14 A. Okay. It is on page 6 of Exhibit 9. If you
15 look at the fourth paragraph under section 2.2.3, "It
16 is also probable that VOCs in ground water are caused
17 in part by liquid phase processes, either moving or
18 leach downward to the ground water or transferred from
19 waste directly to ground water if ground water is in
20 contact with the bottom of the waste.

21 "The county employee who worked at the site
22 during active operations has stated that excavation
23 until ground water was frequently advanced into ground
24 water, and there was evidence of ground water
25 infiltration into some of the disposal operations.

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1 "The presence of elevated levels of arsenic in
2 the south central part of the landfill is also a strong
3 indication of liquid phase impacts."

4 Q. In your assessment that inundation of waste is
5 a potentially significant factor for the ground water
6 threat at the site, are you essentially relying on
7 SCS's analysis, or have you conducted any independent
8 analysis?

9 A. Howard has. Did Howard talk about that this
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10 morning?

11 The -- Howard has taken the cross-sections from
12 I believe it is Exhibit 9.

13 MR. PULUPA: Yeah. He discussed those this
14 morning.

15 Q. BY MR. NEWMARK: He discussed those as far as
16 hydraulic connection to the river, but he said that
17 those figures didn't show the waste mass.

18 A. Well, he took some of these figures from
19 Exhibit 9, and then you can take information from other
20 reports that have borings of gas extraction wells
21 through the waste mass and the depth of those wells,
22 and you can determine where the ground water is in
23 relation to the waste.

24 Q. What is the significance of that factor with
25 regard to the remedial approach that you believe is

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1 appropriate for the landfill?

2 A. My understanding is landfill gas extraction
3 system will not extract gas from water within the waste
4 mass.

5 When the water has risen up into the waste
6 containing VOCs enters that ground water then it needs
7 to be captured by a ground water remediation system.

8 Q. Do you understand the provisions of the cease
9 and desist order that direct the county to conduct
10 investigations and prepare technical reports to be

11 subject to the requirements of water code section
12 13267?

13 A. The submittal of technical reports, yes, is
14 required pursuant to 13267.

15 Q. What about investigations?

16 A. I thought it was the technical reports related
17 to the investigation. Patrick, I --

18 Q. So, it is your understanding that only the
19 technical report submittals are -- and preparation
20 presumably are subject to water code section 13267, but
21 not investigations?

22 A. Wait. I would like to read through 267.

23 Q. Sure.

24 A. Thank you.

25 MR. PULUPA: These are from the reports, not

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1 required by the WDRs.

2 MR. NEWMARK: You can make that specification.

3 Then I will ask why.

4 THE WITNESS: Yes.

5 So, for the reports not required by the WDRs,

6 13267 says that -- says -- what was your question? I

7 am sorry. Can you repeat it?

8 MR. NEWMARK: Can you read it back, please.

9 (The Reporter read back.)

10 THE WITNESS: Section 13267 says, "In

11 conducting an investigation the technical reports --

12 must contain certain things or must -- are subject to
13 certain things."

14 Q. BY MR. NEWMARK: Where are you reading from?

15 A. I am reading from page 8 of Exhibit 3, number
16 30.

17 Q. So, do you read section 13267 to weigh the
18 burden including the cost of these reports to exclude
19 the burden including the cost of getting the
20 information that goes into the reports?

21 A. I think I misunderstood your question.

22 I -- to me, 13267 says that when the board
23 requires an investigation, and we require reports of
24 the investigation, that the reports have to bear
25 reasonable relationship, et cetera.

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1 So, we have to talk about what we require in
2 the report that is the results of the investigation.

3 Q. So, did you make a determination of what the
4 burden including costs of the reports required in the
5 cease and desist order is?

6 MR. PULUPA: In the same stipulation as earlier
7 that reports that aren't otherwise required to be
8 prepared under the WDRs.

9 MR. NEWMARK: Well, I think I am entitled to
10 ask her what she considered, and she can answer that.
11 She can say no, we didn't consider it for anything that
12 was under the WDRs. She can say that.

13 MR. PULUPA: I know, but we made that
14 specification earlier.

15 THE WITNESS: Right.

16 MR. PULUPA: So --

17 THE WITNESS: The investigation would require
18 as part of the WDRs the reports that show that -- some
19 of these other reports are not investigative-type
20 reports, they are required pursuant to Title 27.

21 I am not certain that 13267 applies to those
22 reports.

23 Q. BY MR. NEWMARK: So, is it fair to say that
24 there was no evaluation of the burden including the
25 costs of the reports identified as deliverables in the

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1 cease and desist order in the context of preparing this
2 draft cease and desist order?

3 Strike that. Let me ask another question.

4 Is it correct to say that in preparing the
5 draft cease and desist order, and apart from whatever
6 happened in the WDRs' proceedings, the prosecution team
7 did not take into account the burden including the
8 costs of the reports listed as deliverables in the
9 cease and desist order?

10 A. We did not believe we needed to do that because
11 it was already required in the waste discharge
12 requirements pursuant to section 13267.

13 So, the waste discharge requirements made those
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14 findings or the county could have objected at that
15 point in time.

16 Q. Were you involved in the proceedings leading up
17 to the adoption of the waste discharge requirements?

18 A. Our office had been split at that time. We had
19 a permitting group and a compliance and enforcement
20 group. So, the permitting group wrote this order and
21 took it to the board, and I am in the compliance and
22 enforcement group.

23 So, no, I was not.

24 Q. Do you know if the burden including cost of
25 these reports was considered during the adoption of the

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1 waste discharge requirements?

2 A. I don't know. I wasn't involved.

3 Q. I found some more cost questions. So,
4 switching gears again.

5 Are you aware of how much it cost the county to
6 remove one pound of VOCs using the ground water
7 extraction and treatment system?

8 A. That information may be in one of the technical
9 reports. I can't recall exactly which one it is in
10 right now.

11 So, I am not aware at this moment.

12 Q. Did you consider that data in developing the
13 cease and desist order?

14 A. No.

15 Q. Are you aware of how much it cost to remove one
16 pound of VOCs from landfill gas?

17 A. Again, it might be in one of the county's
18 reports. I am not aware of which one.

19 Q. But you didn't consider that data either in
20 developing the cease and desist order?

21 A. That information, I believe, would be -- would
22 have been considered in developing the waste discharge
23 requirements, and the county would have considered that
24 in its proposal for the corrective actions that are
25 part of the waste discharge requirements.

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1 So, we did not need to look at that again in
2 the cease and desist order.

3 Q. In fact, you did not look at that again,
4 right?

5 A. No, right.

6 Q. I was able to get you to agree that the
7 county's financial resources are less than unlimited
8 before.

9 A. Okay.

10 Q. I nailed you down on that.

11 Assuming that the county has insufficient
12 resources to implement all of the corrective actions
13 required by the cease and desist order, how does that
14 impact the Board's consideration of whether to impose
15 those requirements?

16 A. The county has not shown to us what its
17 financial resources are. The only thing I was able to
18 find out was looking in the budget -- the county budget
19 that is on the website for its current year 2.5 million
20 dollars was moved into the -- this year's operating
21 fund for Geer Road Landfill.

22 I don't know what that was -- has been
23 allocated for. I know that the ground water
24 extraction -- enhanced ground water extraction system,
25 I believe, is about a million dollars to install.

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1 I haven't been shown -- the county has not
2 provided any information to show that it does not have
3 the resources to implement these remedies.

4 And I also wanted to point out what we talked
5 about last week is that some of these costs in these
6 documents are a little misleading because, for example,
7 the enhanced ground water extraction system would
8 replace the current ground water extraction system.
9 So, there is a cost saving of no longer having to
10 operate the current ground water extraction system yet
11 the cost for the new system doesn't take that into
12 account.

13 And then on the enhanced landfill gas system
14 cost, the text says that it is negligible for O&M for
15 that system, yet the table shows that it would cost
16 \$800,000 over a 20-year period.

17 So, there is inconsistencies about what the
18 consultants would say about the cost. And given
19 that -- and given that the county has not given us an
20 accounting of their financial assurances, and given
21 that there is 2.5 million in this year's budget, it
22 seems appropriate that they can do what was required in
23 the cease and desist order.

24 Q. Just to make sure that we understand the
25 documents that you are referring to in your testimony,

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1 you said that the documents are inconsistent in their
2 handling of the cost.

3 Can you identify which documents you are
4 referring to?

5 A. Do you have the document list?

6 Q. I have the exhibit list.

7 A. Oh, no. The --

8 Q. I don't have the evidence list.

9 A. The evidence list. There was -- it was one of
10 the documents within the last three years. Maybe it
11 was this one.

12 Q. Isn't this your exhibit list? No, no, no.

13 A. No. Can I get it to you -- I don't know.

14 Q. We will take a break in a few minutes.

15 A. Can we take a break? I will go get it.

16 Q. But let's keep going for a minute.

17 I understand from your testimony that you don't

18 believe there's been a showing by the county that, in
19 fact, it can't afford to do everything in the way of
20 corrective actions identified in the cease and desist
21 order.

22 But I am asking you to assume that fact for the
23 purposes of this question.

24 Assuming that it is true, that the county has
25 insufficient resources to do all of the corrective

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1 actions listed in the cease and desist order, how does
2 that fact impact the Board's decision on the cease and
3 desist order?

4 A. The board could allow more time to implement
5 the measures.

6 I don't know -- the board is constrained by
7 Title 27 and 92-49 and the base plan. So, I don't
8 believe the board can say okay, you can walk away from
9 the site.

10 The county still has to define the plume,
11 contain the plume, remediate the plume, and do
12 post-closer maintenance on this landfill for a 30-year
13 period at least per Title 27.

14 But I am back on the point where I know there
15 was six million dollars in 2003 in the account. The
16 county is supposed to be putting in 400,000 or so --
17 \$450,000 into that account. 2.5 million was moved over
18 this year.

19 The county needs to show that there is not --
20 that there are insufficient funds.

21 Q. I understand that is your position, and that is
22 why I sort of structured the question to assume the
23 fact.

24 And you testified that if that were true -- we
25 know you don't believe it.

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1 A. Uh-huh.

2 Q. If it were true that the -- strike that.

3 If the county established that it did not have
4 sufficient resources to implement all the corrective
5 actions in the cease and desist order, one of the
6 things the board could do with that information is to
7 allow more time to comply, correct?

8 A. Correct.

9 Q. Could the board also reconsider the enforcement
10 decision to no longer allow phased remedies, and,
11 instead, allow time to see what the effect of the
12 landfill gas system before requiring the ground water
13 remedy?

14 A. This is the prosecution team's proposal. The
15 cease and desist order as amended by technical
16 inspections with the county is a prosecution team's
17 proposal.

18 The board takes that, they take input from the
19 advisory team. They take input from the parties, and

20 then they make the decision.

21 I can't judge what the board will do. They --
22 they can do a lot of things.

23 Q. Would you consider recommending as a member of
24 the prosecution team allowing phasing of landfill gas
25 and ground water remedies if there were a showing that

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1 the county had insufficient financial resources to do
2 both at once?

3 A. I don't know.

4 Q. Would you consider recommending, as a member of
5 the prosecution team, that the county should be given
6 more time to comply with the cease and desist order of
7 deliverables if there were a showing that the county
8 had insufficient financial resources to implement all
9 of the deliverables as set forth in the cease and
10 desist order?

11 A. I don't know.

12 And one reason is the prosecution team needs to
13 balance the comments not just from the county but any
14 other interested parties who may comment on this
15 order.

16 MR. NEWMARK: Okay. why don't we take a break.
17 (Short break taken.)

18 Q. BY MR. NEWMARK: Let's go back on the record.

19 During the break you were going to check on
20 some of the homework --

21 A. Right.
22 Q. -- that we have come up with. And I think --
23 why don't we take the inconsistencies you were
24 testifying about with regard to financial abilities of
25 the county, I guess.

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1 A. The cost of remedial actions?
2 Q. Okay. You were referencing documents.
3 A. This is a document dated June 19th, 2009.
4 It is called a financial assurance cost estimate. It
5 was required under the waste discharge requirements.
6 And, so, in here they -- it says, "The goal of
7 this financial assurance cost estimate is to establish
8 the level of funding required to implement an effective
9 corrective action program to contain and remove VOCs
10 from the ground water at the southern downgrade at the
11 landfill site."
12 And one of the recommended options is expansion
13 of the corrective actions landfill gas collective
14 system in the southern area of the landfill.
15 And they say, "Cost. It's been assumed there
16 will be no significant cost increases for operation and
17 maintenance."
18 Q. You are reading on page 3.
19 A. I am reading on page 3.
20 "Monitoring maintenance of the existing wells
21 will be incorporated into the existing landfill gas

22 collection treatment system O&M program for the site.

23 See table one for 20-year projection for O&M cost."

24 If you look at 20, table one shows \$800,000 for
25 OEM for 20 years for the Phase One landfill gas system

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1 expansion.

2 So, first in their text they say there is no
3 significant cost increase, yet in the table they show
4 \$800,000 over 20 years.

5 Q. But is that a cost increase?

6 A. Well, table one is titled Phase One landfill
7 gas system expansion, and there is engineering, CQA,
8 the well installation and O&M.

9 This is an inconsistency in the report. The
10 text previous on page 2 and 3 talks about what it would
11 take to install these new extraction wells. And it
12 shows the cost in the table for operations and
13 maintenance, it says in text there will be no
14 significant cost increase, yet the table shows \$40,000
15 per year for this expansion.

16 So, I am just saying that there are
17 inconsistencies in what we have been told as far as
18 cost.

19 Q. So, you are assuming -- I was talking over you.

20 You are assuming, if I understand you
21 correctly, that the \$800,000 shown in table one for
22 operations and maintenance is an increased cost that is

23 inconsistent with the text saying there is no increased
24 cost?

25 A. Correct. Based on the title of table one, that

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1 is correct.

2 Q. So, are you assuming that there is no O&M
3 expenditures currently?

4 A. No.

5 This -- the text of this document doesn't talk
6 about the current landfill gas system.

7 So, if you are going to talk about O&M cost for
8 the current landfill gas system, this should talk about
9 it in their text and then refer to it here.

10 The text talks about the expanded system. This
11 talks about the O&M. We have to assume for the
12 expanded system.

13 That is what I am saying. There appears to be
14 inconsistencies in the cost for some of these actions
15 of -- and the ground water extraction wells, this
16 report looked at 19.

17 Q. You are indicating table three now?

18 A. Table three of the same report looks at 19 dual
19 completion wells whereas the 2010 report talks about 13
20 single completion wells. It's got a cost here of 1.8
21 million, which in the 2010 report says 1 million; but,
22 again, it doesn't say that we are saving money because
23 we are not running the current ground water extraction

24 system. It just says here is how much to install and
25 operate the new one.

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1 So, from our perspective, we need to look at
2 costs as a whole at the site and make sure we all
3 understand what cost we no longer have to spend and
4 what we still need to spend.

5 Q. And for the record, in the index of exhibits
6 from the deposition last week, it is indicated that
7 Exhibit 10 was a June 19, 2009, memorandum from SCS
8 Engineers to Jami Aggers?

9 A. That is the same one.

10 Q. Oh, that is the same memorandum you have been
11 referring to, right?

12 A. Yes.

13 Q. Was there another document you wanted to talk
14 about with regard to financial data?

15 A. Yeah. You had asked about the method
16 detection limit.

17 Q. Yes. I had asked you what the method detection
18 limits were for the constituents of concern, and it
19 looks like you have a big book.

20 A. Yes. So, you had asked about the VOCs and the
21 method detection limit.

22 The waste discharge requirements require method
23 8260 for the analytical method.

24 Do you want me to find that?

25 Q. No. I can find it.

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1 A. It is one of these here.

2 Q. It is right here on the -- on table seven,
3 also.

4 A. 8260-B.

5 Okay. So, my understanding, I am talking with
6 staff, is that the EPA -- USEPA sets method detection
7 order for 8262-B, and labs that use that are required
8 to adjust their instruments so that they are within
9 about five percent of that value.

10 And, so, this is our contract lab, CLS, our
11 contract lab, and they are showing the method detection
12 limit for 8260-B.

13 So, for each compound this is the method
14 detection limit.

15 So, they vary from acetone 1.3 micrograms per
16 liter to, the ones that we are interested in here,
17 tetrachlorethane, that is one of our contaminants, is
18 0.18 micrograms per liter; trichloroethylene, 0.092
19 micrograms per liter; vinyl chloride, 0.950 micrograms
20 per liter.

21 Q. Are those constituents of concern separately
22 listed in table seven of Exhibit 5?

23 A. I believe they are in table six or table five.
24 Table six has the constituents of concern and approved
25 USEPA analytical method, volatile organic compounds.

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1 It lists all of these.

2 Q. How do we get from table seven, which is the
3 water quality protection standards, right?

4 A. Uh-huh.

5 Q. And it looks like it just sort of has VOCs
6 listed as a category; is that right?

7 A. That's correct.

8 Q. So, is what you would do for -- you would look
9 at a particular VOC that you might detect, or is there
10 like a group test where you can just run for VOC in
11 general?

12 A. 8262-B is one analytical method that reports
13 about 30 constituents. And those 30 constituents are
14 listed in table six under USEPA method 8270.

15 Q. That is beginning on page 21 of the monitoring
16 and reporting program of Exhibit 5, right?

17 A. Right.

18 Q. And, so, for each of those constituents going
19 on all the way to page 23, it looks like, the method
20 detection limit and therefore the water quality
21 protection standard would be exactly what you are
22 showing me in this document from the contract lab, or
23 does it vary somewhat lab to lab?

24 A. Staff just told me that labs are allowed to
25 vary within five percent of this number.

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1 Q. So, these numbers, the MDL listed in the
2 document you are showing me from your contract lab,
3 under the MDL column are the numbers from USEPA that go
4 along with 8260?

5 A. I believe so, or they are within five percent
6 of the USEPA value.

7 Apparently the labs have to recertify every six
8 months that they can meet the EPA values.

9 Q. If we take probably one more break before we
10 conclude your deposition, can we maybe get a copy of
11 this portion of the document we have been referring
12 to?

13 A. Sure. Sure.

14 Q. As the -- what should we refer to it?

15 A. It is the CLS Contract Lab. It is part of
16 our -- our contract with this lab. Our office
17 contracts to this lab.

18 Q. Okay.

19 MR. PULUPA: I believe 8260-B has all the MLs
20 listed. 8260-B is like that fairly thick document.

21 Q. BY MR. NEWMARK: All right. I am referring now
22 to Exhibit 9, the engineering feasibility study, but I
23 don't want to be so -- strike that.

24 Do you have the corrective action plan
25 over here?

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1 A. That is my EFS.

2 MR. NEWMARK: Let's go off the record for a
3 second.

4 (Brief recess taken.)

5 MR. NEWMARK: Okay. So, during our last break
6 you went and got copies of the CLS Contract Lab
7 document, which I will ask the Court Reporter to mark
8 as Exhibit 15.

9 (Exhibit No. 15 was marked.)

10 Q. BY MR. NEWMARK: Ms. WyeIs, just if you could
11 confirm this document we have marked as Exhibit 15 sets
12 forth the laboratory method detection limits for VOCs
13 that we were just discussing, correct?

14 A. Right. Method 8260-B.

15 Q. Thank you.

16 we have now found the 2010 corrective action
17 work plan.

18 Do you have an opinion as to the effectiveness
19 of the ground water remedial action plan described in
20 this corrective action work plan?

21 A. I believe that that work plan says that the
22 proposed extraction system will capture the
23 contaminants in the ground water and prevent the plume
24 from -- will capture the contaminants in the ground
25 water and provide hydraulic control, I believe it

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1 says.

2 Q. Do you agree with that conclusion?

3 A. The conclusion was made by registered
4 professionals.

5 So, I -- yes, I do.

6 Q. But you don't have an independent recollection
7 as to the likely effectiveness of that corrective
8 action?

9 A. They did a number of studies leading up to this
10 proposal for this system. So, I would assume it's
11 accurate, effective.

12 Q. Are you responsible for other landfill sites in
13 the Central Valley region?

14 A. My -- this particular unit, yes, it is
15 responsible for a number of facilities.

16 Q. Are you aware of other landfill sites that have
17 been required to implement ground water extraction and
18 treatment systems?

19 A. Yes.

20 Q. Could you tell me which facilities?

21 A. Kiefer Road Landfill was required to.

22 Q. Where is that?

23 A. Sacramento County.

24 Q. It looks like you have -- how many things are
25 on that list?

1 A. These are all the landfills that have
2 enforcement orders out of the Sacramento office because
3 I couldn't memorize all of these.

4 MR. PULUPA: There is more in Redding.

5 THE WITNESS: There is more in Redding and
6 Fresno.

7 These are all the formal enforcement, and a
8 number of these are for ground water correction action.
9 Some are for other corrective actions.

10 Q. BY MR. NEWMARK: Do you have a notation in your
11 notes there which have ground water remedies and which
12 do not?

13 A. No. I have to go off of memory, or we could go
14 look online. All of these are online on our website,
15 and we can look at each one individually to see.

16 Q. I am going to try to ask you a question that is
17 going to enable you to go through that list.

18 So, could you list for me the landfills in your
19 region that are subject to enforcement action?

20 And, as you are giving that list, if you would
21 identify those that have ground water remedies, that
22 would be great.

23 MR. PULUPA: Just to be clear, she is not
24 including the land fill -- and the region also includes
25 Redding and Fresno. So, she is just doing Sacramento

1 office.

2 Q. BY MR. NEWMARK: Okay.

3 A. So, for the landfills that my section regulates
4 out of the Sacramento office, there is the Jackson Road
5 Landfill in Sacramento County.

6 Do you want counties, too?

7 Q. Sure.

8 A. In Sacramento County.

9 Your question was whether or not they have
10 active ground water extraction treatment or whether
11 some of these remedial actions are to take -- for
12 example, Jackson Road is doing a phased approach to
13 ground water remediation, and the phase -- the first
14 phrase is the capping of the landfill. Okay. which is
15 similar to what Geer Road did many years ago.

16 Q. My question specifically, I would like to know
17 about those that have ground water extraction and
18 treatment.

19 A. Okay.

20 Q. Or if there is any of them that have like
21 barriers. I don't know if anyone has done that, but
22 something other than capping.

23 MR. PULUPA: They have done that at some sites,
24 but I don't believe in landfills. I don't know of any
25 landfills off the top of my head.

1 THE WITNESS: Okay. Florin-Perkins Landfill in
2 Sacramento County is under enforcement, but not for
3 ground water. Not for ground water extraction system.

4 Buena Vista Landfill in Amador County is under
5 enforcement, but does not have a ground water
6 extraction system.

7 East Lake Landfill in Lake County is under
8 enforcement, and I believe they have a ground water
9 extraction system, but I would need to check on that.

10 Forward Landfill in San Joaquin County is under
11 enforcement, and they do have a ground water extraction
12 treatment system.

13 Fingers Landfill also called Barry Street Mall
14 in Sacramento is under enforcement.

15 Elk Grove Landfill, Sacramento County, under
16 enforcement, and I believe they have ground -- I know
17 they have ground water issues. I don't recall if they
18 have an extraction system.

19 Benson Ridge in the coast ranges is under
20 enforcement, and I am pretty sure they have ground
21 water. They have a ground water remediation system,
22 I'm pretty sure.

23 GPF Pittsburg in Contra Costa County is under
24 enforcement, and they have a ground water remediation
25 system.

2 under enforcement, I know they are providing bottled
3 water to their neighbors. I am pretty sure they have a
4 ground water extraction treatment system.

5 Cove Contractors in San Joaquin County is under
6 enforcement.

7 L&D Landfill in Sacramento County under
8 enforcement. I can't recall if they have ground water
9 extraction or not.

10 Corral Hollow Landfill in San Joaquin County
11 under enforcement. And they are going to have
12 extraction soon.

13 Yolo County Landfill under enforcement. They
14 have ground water extraction.

15 Kiefer Road Landfill, Sacramento County, is
16 under enforcement with ground water extraction
17 treatment.

18 Evans Road Landfill, Colusa County, under
19 enforcement. I don't know about their ground water
20 situation.

21 Union Mine Landfill, El Dorado County, under
22 enforcement. I believe they have a ground water pump
23 and treat.

24 Dixon Pit Landfill, Sacramento County, under
25 enforcement.

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1 No, they don't have ground water extraction
2 there.

3 Foothill Landfill, it is San Joaquin County,
4 under enforcement. I think they have ground water
5 extraction.

6 Yuba Sutter Landfill, I think it is Yuba
7 County, under enforcement.

8 And Montezuma Hills in Solano County is under
9 extraction, and I think they have ground water
10 enforcement.

11 Can I double-check and correct the record?
12 What is the best way?

13 Q. BY MR. NEWMARK: You will get an opportunity to
14 review your transcript.

15 A. Okay.

16 Q. So, that would probably be a good time to --

17 A. Okay.

18 Q. -- to correct that.

19 Of those that you have listed as having -- or
20 to the best of your recollection, having --

21 (Outside interruption.)

22 Q. BY MR. NEWMARK: -- active ground water
23 remedies, do any of those landfills have ground water
24 remedies solely to address inorganics/metals?

25 A. I don't know offhand.

1 But the other thing I want to add is that we
2 can also address ground water remediation through
3 corrective action waste discharge requirements, and

4 this list does not include facilities who are taking
5 care of ground water remediation through corrective
6 action WDRs.

7 I had thought based on one of these questions
8 here that you wanted to know which ones were under
9 enforcement orders. That is why I put this list
10 together.

11 So, I can give you more information, but we
12 need to look it up.

13 Q. Okay. Yeah.

14 A. We have like 60 landfills we regulate out of
15 this office.

16 Q. The category in the deposition notice was
17 broader than just enforcement.

18 A. Okay.

19 Q. I think for now we will take the information
20 that you have given us.

21 And it sounds -- my last question was: You
22 don't know whether any of them are implementing ground
23 water remedies just to control inorganics and metals,
24 correct?

25 A. I would need to look at the individual

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1 orders.

2 Q. You testified earlier that among the conditions
3 of the Geer Road Landfill that justified the ground
4 water remedy was a hydraulic connection to the river;

5 is that correct?

6 A. Yes.

7 Q. Last week we asked Mr. Hold if as a component
8 of the prosecution team's contentions in the cease and
9 desist order proceedings does the prosecution team
10 allege that the landfill is a threat to the Tuolumne
11 River, and he said yes. But he said that you would be
12 the best person to talk to about any sort of
13 information beyond that.

14 So, I guess I should clarify and ask you the
15 same question. Is it the prosecution team's contention
16 in this cease and desist order proceeding that waste
17 from the landfill presents a threat to the Tuolumne
18 River?

19 A. I think the word "threat" is an appropriate
20 term to use.

21 The documents from the consultants show that
22 the ground water -- the shallow ground water in
23 connection with the Tuolumne River -- numerous
24 documents say that or show that in maps.

25 The north area of the plume has not been

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♀

1 defined. The ground water moves from that direction
2 toward the river, and on the south -- and southwest
3 side, the documents all show that the current ground
4 water extraction system is inadequate to control or
5 maintain the plume. So, that all goes toward the

6 river, also.

7 So, we have no information to show that it is
8 not a threat to the river.

9 Q. Well, you sort of seized on one of the words
10 that I wanted to ask you about, too, when you say
11 "threat."

12 What do you mean when you say it is a threat to
13 the river?

14 A. It has the potential to impact beneficial
15 uses.

16 Q. And specifically which beneficial uses of the
17 river?

18 A. I would say any of the beneficial uses because
19 at this point there is no data to show one way or
20 another if there is VOCs in the river; and, if so, what
21 the concentrations are.

22 So, we don't have data showing that they are
23 there. We don't have data showing that they are not
24 there.

25 What we do have is information to show that

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1 there is VOCs in the ground water. The ground water is
2 moving toward the river, and the plume is not being
3 captured.

4 So, I can't tell you -- to actually say which
5 beneficial uses are threatened, you need to know the
6 concentrations, and you need to know what the impacts

7 for that chemical -- what would impact a particular
8 potential use.

9 We don't know what chemical is in the river.
10 we can't say for certain that they are not in there.

11 Q. Are you planning to tell the board in your
12 presentation that VOCs from the landfill threaten the
13 domestic drinking water supply of beneficial use of the
14 Tuolumne River?

15 A. We haven't put our presentation together yet.
16 I don't really -- I don't know what we will say in that
17 regard.

18 Q. Do you feel qualified to testify about the fate
19 and transport of VOCs in surface water?

20 A. I am not certain how to answer that. It is --
21 can I -- I mean --

22 Q. Sure.

23 A. What's "qualified" mean?

24 MR. PULUPA: I mean, you can restate and say
25 what you feel that you are qualified to testify on and

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1 ask Greg if you have any questions as to the
2 terminology that he's using.

3 THE WITNESS: I feel I am qualified to talk
4 about site conditions and the data gaps out there, and
5 what could lead to a conclusion that there might be
6 impacts to the river.

7 As far as the chemical fate and transport of

8 VOCs in the environment, I know some information. I am
9 not an expert on it.

10 Q. BY MR. NEWMARK: So, are you qualified to talk
11 about how VOCs would degrade or not degrade moving
12 through surface water?

13 A. I can give a brief summary, but I am not an
14 expert on it.

15 Q. Have you done any analysis to determine whether
16 there is an actual threat to existing beneficial uses
17 of the Tuolumne River from the Geer Road Landfill?

18 A. I am not aware of any analysis that anybody has
19 done.

20 Q. Do you actually believe that the amount and
21 concentrations of VOCs coming off the landfill would
22 even be detectable in the river?

23 A. It is always hard to sample rivers for this
24 sort of thing.

25 I used to do water quality sampling in creeks

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1 and rivers and ag drains, and where you take the sample
2 is critical. Whether you take it on the opposite side
3 of the banks where there's been all sorts of dilution
4 and mixings or whether you take it right where the
5 potential impact might be, there is all sorts of things
6 to think about in doing sampling programs.

7 So, whether or not it is going to be detected
8 really depends on where you might actually take samples

9 and under what flow conditions.

10 Q. Well, I asked the question as to whether there
11 would be a threat to existing beneficial uses. And,
12 so, I will just focus in on existing domestic supply
13 use.

14 Are you aware of any drinking water diversions
15 from the Tuolumne River downstream of the Geer Road
16 facility?

17 A. No. I am not aware of that. I don't have
18 expertise in that.

19 Q. I don't think that the location of the
20 diversion actually would be a subject for expert
21 testimony; but, I just want to know. You are not aware
22 of whether there are or whether there are not any
23 drinking water diversions --

24 A. Correct.

25 Q. -- down --

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1 A. Correct. I would assume there are, but I don't
2 know. I have no idea.

3 MR. PULUPA: Technically it makes it all the
4 way down to the Delta, which is the drinking water
5 supply for a large part of Southern California.

6 Q. But you don't know where in between the Geer
7 Road Landfill and the Delta there might be
8 diversions?

9 A. This agency doesn't regulate water diversions.

10 So, no, I do not know.

11 Q. Do you plan to have any analysis performed by
12 your staff or consultants as to the threat presented by
13 the Geer Road Landfill to uses of surface water in
14 preparation for the cease and desist order hearing?

15 A. Can I tell him about what we were thinking?

16 MR. PULUPA: Just stick to the question.

17 THE WITNESS: We are not planning on going and
18 taking any samples prior to this hearing, if that was
19 your question.

20 MR. NEWMARK: No. Would you read back my
21 question?

22 (The Reporter read back.)

23 THE WITNESS: So, we are not planning on taking
24 samples, but that doesn't answer your question.

25 Q. BY MR. NEWMARK: Well, I think analysis -- I am

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1 not talking about just laboratory analysis. I am
2 talking about any analysis, research.

3 A. I don't think -- I don't think we are planning
4 on doing more than what I just talked about; however,
5 again, it depends on comments we get.

6 If we get any comments from the public or other
7 parties, we have to respond to all comments we get.

8 And, so, if we get comments that express
9 concern about the potential impacts of the landfill on
10 the Tuolumne, we have to be able to respond how the

11 proposed cease and desist order either addresses it or
12 protects it, or somehow we have to be able to respond
13 to those comments.

14 So, at this point I wasn't planning on doing
15 any more than what I have just talked to you about;
16 but, again, comments aren't due until Monday. And, so
17 let's see what we get.

18 Q. Are you aware of any analysis of water in the
19 river downstream of the Geer Road Landfill within, say,
20 a mile that indicates the presence of VOCs?

21 A. We have not looked at any sort of analysis for
22 water quality in Tuolumne.

23 Q. You testified that sampling for things like
24 VOCs in the river is tricky and very much depends on
25 the location of where the sample is pulled.

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1 Can I infer from that that you expect any
2 impacts that there might be of VOCs in the Tuolumne
3 River to be extremely localized before there is
4 significant mixing?

5 A. I meant to testify that sampling for any
6 constituent, the results depend on where you take the
7 samples.

8 For example, when I did all the ag pesticide
9 sample, when you have an ag train coming into the big
10 water body, just the water body has a such flow will
11 contain the chemicals along one side of the bank that

12 the side of the ag drain comes in.

13 If you take samples opposite the ag bank, you
14 are going to see any contamination where if you take a
15 sample where the ag bank comes in, you are going to
16 find contamination.

17 So, the same idea would apply here. If you
18 take samples of the location because of dilution or the
19 lack of mixing, you may not find it. If you take it
20 somewhere else, you may find it.

21 I -- then, you know, depending on the flow
22 conditions. If it is -- the Tuolumne is running at
23 flood stage, you may not -- you probably won't find
24 anything. If it is running at very low levels, you
25 might find something.

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1 Q. Even if the Tuolumne -- strike that.

2 Assume that the Tuolumne is flowing at very low
3 levels, would you expect to be able to detect VOCs 100
4 feet downstream from the most downstream edge of the
5 landfill?

6 A. You are asking me to make assumptions when
7 there is not enough data to answer that. And part of
8 that is because the northwest portion of the plume is
9 not defined. We don't know if that extends all the way
10 to the river or not.

11 Q. Well, isn't it true that the amount of ground
12 water contributed by this site is quite small in

13 comparison to even low flow conditions in the Tuolumne
14 River?

15 A. I can't answer that. I would have to look at
16 the documents to see if there was information about
17 that in the documents.

18 Q. So, you are prepared to testify to the board
19 that there is a threat to beneficial uses in the
20 Tuolumne River having not done any of this work that we
21 have just been talking about?

22 A. Nobody has shown that there is no threat.
23 Nobody that I am aware has taken samples of the river.

24 The plume is undefined in the north area. The
25 ground water extraction system has less than a 40-foot

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1 radius of influence at each point. This plume is
2 uncontained.

3 The ground -- the consultant's documents show
4 that the ground water does interact with the river and
5 it moves toward the river.

6 I cannot tell the board or other people
7 definitively that there is no impact to the Tuolumne
8 River.

9 Q. So, if the question to the prosecution team is:
10 Is there a threat of VOC impacting the municipal
11 diversion, your answer would basically be, "We can't
12 rule that out?"

13 A. I can't answer "yes" or "no".

- 14 MR. NEWMARK: Ask that the Court Reporter mark
15 this as Exhibit 16.
16 (Exhibit No. 16 was marked.)
17 Q. BY MR. NEWMARK: Have you seen this article
18 indicated to be from the Modesto Bee posted on February
19 1st, 2011?
20 A. Yes, I have.
21 Q. Have you read that article?
22 A. I read it a week ago. I can read it again.
23 Q. Were you contacted by Mr. Garth Stapley --
24 A. Yes, I was.
25 Q. -- from the Modesto Bee?

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- 1 A. Yes.
2 Q. I think I will ask you to quickly read the
3 article because there are some quotations attributed to
4 you in the article, and I would like to ask you if they
5 are accurate.
6 A. Do you want to ask me specific parts of this or
7 all of it in general?
8 Q. Just the things that are directly attributed to
9 you as quotations.
10 A. So, the first quotation.
11 Q. Okay.
12 A. I believe I said that.
13 Q. The first quotation is not very long. It says,
14 "We consider this to be very serious."

15 Is that an accurate quotation?

16 A. That would be accurate.

17 Q. Then the next quotation is further down the
18 first page, there is a parenthetical, but I will just
19 read it straight through. It says, "We told county
20 officials in 2009 what they had to do to further define
21 the plume and clean it up, but county did not do it."

22 Is that an accurate quotation?

23 A. I think the gist of what I said is accurate. I
24 don't know if I stated it exactly that way.

25 Q. But you don't disagree with that statement?

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1 A. I don't disagree with it, no.

2 Q. Then on the next page towards the bottom, it
3 says, "'we prefer to work cooperatively,' wyels said.
4 'The problem is our previous order required the county
5 to take additional steps, and they did not do that.'"

6 A. The gist of that is accurate, too.

7 Q. Did you discuss with Mr. Stapley threats to
8 drinking water diversions?

9 A. He did not ask anything about that.

10 Q. Were there other observations you offered to
11 Mr. Stapley that aren't included in this article?

12 A. He talked to me for probably 15 minutes.

13 Q. Can you be --

14 A. When I -- when reporters talk to me, I answer
15 the questions. I don't volunteer information. That

16 was how we were trained to work with reporters.

17 So, he asked a number of questions, and I
18 answered them. He chose what to use in here.

19 One of the main areas of questioning was about
20 the trailer park because I -- he -- he was saying
21 he had written a lot of articles about that, and I said
22 numerous times that no, we do not believe the plume is
23 going that way. We have not asked for any additional
24 work over in that direction, and he did couch that in
25 here.

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1 Q. Do you have an opinion as to whether VOCs
2 volatilize as they move down surface water body?

3 A. They should volatilize because that is one of
4 the main reasons of treating remediating VOC is through
5 air stripping. The more oxygen you add to VOCs the
6 breakdown -- down to --

7 Q. Are you familiar with conditions in a stream
8 that would cause aeration?

9 A. A diversion dam would. Rocks, water flowing
10 over rocks.

11 Q. Let me ask you to look at this tightly
12 rolled-up aerial photograph. Tell me if you can
13 recognize the location of the landfill in that
14 photograph.

15 A. Yeah. I see it.

16 Q. Can you indicate to me where on that photograph

17 the landfill is?

18 A. It is right here.

19 Q. And do you know the direction of flow of the
20 river in this?

21 A. The river is flowing from right to left, I
22 believe. Actually, is that right?

23 Q. And I realize this isn't an extremely high
24 resolution photograph, but can you see any conditions
25 in the river that indicate conditions that would cause

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1 an aeration?

2 A. I can't tell what these white marks are, if
3 they are sand bars.

4 I am sorry. I cannot tell.

5 Q. But if there were sand bars or gravel bars,
6 those are conditions that would cause aeration?

7 A. No, they are not.

8 Q. No?

9 A. No. I can't tell what -- I can't tell if these
10 are like --

11 MR. PULUPA: Ripples?

12 THE WITNESS: If the river was higher up in the
13 mountains, I would assume these were rapids; but,
14 because this is in the flood or lower down elevation,
15 the rivers meandering, I can't tell if these are rapids
16 or ripples or if they are sand bars. If there is sand
17 bars, there is no aeration if there was a rapid.

18 Q. BY MR. NEWMARK: That is my question. If there
19 was ripple, there would be aeration?

20 A. Yes.

21 Q. All right. Why don't we take a break and go
22 off the record.

23 A. We have got ten minutes.

24 MR. NEWMARK: Yes. So, I think we are going to
25 make it. If I could have just a couple of minutes with

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1 Sonya, I think we are almost done.

2 (Short break taken.)

3 BY MR. NEWMARK: Go back on the record.

4 I have no further questions for you, Ms. Wyels.

5 Your counsel has no questions, correct?

6 MR. PULUPA: Correct.

7 MR. NEWMARK: All right. So, I would like to
8 propose a stipulation that the Court Reporter will
9 deliver an original transcript to this office by
10 February 15th to your attention and Mr. Hold's
11 transcript to his attention. You will have until
12 February 22nd to notify me of any changes that are made
13 in the transcript and to provide the signed original to
14 me.

15 However, if I don't receive notification of any
16 changes or the signed original by February 22nd,
17 we will stipulate that a certified copy of the
18 transcript can be used in every respect in substitution

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 19 for the original. That the county shall maintain
 20 custody of the original. That is it.
 21 So stipulated?
 22 MR. PULUPA: So stipulated.
 23 MR. NEWMARK: Thank you.
 24 (The deposition concluded at 12:04 p.m.)
 25

_____ WENDY WYELS

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1 CERTIFICATE OF WITNESS

2
 3 I, Wendy Wyels, the deponent, in re Proposed CDO,
 4 Geer Road Landfill, Stanislaus County, DO HEREBY
 5 CERTIFY under penalty of perjury that the foregoing
 6 deposition taken 2/8/11 was read by or to me and that I
 7 approved of same as a true and correct record of my
 8 testimony with changes hereinbelow, Sheet ____ of ____.

| 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|----|-------|-------|---------------------|----|----|----|----|----|----|----|----|----|----|
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| 19 | _____ | _____ | _____ | | | | | | | | | | |

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IN WITNESS WHEREOF, I have hereunto subscribed my name
at _____, California, this _____
day of _____, 2011.

WENDY WYELS, Deponent

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State of California)
County of Sacramento) ss.

I certify that the witness in the foregoing deposition,
WENDY WYELS
was by me duly sworn to testify the truth, the whole
truth, in the within-entitled cause; that said
deposition was taken at the time and place therein
named; that the testimony of said witness was reported
by me, a duly certified shorthand reporter and a
disinterested person, and was thereafter transcribed
into typewriting.

I further certify that I am not of counsel or
attorney for either or any of the parties to said
deposition, nor in any way interested in the outcome of
the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand
this 15th day of February, 2011.

Kathy A. Walter, CSR 5048
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County of Sacramento
22 State of California.
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1 DAWN SUE STEFKO
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4 dawnstefko@aol.com

5 February 15, 2011

6
7 WENDY WYELS
California Regional Water Quality Control Board
11020 Sun Center Drive Suite 200
8 Rancho Cordova, CA. 95670

9 Re: In Re Proposed CDO, Geer Road Landfill, Stanislaus
County
10 Your Deposition on February 8, 2011

11
12 Enclosed herein is the original transcript of your
deposition as referenced above for you to read, correct
13 the form or substance of your answers, and sign for
approval thereof. Please use pages 131 and 132 of the
14 transcript when making any changes/corrections and to
sign your transcript.

15 Pursuant to stipulation of counsel on the record, if
you fail to approve your transcript on or before
16 February 22, 2001, the deposition, which may be used at
a subsequent proceeding, shall be given the same effect
17 as though it has been approved, subject to any changes
made timely by you.

18
19
20 KATHY A. WALTER
Certified Shorthand Reporter
21

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22 cc: Original Transcript
Gregory J. Newmark
23 Patrick E. Pulupa
24
25

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DAWN SUE STEFKO*CERTIFIED SHORTHAND REPORTERS*650/685-1795

1 BEFORE THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
2 CENTRAL VALLEY REGION
3

4 In Re:

5 Proposed Cease and Desist Order,
6 Geer Road Class III Landfill,
7 Stanislaus County,
8

9
10 EXHIBITS NUMBERS 1 THROUGH 12

11 TO THE DEPOSITIONS OF

12 ANNE L. OLSON, WENDY WYELS, AND

13 HOWARD HOLD

14 DATE: Friday, February 4, 2011

15 TIME: 9:37 a.m. through 6:19 p.m.

16 PLACE: California Regional Water Quality Control Board
17 11020 Sun Center Drive, Suite 200
18 Rancho Cordova, California

19 PURSUANT TO: Notice

20 REPORTED BY: ROSE M. GONI
21 CRR/RMR, CSR NO. 8760

22
23 DAWN SUE STEFKO
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| Number 4 | 11/18/10 memorandum from Hold to Olson, 9 pages | 19 |
| Number 5 | CRWQCB, Central Valley Region, Order No. R5-2009-0051, WDRs, 53 pages | 28 |
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9 Attorneys for Stanislaus County Department of
Environmental Resources

11 **BEFORE THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,**
12 **CENTRAL VALLEY REGION**

14 In Re:

15 Proposed Cease and Desist Order,
16 Geer Road Class III Landfill,
Stanislaus County,

AMENDED NOTICE OF DEPOSITION

DATE: February 4, 2011
TIME: 9:00 a.m.
LOCATION: 11020 Sun Center Drive, #200
Rancho Cordova, CA 95670

Hearing Date: April 6-8, 2011

20 TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD HEREIN:

21 PLEASE TAKE NOTICE that by the agreement of the parties to this hearing, Stanislaus
22 County Department of Environmental Resources (the "County"), will take the deposition of the
23 California Regional Water Quality Control Board, Central Valley Region, (the "Regional Board")
24 on February 4, 2011, at 9:00 a.m., at the Regional Board's office in Rancho Cordova, 11020 Sun
25 Center Drive, Suite 200, Rancho Cordova, California 95670-6114. The purpose of this deposition
26 is to "avoid surprise testimony or evidence," and to afford the County due process and a fair
27 hearing. (*Hearing Procedures for Geer Road Landfill*, p. 6; *Mohilef v. Janovici* (1997) 51
28 Cal.App.4th 267, 302).



1 PLEASE TAKE FURTHER NOTICE that the deponent is not a natural person. The
2 matters on which the deponent will be examined are attached to this Notice of Deposition as
3 Attachment A.

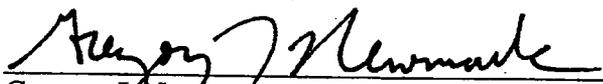
4 **If in the event that one person is not most knowledgeable on all of the foregoing**
5 **topics, then the deponent is required to produce multiple witnesses such that the person most**
6 **knowledgeable on each of the foregoing topics is produced for deposition**

7 Said deposition will be taken upon oral examination before a court reporter authorized to
8 administer oaths and will continue from day to day thereafter, excluding Saturdays, Sundays and
9 holidays, until completed.

10 The deposition is intended to be recorded stenographically and through instant visual
11 display via "real time" software, which provides instantaneous electronic transcripts on a laptop
12 computer.

13
14 DATED: January 31, 2011

MEYERS, NAVE, RIBACK, SILVER & WILSON

15
16 By: 
17 Gregory J. Newmark
18 Attorneys for Stanislaus County Department of
19 Environmental Resources

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1 **ATTACHMENT A**

2 **MATTERS UPON WHICH THE WITNESS(ES) MAY BE EXAMINED**

3 **DEFINITIONS**

4 The following definitions shall apply to the matters listed below, and shall be deemed
5 incorporated therein:

6 A. "COUNTY" means the County of Stanislaus.

7 B. "REGIONAL BOARD" means the California Regional Water Quality Control
8 Board, Central Valley Region.

9 C. "TENTATIVE CDO" means the Draft Cease and Desist order for the Geer Road
10 Landfill issued by the REGIONAL BOARD on or about November 22, 2010.

11 D. "WDRs" means REGIONAL BOARD Order No. R5-2009-0051, Waste Discharge
12 Requirements for Stanislaus County Department of Environmental Resources, Geer Road Class III
13 Landfill, Post-Closure Maintenance and Corrective Action.

14
15 **MATTERS UPON WHICH THE WITNESS(ES) MAY BE EXAMINED**

16 1. The factual and technical basis for the REGIONAL BOARD determination that the
17 COUNTY violated the WDRs.

18 2. The factual and technical basis for the REGIONAL BOARD contention that
19 additional investigation is required for the north area of the Geer Road Landfill.

20 3. The factual and technical basis for the REGIONAL BOARD contention that
21 installation of corrective action is required for the north area of the Geer Road Landfill.

22 4. The factual and technical basis for the REGIONAL BOARD contention that an
23 engineering feasibility study is required for the north area of the Geer Road Landfill.

24 5. The burden, including costs, of additional investigation into the lateral and vertical
25 extent of the contamination from the Geer Road Landfill.

26 6. The benefits to be obtained from the TENTATIVE CDO's required investigation
27 into the lateral and vertical extent of contamination.

28 ///

- 1 7. The cost, and cost-effectiveness, of expanded groundwater extraction and treatment
2 system at the Geer Road Landfill.
- 3 8. The cost, and cost-effectiveness, of the landfill gas optimization plan at the Geer
4 Road Landfill.
- 5 9. The cost, and cost-effectiveness, of the installation of additional landfill gas
6 extraction wells and a new flare.
- 7 10. The objective of, and water quality benefits to be obtained from, the TENTATIVE
8 CDO's requirement to expand groundwater extraction and treatment system.
- 9 11. The objective of, and water quality benefits to be obtained from, the TENTATIVE
10 CDO's requirement to implement a landfill gas optimization plan.
- 11 12. The objective of, and water quality benefits to be obtained from, the TENTATIVE
12 CDO's requirement to install additional landfill gas extraction wells and a new flare.
- 13 13. The burden, including costs, of the TENTATIVE CDO's requirement to sample
14 groundwater on the other side of the Tuolumne River from the Geer Road Landfill.
- 15 14. The REGIONAL BOARD's review and action on the October 30, 2010, corrective
16 action proposal.
- 17 15. The REGIONAL BOARD's review and action on the County's June 2009 financial
18 assurance proposal for corrective action costs.
- 19 16. The REGIONAL BOARD's process for review and action on reports, work plans
20 and proposals made by the COUNTY relating to the Geer Road Landfill.
- 21 17. The burden, including costs, of any requirement to sample all wells within a one
22 mile radius down gradient of the Geer Road Landfill.
- 23 18. The benefits to be obtained by any requirement to sample all wells within a one
24 mile radius down gradient of the Geer Road Landfill.
- 25 19. The regulatory, factual and technical basis of any requirement to obtain hydraulic
26 control of contaminated groundwater near the Geer Road Landfill.
- 27 20. The factual and technical basis of any contention that the current groundwater
28 extraction and treatment system fails to prevent inundation of the landfill wastes from rising

1 groundwater.

2 21. The financial and technical resources available to the COUNTY.

3 22. The REGIONAL BOARD's enforcement of water quality laws at other landfill
4 sites in the Central Valley Region.

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PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF LOS ANGELES

At the time of service, I was over 18 years of age and **not a party to this action**. I am employed in the County of Los Angeles, State of California. My business address is 333 South Grand Avenue, Suite 1670, Los Angeles, California 90071.

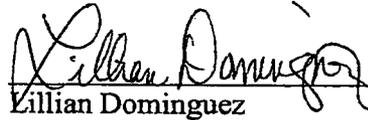
On January 31, 2011, I served true copies of the following document(s) described as **NOTICE OF DEPOSITION** on the interested parties in this action as follows:

Patrick E. Pulupa
Staff Counsel
State of California EPA State Water Resources
Board Office of Chief Counsel
1001 I Street, 22nd Floor
Sacramento, CA 95814
Telephone: (916) 341-5189
Facsimile: (916) 341-5199
ppulupa@waterboards.ca.gov

BY E-MAIL OR ELECTRONIC TRANSMISSION: I caused a copy of the document(s) to be sent from e-mail address ldominguez@meyersnave.com to the persons at the e-mail addresses listed in the Service List. I did not receive, within a reasonable time after the transmission, any electronic message or other indication that the transmission was unsuccessful.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on January 31, 2011, at Los Angeles, California.


Lillian Dominguez



Person Most Knowledgeable Table – Geer Road Depositions

| | Question | Anne | Howard | Wendy |
|-----|--|------|--------|-------|
| 1. | The factual and technical basis for the Board's determination that the COUNTY violated the WDRs. | X | | |
| 2. | The factual and technical basis for the Board's contention that additional investigation is required for the north area of the Geer Road Landfill. | X | | |
| 3. | The factual and technical basis for the Board's contention that installation of corrective action is required for the north area of the Geer Road Landfill. | X | | |
| 4. | The factual and technical basis for the Board's contention that an engineering feasibility study is required for the north area of the Geer Road Landfill. | X | | |
| 5. | The burden, including costs, of additional investigation into the lateral and vertical extent of the contamination from the Geer Road Landfill. | | X | |
| 6. | The benefits to be obtained from the TENTATIVE CDO's required investigation into the lateral and vertical extent of contamination. | | X | |
| 7. | The cost, and cost-effectiveness, of expanded groundwater extraction and treatment system at the Geer Road Landfill. | | | X |
| 8. | The cost, and cost-effectiveness, of the landfill gas optimization plan at the Geer Road Landfill. | | | X |
| 9. | The cost, and cost-effectiveness, of the installation of additional landfill gas extraction wells and a new flare. | | | X |
| 10. | The objective of, and water quality benefits to be obtained from, the TENTATIVE CDO's requirement to expand groundwater extraction and treatment system. | | X | |
| 11. | The objective of, and water quality benefits to be obtained from, the TENTATIVE CDO's requirement to implement a landfill gas optimization plan. | | | X |
| 12. | The objective of, and water quality benefits to be obtained from, the TENTATIVE CDO's requirement to install additional landfill gas extraction wells and a new flare. | | | X |
| 13. | The burden, including costs, of the TENTATIVE CDO's requirement to sample groundwater on the other side of the Tuolumne River from the Geer Road Landfill. | | X | |



Person Most Knowledgeable Table – Geer Road Depositions

| | | | | |
|-----|--|--|---|---|
| 14. | The Board's review and action on the October 30, 2010, corrective action proposal. | | | X |
| 15. | The Board's review and action on the County's June 2009 financial assurance proposal for corrective action costs. | | X | |
| 16. | The Board's process for review and action on reports, work plans and proposals made by the COUNTY relating to the Geer Road Landfill. | | | X |
| 17. | The burden, including costs, of any requirement to sample all wells within a one-mile radius down gradient of the Geer Road Landfill. | | | X |
| 18. | The benefits to be obtained by any requirement to sample all wells within a one mile radius down gradient of the Geer Road Landfill. | | | X |
| 19. | The regulatory, factual and technical basis of any requirement to obtain hydraulic control of contaminated groundwater near the Geer Road Landfill. | | | X |
| 20. | The factual and technical basis of any contention that the current groundwater extraction and treatment system fails to prevent inundation of the landfill wastes from rising groundwater. | | | X |
| 21. | The financial and technical resources available to the COUNTY. | | | X |
| 22. | The Board's enforcement of water quality laws at other landfills sites in the Central Valley Region. | | | X |



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CEASE AND DESIST ORDER ___

FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL, STANISLAUS COUNTY

TO CEASE AND DESIST
FROM DISCHARGING CONTRARY TO REQUIREMENTS

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board or Board) finds that:

1. On 24 April 2009, the Central Valley Water Board adopted Waste Discharge Requirements (WDRs) Order R5-2009-0051, prescribing waste discharge requirements and compliance schedules for the Geer Road Class III landfill, which is owned and maintained by the Stanislaus County Department of Environmental Resources (hereafter referred to as Discharger).
2. The Geer Road Landfill is eight miles east of Modesto, adjacent to the Tuolumne River. The 168-acre facility comprises Assessor's Parcel Numbers 9-29-09, 9-29-12 and 18-03-13, and includes the closed Class III landfill and a sedimentation basin (see Attachment A, which is attached and forms part of this Order). The site was operated as a sanitary landfill by Stanislaus County from 1970 until 1990 and accepted residential, commercial, industrial, cannery, construction and demolition wastes. The Discharger estimates that the landfill contains approximately 4.5 million tons of waste.
3. The landfill was closed in 1995. For the top deck, a geomembrane liner is overlain by vegetative soil. For the slide slopes, compacted clay is overlain by vegetative soil. Closure was approved in July 1996 and the WDRs prescribe post closure and corrective action requirements.
4. The discharge of wastes has polluted the groundwater beneath the landfill with volatile organic compounds (VOCs) and metals. This pollution was first identified in 1985. Since that time, several investigations have been completed. The Discharger has completed three remedial actions: closure of the landfill, installation of a landfill gas extraction system, and installation of a shallow zone groundwater extraction and treatment system. However, as described in the Findings of the 2009 WDRs, (a) the horizontal and vertical extent of contamination has not been completely defined on the south, southwest, and north sides of the landfill; and (b) the existing groundwater extraction system is not adequate to prevent VOC migration away from the site or to deeper groundwater zones.

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HYDROGEOLOGIC FRAMEWORK AND MONITORING

5. The Findings of the WDRs describe the surface water and groundwater conditions at the landfill. To summarize, the landfill is surrounded on two sides by the Tuolumne River (see Attachment A). Groundwater elevations tend to vary over time by up to five feet, and can rise up to 15 feet above normal levels in response to seasonal high river flows. This indicates that the shallow groundwater beneath the landfill is in hydraulic communication with the river.
6. Wastes were deposited both below the ground surface and approximately 40 feet above the ground surface. First groundwater is encountered at approximately 20 to 60 feet below the surrounding grade, and is monitored by 22 wells. The deeper zone groundwater is monitored by 12 wells, with screens set at 80 to 100 feet below ground surface (bgs). Based on vertical gradients measured in the monitoring wells, the deeper zone is likely in hydraulic communication with the shallow zone and the river.
7. During the February and May 2010 monitoring events, the groundwater flow direction for the shallow zone was calculated to be southwest, towards the Tuolumne River. During the same monitoring events, a downward gradient was present in shallow monitoring wells in the eastern portion of the landfill. The western portion of the landfill has periods of upward gradient. The boundary conditions between the two aquifer zones have not been well defined enough to understand the cause of the change in groundwater potentials, although the Discharger has stated that the "...apparent conflicting gradients... may result from laterally discontinuous zones of semi-confined strata and pumping of groundwater extraction wells."¹
9. The base of the deeper zone appears to be defined by a clay unit that was intersected during the drilling of the landfill's Supply Well SW-1 at approximately 140 feet bgs. The Discharger has not yet defined the thickness and lateral extent of the deep zone. The groundwater flow direction in the deep zone during the February and May 2010 monitoring events was towards the east-northeast (toward the Tuolumne River).

LANDFILL GAS

10. The conditions at the landfill promote the generation of landfill gas and uncontrolled leachate drainage, both of which have caused groundwater pollution. Landfill gas production rates are dependent on a number of factors: refuse composition and tonnage, free oxygen availability, moisture content, landfill cover, soil pH and temperature. Gas production increases when the moisture level of the waste increases. This can happen when groundwater rises up into the waste, or when a landfill is not

¹ *Evaluation Monitoring and Engineering Feasibility Study, Geer Road Landfill.* Kleinfelder, 2002.

properly closed and rainfall saturates the waste from above.²

11. The Geer Road Landfill operated as a cut and fill operation adjacent to the Tuolumne River. During the dry months, the landfill operator would excavate down to the water table and begin to fill the pit with waste. When the groundwater elevation rises during the wet months, waste in the lower portion of the pits becomes inundated with groundwater, thus promoting the generation of landfill gas and leachate. Because the landfill does not have a bottom liner system, leachate and landfill gas freely drain to the underlying groundwater. This is supported by the Discharger's 2002 Engineering Feasibility Study, which states: *"Some waste may be immersed in groundwater either constantly or periodically as groundwater rises and falls over time. When immersed in water, the waste releases VOCs some depth beneath groundwater. This may be the reason for the increasing VOC concentrations with depth discovered immediately downgradient of the landfill."*
12. Because landfill gas is a contributor to groundwater pollution, the Discharger installed a landfill gas extraction system as a corrective action measure. Pressure readings provided in the Discharger's 2010 LFG Recovery System First and Second Quarter reports show that many of the wells in the northern portion of the landfill exhibited positive or zero gas pressure during the six monthly monitoring events. Positive or zero gas pressure readings mean that a vacuum is not present, and that landfill gas is not being collected. Without a negative pressure, landfill gas is free to migrate downward to the underlying groundwater. This Order requires that the Discharger optimize operation of the existing landfill gas collection system and install additional landfill gas extraction wells as needed to maximize reduction and control of this ongoing source of groundwater pollution.

IMPACTS ON GROUNDWATER QUALITY

13. Quarterly groundwater monitoring data show that aromatic VOCs, halogenated VOCs, and metals are present in groundwater in both the shallow and deeper groundwater zones under the landfill and downgradient of the site.
14. The table below summarizes selected analytical results for shallow zone monitoring wells along the downgradient boundary of the landfill. The May 2010 monitoring results shows that each of these wells contains VOCs at levels up to 40 times higher than the applicable concentration limits.³ Additional VOCs are present in some of the wells at levels below the concentration limits.

² *Procedural Guidance Manual for Sanitary Landfills, Volume II, Landfill Gas Monitoring and Control Systems,* SCS Engineers, for the CIWMB, April 1989.

³ Sections 20390 to 20405 of Title 27 require that the Board establish a Water Quality Protection Standard, including a concentration limit for each constituent reasonably expected to be present in the groundwater. The concentration limit applies at the downgradient edge of the unit. If groundwater constituents exceed the

VOCs in Shallow Zone Monitoring Wells

(Concentrations in ug/L)

| Constituent | Concentration Limit | MW3S | MW4S | MW5S | MW8S | MW23S |
|-------------------------|---------------------|------|--------|--------|------|--------|
| 1,1 Dichloroethane | 0.5 | 1.2 | 6.0 | 0.29 J | 2.3 | 0.37 J |
| cis 1,2 Dichloroethane | 0.5 | | 8.6 | | 10 | 0.48 J |
| Dichlorodifluoromethane | 0.5 | 7.8 | 0.44 J | 2.4 | 7.0 | 0.52 |
| Trichloroethene (TCE) | 0.5 | 1.6 | 1.8 | 0.23 | 4.4 | 0.18 |
| Tetrachloroethene (PCE) | 0.5 | 1.8 | | 0.81 | 2.8 | |
| Vinyl Chloride | 0.5 | | 23 | | 0.62 | |

ug/l = micrograms per liter

J = The reported value was obtained from a reading that was less than the laboratory reporting limit (RL) but greater than or equal to the Method Detection Limit (MDL).

15. The table below lists several deep zone monitoring wells, all of which are along the downgradient boundary of the landfill. The May 2010 monitoring results shows that each of these wells contains VOCs at levels up to three times higher than the applicable concentration limits. Additional VOCs are present in some of the wells at levels below the concentration limits.

VOCs in Deeper Zone Monitoring Wells

(Concentrations in ug/L)

| Constituent | Concentration Limit | MW3D | MW4D | MW23D |
|-------------------------|---------------------|------|------|--------|
| 1,1 Dichloroethane | 0.5 | | 0.52 | 0.36 |
| Dichlorodifluoromethane | 0.5 | 0.95 | 10 | 1.7 |
| Trichloroethene (TCE) | 0.5 | | 0.65 | 0.30 J |
| Tetrachloroethene (PCE) | 0.5 | | 1.6 | 0.17 J |

ug/l = micrograms per liter

J = The reported value was obtained from a reading that was less than the laboratory reporting limit (RL) but greater than or equal to the Method Detection Limit (MDL).

16. The table below lists results for three inorganic constituent in two downgradient shallow/deep well pairs. These wells are beyond the hydrologic control of the landfill's groundwater extraction wells and beyond the influence of the landfill gas extraction system. The May 2010 sampling event shows that these wells contain elevated levels

concentration limits, then Section 20430 requires that Discharger take corrective action to clean up the release so the constituents do not exceed the concentration limits.

of three constituents that are commonly present due to a release of leachate.

Inorganic Constituents in Downgradient Monitoring Well Pairs
(Units as noted)

| Constituent | Concentration Limit | MW15S | MW15D | MW23S | MW23D |
|--------------------------------|---------------------|-------|-------|-------|-------|
| Specific Conductance(umhos/cm) | 973 | 731 | 720 | 1,101 | 623 |
| Chloride (mg/l) | 155 | 180 | 180 | 210 | 37 |
| Bicarbonate (mg/l) | 141 | 180 | 140 | 220 | 190 |

MWxxS = Shallow zone well MWxxD – Deeper zone well
mg/l = milligrams per liter umhos/cm/cm = micromhos per centimeter

17. The Discharger has installed a groundwater extraction and treatment system to address the migration of contamination in the underlying aquifer. The system consists of 12 extraction wells and two granular activated carbon vessels for the removal of VOCs. Effluent from the treatment system is discharged to the subsurface through a series of injection trenches.
18. The Discharger completed repairs and enhancements to the existing groundwater extraction system in 2008. Following the repairs, the system was tested for effectiveness in controlling the movement of groundwater flow. The evaluation found that the system produces measurable drawdown in some of the extraction wells, but that the area of influence around the extraction wells is minimal and no influence (drawdown) was observed in the nearby monitoring wells.⁴
19. The groundwater data shown above and documents in the case file indicate that the current groundwater extraction system is unable to:
 - a. Prevent inundation of the waste from rising groundwater;
 - b. Prevent groundwater pollution from moving beyond the of downgradient monitoring wells; or
 - c. Draw back any pollution that has migrated offsite.
20. The Discharger's consultant has reported that the vertical and lateral extent of the plume has yet to be fully defined; that the VOC plume in the deep zone may extend beneath the Tuolumne River; and that the VOC plume may extend up to 1,000 feet beyond the landfill⁵. This Order requires that the Discharger upgrade the existing monitoring

⁴ Corrective Action Workplan, SCS Engineers, 2010

⁵ See the reports: *Evaluation of Impacted Groundwater in North Area* and *Evaluation Monitoring and Engineering Feasibility Study, Geer Road Landfill*.

system to define the vertical and lateral extent of the plume in all groundwater zones affected by the release, and to upgrade the groundwater extraction system to fully capture and remediate the plume.

VIOLATIONS OF THE WASTE DISCHARGE REQUIREMENTS

8. The Provisions of the WDRs contain a schedule for specific work that the Discharger must complete to address the above issues. The scope of required work and reports was based on the Discharger's proposals, which were contained in the Report of Waste Discharge (RWD) and Engineering Feasibility Study (EFS) upon which the WDRs are based. Key provisions of the WDRs require that the Discharger submit the following:
 - a. By **30 July 2009**, a report certifying the installation of 10 new landfill gas (LFG) extraction wells at the south area of the landfill (Provision G.1.d).
 - b. By **30 October 2009**, an evaluation monitoring report documenting the nature and extent of groundwater contamination at the north area of the landfill (Provision G.1.f).
 - c. By **29 January 2010**, a corrective action plan for groundwater remediation at the north area of the landfill (Provision G.1.g).
 - d. By **30 August 2010**, a report certifying the installation additional groundwater extraction wells at the north area of the landfill (Provision G.1.h).
 - e. By **31 October 2010**, a corrective action plan for installation of either 28 additional LFG extraction wells and a new gas flare, or 20 dual-zone groundwater extraction wells and upgraded treatment units (Provision G.1.i).
 - f. By **31 October 2011**, a documenting completion of installation and startup testing of the facilities and improvements described in the approved corrective action work plans for the north and south areas of the landfill (Provision G.1.k).
9. The Discharger has complied with the majority of the schedule in the Provisions, but has not completed all of the work that was required. Therefore, this Order requires the Discharger to address all known deficiencies in the corrective action program that cause or contribute to groundwater pollution. This Order was prepared to address the following violations of WDRs Order R5-2009-0051:
 - a. Failure to completely define the vertical and lateral extend of VOCs in groundwater as required by Provision G.7 and G.12.f.
 - b. Failure to submit a corrective action plan for groundwater remediation at the north end of the landfill as required by Provision G.12.g.

- c. Submittal of an inadequate corrective action plan for additional LFG and dual zone groundwater extraction wells. The required scope of required work was specified in Provision G.12.i.
 - d. Failure to make upgrades to the corrective action systems as required by Provisions G.12.h and k.
 - e. Failure to protect the underlying aquifer from contaminants emanating from the landfill as required by Provision E.5 and G.8; and
 - f. Failure to construct a groundwater monitoring system that meets the standards in California Code of Regulations Title 27 (Title 27) Section 20415, as required by Provision E.1 and G.2.
21. With regard to Provision G.12.f, the Discharger submitted the required report, but the evaluation of the nature and extent of groundwater contamination was incomplete. Rather than defining the complete vertical and lateral extent of the plume in all zones affected by the release as required, the report stated that no further investigation is necessary. The report also stated that the existing landfill gas issue will be addressed by the existing LFG extraction system, and that no additional investigation of landfill gas is necessary because additional groundwater corrective action measures are planned.
 22. With regard to Provision G.12.g, the Discharger did not submit the required corrective action plan for groundwater impacts at the north end of the landfill.
 23. With regard to Provision G.12.i, the Discharger submitted a *Corrective Action Workplan*. The document describes the results of an aquifer test, groundwater treatability study, and an infiltration study. Based on the aquifer test, the workplan states that fewer than 20 wells are needed to create a barrier along the southern and western boundary of the landfill. The workplan recommends that 13 shallow zone extraction wells be installed, approximately 400 feet apart, with a flow rate of 30 gallons per minute (gpm) per well. The total flow rate is similar to what was proposed in the Engineering Feasibility Study. The workplan recommends against installing deeper zone extraction wells because of the potential for drawing VOCs downward from the shallow zone. The workplan recommends that groundwater be treated with a Hazleton system (with air stripping, filtration, granulated activated carbon) and discharged through new infiltration trenches. Instead of implementing this plan, the Discharger states in the report transmittal letter "...we are not recommending implementation of this system at this time...".
 24. Provision E.5 of the WDRs states: "The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2009-0051." The data presented in Findings 14 through 16 show that certain VOCs, specific conductivity, chloride, and bicarbonate concentrations in groundwater exceed the WDRs'

concentration limits at, and downgradient of, the point of compliance in both the shallow and deeper zones.

REGULATORY CONSIDERATIONS

25. The Discharger's acts and failure to act have caused or permitted waste to be discharged or deposited where it has discharged to waters of the state and has created, and continues to threaten to create, a condition of pollution or nuisance.
26. The Water Quality Control Plan for the California Regional Water Quality Control Board, Central Valley Region, 4th Edition (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
27. The designated beneficial uses of underlying groundwater, as stated in the Basin Plan, are domestic and municipal supply, agricultural supply, and industrial supply.
28. Surface water runoff from the site is to the Tuolumne River. The beneficial uses of the Tuolumne River in the reach between New Don Pedro Dam and the San Joaquin River are municipal and domestic supply; agricultural supply; water contact recreation; noncontact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction and/or early development; and wildlife habitat.
29. Section 13301 of the California Water Code (CWC) states in part, "*When a regional board finds that a discharge of waste is taking place or threatening to take place in violation of requirements or discharge prohibitions prescribed by the regional board or the state board, the board may issue an order to cease and desist and direct that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) comply in accordance with a time schedule set by the board, or (c) in the event of a threatened violation, take appropriate remedial or preventative action. In the event of an existing or threatened violation of waste discharge requirements in the operation of a community sewer system, cease and desist orders may restrict or prohibit the volume, type, or concentration of waste that might be added to such system by dischargers who did not discharge into the system prior to the issuance of the cease and desist order. Cease and desist orders may be issued directly by a board, after notice and hearing, or in accordance with the procedure set forth in Section 13302.*"
30. Section 13267(b)(1) of the CWC provides that: "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region*

that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

31. The Discharger owns, maintains and monitors the facility subject to this Order. Monitoring reports and other technical reports are necessary to determine compliance with Waste Discharge Requirements Order R5-2009-0051, and with this Order.
32. Applicable sections from Title 27 of the California Code of Regulations are as follows:
 - a. Title 27 section 20405(a) states in part: *"For each Unit, the RWQCB shall specify in the WDRs the Point of Compliance at which the Water Standard... applies. The Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit."*
 - b. Title 27 section 20425(b) states in part: *"The discharger shall collect and analyze all data necessary to assess the nature and extent of the release from the Unit. This assessment shall include a determination of the spatial distribution and concentration of each COC throughout the zone affected by the release. The discharger shall complete and submit this assessment within 90 days of establishing an evaluation monitoring program."*
 - c. Title 27 section 20425(i) states in part: *"Any time the RWQCB determines that the evaluation monitoring program does not satisfy the requirements of this section, the RWQCB shall send written notification of such determination to the discharger by certified mail, return receipt requested. The discharger shall, within 90 days of such notification by the RWQCB, submit an amended report of waste discharge to make appropriate changes to the program."*
 - d. Title 27 section 20430(b) states: *"The discharger shall take corrective action to achieve the following goals: to remediate releases from the Unit; to ensure that the discharger achieves compliance with the Water Standard adopted under section 20390 for that Unit."*
 - e. Title 27 section 20430(c) states: *"The discharger shall implement corrective action measures that ensure that COCs achieve their respective concentration limits at all Monitoring Points and throughout the zone affected by the release, including any portions thereof that extend beyond the facility boundary, by removing the waste constituents or treating them in place."*

- f. Title 27 section 20430(j) states in part: *"Any time the RWQCB determines that the corrective action program does not satisfy the requirements of this section, the discharger shall, within 90 days of receiving written notification of such determination by the RWQCB, submit an amended report of waste discharge to make appropriate changes to the program."*
- g. Title 27 section 20400 states in part:
"(a) ...For each Constituent of Concern..., the discharger shall propose one of the following...:
- (1) **Background Value** — a concentration limit not to exceed the background value of that constituent as determined pursuant to §20415(e)(10)(A);*
 - (2) **Value Redetermined Each Time** — that the WDRs include a statement that, at any given time, the concentration limit for that COC will be equal to the background value of that constituent, as determined pursuant to §20415(e)(10)(B); or*
 - (3) **CLGBC** — a concentration limit greater than background (**CLGB**) established pursuant to this section for a corrective action program.*
- (b) ... Upon final approval by the RWQCB, each concentration limit and each statement shall be specified in WDRs...*
- (c) **Establishing a CLGB** — For a corrective action program, the RWQCB shall establish a CLGB... only if the RWQCB finds that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the CLGB is not exceeded. In making this finding, the RWQCB shall consider the factors specified in ¶(d), the results of the engineering feasibility study submitted pursuant to §20425(c), data submitted by the discharger pursuant to §20425(d)(2) to support the proposed CLGB, public testimony on the proposal, and any additional data obtained during the evaluation monitoring program.*
- ...
- (e) **CLGB Ceiling** — In no event shall a CLGB for a constituent of concern exceed the lowest concentration that the discharger demonstrates and the RWQCB finds is technologically and economically achievable. No provision of this section shall be taken to allow a CLGB for a constituent of concern to exceed the maximum concentration that would be allowed under other applicable statutes or regulations [e.g., Maximum Concentration Limits established under the federal Safe Drinking Water Act...]."*

The Discharger has not proposed a concentration limit greater than background for any constituent of concern at this facility.

33. Provision G.2 of Waste Discharge Requirements Order R5-2009-0051 states: *"The Discharger shall comply with all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order."*

34. Provision G.8 of Waste Discharge Requirements Order R5-2009-0051 states: "*The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the postclosure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.*"
35. The issuance of this Order is an enforcement action by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act, pursuant to Section 15321(a)(2), Title 14, California Code of Regulations.
36. On **February 2011**, in Rancho Cordova, California, after due notice to the Discharger and all other affected persons, the Central Valley Water Board conducted a public hearing at which evidence was received to consider a Cease and Desist Order under CWC section 13301 to establish a time schedule to achieve compliance with waste discharge requirements.

IT IS HEREBY ORDERED that, pursuant to Sections 13301 and 13267 of the California Water Code, Stanislaus County, its agents, successors, and assigns shall, in accordance with the following tasks and time schedule, implement the following improvements to their monitoring, and corrective action systems to ensure compliance with WDRs Order R5-2009-0051.

Each report submitted to the Central Valley Water Board shall be included in the Discharger's Operating Record. Furthermore, any person signing a document submitted under this Order shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Landfill Gas Corrective Action Tasks

1. By **30 March 2011**, the Discharger shall submit a *Landfill Gas Extraction System Optimization Plan* that includes the following:
 - a. An evaluation of the ability of the existing LFG extraction system to provide continuous negative pressure in each LFG extraction well for each interval monitored.
 - b. If the evaluation concludes that the existing system can achieve continuous negative pressure site-wide and within each interval:

- i. A description of the measures that have been taken to do so;
 - ii. certification that those measures have been fully implemented; and
 - iii. An operational protocol to ensure that LFG extraction is continuously optimized.
 - c. If the evaluation concludes that the existing system cannot achieve continuous negative pressure site-wide:
 - i. An *Interim LFG Extraction System Optimization Plan* to ensure that LFG extraction is optimized within the limits of the current system, and certification that those measures have been fully implemented; and
 - ii. A detailed plan and schedule to install sufficient LFG extraction wells and associated flares or other treatment systems such that LFG is captured and destroyed throughout the entire landfill unit, including the waste and the vadose zone. The schedule for full implementation of this plan shall not extend beyond **30 December 2011**.
2. If the existing LFG system cannot be optimized to achieve continuous negative pressure site-wide, by **30 December 2011**, the Discharger shall submit an *Expanded LFG System Construction Completion Report* that documents that construction and startup testing for all site improvements have been completed in accordance with the approved plan submitted pursuant to Task 1.c.ii above.

Groundwater Corrective Action Tasks

3. By **30 March 2011**, the Discharger shall submit an *Interim Groundwater Extraction and Treatment System Expansion Plan* that presents a specific plan and schedule to implement the recommendations in the 29 October 2010 *Corrective Action Workplan* (summarized in Finding 23, above). The plan shall include a detailed description of the improvements to be constructed, proposed effluent limits for the treatment system, and a design for the expanded treated groundwater disposal system. The schedule shall show that all construction and startup testing will be completed by **30 December 2011**.
4. By **30 April 2011**, the Discharger shall submit a *Supplemental Groundwater Investigation Workplan* that describes a specific plan to define the nature and extent of groundwater impacts associated with the Geer Road landfill. Consistent with Title 27 Section 20425, the investigation shall include the installation of additional groundwater monitoring wells as needed and shall be designed to:
 - a. Determine the vertical and lateral extent of the geologic interval (paleosol) that separates the shallow zone from the deeper zone.

- b. Determine the vertical and lateral distribution and concentration of each constituent of concern ⁶ in groundwater in each aquifer zone affected by the release.
 - c. Define the lateral extent of contamination within the deeper gravel zone beneath and beyond the landfill and provide a permanent groundwater monitoring system for that interval. The workplan shall identify all water supply wells within a one-mile radius that utilize this interval to support the proposed scope of investigation and monitoring.
 - d. Evaluate whether groundwater on the opposite side of the Tuolumne River has been affected by the releases.
5. By **30 October 2011**, the Discharger shall submit a *Supplemental Groundwater Investigation Report* that presents of the findings of the hydrogeologic investigation completed pursuant to the approved workplan. The report shall include :
- a. A well installation report for any newly installed monitoring points.
 - b. Documentation of all investigative activities and data derived from the investigation.
 - c. A detailed evaluation of the lateral extent of all COCs in the shallow and deeper saturated zones that extends in all directions from the landfill to the points where all COCs are not detected in groundwater samples from those zones.
 - d. A site conceptual model that defines the stratigraphy; hydrogeologic properties of the shallow and deeper aquifer zones; and the influence of water supply wells, river stage and on-site disposal of treated groundwater on groundwater elevation and gradient.
 - e. A calibrated numeric groundwater model based on site-specific data that depicts the existing groundwater plumes and can be used to model alternative groundwater remediation strategies.
6. By **30 January 2012**, the Discharger shall submit an *Interim Groundwater Extraction and Treatment System Expansion Report* documenting that construction and startup testing of the groundwater extraction and treatment system upgrades proposed in the *Interim Groundwater Extraction and Treatment System Expansion Plan* have been completed.

⁶ Constituents of concern include, but may not be limited to, 1,1-dichloroethane, 1,1-dichloroethene, PCE, trichloroethene, cis- and trans-1,2-DCE, vinyl chloride, trichlorofluoromethane (Freon-11), and dichlorodifluoromethane (Freon-12).

7. By **30 December 2012**, the Discharger shall submit an *Updated Engineering Feasibility Study Report* that presents an updated engineering feasibility analysis of alternatives to expand and/or modify the existing groundwater extraction and treatment system so that it will achieve compliance with the water quality protection standards for each COC. The analysis shall include consideration of the following factors:
 - a. The nature and extent of groundwater impacts for each COC;
 - b. The Water Quality Protection Standards and date when compliance with all water quality protection standards will be achieved for all zones affected by the release.
 - c. The extent of buried waste in contact with groundwater, whether seasonal or continuous; and
 - d. The potential for continued LFG generation to represent an ongoing source of releases to groundwater.

The feasibility analysis shall include a revised cost estimate for capital and annual operation/maintenance/monitoring costs, as well as selection of the preferred alternative and justification for the selection.
8. By **30 April 2013**, the Discharger shall submit a *Final Design Report* for the enhanced groundwater extraction and treatment system based on the approved updated feasibility study. The report shall provide a narrative description of improvements to be constructed, and engineering drawings and construction specifications at the 70 percent completion level.
9. By **30 January 2014**, the Discharger shall submit a *Groundwater Correction Action System Improvements Construction Completion Report* that documents all site improvements completed pursuant to the approved *Final Design Report* submitted pursuant to Task 8 above.
10. By **30 April 2014**, the Discharger shall submit a *Groundwater Correction Action System Improvements Start-up Testing Completion Report* that certifies successful completion of start-up testing for the groundwater treatment system and documents any post-construction modifications that were made to ensure that the system operates as designed.

In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain the professional's signature and/or stamp of the seal.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability.

Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the California Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with CWC section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday (including mandatory furlough days), the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality, or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on ___.

PAMELA C. CREEDON, Executive Officer





**California Regional Water Quality Control Board
Central Valley Region**

Katherine Hart, Chair



Arnold
Schwarzenegger
Governor

Linda S. Adams
Secretary for
Environmental
Protection

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>

TO: Anne Olson
Senior WRCE
Compliance and Enforcement
Section

FROM: Howard Hold
Engineering Geologist
Compliance and Enforcement
Section

DATE: 18 November 2010

SIGNATURE: Howard Hold

SUBJECT: TECHNICAL EVALUATION OF LANDFILL GAS AND GROUNDWATER
CORRECTIVE ACTION SYSTEMS
GEER ROAD LANDFILL, STANISLAUS COUNTY



Waste Discharge Requirements (WDRs) Order No. R5-2009-0051 prescribes waste discharge requirements and compliance schedules for the Geer Road Class III landfill, which is owned and maintained by the Stanislaus County Department of Environmental Resources.

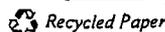
The Geer Road Landfill is eight miles east of Modesto, adjacent to the Tuolumne River. The 168-acre facility includes the closed Class III landfill and a sedimentation basin. The site was operated as a sanitary landfill by the County of Stanislaus from 1970 until 1990 and accepted residential, commercial, industrial, cannery, and construction and demolition wastes. The landfill used a trench and fill method and consists of a single unlined landfill unit. The Discharger estimates that the landfill contains approximately 4.5 million tons of waste. The landfill was closed in 1995 with a geomembrane and vegetative soil on the top deck and compacted clay and vegetative soil on the side slopes. Closure was approved in July 1996 and it is currently under post closure and corrective action requirements.

On 13 February 2009, the Discharger submitted their Engineering Feasibility Study (EFS) to address the vertical and lateral extent of contamination that emanates from the landfill. To memorialize the efforts of the Discharger, WDRs Order R5-2009-0051 was adopted with a discussion of the current conditions beneath the site, a time schedule for further investigation beneath the northern portion of the landfill, and a requirement to enhance their existing corrective action system. To comply with the Order, on 30 October 2009, the Discharger submitted their Evaluation of Impacted Groundwater in North Area which made the following statements:

- "As recently stated in SCS's Engineering Feasibility Study, the vertical extent of volatile organic compounds¹ (VOCs) in groundwater has not been fully determined. Further, a lower confining unit has not been confirmed for the "deep" zone aquifer."

¹ Volatile Organic Compounds (VOCs) – "VOCs are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and, subsequently, analyzed by

California Environmental Protection Agency



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- "Based on the facts that VOC impacts to groundwater in the northern area of the site appear to be limited to areas immediately surrounding the landfill; have caused by prior LFG impacts that are now being controlled; have relatively low concentrations and concentrations have declined since the implementation of the landfill gas control systems; and greater corrective action measures are planned and are currently being tested for the landfill, there appears to be no reason to further study this area or to implement additional corrective action measures specific to the area."

On 29 October 2010, to comply with Order R5-2009-0051, the Discharger submitted their corrective action work plan for installation of 20 groundwater extraction wells, and upgraded treatment units and capacity as described in the Discharger's 13 February 2009 EFS. The Discharger made the following statement in their cover letter: "We are not recommending implementation of this system at this time. We believe that the cost of this system, and ancillary environmental impacts that may be created by this system, do not justify installation of new extraction wells, construction of a new treatment plant and construction of water disposal gallery at this time." The Discharger also states: "We believe VOC concentrations in groundwater are trending downward with the existing corrective actions already in place at Geer Road Landfill, and we are requesting more time to evaluate the effectiveness of these corrective actions, including the ten new landfill gas extraction wells that were installed in the vadose zone late last year."

The following are violations of WDRs Order R5-2009-0051:

- The Discharger has notified staff that they are electing to not make the mandatory upgrades to their corrective action systems;
- The Discharger has not yet completely defined the vertical and lateral extend of VOCs in groundwater;
- The existing corrective action systems are not capable of protecting the underlying aquifer from contaminates emanating from the landfill; and
- The existing groundwater monitoring system does not meet the standards in California Code of Regulations Title 27 (Title 27) Section 20415.

The top surface of the landfill has been graded during historical operations, therefore the ground surface elevation is measured taken from surveyed well casing elevations. The local relief between MW20S (138 feet mean sea level (msl)) and MW23S (74 feet msl) is 64 feet. The entire site surface is gently sloped downward toward the Tuolumne River. Since groundwater continuously rises and falls with the seasons, the vadose zone² thickness is variable. This zone is monitored with 20 "Landfill Gas Probes" that are completed in two discrete intervals, "shallow and deep".

gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They often are compounds of fuels, solvents, hydraulic fluids, paint thinners, and dry-cleaning agents commonly used in urban settings. VOC contamination of drinking water supplies is a human-health concern because many are toxic and are known or suspected human carcinogens." - U.S. Geological Survey, 2005

² Vadose Zone or Unsaturated Zone means the zone between the ground surface and the regional water table or, in cases where the uppermost aquifer is confined, the zone between the ground surface and the top of the saturated portion of the aquifer's confining layer. (Section 20164.CCR Title 27).

The physical description of the underlying sediments and water quality data for the underlying aquifer(s) was obtained during the installation of the 34 monitoring wells as well as the ongoing semi-monitoring events. Within the monitoring program there are 22 "shallow zone" and "12 "deep zone" wells.

The Discharger has divided the groundwater system into a shallow and deep zone. The unconfined "shallow zone" is dominated with intercalated silts and sands. The top of the monitoring well screen intervals within this zone range from a high elevation of 93.8 feet msl in background well MW20S to the lowest elevation of 59 ft msl in MW23S, which is adjacent to the river. Groundwater flow during the February and May 2010 monitoring events was calculated to be southwest toward the Tuolumne River. During the same monitoring event, a downward gradient is present on the eastern portion of the landfill. The western portion of the landfill has periods of upward potential. The boundary conditions between the two aquifer zones have not been well defined enough to understand the cause of the change in groundwater potentials. The *Evaluation Monitoring and Engineering Feasibility Study (EFS), Geer Road Landfill (Kleinfelder, 2002)* states: "The apparent conflicting gradients indicated by groundwater elevations in the paired and nested monitoring wells may result from laterally discontinuous zones of semi-confining strata and pumping of the groundwater extraction wells."

The "deep zone" has been labeled by the discharger as a semi-confined aquifer and is potentially separated from the overlying "shallow zone" by a paleosol³ identified on borehole logs as a 10 to 15 foot clay interval. This fined grained boundary does not appear laterally extensive and pinches out toward the west. This clay interval, or aquitard⁴, was reported on borehole logs as being wet. The sediments in the "deep zone" begin with a basal gravel and fines upward to the overlying paleosol. The monitoring well screen intervals in the deep zone range from a high elevation of 40.7 feet msl in background well MW1D to the lowest elevation of -10.88 ft msl in MW3D. The base of the "deep zone" appears to be defined by a clay unit that was intersected during the drilling of the landfill's Supply Well SW-1 at approximately 140 feet below ground surface (approximately -10 feet msl). The discharger has not installed monitoring wells that fully penetrate this interval of highest hydraulic conductivity beneath the landfill. The thickness and lateral extent of the deep zone's boundaries has yet to be defined. Groundwater flow in the deep zone during the February and May 2010 monitoring events was moving from the east-north-east toward the Tuolumne River.

The existing condition at this landfill promotes gas generation, uncontrolled leachate⁵ drainage, and eventually groundwater pollution. Landfill gas production rates are dependent on a number of factors: refuse composition and tonnage, free oxygen availability, moisture

³ Paleosol. A layer of buried, ancient soil

⁴ Aquitard, is a layer of low permeability that can store groundwater and also transmit it slowly from one aquifer to another. The term leaky confining layer is also applied to such a unit. (Fetter, 1994)

⁵ "Leachate" (SWRCB) means any liquid formed by the drainage of liquids from waste or by the percolation or flow of liquid through waste. It includes any constituents extracted from the waste and dissolved or suspended in the fluid. The term ceases to apply to such liquid upon its being mingled with ground water outside the Unit's liner system. The term also ceases to apply to such liquid upon its being treated to the extent that it no longer contains any constituent of concern whose concentration exceeds the water quality objectives of ground water in the uppermost aquifer underlying the waste management unit. (Section 20164 CCR Title 27)

content, landfill cover, soil pH and temperature. "Water must be present in the refuse mass for the biological processes to occur. It also acts as a mixing mechanism for the microorganisms and their food and nutrients. Maximum gas generation rates are believed to occur at saturation or when the moisture content of the refuse is between 50 and 80 percent. However, since the average moisture content of refuse at the time of placement is only 25 percent, methane generation rates will be substantially below maximum levels. On the other hand, gas production can increase when heavy rainfall and/or permeable landfill covers cause refuse moisture levels to rise (*Procedural Guidance Manual for Sanitary Landfills, Volume II, Landfill Gas Monitoring and Control Systems*," SCS Engineers, for the CIWMB, April 1989)."

The Geer Road Landfill operated as a cut and fill operation adjacent to the Tuolumne River. The landfill would excavate the base of the site during the dry months down to the water table and then fill the pit with garbage. However during higher groundwater table elevations, or when the river levels would rise, the garbage would be inundated with groundwater, thus promoting gas generation and uncontrolled leachate drainage. Without a protective liner system that a modern landfill has, leachate and landfill gas from this landfill freely drain to the underlying groundwater. This was confirmed in the *Evaluation Monitoring and Engineering Feasibility Study, Geer Road Landfill (Kleinfelder, 2002)* report includes the following statements:

- "County workers interviewed for the preparation of the Kleinfelder EFS stated that the base of the landfill was excavated down to groundwater and at times waste was floating in the pits."
- "Some waste may be immersed in groundwater either constantly or periodically as groundwater rises and falls over time. When immersed in water, the waste releases VOCs some depth beneath groundwater. This may be the reason for the increasing VOC concentrations with depth discovered immediately downgradient of the landfill."

Groundwater degradation at this site was initially identified in 1985 and later confirmed in both 1986 groundwater studies and 1987 Solid Waste Assessment Test (SWAT) water quality studies. Aromatic and halogenated VOCs are present in groundwater in the "shallow" and "deeper" groundwater zones under the landfill and downgradient of the site.

In 1991, the Discharger initiated corrective action to address impacts to groundwater from VOCs. The three methods of corrective action are: (1) operation of a groundwater extraction and treatment system, and (2) source control measures consisting of installation and operation of the landfill gas (LFG) extraction system (3) and landfill capping. The 2010 first and second quarter groundwater analytical test results from groundwater monitoring wells, and landfill gas monitoring probes sampling show that contamination is confirmed downgradient of both the groundwater extraction wells and landfill gas extraction wells in both the shallow and deep zones of the underlying aquifer.

The following shallow zone monitoring wells, which are installed along the downgradient boundary of the landfill. These wells are listed in the WDRs as corrective action monitoring points. Each of these wells had detections of VOCs during the May 2010 sampling event. The following table presents these detections.

**May 2010
Detection of Volatile Organic Compounds
Downgradient Shallow Zone Wells**

| CONSTITUENT OF CONCERN | MW3S | MW4S | MW5S | MW8S | MW23S |
|-------------------------|----------|-------------|-------------|-------------|-------------|
| 1,1 Dichloroethane | 1.2 ug/l | 6.0 ug/l | 0.29 ug/l J | 2.3 ug/l | 0.37 ug/l J |
| cis 1,2 Dichloroethane | | 8.6 ug/l | | 10 ug/l | 0.48 ug/l J |
| Trichlorofluoromethane | 1.6 ug/l | | 0.21 ug/l J | 0.45 ug/l J | |
| Dichlorodifluoromethane | 7.8 ug/l | 0.44 ug/l J | 2.4 ug/l | 7.0 ug/l | 0.52 ug/l |
| Trichloroethene (TCE) | 1.6 ug/l | 1.8 ug/l | 0.23 ug/l | 4.4 ug/l | 0.18 ug/l |
| Tetrachloroethene (PCE) | 1.8 ug/l | | 0.81 ug/l | 2.8 ug/l | |
| Vinyl Chloride | | 23 ug/l | | 0.62 ug/l | |

ug/l = micrograms per liter

J value = The reported value was obtained from a reading that was less than the laboratory reporting limit (RL) but greater than or equal to the MDL (Method Detection Limit).

Bold text = Exceeds US EPA Primary Maximum Contaminant Level

The following deep zone monitoring wells, which are installed along the downgradient boundary of the landfill, are installed adjacent to their respective shallow monitoring well. However, not all shallow monitoring wells have an adjacent deep zone monitoring well. These deeper wells are listed in the WDRs as corrective action monitoring points. Each of these wells had detections of VOCs during the May 2010 sampling event. The following table presents these detections.

**May 2010
Detection of Volatile Organic Compounds
Downgradient Deep Zone Wells**

| CONSTITUENT OF CONCERN | MW3D | MW4D | MW23D |
|-------------------------|-----------|-----------|-------------|
| 1,1 Dichloroethane | | 0.52 ug/l | 0.36 ug/l |
| Trichlorofluoromethane | 0.24 ug/l | 0.85 ug/l | 0.18 ug/l J |
| Dichlorodifluoromethane | 0.95 ug/l | 10 ug/l | 1.7 ug/l |
| Trichloroethene (TCE) | | 0.65 ug/l | 0.30 ug/l J |
| Tetrachloroethene (PCE) | | 1.6 ug/l | 0.17 ug/l J |

ug/l = micrograms per liter

J value = The reported value was obtained from a reading that was less than the laboratory reporting limit (RL) but greater than or equal to the MDL (Method Detection Limit).

While MW15S and MW15D, did not have VOCs detected during the May 2010 sampling event, elevated levels of these compounds (see table below), downgradient of an unlined landfill, is a common indicator that a release of leachate from the landfill is occurring. Groundwater samples collected from the following wells: MW15S, MW15D, MW23S and MW23D (see Attachment B which is attached and forms part of this Order) had specific conductance, chloride and bicarbonate that exceed their water quality protection standards listed in their waste discharge requirements. Each of the wells is beyond the hydrologic control of the landfill's groundwater extraction wells and will not be controlled by a landfill gas

extraction. The following table presents the exceedances for these wells along with the applicable water quality protection standard listed in Table VII of the WDRs.

**May 2010,
Exceedances of Inorganic Chemistry
Downgradient Monitoring Wells**

| CONSTITUENT | WATER QUALITY PROTECTION STANDARD IN WDRS | MW15S | MW15D | MW23S | MW23D |
|----------------------|---|--------------|--------------|----------------|--------------|
| Specific Conductance | 973 umhos/cm | 731 umhos/cm | 720 umhos/cm | 1,101 umhos/cm | 623 umhos/cm |
| Chloride | 155 mg/l | 180 mg/l | 180 mg/l | 210 mg/l | 37 mg/l |
| Bicarbonate | 141 mg/l | 180 mg/l | 140 mg/l | 220 mg/l | 190 mg/l |

mg/l = milligrams per liter
umhos/cm = ohms per centimeter

The Discharger has installed a groundwater extraction system to address the migration of contamination in the underlying aquifer. Groundwater data in the downgradient wells listed above indicate that the current groundwater extraction system is unable to prevent inundation of the waste from rising groundwater; prevent groundwater pollution from passing the downgradient monitoring wells; or able to draw back any pollution that has migrated offsite.

Even though the Discharger has initiated source control through landfill gas and groundwater extraction, the current systems appear not able to control the release of contaminants from the landfill. Consequently, the groundwater and landfill gas plumes are unabated at the point of compliance⁶. As recent as 2009, their consultant reported that the vertical and lateral extent of the plume has yet to be fully defined.

- On page 19 of the *Evaluation of Impacted Groundwater in North Area* the consultant states: "As recently stated in SCS's Engineering Feasibility Study, the vertical extent of VOCs in groundwater has not been fully determined."
- On page 35 of the *Evaluation Monitoring and Engineering Feasibility Study, Geer Road Landfill* the consultant states: "Based on the VOC concentration contour maps (Appendix F), the lateral extent of VOCs is similar in both the shallow and deep groundwater, with the VOC extent beyond the landfill boundary in some instances estimated to be over 1000 feet. The lateral extent of VOCs in the shallow groundwater is confined to the area north and east of the Tuolumne River. The lateral extent of

⁶ California Code of Regulations 20405(a): "For each Unit, the RWQCB shall specify in the WDRs the Point of Compliance at which the Water Standard (of §20390) applies. The Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. For each Unit, the RWQCB shall specify Monitoring Points (as defined in §20164) along the Point of Compliance, and shall specify additional Monitoring Points at locations determined pursuant to §20415(b-d) at which the Water Standard under §20390 applies and at which monitoring shall be conducted."

VOCs in the deep groundwater may extend beneath the river to the south, although there are no monitoring wells south of the river and therefore no samples were collected south of the river to confirm the southern extent in the deep groundwater."

The existing condition at this landfill promotes gas generation and, uncontrolled leachate⁷ drainage, which have caused groundwater pollution. Landfill gas production rates are dependent on a number of factors: refuse composition and tonnage, free oxygen availability, moisture content, landfill cover, soil pH and temperature. "Water must be present in the refuse mass for the biological processes to occur. It also acts as a mixing mechanism for the microorganisms and their food and nutrients. Maximum gas generation rates are believed to occur at saturation or when the moisture content of the refuse is between 50 and 80 percent. However, since the average moisture content of refuse at the time of placement is only 25 percent, methane generation rates will be substantially below maximum levels. On the other hand, gas production can increase when heavy rainfall and/or permeable landfill covers cause refuse moisture levels to rise (*Procedural Guidance Manual for Sanitary Landfills, Volume II, Landfill Gas Monitoring and Control Systems*," SCS Engineers, for the CIWMB, April 1989)."

As noted above, the buried waste is periodically inundated with groundwater, thus promoting gas generation. Because landfill gas is a contributor to groundwater pollution, the Discharger installed a landfill gas extraction system as a corrective action measure. Pressure readings provided in the Discharger's 2010 LFG Recovery System First and Second Quarter reports indicate that many of the wells in the northern portion of the landfill did not have negative vacuum pressures during the six monthly monitoring events. Positive pressure or zero pressure readings on the well heads is an indication that a vacuum is not present. Without a negative pressure, landfill gas is free to migrate downward to the underlying aquifer. Consequently this Order will address the performance criteria for the landfill gas system.

Even though the Discharger has initiated source control through landfill gas and groundwater extraction, the current systems appear not able to control the release of contaminants from the landfill. Consequently, the groundwater and landfill gas plumes are unabated at their Point of Compliance⁸. As recent as 2009, their consultant reported that the vertical and lateral extent of the plume has yet to be fully defined.

- On page 19 of the *Evaluation of Impacted Groundwater in North Area* the consultant states: "As recently stated in SCS's Engineering Feasibility Study, the vertical extent of VOCs in groundwater has not been fully determined."

⁷ "Leachate" (SWRCB) means any liquid formed by the drainage of liquids from waste or by the percolation or flow of liquid through waste. It includes any constituents extracted from the waste and dissolved or suspended in the fluid. The term ceases to apply to such liquid upon its being mingled with ground water outside the Unit's liner system. The term also ceases to apply to such liquid upon its being treated to the extent that it no longer contains any constituent of concern whose concentration exceeds the water quality objectives of ground water in the uppermost aquifer underlying the waste management unit. (Section 20164 CCR Title 27)

⁸ California Code of Regulations 20405(a): "For each Unit, the RWQCB shall specify in the WDRs the Point of Compliance at which the Water Standard (of §20390) applies. The Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. For each Unit, the RWQCB shall specify Monitoring Points (as defined in §20164) along the Point of Compliance, and shall specify additional Monitoring Points at locations determined pursuant to §20415(b-d) at which the Water Standard under §20390 applies and at which monitoring shall be conducted."

- On page 35 of the *Evaluation Monitoring and Engineering Feasibility Study, Geer Road Landfill* the consultant states: "Based on the VOC concentration contour maps (Appendix F), the lateral extent of VOCs is similar in both the shallow and deep groundwater, with the VOC extent beyond the landfill boundary in some instances estimated to be over 1000 feet. The lateral extent of VOCs in the shallow groundwater is confined to the area north and east of the Tuolumne River. The lateral extent of VOCs in the deep groundwater may extend beneath the river to the south, although there are no monitoring wells south of the river and therefore no samples were collected south of the river to confirm the southern extent in the deep groundwater."

Summary and Conclusions

Groundwater degradation at this site was initially identified in 1985 and it took the Discharger 6 years to install the first groundwater extraction wells. Twenty five years later, the extent of the contamination has yet to be defined; contamination continues to migrate past their corrective action systems and degrade the beneficial uses of the deep and shallow zone aquifer. In the recent submittal received on 29 October 2010, the Discharger asked that they be excused from the requirement in the WDRs to install additional extraction and to allow time to evaluate the effectiveness of the system. The request of the discharger does not comply with their WDRs or Title 27.

Provision E5 of Waste Discharge Requirements R5-2009-0051 states: the concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5 2009-0051.

Groundwater quality data and the Discharger's flow direction measurements indicate that (a) historical operation of placing waste in groundwater; (b) failure to install enough extraction wells to prevent the migration of pollution past the point of compliance; and (c) the inability to keep groundwater from inundation the waste may have caused the groundwater plume to expand beyond its originally defined boundary. Consequently, the groundwater downgradient of the Geer Road Landfill is polluted.

Applicable sections from Title 27, are as follows:

- Title 27 section 20425(b) states: "the discharger shall collect and analyze all data necessary to assess the nature and extent of the release from the Unit. This assessment shall include a determination of the spatial distribution and concentration of each COC throughout the zone affected by the release. The discharger shall complete and submit this assessment within 90 days of establishing an evaluation monitoring program. For MSW landfills, the discharger shall comply with the additional notification and monitoring system requirements incorporated by reference into SWRCB Resolution No. 93-62, regarding notification and monitoring relative to offsite or potential off-site migration of waste constituents [see §§258.55(g)(1)(ii & iii) of 40CFR258]."
- Title 27 section 20425(i) states: "RWQCB-Initiated EMP Changes — Any time the RWQCB determines that the evaluation monitoring program does not satisfy the

requirements of this section, the RWQCB shall send written notification of such determination to the discharger by certified mail, return receipt requested. The discharger shall, within 90 days of such notification by the RWQCB, submit an amended report of waste discharge to make appropriate changes to the program."

- Title 27 section 20430(b) states: "The discharger shall take corrective action to achieve the following goals: to remediate releases from the Unit; to ensure that the discharger achieves compliance with the Water Standard adopted under section 20390 for that Unit."
- Title 27 section 20430(c) states: "The discharger shall implement corrective action measures that ensure that COCs achieve their respective concentration limits at all Monitoring Points and throughout the zone affected by the release, including any portions thereof that extend beyond the facility boundary, by removing the waste constituents or treating them in place."
- Title 27 section 20430(j) states: "RWQCB-Initiated CAP Changes — Any time the RWQCB determines that the corrective action program does not satisfy the requirements of this section, the discharger shall, within 90 days of receiving written notification of such determination by the RWQCB, submit an amended report of waste discharge to make appropriate changes to the program."

Provision G2 of Waste Discharge Requirement R5-2009-0051 states; "the Discharger shall comply with all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order."

Provision G8 of Waste Discharge Requirement R5-2009-0051 states; The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the postclosure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2009-0051

WASTE DISCHARGE REQUIREMENTS
FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
STANISLAUS COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. The Stanislaus County Department of Environmental Resources (hereafter referred to as Discharger) owns and formerly operated the Geer Road Landfill, a municipal solid waste landfill that was closed in 1995. The landfill is eight miles east of Modesto, near the Tuolumne River in the southeast corner of Section 34, Township 3 South, Range 10 East, and the northeast corner of Section 3, Township 4 South, Range 10 East, Mount Diablo Base and Meridian, as shown in Attachment A, which is incorporated herein and made part of this Order.
2. The 168-acre facility comprises Assessor's Parcel Number 9-29-09, 9-29-12, and 18-03-13 and includes the closed Class III landfill and a sedimentation basin. The site was operated as a sanitary landfill by the County of Stanislaus from 1970 until 1990 and accepted residential, commercial, industrial (including cannery waste), and construction and demolition wastes. The landfill used a trench and fill method and consists of a single unlined landfill unit. The Discharger estimates that the landfill contains approximately 4.5 million tons of waste. The landfill was closed in 1995 with a geomembrane and vegetative soil on the top deck and compacted clay and vegetative soil on the side slopes. Closure was approved in July 1996.
3. The Discharger submitted a 31 October 2007 amended Report of Waste Discharge (RWD) as part of the Joint Technical Document (JTD) for the landfill. The information in the RWD/JTD has been used in writing these waste discharge requirements (WDRs). The RWD contains the applicable information required in Title 27, California Code of Regulations (CCR), Chapter 4, Subchapter 3, Article 4. Within the RWD, the Discharger proposed to submit an Engineering Feasibility Study (EFS) for corrective action of volatile organic compounds (VOCs) in groundwater. The EFS was submitted 13 February 2009. These WDRs include a time schedule for determining the nature and extent of VOC contamination at the north area of the landfill, and for implementing and documenting corrective actions for VOC removal from groundwater at the north and south areas of the landfill. These WDRs have also been updated since previous Order No. 5-00-087 with current site information and to ensure consistency with the Regional Water Board's plans and policies.



4. Previous WDRs for the facility, including most recent Order No. 5-00-087, classified the facility as a Class III waste disposal site. This Order continues to classify the landfill as a Class III landfill in accordance with Title 27, CCR Section 20005, et seq. (Title 27).

SITE DESCRIPTION

5. The site lies near the eastern edge of the San Joaquin Valley adjacent to the Tuolumne River. The terrain is characterized by river terraces and is gently sloping with elevations at approximately 140 feet above mean sea level.
6. The Foothills Fault zone is the nearest significant fault and is located approximately 25 miles east of the site. The maximum credible earthquake (MCE) for the Foothills Fault zone is a magnitude 6.5 event. Other regionally significant faults are located within the Coast Ranges geomorphic province to the west of the site. One of these, the Calaveras Fault, approximately 50 miles west of the landfill, may be a potential source of seismicity with an MCE of 7.5. The maximum peak bedrock acceleration expected at the landfill for an event from either the Foothills or the Calaveras Faults is approximately 0.13 g.
7. Land within 1,000 feet of the facility is used for irrigated agricultural purposes, buffer area, and residential housing. Around the perimeter of the site, agriculture is the principal use, with the predominant crops being walnuts and peaches. A 15-acre multiple family housing development, Pinewood Meadows Mobile Home Park with 174 trailer spaces, is located across Geer Road 350 feet east of the landfill.
8. The facility receives an average of 12.2 inches of precipitation per year as measured by Modesto Irrigation District. Mean evaporation is estimated to be between 65-75 inches per year. Based on these data, the average annual net evaporation is approximately 53-63 inches.
9. The 100-year, 24-hour precipitation event for Modesto is 2.43 inches, as calculated from rainfall intensity-duration-frequency curves from the County of Stanislaus Department of Environmental Resources Storm Drain Design Manual, developed with data from the California Department of Water Resources.
10. According to the Federal Insurance Administration Map, Stanislaus County, Community Panel No. 060384055A, August 1980, the landfill footprint is outside the 100-year flood plain. However, it is within Zone C (area of minimal flooding). The 100-year flood plain crosses the southwest property boundary, an area that is open land outside of the footprint of the landfill. During the winter of 1997-1998, portions of the property were flooded. The landfill area is protected by a 10-foot high berm.
11. There are four groundwater supply wells near the landfill including two immediately south of the landfill (Streeter wells) and two east of the landfill (Pine Wood Meadows Mobile Home Park wells), as shown on Attachment B, which is incorporated herein and made part of this Order. A third supply well formerly located at the mobile home park was

capped by the property owner. In 2006, the Discharger purchased a property near the northern section of the landfill and abandoned its well (former Lopez well).

WASTES AND THEIR CLASSIFICATION

12. The landfill began operation in November 1970 and was continuously operated by Stanislaus County. The landfill accepted municipal solids waste and cannery wastes. These wastes are classified as non-hazardous solid waste using the criteria in Chapter 15 of Title 23, CCR that was applicable to the landfill at that time.

SURFACE AND GROUNDWATER CONDITIONS

13. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
14. Storm runoff from the site is routed to the sedimentation basin. The sedimentation basin is in the south central area of the site, as shown on Attachment B. The basin allows suspended material to settle out from surface water runoff prior to discharge into the Tuolumne River. Discharge from the basin only occurs in very wet weather years. As of January 2009, there have been no discharges from the basin since 31 December 2001.
15. The designated beneficial uses of the Tuolumne River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact and non-contact water recreation; warm fresh water habitat; cold fresh water habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.
16. Due to topographic variations across the site, groundwater is first encountered at depths ranging between approximately 20 to 60 feet below grade. The shallow monitoring wells are screened across a 20-foot interval ranging from 40 to 80 feet in elevation above mean sea level. The shallow water-bearing zone is unconfined. The deeper zone groundwater monitoring wells are screened at about 80 to 100 feet bgs in an unconfined to semiconfined aquifer that is likely in hydraulic communication with the shallow zone.
17. Groundwater gradients vary seasonally, but range from southwest to westerly. Groundwater elevations may vary up to five feet, however elevations varied by as much as 15 feet during the winter of 1997, which was unusually wet. The gradient in the shallow zone is approximately 0.31 foot per foot (ft/ft), generally toward the southwest. The gradient in the deeper aquifer is approximately 0.32 ft/ft toward the southwest. According to the Discharger, groundwater velocities calculated from transmissivity values range from 11.4 to 119 feet per year.

18. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER MONITORING AND CORRECTIVE ACTION

19. There are 22 groundwater monitoring wells completed in the shallow groundwater zone and 12 groundwater monitoring wells in the deeper zone. The monitoring well locations are shown on Attachment B.
20. The facility is in corrective action monitoring for impacts to groundwater from VOCs. The two methods of corrective action are: (1) source control measures consisting of installation and operation of the landfill gas (LFG) extraction system and landfill capping, and (2) installation and operation of a groundwater extraction and treatment system. The groundwater extraction and treatment system is located near the southern end of the landfill, as shown on Attachment B.
21. Groundwater degradation at this site was initially identified in 1985 and later confirmed in both 1986 groundwater studies and 1987 Solid Waste Assessment Test (SWAT) water quality studies. Aromatic and halogenated VOCs are present in groundwater in the "shallow" and "deeper" groundwater zones under the landfill and downgradient of the site. The lateral and vertical extent of VOCs has not been completely defined. For example, MW-23S, located outside and southwest of the property boundary and along the river bank, has concentrations of vinyl chloride ranging from 2.3 ug/L to 3.4 ug/L. These concentrations are above the California Primary MCL of 0.5 ug/L. Vinyl chloride is a degradation product of tetrachloroethylene (PCE). MW-23S also has detected concentrations of other PCE degradation products, including 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, and trichloroethene. The deeper companion well to MW-23S, MW-23D, also has detected concentrations of Freon and PCE degradation products. Similarly, MW-15S (a shallow well), located outside the property boundary to the south of the landfill, has concentrations of Freon, PCE, and PCE degradation products. Wells along the property boundary to the north also contain halogenated VOCs. Thus, at a minimum the horizontal and vertical extent of contamination have not been completely defined to the south, southwest, and north of the landfill.
22. As of May 2007, halogenated VOCs remaining in groundwater included 1,1-dichloroethane, 1,1-dichloroethene, PCE, trichloroethene, cis- and trans-1,2-DCE, vinyl chloride, trichlorofluoromethane (Freon-11), and dichlorodifluoromethane (Freon-12). The greatest concentrations of volatiles are under the southernmost portion of the landfill and off-site to the south, southwest, and southeast. Lower concentrations of VOCs have been detected in the shallow offsite, upgradient wells to the northeast.
23. As of 2007, aromatic VOCs reported in groundwater included benzene, chlorobenzene, toluene, and 1,2-dichloropropane.

24. During 1991, arsenic was reported in monitoring wells MW-14S at 130 micrograms per liter (ug/L). During 1996, arsenic was present in shallow monitoring well MW-4S at 64 ug/L and in all four deep wells and nine other shallow wells at concentrations up to 3.8 ug/L. In 2007, a study of arsenic concentrations in the area of the landfill concluded that natural background concentrations of arsenic ranged from ND to 4.42 ug/L. The primary maximum contaminant level, a drinking water standard, for arsenic is 10 ug/L and the one-in-a-million incremental cancer risk estimate for drinking water based on the US EPA Integrated Risk Information System is 0.02 ug/L. Iron and manganese are elevated in one deep well and six shallow wells. Lead was detected in one deep well at a concentration above the Public Health Goal for drinking water as recommended by the Office of Environmental Health Hazard Assessment.
25. A LFG control system consisting of an air injection curtain was installed in 1983 along a portion of the site's southern perimeter. Phase 1 of the LFG extraction system, which included the first flare station, was in operation from 1992 to 2006 and covered the northeast one-third of the site. The system was expanded to include 45 gas wells with aboveground piping and a second flare station located near the center of the landfill. The current LFG control system is comprised of 83 extraction wells and one flare station. Many of the VOCs found in groundwater are commonly found in landfill gas. Measurements of LFG concentrations indicate that the system is capturing landfill gas from the landfill (i.e., methane). Methane in each of the shallow, medium, and deep probes around the landfill show concentrations at or near zero percent. Methane concentrations in the LFG extraction wells within the waste average about 24 percent. Perimeter gas monitoring probes were sampled in 2000, 2001, and 2006 for VOCs. In the 2006 investigation, PCE and other halogenated VOCs were detected at probes GP-01, GP-02, GP-03, GP-05, GP-08, GP-09, GP-10, GP-11, GP-13, and GP-17. Freon species were detected in all these probes. Freon 12 concentrations ranged from 0.8 parts per billion by volume (ppbv) to 230 ppbv. In wells GP-01, GP-02, GP-03, GP-09, GP-10, GP-13, and GP-17, PCE concentrations ranged from 0.97 ppbv (GP-17) to 220 ppbv (GP-02). In the June 2001 sampling event, samples obtained from GP-17, GP-18, GP-22, GP-23, GP-24 had concentrations of PCE and other halogenated VOCs. PCE concentrations ranged from 1.7 to 6.4 ppbv. In July 2000, gas probes GP-36, GP-37, and GP-38 were sampled and had detected concentrations of 16 VOC constituents. At 850 ppbv and 2,200 ppbv, GP-38 had the highest concentrations of PCE and Freon 12, respectively.
26. As of 2006, only one flare station (the South Flare) has been operating to burn the landfill gas. The location of the flare station is shown on Attachment B. The North Flare was decommissioned in 2006 due to vandalism (Stanislaus County Sheriff case # S06-62706).
27. During 1991 and 1993, 12 groundwater extraction wells were installed as part of a groundwater remediation system to address groundwater impacts from VOCs and metals. The groundwater remediation system consists of the 12 extraction wells, a granular activated carbon (GAC) treatment system, and eight injection trenches. The injection trenches are located immediately southwest of the treatment plant which is shown on

Attachment B along the eastern side of the landfill. Groundwater is pumped from the 12 extraction wells located along the perimeter of the landfill and is pumped through a bag filter to remove suspended solids and then through two 10,000-pound GAC units, in series, to remove VOCs. Treated groundwater, prior to injection into the shallow zone via infiltration trenches, is sampled and analyzed to assess effluent quality from the treatment system and to evaluate the system efficiency.

28. In May 2007, the Discharger completed a study of the southern portion of the landfill and surrounding lands. This study evaluated the distribution of VOCs in existing monitoring wells, and at other locations where samples were collected from direct push borings. Although LFG and groundwater extraction and treatment systems are and have been in operation for more than 15 years, the Discharger concluded that: VOCs and halogenated VOCs continue to be detected in LFG and groundwater beyond the boundary of the landfill; the existing LFG system does not adequately capture the gases; and expansion of the LFG system into the south area of the landfill was recommended. The Discharger concluded that VOCs are distributed in groundwater throughout the area, with the highest concentrations adjacent to the landfill. The study also found that the VOC concentrations were generally higher in the shallow zone compared to the deeper zone groundwater. The Discharger concluded that the existing groundwater extraction system was not extracting sufficient volumes of water to form a barrier to VOCs migrating away from the site. During 2007 and early 2008, the Discharger upgraded the extraction and treatment system to increase the flow rate, including replacing extraction well pumps, air lines, discharge lines, installing more filters, and replacing the GAC.
29. Groundwater exceeds the Maximum Concentration Limit (MCL) for PCE. The US EPA Primary MCL for PCE is 5 ug/L. At the south area of the landfill, the concentration of PCE at well MW-1D has trended upward from 0.86 ug/L in March 1996 to 5.6 ug/L in June 2008; and the concentration of PCE at MW-12S has ranged from 12 ug/L (1987) to 20 ug/L (November 2008). During 2008, groundwater at MW-01D and MW-12S exceeded the MCL for PCE in groundwater.
30. On 14 April 2008, the Discharger submitted a corrective action work plan for expansion of the existing LFG system into the south area of the landfill. The work plan includes installation of 10 LFG extraction wells, connection of the new LFG wells to the existing flare, and installation of two groundwater monitoring wells near the Tuolumne River. The two groundwater monitoring wells (MW-15D and MW-23D) were installed and a report was submitted on 15 January 2009. An LFG well installation report, including analytical and test results, was due by 30 September 2008. The Discharger has not submitted the report, and on 23 February 2009 confirmed that the 10 new LFG extraction wells have not been installed. This Order requires that the Discharger install, operate, and maintain the 10 new LFG extraction wells.
31. Groundwater concentrations at the north area of the landfill, including wells MW-13, MW-17, MW-18, MW-22, and MW-13, show concentrations of halogenated VOCs in

- groundwater. In a letter dated 23 February 2009, the Discharger proposed to define the nature and extent of VOCs in groundwater at the north area of the landfill. This Order requires that the Discharger define the nature and extent of VOC concentrations in groundwater, to submit a report documenting the findings, and to submit and implement a corrective action for groundwater remediation at the north area of the landfill.
32. The Discharger submitted a report on 1 July 2008 summarizing the GWETS upgrades and system effectiveness, and the results of an aquifer test to estimate the radius of influence for each of the groundwater extraction wells. The aquifer test was conducted by shutting off the extraction system (all 12 extraction wells), and measuring the water levels in those wells every 10 minutes for several hours and then over the next several days. The system was then restarted, and further measurements were recorded over several days. Pressure transducers were installed in 23 monitoring wells to observe response away from the extraction wells.
33. The results of the aquifer test indicate that the extraction system does not influence any of the monitoring wells at the landfill. Monitoring wells located closest to the extraction wells were 40 to 60 feet away. The Discharger concluded that the radius of influence of the extraction system was less than the distance to these wells. Pumping rates from the wells ranged from 0.13 gallons per minute (gpm) in EX-1 to about 11 gpm in EX-7, and the total system flow rate was about 61 gpm. Pumping rates were averaging about 40 gpm prior to the system upgrades. Total VOC loading in the influent to the system during the test was about 6.4 grams per day with an average VOC concentration of about 19 ug/L.
34. Based on the results of the aquifer test, the Discharger proposed to prepare a new EFS to compare ongoing use of the groundwater extraction system (including upgrading the system to achieve higher flow rates) to other available technologies for low-level VOC removal from groundwater.
35. The Discharger submitted an EFS on 13 February 2009 for corrective action of VOCs within the landfill boundary of the south area of the landfill. The Discharger's recommendations include installation of 10 LFG extraction wells (the same wells that were to be installed by 31 August 2008 under a corrective action plan submitted on 14 April 2008 [see Finding 30]). In addition, the Discharger recommended one of two options: (1) replacement of an existing flare with a 1,500 scfm capacity flare, installation of an additional 28 LFG extraction wells or (2) enhancement of the existing groundwater extraction and treatment system with 20 dual-completion groundwater extraction wells, upgraded treatment units, and increased treatment capacity. This Order requires the Discharger to install 10 LFG extraction wells, and to install either (1) a 1,500 scfm capacity flare and the additional 28 LFG extraction wells or (2) to install 20 dual-completion groundwater extraction wells, upgraded groundwater treatment units, and increased treatment capacity and to implement corrective action for VOC-impacted groundwater at the south area of the landfill, including remediation of groundwater outside

the landfill property boundary. This Order requires that the Discharger submit a Construction Report documenting that the corrective action facilities have been installed.

36. This Order requires the Discharger to submit an Operation and Maintenance Plan for the new corrective action facilities installed under this Order.
37. Under WDRs R5-00-087, the Discharger has been required to submit historical analytical data annually in an electronic file format (.xls) that is acceptable to the Regional Water Board. On 5 March 2009, the Board received an electronic file of historical data through 2005. However, the Discharger has not submitted the historical data for 2006 through 2008. In the 2008 annual monitoring report, the Discharger submitted an incomplete file with omitted inorganic results, omitted VOC analytical results, and approximately 2,000 lines of data without a sample location identifier. The Discharger stated that a new consultant was unable to retrieve historical data from the prior consultants database. This Order requires that the Discharger submit all the historical data from 1 January 2006 through 31 December 2008, including all inorganic, VOC, and non-detects, in an electronic format file that is acceptable to the Regional Water Board.

FINANCIAL ASSURANCES

38. The March 1994 Post-Closure Maintenance Plan (PCMP) includes a cost estimate for post-closure maintenance at the landfill. The amount of the post-closure maintenance cost estimate is \$322,780/year. According to the California Integrated Waste Management Board (CIWMB), the amount adjusted for inflation in 2008 dollars is \$441,282 per year. The Discharger has a Pledge of Revenue Agreement on file with the CIWMB for post-closure maintenance.
39. Title 27 Section 22222 requires the Discharger to prepare a cost estimate and establish financial assurances for corrective action of all known or reasonably foreseeable releases at the landfill. The Regional Water Board has not received a cost estimate for corrective action financial assurances. This Order therefore requires the Discharger to prepare a cost estimate for corrective action of all known or reasonably foreseeable releases from the landfill. Since the landfill has a known release, the Discharger should prepare a cost estimate with a lump sum present day cost for a third-party to complete remediation of the known release. This Order also requires that the Discharger establish and maintain financial assurance with the CIWMB in at least the amount of this cost estimate, plus annual inflation.

CEQA AND OTHER CONSIDERATIONS

40. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section 21000, et seq., and the CEQA guidelines, in accordance with Title 14 CCR, Section 15301.

41. This order implements:

- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
- b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
- c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and
- d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and amended 21 July 2005.

42. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

43. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2009-0051" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

44. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
45. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
46. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

47. Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.waterboards.ca.gov/laws_regulations/ and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 5-00-087 is rescinded, and that Stanislaus County Department of Environmental Resources, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of any waste at this facility, other than treated groundwater to the infiltration trenches, is prohibited.
2. The discharge of treated groundwater with detectable levels of organic compounds, or that fails to conform to the site's water quality protection standards, is prohibited.

B. DISCHARGE SPECIFICATIONS

General Specifications

1. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control and irrigation to promote vegetation for erosion control.
2. Groundwater discharged to the unsaturated zone shall be treated to remove organic compounds and shall not exceed the site's water quality protection standards.

Protection from Storm Events

3. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
4. Annually, prior to the anticipated rainy season, but no later than **1 November**, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the facility and to prevent surface drainage from contacting or percolating through wastes.

C. FACILITY SPECIFICATIONS

1. The Discharger shall immediately notify the Regional Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
2. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
3. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
4. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
5. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site.

D. POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. During the closure and post-closure maintenance period, the Discharger shall conduct routine maintenance of the final cover, areas with interim cover, the precipitation and drainage control facilities, the groundwater, unsaturated zone and landfill gas monitoring systems, the landfill gas extraction system, and any facilities associated with corrective action.
2. The Discharger shall, in a timely manner, repair any areas of the final cover that have been damaged by erosion, cracking, differential settlement, subsidence, or any other causes that could allow ponding of surface water or percolation of surface water into the wastes.

3. The Discharger shall perform all post-closure maintenance activities specified in the facility's Final Closure and Post-Closure Maintenance Plan that are not specifically referred to in this Order.
4. The post-closure maintenance period shall continue until the Board determines that the remaining wastes in all waste management units will not threaten water quality.

E. DETECTION AND CORRECTIVE ACTION MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, as appropriate, and in accordance with Monitoring and Reporting Program No. R5-2009-0051.
2. The Discharger shall provide Regional Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2009-0051, and the Standard Provisions and Reporting Requirements, dated April 2000.
4. The Water Quality Protection Standard for organic compounds that are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.
5. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2009-0051.
6. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2009-0051 and Title 27 CCR Section 20415(e).
7. The Discharger shall submit for review and approval a Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;

- c. Sample analytical methods and procedures;
 - d. Sample quality assurance/quality control (QA/QC) procedures; and
 - e. Chain of Custody control.
8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved by the Executive Officer, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.
 9. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval prior to use.
 10. **The methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
 11. **"Trace" results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
 12. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
 13. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from

the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

14. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
15. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
16. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27 CCR Section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Title 27 CCR Section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
17. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that

reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval.

18. The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval. Upon receiving written approval, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (e.g., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Regional Water Board staff.
19. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
 - a. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. Unless a given monitoring point is already under corrective action monitoring for a given constituent, the Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
 - 1) The data contain two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
 - 2) The data contain one or more analyte that equals or exceeds its PQL.
 - b. **Discrete Retest** [Title 27 CCR Section 20415(e)(8)(E)]:
 - 1) In the event that the Discharger concludes (pursuant to paragraph 19.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Regional Water Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated.
 - 2) For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample**. As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or

more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:

- a) **Immediately** notify the Regional Water Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
 - b) Comply with ¶20, below if any constituent or constituents were verified to be present.
- 3) Any analyte that is confirmed per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

20. If the Discharger determines that there is measurably significant evidence of a release from the Unit at any monitoring point, the Discharger shall **immediately** implement the requirements of **XI. Response To A Release, C. Release Has Been Verified**, contained in the Standard Provisions and Reporting Requirements.

F. FINANCIAL ASSURANCES

1. The Discharger shall obtain and maintain Financial Assurance Instruments (Instruments), which comply with CCR Title 27 (Sections 22207 [Closure Fund], 22212 [Post-Closure Fund], and 22220 et seq. [Corrective Action Fund]) and 40 CFR parts 257 and 258. The Discharger shall evaluate the cost of Financial Assurance to cover the estimated costs of the worst case known release. The Discharger shall submit a report on financial assurance for corrective action for the Regional Water Board Executive Officer's review and approval within in accordance with Provision 12.b of this Order. The Discharger shall also submit a copy of a request letter to the CIWMB—Financial Assurance Division to establish corrective action financial assurances in accordance with Provision 12.e of this Order. The most recent acceptance letter from the CIWMB Financial Assurance Division shall also be included in the Landfill's Annual Report.
2. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for corrective action has been updated in accordance with the fund balance calculations provided in Section 22226 of Title 27.
3. The Discharger shall maintain assurances of financial responsibility with the CIWMB for post-closure maintenance costs in the amount of the cost estimate in the March 1994 Post-Closure Maintenance Plan (PCMP), plus annual inflation.
4. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for closure and post-closure

maintenance has been updated in accordance with the fund balance calculations provided in Section 22225 of Title 27.

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the County Offices and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.
3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2009-0051, which is incorporated into and made part of this Order.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.
5. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the Regional Water Board office by telephone as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
6. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
 - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
 - d. A duly authorized representative of a person designated in a, b, or c above if;
 - 1) The authorization is made in writing by a person described in a, b, or c of this provision;

- 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - 3) The written authorization is submitted to the Regional Water Board.
- e. Any person signing a document under this Section shall make the following certification:
- “I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
7. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to evaluate the nature, extent, and impact of the noncompliance.
 8. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the postclosure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.
 9. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
 10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Water Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Water Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Water Board.

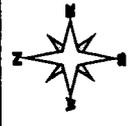
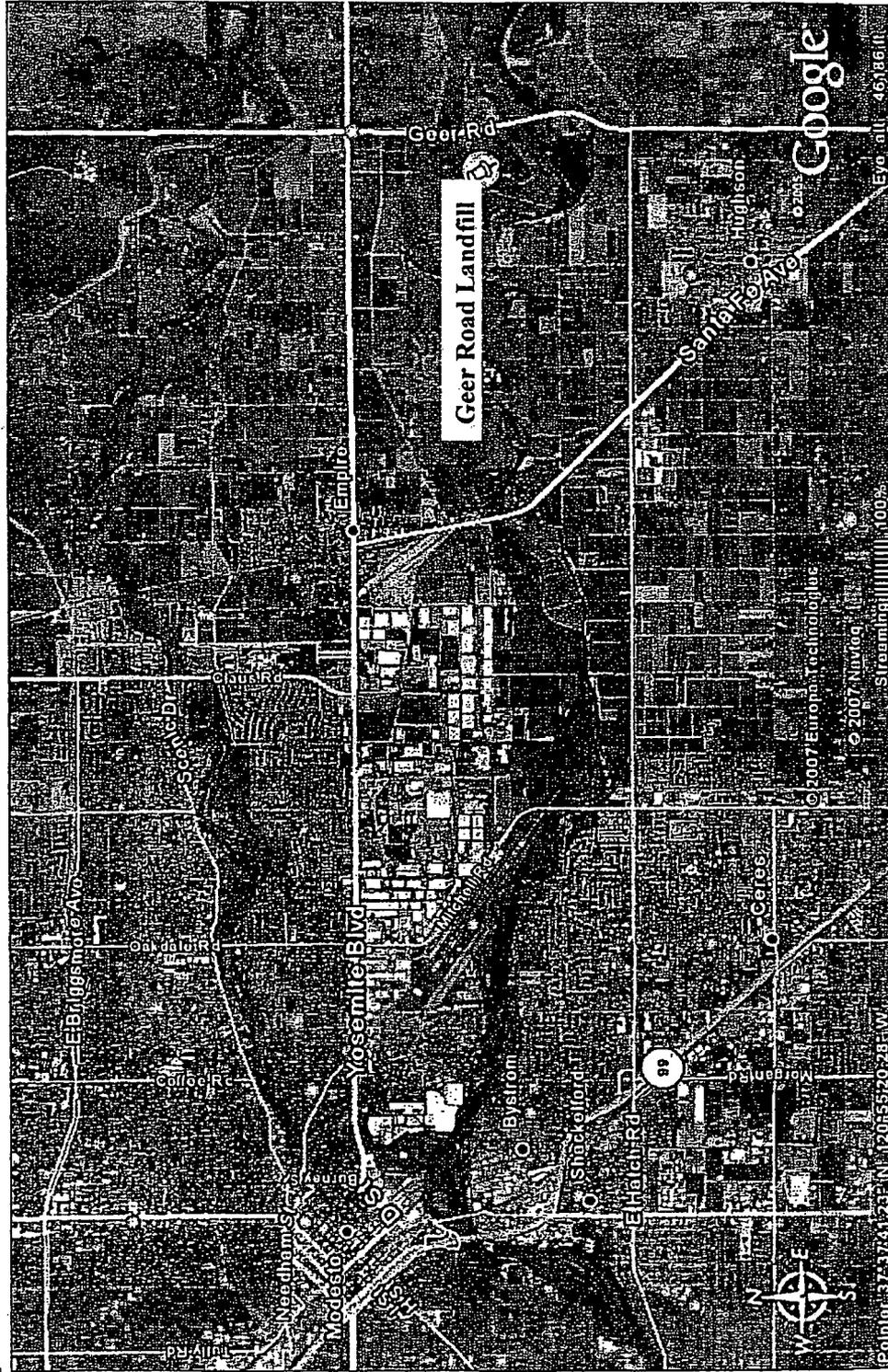
11. All technical reports required by this Order shall be submitted pursuant to Section 13267 of the California Water Code. Technical reports are necessary in order to demonstrate compliance with the requirements of this Order, including but not limited to, requirements for remediation of impacted groundwater.
12. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:
 - a. By **30 May 2009**, submit an electronic Excel (.xls) file with all inorganic and organic historical analytical data from 1 January 2006 through 31 December 2008 in a format acceptable to the Regional Water Board. All results must be reported, including non-detects, inorganic, and organic analyses.
 - b. By **30 June 2009**, submit a present day lump-sum cost estimate for a third-party to complete corrective action of the known release at the landfill per Sections 20380(b) and 22221 of Title 27 and a proposed financial assurances mechanism meeting the requirements of Title 27 for maintaining financial assurances.
 - c. By **30 June 2009**, submit a Sample Collection and Analysis Plan with the information required in Detection and Corrective Action Monitoring Specification E.7.
 - d. By **30 July 2009**, submit an LFG extraction well installation report for the 10 new LFG wells at the south area of the landfill.
 - e. By **30 October 2009**, submit a copy of correspondence with the CIWMB requesting to establish financial assurances for corrective action in the amount of the approved cost estimate and using the approved financial assurances mechanism.
 - f. By **30 October 2009**, submit an evaluation monitoring report documenting the nature and extent of groundwater contamination at the north area of the landfill.
 - g. By **29 January 2010**, submit a corrective action plan for remediation of contaminated groundwater at the north area of the landfill.
 - h. By **30 August 2010**, submit a well installation report for corrective action at the north area of the landfill.
 - i. By **31 October 2010**, submit a corrective action work plan for installation of either (1) the additional 28 LFG wells and the 1,500 scfm flare, or (2) for installation of the 20 dual-completion groundwater extraction wells, and upgraded treatment units and capacity as described in the Discharger's 13 February 2009 EFS.
 - j. By **29 July 2011**, submit an operations and maintenance plan for the new corrective action facilities for north and south areas of the landfill.

- k. **By 31 October 2011**, submit a construction report documenting installation, startup, operation, and maintenance of the facilities and improvements in the Discharger's 31 January 2010 and 31 October 2010 corrective action work plans, as approved by the Regional Water Board, for the north and south areas of the landfill.
- l. **By 31 January 2010 and annually thereafter**, upload monitoring reports, a site map, well survey data, and analytical data into the GeoTracker database, as required by Chapter 30 of Title 23. The global ID number for the Geer Road Landfill is L10005824413.
- m. **By 31 January 2010 and annually thereafter**, submit an electronic Excel (.xls) file with all historical and current analytical data in a format acceptable to the Regional Water Board.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 24 April 2009.

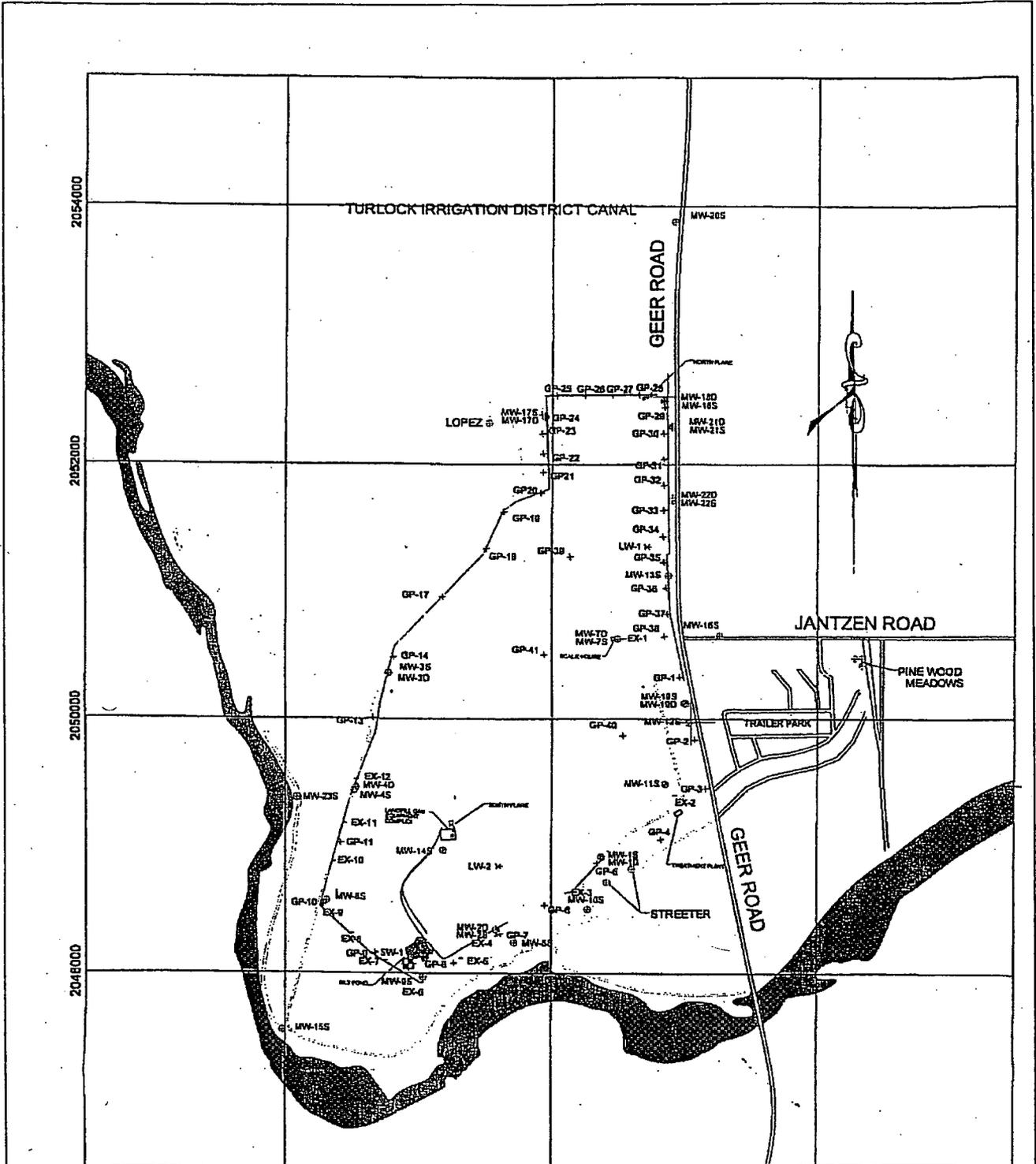
PAMELA C. CREEDON, Executive Officer

WLB



Drawing Reference:
Revised Report of Waste Discharge,
SCS Engineers, 31 October 2007, Figure 2-1

**SITE LOCATION MAP
GEER ROAD LANDFILL
STANISLAUS COUNTY**



Drawing Reference:
Revised Report of Waste
Discharge, SCS Engineers,
31 October 2007, Figure 2-3

**SITE MAP
GEER ROAD LANDFILL
STANISLAUS COUNTY**

Scale:
Approx 1" = 1,000'

ATTACHMENT C
ORDER NO. R5-2009-0051
GEER ROAD LANDFILL
ITEMS TO BE INCLUDED IN THE
FEASIBILITY STUDY/REMEDIAL OPTIONS EVALUATION REPORT

The outline below is a minimum requirement for the contents and items to be included and discussed in the text of all feasibility studies/remedial options evaluation reports submitted to the Regional Water Quality Control Board. Reports shall be stamped and/or signed, as appropriate, by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California. The Discharger's certification statement shall be included with each report and plan.

- I. Purpose of Feasibility Study/Remedial Options Evaluation**

- II. Background**
 - A. Description of Facility
 - B. Site History
 - 1. Years of Operation
 - 2. Chemical Use
 - 3. Chemical Releases (Potential and Documented)
 - C. Geology
 - 1. Regional
 - 2. Local, soil type, lithology, lateral extent of lithologic units
 - D. Hydrogeology
 - 1. Aquifers, Aquitards, Perched Aquifers
 - 2. Groundwater flow rates, directions, recharge, discharge
 - 3. Groundwater Use
 - 4. Extraction and injection wells affect on groundwater flow
 - E. Surface Water
 - 1. Losing or gaining streams, ponds etc.
 - 2. Hydraulic connection with aquifers
 - F. Local Land Use
 - G. Previous Investigation and Remedial Actions

- II. Nature and Extent of Contamination**
 - A. Contaminants in Soils
 - 1. Types and Concentrations
 - 2. Lateral and Vertical Extent
 - B. Pollutants in Groundwater
 - 1. Constituents, concentrations, and water quality goals
 - 2. Lateral and Vertical Extent (including Perched Zones) of contamination

**ITEMS TO BE INCLUDED IN THE
FEASIBILITY STUDY/REMEDIAL OPTIONS EVALUATION REPORT**

- III. Contaminant Fate and Transport**
 - A. Contaminant Properties**
 - 1. Mobility
 - 2. Toxicity
 - 3. Half-life
 - 4. Chemical and biological degradation
 - 5. References for above information
 - B. Contaminant Transport based on Soil and Aquifer Properties**
- IV. Remedial Action Objectives**
- V. Description of Remedial Action Alternatives – at a minimum, 3 alternatives must be considered**
 - A. Alternative that meets background levels
 - B. Alternative that meets water quality objectives
 - C. Alternative that meets levels between background and water quality objectives
- VI. Evaluation of Remedial Action Alternatives**
 - A. Overall Protectiveness of Human Health and the Environment
 - B. Compliance with Laws and Regulations
 - C. Long Term Effectiveness and Permanence
 - D. Reduction of Toxicity, Mobility, and Volume
 - E. Short Term Effectiveness
 - F. Implementability
 - G. Cost
 - F. State and Community Acceptance
- VII. Potential Impacts of Remedial Actions**
- VIII. Estimated Project Schedule for Each Alternative**
- IX. Preferred Alternative**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-0051
FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
STANISLAUS COUNTY

The Discharger shall comply with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, as ordered by Waste Discharge Requirements Order No. R5-2009-0051.

A. REQUIRED MONITORING REPORTS

| <u>Report</u> | <u>Due</u> |
|---|----------------------|
| 1. Groundwater Monitoring (Section D.1) | See Table I |
| 2. Annual Monitoring Summary Report (Section E.5.) | Annually |
| 3. Unsaturated Zone Monitoring (Section D.2) | See Table II |
| 4. Leachate Monitoring (Section D.3) | See Table III |
| 5. Surface Water Monitoring (Section D.4) | See Table IV |
| 6. Facility Monitoring (Section D.5) | As necessary |
| 7. Response to a Release (Standard Provisions and Reporting Requirements) | As necessary |

B. REPORTING

The Discharger shall submit semiannual monitoring reports with the data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2009-0051 and the Standard Provisions and Reporting Requirements. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the

Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in E. Reporting Requirements, below.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to the Regional Water Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

| <u>Sampling Frequency</u> | <u>Reporting Frequency</u> | <u>Reporting Periods End</u> | <u>Report Date Due</u> |
|---------------------------|----------------------------|--|--|
| Monthly | Semiannual | Last Day of Month | by Semiannual Schedule |
| Quarterly | Semiannually | 31 March 30 June 30 September 31 December | by Semiannual Schedule by Semiannual Schedule by Semiannual Schedule by Semiannual Schedule |
| Semiannually | Semiannually | 30 June 31 December | 31 July 31 January |
| Annually | Annually | 31 December | 31 January |
| 5-Year | Every 5 years | 31 December | 31 January |

The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in E. Reporting Requirements, below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

The Discharger shall monitor all **Constituents of Concern (COCs)** for all Monitoring Points for each monitored medium every fifth year (5-year sampling frequency). The last COC monitoring event occurred in May 2007. Subsequent COC monitoring efforts shall be carried out every fifth year thereafter beginning in **2012**, and reporting of five-year COCs will next be due on **31 January 2013**. The report for the COC monitoring shall be submitted with, or reported in, the Annual Report for that year.

The results of **all monitoring** conducted at the site shall be reported to the Regional Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each COC, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points.

The Discharger submitted a water quality protection standard in the "*Article 5 Technical Report*" dated 13 October 1992 and a *Proposed Concentration Limits* was submitted on 31 August 1999. Concentration limits proposed are listed in Table VII.

Any modifications to the Water Quality Protection Standard shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all distinct bodies of surface and groundwater** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zones.

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Constituents of Concern (COCs)

The COCs include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The COCs for all Units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program.

a. Monitoring Parameters

Monitoring parameters are COCs that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

3. Concentration Limits

For a naturally occurring COC, the concentration limit for each COC shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27(e)(8); or
- b. By an alternate statistical method meeting the requirements of §20415(e)(8)(E) of Title 27.

Concentration limits for groundwater proposed by the Discharger in 1999 are listed in Table VII. Currently, background groundwater monitoring well MW 16S is impacted with sporadic low-level detections of VOCs. Therefore, the well is not currently representative of background conditions. Concentration limits for the landfill shall be as listed in Table VII until representative background groundwater quality can be established, and the Discharger calculates updated concentration limits.

4. Point of Compliance

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

5. Monitoring Points

Surface Water: At the discharge from the sedimentation basin

Groundwater: Background: None (formerly MW-16S)

Detection Monitoring (shallow zone):
MW-9S, MW-10S, MW-20S, MW-23S

Detection Monitoring (deep zone):
MW-7D, MW-17D, MW-18D, MW-19D, MW-20D

Other Off-site Monitoring Points (deep zone):
Streeter wells (2 wells), Pinewood Meadows Mobile Home Park (2 wells). Monitoring of these wells is required contingent upon access by property owners.

Corrective Action Monitoring (shallow zone):
MW-1S, MW-2S, MW-3S, MW-4S, MW-5S, MW-7S, MW-8S, MW-11S, MW-12S, MW-13S, MW-14S, MW-15S, MW-16S, MW-17S, MW-18S, MW-19S, MW-21S, MW-22S, MW-23S

Corrective Action Monitoring (deep zone):
MW-1D, MW-2D, MW-3D, MW-4-D, MW-15D, MW-21D, MW-22D, MW-23D

6. Compliance Period

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

D. MONITORING

The Discharger shall comply with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan that is due by the date shown in section G.12.D, Provisions, of the Waste Discharge Requirements R5-2009-0051. The submitted Sample Collection and Analysis Plan must include quality assurance/quality control standards and must be submitted for review and approval, as described in the Waste Discharge Requirements R5-2009-0051.

All point of compliance monitoring wells established for the detection and corrective action monitoring programs shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring and corrective action program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and COCs as indicated and listed in Tables I through IV.

Method detection limits and practical quantitation limits shall be reported. All peaks and trace concentrations must be reported, including those that cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table VI.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. Groundwater

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with approved Detection and Corrective Action Monitoring Programs, where appropriate. The monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall assess the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared semiannually and submitted annually.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot. Samples for the COCs specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

2. Unsaturated Zone Monitoring

Unsaturated zone monitoring shall consist of the landfill gas monitoring probes at the landfill. The Discharger shall monitor the landfill gas monitoring probes in accordance with Table II.

3. Leachate/Seep Monitoring

Leachate which seeps to the surface from the Unit shall be sampled and analyzed for the Monitoring Parameters and COCs listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day). Also, refer to **Reporting Requirements** Section E.4, which lists the reporting requirements for seepage from the landfill.

4. Surface Water Monitoring

The Discharger shall install and operate a surface water detection monitoring system, where appropriate, that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with an approved Detection Monitoring Program.

For all monitoring points and background monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the COCs specified in Table IV every five years. All monitoring parameters shall be graphed to show historical trends at each sample location.

5. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section E.3.f. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs **within 45 days** of completion of the repairs, including photographs of the problem and repairs.

c. Standard Observations

The Discharger shall conduct Standard Observations for the waste management unit, for the perimeter of the landfill module, and for the receiving waters. The standard observations shall include those elements identified in Section E.3.f and shall be performed at the required frequencies.

6. Corrective Action Monitoring

A release from the landfill has resulted in groundwater and unsaturated zone degradation. The Discharger has implemented a corrective action program that includes a groundwater extraction, treatment, and injection system (GWETS) and a landfill gas extraction (LFG) and treatment system. The corrective action monitoring program shall be implemented to demonstrate the effectiveness of the corrective action. A discussion of the effectiveness of the corrective action shall be included in the annual reports. Corrective action monitoring shall include groundwater monitoring; monitoring of the influent, midpoint, and

effluent of the GWETS system; LFG probe monitoring; and LFG treatment system monitoring of the influent to the LFG plant.

The Discharger shall collect and analyze all data necessary to assess the success of corrective actions. This assessment shall include an evaluation of the spatial distribution and concentration of each COC throughout the zone affected by the release. In conjunction with the assessment the Discharger shall monitor groundwater, surface water, and the unsaturated zone to evaluate changes in water quality resulting from the corrective action. Based on the data collected the corrective action may be revised, or discontinued.

Groundwater monitoring shall be accomplished with the same parameters and schedule as specified in Table I. The Discharger shall determine at each sampling whether there is a statistically significant increase over water quality protection standards for each parameter and constituent analyzed, or a statistically significant change from the last sample round.

Groundwater Extraction and Treatment System Monitoring:

The efficiency of the GWETS shall be monitored. The GWETS plant includes prefilters to remove precipitation and two granulated activated carbon (GAC) units in series. The Discharger shall record the cumulative flow going into the system on a weekly basis. The three established sampling ports shall be monitored for concentrations of VOCs in water. Sampling port SP-13 is the influent monitoring point to the GWETS plant. Sampling port SP-14 is the midpoint between the two GAC vessels. Sampling port SP-15 is the effluent monitoring point and is located at the discharge point of the secondary GAC vessel. Sample analyses and frequency of monitoring are as follows:

| <u>Sample Location</u> | <u>Analytical Methods</u> | <u>Frequency of Sampling</u> |
|------------------------|---------------------------|------------------------------|
| SP-13, Influent | USEPA 8260B and TDS | Every 40-days |
| SP-14, Mid-point | USEPA 8260B | Every 40 days |
| SP-15, Effluent | USEPA 8260B and TDS | Every 40 days |

When breakthrough of VOCs is noted at monitoring point SP-14 (the midpoint between GAC vessels) or at SP-15 (the effluent monitoring point), then the Discharger shall take immediate steps to complete the carbon vessel change-out.

The analytical results, mass of VOCs removed for the reporting period, cumulative mass of VOCs removed, volume of water treated for the reporting period, and the cumulative flow recorded in gallons shall be reported with the semi-annual/annual reports. However, whenever breakthrough occurs the

Discharger shall notify the Regional Water Board within 72 hours of the discovery.

E. REPORTING REQUIREMENTS

1. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period.

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
 - b. Date, time, and manner of sampling;
 - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
 - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
 - e. Calculation of results; and
 - f. Results of analyses, and the MDL and PQL for each analysis.
2. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted and shall identify if the violations were corrected or not. If no violations have occurred since the last submittal, then this information must be stated in the transmittal letter. The transmittal letter must provide a discussion of any violations found since the last report was submitted, must provide a description of the actions taken or planned for correcting those violations, must include any references to previously submitted time schedules, and must state if a schedule is contained in the accompanying report or not. The transmittal letter must also include the Discharger's signed certification statement.
 3. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
 - a. For each monitoring point and background monitoring point addressed by the report, a description of:

- 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
- c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
- d. Laboratory statements of results of all analyses evaluating compliance with requirements.
- e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
- f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard observations shall be conducted **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September). Standard The Standard Observations shall include:
- 1) For the Unit:
 - a) Evidence of ponded water at any point on the facility (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.

- 2) Along the perimeter of the Unit:
 - a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
 - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
 - b) Discoloration and turbidity - description of color, source, and size of affected area;
 - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
 - d) Evidence of water uses - presence of water-associated wildlife;
 - e) Flow rate; and
 - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.

g. A discussion about the effectiveness of the Corrective Action Program including comparison of the current data with historical data, trends, and the status of the GWETS, including sampling data, flow rates, and effectiveness.
4. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Regional Water Board **within seven days**, containing at least the following information:
 - a. A map showing the location(s) of seepage;
 - b. An estimate of the flow rate;
 - c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d. Verification that samples have been submitted for analyses of the Monitoring Parameters and COCs listed in Table III of this MRP, and an estimated date that the results will be submitted to the Regional Water Board; and

- e. Corrective measures underway or proposed, and corresponding time schedule.
5. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the reporting period of the previous monitoring year. This report shall contain:
- a. All monitoring parameters and COCs shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous ten calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b. All historical monitoring data, including data for the previous year, shall be submitted in tabular format and in a digital MS Excel file (.xls) in a format acceptable to the Regional Water Board. Data for all field, monitoring, and constituents of concern must be included. Detected and non-detected constituents must be included along with the sample date, well number, analytical method, constituent, MDL, PQL, and qualifiers. The Regional Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27 CCR Section 20420(h)], that facilitates periodic review by the Regional Water Board.
 - c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - d. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
 - e. A comprehensive evaluation of the effectiveness of the Corrective Action Program, including graphs showing trends for all historical and current data for each detected constituent in all wells listed as corrective action wells in this MRP must be provided. The evaluation shall include the status of landfill gas controls, and landfill gas monitoring data for the probes and gas extraction wells.
 - 1) For the GWETS, all data, flow rates, annual volumetric flow, and cumulative volumetric flow shall be reported and tabulated. The annual GWETS plant run time, down time, and duration of downtime shall be reported in hours of operation, hours not in operation, and percent of total time in full operation. At a minimum, the plant shall operate 95% of the time over the course of a calendar

year. The cumulative pounds of VOCs removed for the year and over the life of the project by the GWETS shall be reported.

- 2) In reporting the progress of the corrective action, the annual monitoring report must provide the total volumetric flow into the landfill gas treatment (LFG) system, the mass of halogenated VOCs destroyed for the year, and a trend analysis of halogenated VOCs constituents (not total VOCs) in groundwater at each monitoring point over the life of the LFG treatment system. The annual LFG plant run time, down time, and duration of downtime shall be reported in hours in operations, hours not in operation, and percent of total time in full operation. At a minimum, the plant shall be operating 95% of the time over the course of a calendar year.
- 3) In reporting the progress of the corrective action, the annual report must include contaminant contour maps for specific VOCs in groundwater. Separate contour maps must be provided for vinyl chloride, tetrachloroethene (PCE), trichloroethylene, 1,1-DCE, 1,1-dichloroethane (DCA), 1,2-DCA, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and similar halogenated VOC constituents. Separate maps shall be provided for the deep wells and for the shallow wells. Summary maps showing contours of totalized VOCs do not meet the aforementioned requirements.
- 4) The Discharger shall report any modifications to the Corrective Action Program intended to improve the effectiveness, and shall also report any major maintenance such as replacement/addition of pumps, piping, and dates of carbon change-outs.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

24 April 2009

(Date)

WLB

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

| <u>Parameter</u> | <u>Units</u> | <u>Frequency</u> |
|---|--------------------------|------------------|
| Field Parameters | | |
| Groundwater Elevation | Ft. & hundredths, M.S.L. | Quarterly |
| Temperature | °C | Semiannual |
| Electrical Conductivity | µmhos/cm | Semiannual |
| pH | pH units | Semiannual |
| Turbidity | Turbidity units | Semiannual |
| Eh | Millivolts | Semiannual |
| Monitoring Parameters | | |
| Total Dissolved Solids (TDS) | mg/L | Semiannual |
| Chloride | mg/L | Semiannual |
| Carbonate | mg/L | Semiannual |
| Bicarbonate | mg/L | Semiannual |
| Nitrate - Nitrogen | mg/L | Semiannual |
| Sulfate | mg/L | Semiannual |
| Calcium | mg/L | Semiannual |
| Arsenic (dissolved) | µg/L | Semiannual |
| Iron (dissolved) | µg/L | Semiannual |
| Lead (dissolved) | µg/L | Semiannual |
| Magnesium | mg/L | Semiannual |
| Manganese | mg/L | Semiannual |
| Potassium | mg/L | Semiannual |
| Sodium | mg/L | Semiannual |
| Volatile Organic Compounds (USEPA Method 8260, see Table V) | µg/L | Semiannual |
| Constituents of Concern (see Table VI) | | |
| Total Organic Carbon | mg/L | 5 years |
| Inorganics (dissolved) | µg/L | 5 years |
| Volatile Organic Compounds (USEPA Method 8260B, extended list) | µg/L | 5 years |
| Semi-Volatile Organic Compounds (USEPA Method 8270C) | µg/L | 5 years |
| Chlorophenoxy Herbicides (USEPA Method 8151A) | µg/L | 5 years |
| Organophosphorus Compounds (USEPA Method 8141A) | µg/L | 5 years |

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS AND LFG Plant

| <u>Parameter</u> | <u>Units</u> | <u>Frequency</u> |
|---|--------------------|-------------------------|
| LFG Plant Field Parameters | | |
| Atmospheric Temperature | °F | Monthly |
| Atmospheric Pressure | PSIG | Monthly |
| Temperature into LFG Plant | °F | Monthly |
| Pressure into the LFG plant | in mm of Hg vacuum | Monthly |
| Totalized flow and flow rate into the LFG Plant | Cubic feet & CFM | Monthly |
| Total halogenated VOCs into the LFG Plant | µg/cm ³ | Monthly ¹ |
| Gas Probe and LFG Plant Influent Monitoring Parameters | | |
| Volatile Organic Compounds (USEPA Method TO-15) | µg/cm ³ | Semiannual ² |
| Methane | % | Semiannual |

1 Discharger shall measure total halogenated VOCs using field instrument with appropriate lamp.

2 Volatile organic compounds by TO-15 to be sampled at LFG Plant Influent, and at any landfill gas perimeter probe where methane is detected at greater than or equal to one percent (1.0 %).

TABLE III

LEACHATE SEEP MONITORING

| <u>Parameter</u> | <u>Units</u> |
|---|---------------|
| Field Parameters | |
| Total Flow | Gallons |
| Flow Rate | Gallons/Day |
| Electrical Conductivity | μ mhos/cm |
| pH | pH units |
| Monitoring Parameters | |
| Total Dissolved Solids (TDS) | mg/L |
| Chloride | mg/L |
| Carbonate | mg/L |
| Bicarbonate | mg/L |
| Nitrate - Nitrogen | mg/L |
| Sulfate | mg/L |
| Calcium | mg/L |
| Magnesium | mg/L |
| Potassium | mg/L |
| Sodium | mg/L |
| Volatile Organic Compounds (USEPA Method 8260B, see Table V) | μ g/L |

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

| <u>Parameter</u> | <u>Units</u> | <u>Frequency</u> |
|---|-----------------|-----------------------------|
| Field Parameters | | |
| Temperature | °C | Twice Annually ¹ |
| Electrical Conductivity | µmhos/cm | Twice Annually ¹ |
| pH | pH units | Twice Annually ¹ |
| Turbidity | Turbidity units | Twice Annually ¹ |
| Monitoring Parameters | | |
| Total Dissolved Solids (TDS) | mg/L | Twice Annually ¹ |
| Total Suspended Solids (TSS) | mg/L | Twice Annually ¹ |
| Carbonate | mg/L | Twice Annually ¹ |
| Bicarbonate | mg/L | Twice Annually ¹ |
| Chloride | mg/L | Twice Annually ¹ |
| Nitrate - Nitrogen | mg/L | Twice Annually ¹ |
| Sulfate | mg/L | Twice Annually ¹ |
| Calcium | mg/L | Twice Annually ¹ |
| Magnesium | mg/L | Twice Annually ¹ |
| Potassium | mg/L | Twice Annually ¹ |
| Sodium | mg/L | Twice Annually ¹ |
| Volatile Organic Compounds (USEPA Method 8260B, see Table V) | µg/L | Twice Annually ¹ |
| Constituents of Concern (see Table VI) | | |
| Total Organic Carbon | mg/L | 5 years |
| Inorganics (dissolved) | µg/L | 5 years |
| Volatile Organic Compounds (USEPA Method 8260B, extended list) | µg/L | 5 years |
| Semi-Volatile Organic Compounds (USEPA Method 8270C) | µg/L | 5 years |
| Chlorophenoxy Herbicides (USEPA Method 8151A) | µg/L | 5 years |
| Organophosphorus Compounds (USEPA Method 8141A) | µg/L | 5 years |

¹ The Discharger shall collect surface water samples during the first storm of the rainy season that produces significant flow discharging from the sedimentation basin, and during one other storm event that produces significant flow discharging from the sedimentation basin.

TABLE V
MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC analysis:

USEPA Method 8260B

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)

TABLE V (Continued)

MONITORING PARAMETERS FOR DETECTION MONITORING

Hexachlorobutadiene
Hexachloroethane
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl tertiary butyl ether (MTBE)
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE VI
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

| <u>Inorganics (dissolved):</u> | <u>USEPA Method</u> |
|---------------------------------------|----------------------------|
| Aluminum | 6010 |
| Antimony | 7041 |
| Barium | 6010 |
| Beryllium | 6010 |
| Cadmium | 7131A |
| Chromium | 6010 |
| Cobalt | 6010 |
| Copper | 6010 |
| Silver | 6010 |
| Tin | 6010 |
| Vanadium | 6010 |
| Zinc | 6010 |
| Iron | 6010 |
| Manganese | 6010 |
| Arsenic | 7062 |
| Lead | 7421 |
| Mercury | 7470A |
| Nickel | 7521 |
| Selenium | 7742 |
| Thallium | 7841 |
| Cyanide | 9010B |
| Sulfide | 9030B |

Volatile Organic Compounds:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
Hexachloroethane
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether (MTBE)
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Chlorophenoxy Herbicides:

USEPA Method 8151A

2,4-D (2,4-Dichlorophenoxyacetic acid)

Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)

Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)

2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141A

Atrazine

Chlorpyrifos

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)

Diazinon

Dimethoate

Disulfoton

Ethion

Methyl parathion (Parathion methyl)

Parathion

Phorate

Simazine

TABLE VII- GROUNDWATER CONCENTRATION LIMITS

| Constituent | Units | Concentration Limit |
|--|--------------|----------------------------|
| Specific Conductance (EC) | µmhos/cm | 973 |
| pH | pH Units | 6.0-7.8 |
| Total Dissolved Solids (TDS) | mg/L | 739 |
| Chloride | mg/L | 155 |
| Sulfate | mg/L | 83 |
| Nitrate as N | mg/L | 55 |
| Total Alkalinity | mg/L | TBD |
| Total Organic Carbon | mg/L | TBD |
| Carbonate | mg/L | 5.0 |
| Alkalinity, Bicarbonate | mg/L | 141 |
| VOCs (EPA 8260B) | µg/L | MDL ¹ |
| SVOCs (EPA 8270C) | µg/L | MDL ¹ |
| Organochlorine Pesticide (EPA 8081A) | µg/L | MDL ¹ |
| Polychlorinated Biphenyls (EPA 8082) | µg/L | MDL ¹ |
| Chlorophenoxy Herbicides (EPA 8151) | µg/L | MDL ¹ |
| Organophosphorus Compounds (EPA 8141A) | µg/L | MDL ¹ |
| Aluminum, dissolved | mg/L | TBD |
| Antimony, dissolved | mg/L | TBD |
| Arsenic, dissolved | mg/L | TBD |
| Barium, dissolved | mg/L | TBD |
| Beryllium, dissolved | mg/L | TBD |
| Cadmium, dissolved | mg/L | TBD |
| Chromium, dissolved | mg/L | TBD |
| Chromium VI+, dissolved | mg/L | TBD |
| Cobalt, dissolved | mg/L | TBD |
| Copper, dissolved | mg/L | TBD |
| Iron, dissolved | mg/L | 115 |
| Lead, dissolved | mg/L | TBD |
| Manganese, dissolved | mg/L | 11 |
| Mercury, dissolved | mg/L | TBD |
| Nickel, dissolved | mg/L | TBD |
| Selenium, dissolved | mg/L | TBD |
| Silver, dissolved | mg/L | TBD |
| Sulfide, dissolved | mg/L | TBD |
| Thallium, dissolved | mg/L | TBD |
| Tin, dissolved | mg/L | TBD |
| Vanadium, dissolved | mg/L | TBD |
| Zinc, dissolved | mg/L | 73 |

Notes:
¹ Laboratory Method Detection Limit (MDL)

INFORMATION SHEET

ORDER NO. R5-2009-0051
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
STANISLAUS COUNTY

The Stanislaus County Department of Environmental Resources (hereafter referred to as Discharger) owns and formerly operated a municipal solid waste landfill that was closed in 1995. The landfill is eight miles east of Modesto. The 168-acre facility was operated as a sanitary landfill by the County of Stanislaus from 1970 until 1990 and accepted residential, commercial, industrial (including cannery waste), and construction and demolition wastes. The landfill was closed in 1995 with a geomembrane and vegetative soil on the top deck and compacted clay and vegetative soil on the side slopes. Closure was approved during July 1996. The landfill contains approximately 4.5 million tons of waste.

Groundwater degradation was identified in 1985, and later confirmed in both 1986 groundwater studies and 1987 Solid Waste Assessment Test (SWAT) water quality studies. Aromatic and halogenated volatile organic constituents (VOCs) are present in groundwater in the "shallow" or "upper" groundwater zone under the landfill and downgradient of the site. The exact lateral and vertical extent of degradation is not determined. Halogenated VOCs have been continuously detected in groundwater since 1987.

A LFG control system consisting of an air injection curtain was installed in 1983 along a portion of the site's southern perimeter. Phase 1 of the LFG extraction system, which included the first flare station, was in operation from 1992 to 2006 and covered the northeast one-third of the site. The system was expanded to include 45 gas wells with aboveground piping and a second flare station located near the center of the landfill. The current LFG control system is comprised of 83 extraction wells and one flare station.

During 1991 and 1993, 12 groundwater extraction wells were installed as part of a groundwater remediation system to address groundwater impacts from VOCs and metals. The groundwater remediation system consists of 12 extraction wells, a granular activated carbon (GAC) treatment system, and eight injection trenches. Groundwater is pumped from the 12 extraction wells located along the perimeter of the landfill and is pumped through a bag filter to remove suspended solids and then through two 10,000-pound GAC units, in series, to remove VOCs. Treated groundwater, prior to injection to the shallow zone via infiltration trenches, is sampled and analyzed to assess effluent quality from the treatment system and to evaluate the system efficiency.

The Discharger upgraded the groundwater extraction system during 2007 to increase the flow rate, including replacing extraction well pumps, air lines, discharge lines, installing more filters, and replacing the GAC. During 2008, the Discharger conducted an aquifer test to estimate the radius of influence for each of the groundwater extraction wells. The results of the aquifer test indicate that the extraction system did not influence any of the monitoring

wells at the landfill. Monitoring wells located closest to the extraction wells were 40 to 60 feet away. The Discharger concluded that the radius of influence of the extraction system was less than the distance to these wells. Based on the results of the aquifer test, the Discharger proposed to prepare a new Engineering Feasibility Study (EFS) to compare ongoing use of the groundwater extraction system (including upgrading the system to achieve higher flow rates) to other available technologies for low-level VOC removal from groundwater.

On 14 April 2008, the Discharger submitted a corrective action work plan for expansion of the existing LFG system into the south area of the landfill. The work plan includes installation of 10 LFG extraction wells, connection of the new LFG wells to the existing flare, and installation of two groundwater monitoring wells near the Tuolumne River. The two groundwater monitoring wells (MW-15D and MW-23D) were installed and a report was submitted on 15 January 2009.

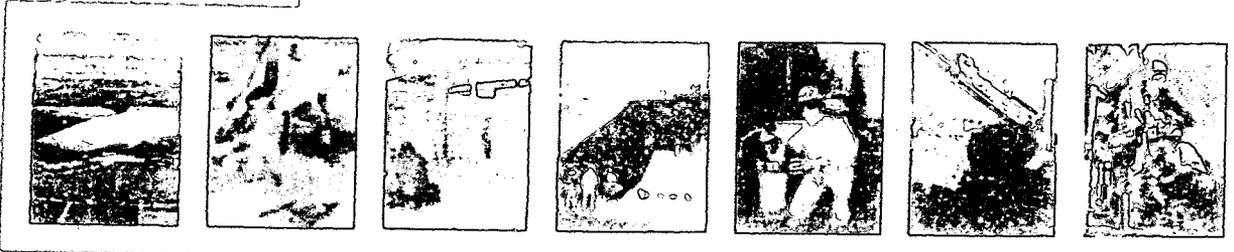
The Discharger submitted an EFS on 13 February 2009 for corrective action of VOCs within the landfill boundary of the south area of the landfill. The Discharger's recommendations include installation of 10 LFG extraction wells. This Order requires that the Discharger install, operate, and maintain the 10 new LFG extraction wells. In addition, the Discharger recommended one of two options: (1) replacement of an existing flare with a 1,500 scfm capacity flare, installation of an additional 28 LFG extraction wells or (2) enhancement of the existing groundwater extraction and treatment system with 20 dual-completion groundwater extraction wells, upgraded treatment units, and increased treatment capacity. This Order requires the Discharger to install 10 LFG extraction wells, and to install either (1) a 1,500 scfm capacity flare and the additional 28 LFG extraction wells or (2) to install 20 dual-completion groundwater extraction wells, upgraded groundwater treatment units, and increased treatment capacity and to implement corrective action for VOC-impacted groundwater at the south area of the landfill, including remediation of groundwater outside the landfill property boundary. This Order requires that the Discharger submit a Construction Report documenting that the corrective action facilities have been installed.

Storm runoff from the site is routed to the sedimentation basin. The basin allows suspended material to settle out from surface water runoff prior to discharge into the Tuolumne River. Discharge from the basin only occurs in very wet weather years. As of January 2009, there have been no discharges from the basin since 31 December 2001.

WLB



SCS ENGINEERS



Evaluation of Impacted Groundwater in North Area

Geer Road Landfill

Presented to:
Stanislaus County



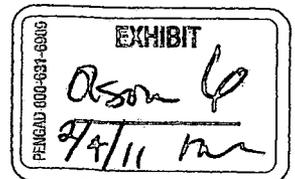
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October 30, 2009
File No. 03196022.42; Task 2

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RB00241

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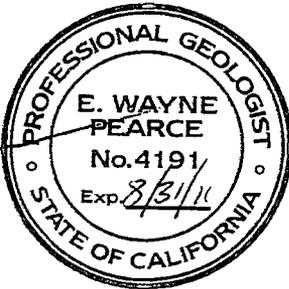
| No. | |
|-----------|--|
| Table 1-1 | Monitoring Wells Included in North Area Evaluation |

Appendices

- Appendix A Tabulated Historical Data
- Appendix B Time-Series Graphs (VOCs and Inorganic)
- Appendix C Onsite Supply Well WDR Well Log

CERTIFICATION

This Evaluation of Impacted Groundwater in North Area, Geer Road Landfill, Stanislaus County, California was prepared under my direct supervision. I am a California Professional Geologist, pursuant to Section 7850 of the Business and Professional Code.

E. Wayne Pearce, P.G.
California Professional Geologist No. 4191

1.0 INTRODUCTION

The Geer Road Landfill is located at 750 Geer Road, in Stanislaus County, California, approximately 10 miles southeast of the City of Modesto (Figure 1-1). The site was operated by the County from 1970 until July 1990. Groundwater has been monitored at the site since 1987 and a groundwater extraction and treatment system was installed for VOC mitigation in 1991. The groundwater monitoring network at the Geer Road Landfill is comprised of thirty-four monitoring wells. Twenty-two of these wells are designated as "shallow" wells and are indicated with an "S" in the well number. These wells are typically screened across the static water level of the first saturated zone. The remaining twelve wells are designated as "deep" wells and are typically screened at depths of 30-50 feet below the static water level.

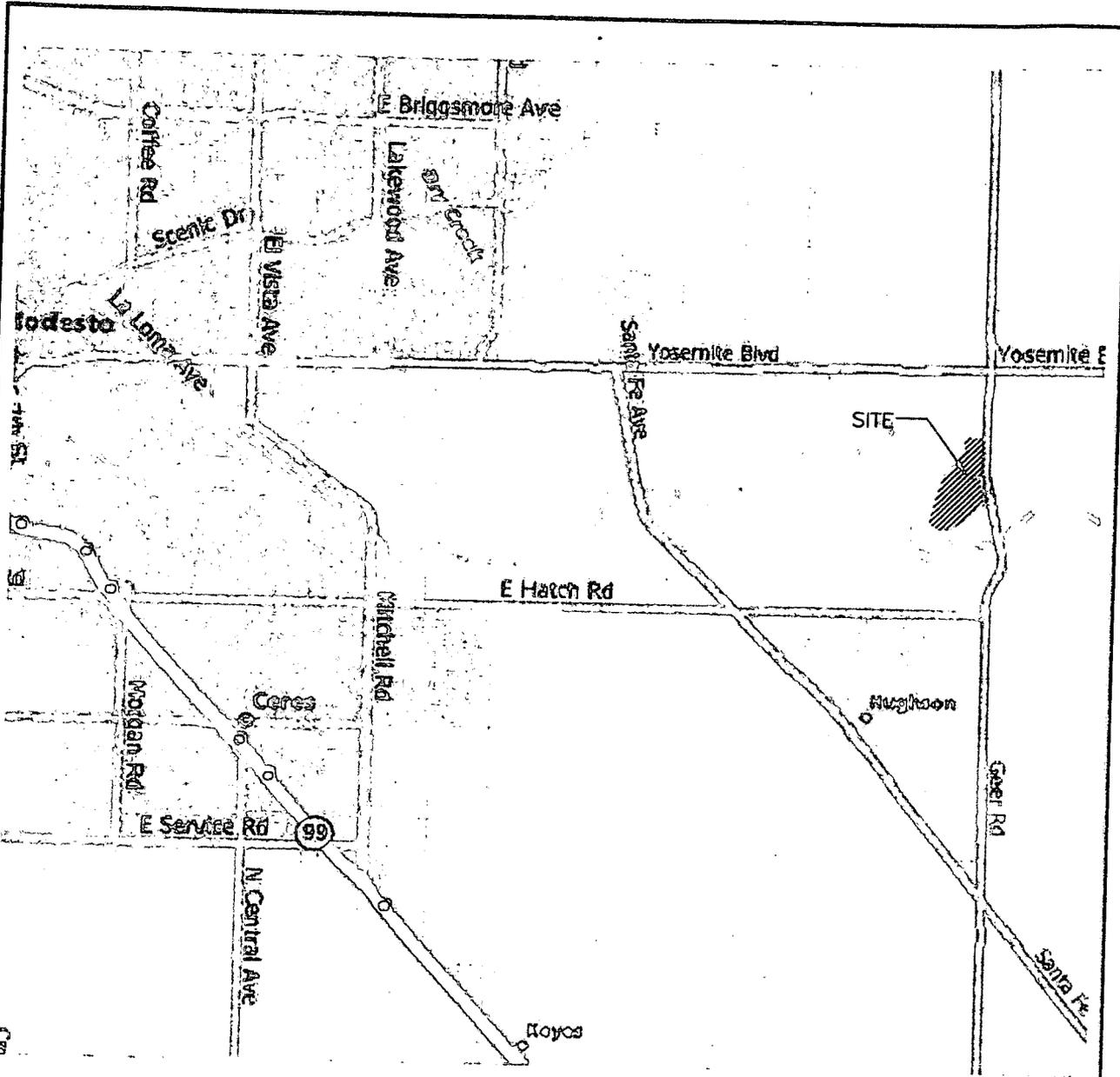
The groundwater extraction and treatment system (GWETS) includes 12 extraction wells that pump water from the first saturated zone, and two granular activated carbon vessels, in series, for removal of VOCs. Effluent from the treatment system is discharged to the subsurface through a series of re-injection trenches. Figure 1-2 is a site map showing all monitoring/extraction points.

The landfill was capped in 1995 and a landfill gas collection (LFG) and flaring system has been installed. Landfill gas monitoring is conducted monthly using seventy gas probes. Data from this monitoring, and from the operation and maintenance of the landfill gas collection system, is reported to the County monthly.

On April 24, 2009, the Regional Water Quality Control Board (RWQCB) Central Valley Region issued new Waste Discharge Requirements (WDRs) and associated Monitoring and Reporting Program (MRP) Order No. R5-2009-0051 for the Geer Road Landfill. The new WDRs require the discharger to investigate the nature and extent of groundwater contamination beneath the north area of the site.

Extensive investigative work has already been performed for the site as a whole, and the nature and extent of contamination at the site was recently reported in SCS's *Engineering Feasibility Study*, dated February 13, 2009. However, for this report, northern area data has been reviewed separately, so that conclusions and recommendations could be made specific the northern area.

Several shallow and deep groundwater monitoring wells were identified in the new WDRs as being located in the northern area of the site and needing further investigation. This report focuses on impacted groundwater in these wells (see Table 1-1). Considering the locations of monitoring wells listed in Table 1-1, the "north area" is generally defined in this report as the area which includes monitoring points north of the Jantzen Road alignment and the old landfill entrance. In addition to groundwater monitoring wells, other monitoring points located in the northern area include numerous gas probes, landfill gas recovery wells, and one leachate monitoring well (LW-1). Two groundwater supply wells are also located in the northern area of the landfill which are no longer in operation, but have not yet been abandoned. Figure 1-3 shows the northern area and associated monitoring points.



LEGEND:
 SITE LOCATION

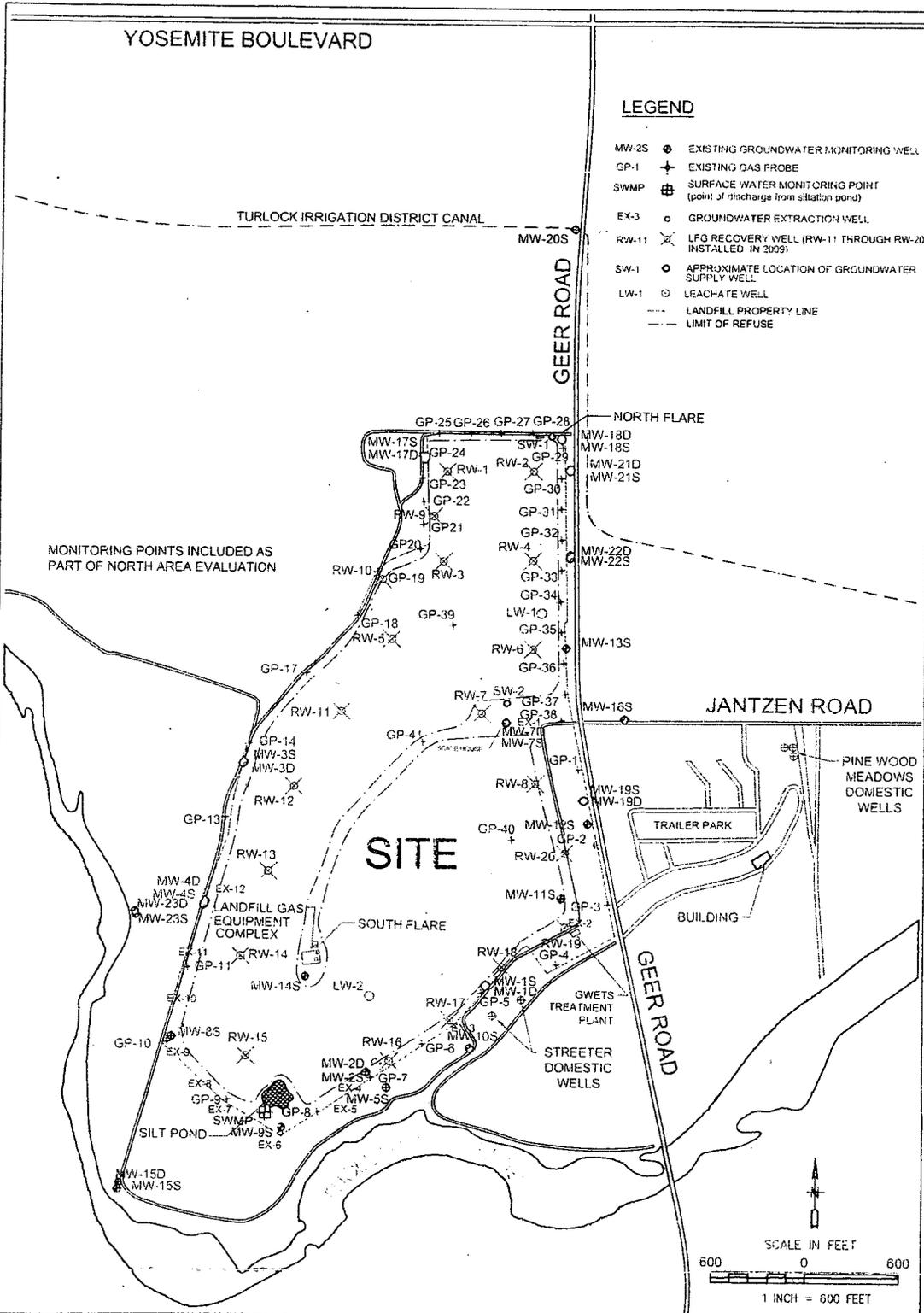


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| | | |
|------------------------|---------------|-----------------------|
| PROJ. NO.: 03196022.42 | DRAWN BY: ATV | ACAD FILE: FIGURE 1-1 |
| DATE: 5/19/09 | CHK. BY: CJH | APP. BY: EWP |

| |
|---|
| SHEET TITLE: LOCATION OF GEER ROAD LANDFILL |
| PROJECT TITLE: GEER ROAD LANDFILL MODESTO, CALIFORNIA |

| |
|--------------------|
| SCALE: N.T.S. |
| FIGURE NO.: 1-1 |

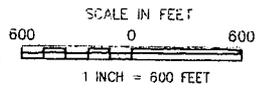


MONITORING POINTS INCLUDED AS PART OF NORTH AREA EVALUATION

SITE

LEGEND

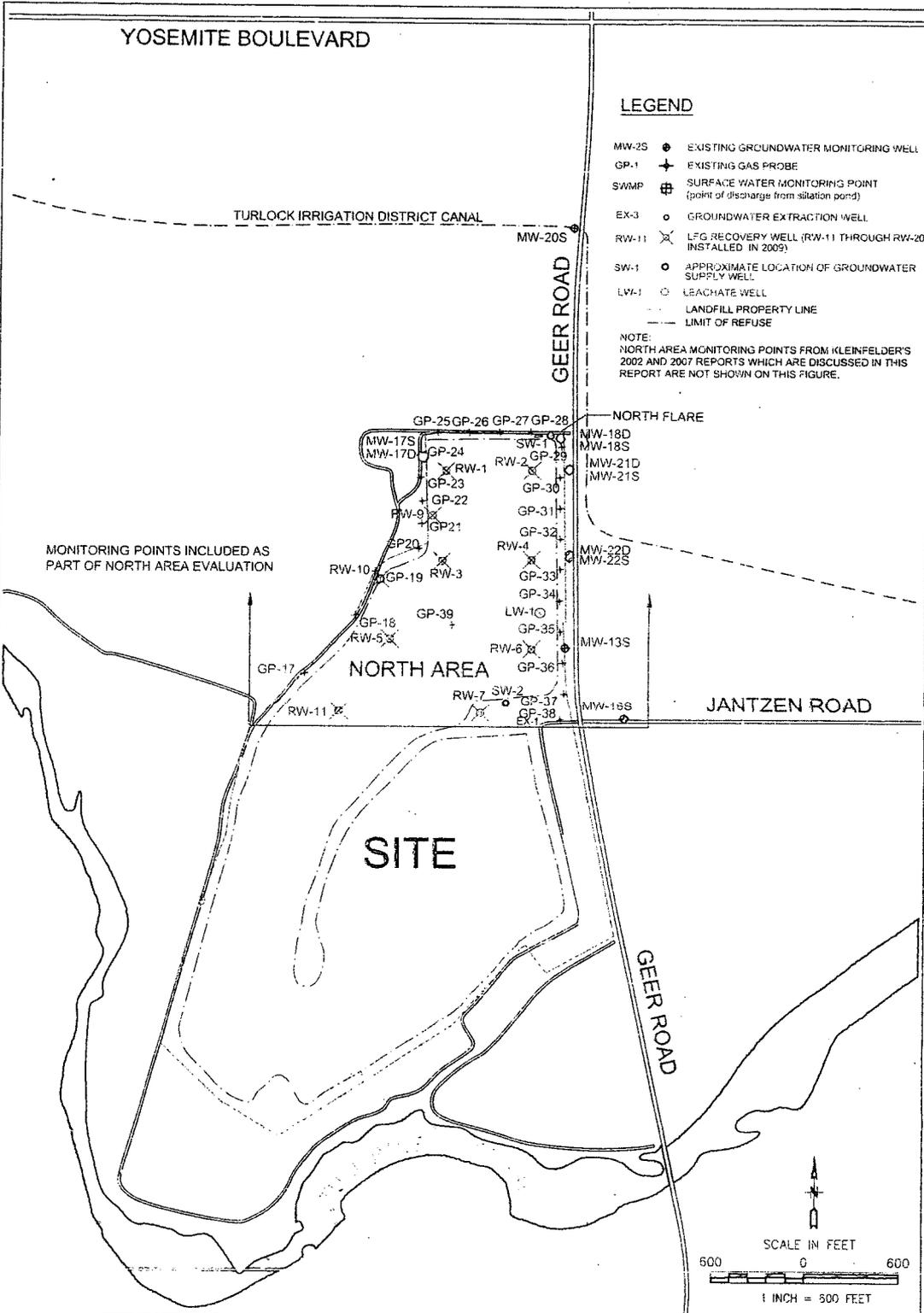
- MW-2S ● EXISTING GROUNDWATER MONITORING WELL
- GP-1 + EXISTING GAS PROBE
- SWMP ⊕ SURFACE WATER MONITORING POINT (point of discharge from siltation pond)
- EX-3 ○ GROUNDWATER EXTRACTION WELL
- RW-11 ✕ LFG RECOVERY WELL (RW-11 THROUGH RW-20 INSTALLED IN 2005)
- SW-1 ○ APPROXIMATE LOCATION OF GROUNDWATER SUPPLY WELL
- LW-1 ○ LEACHATE WELL
- LANDFILL PROPERTY LINE
- - - LIMIT OF REFUSE



| | | | |
|---------------------|--|---|--|
| DATE: 5/20/99 | SCS ENGINEERS | COUNTY OF STANISLAUS ENVIRONMENTAL RESOURCES DEPARTMENT | SHEET TITLE SITE PLAN |
| SCALE: 1" = 600' | ENVIRONMENTAL CONSULTANTS 1117 STEELE CIRCLE, SUITE 108 MORNINGTON, CALIFORNIA 95227 PH (916) 361-1287 FAX (916) 361-1289 | | PROJECT TITLE GEER ROAD LANDFILL MODESTO, CALIFORNIA |
| FIGURE NO. 1-2 | PROJECT NO. 03198022.42 DATE: 1F DRAWN BY: AN CHECKED BY: NF SCALE FILE: Figure 1-2 APP BY: EWP | | |

Table 1-1. Monitoring Wells Included in North Area Evaluation

| Monitoring Well | Reason for Including Monitoring Well |
|---|---|
| MW-13S, MW-17S, MW-17D, MW-18S, MW-18D, MW-22S, MW-22D | Listed on page 6 of WDRs, Order No. R5-2009-0051 in context of defining the nature and extent of VOCs in groundwater in the north area of the site. |
| MW-21S and MW-21D | Located in the vicinity of MW-18. It is believed RWQCB intended to include this well on page 6 of WDRs, Order No. R5-2009-0051, but was omitted. |
| MW-16S | Listed in MRP No. R5-2009-0051 as being impacted with VOCs and no longer a background monitoring well. |
| MW-20S | Located an upgradient well (north of site) – not listed in WDRs. |



| | | | |
|---------------------|--|---|---|
| DATE: 5/20/09 | SCS ENGINEERS | COUNTY OF STANISLAUS ENVIRONMENTAL RESOURCES DEPARTMENT | SHEET TITLE NORTH AREA LOCATIONS |
| SCALE: 1" = 500' | ENVIRONMENTAL CONSULTANTS 7117 TITE CIRCLE, SUITE 100 MODOesto, CALIFORNIA 95207 Ph. (516) 361-1297 FAX. (516) 361-1299 | | PROJECT TITLE GEER ROAD LANDFILL MODOesto, CALIFORNIA |
| FIGURE NO. 1-3 | PROJ. NO. 03196022.42 | DRW. BY: ATV | ACAD FILE: Figure 1-3 |
| | CHK. BY: NF | APP. BY: NF | APP. BY: ENP |

2.0 HISTORICAL DATA REVIEW

SCS has conducted review of existing northern area data which were obtained, tabulated, graphed, and evaluated to determine the nature and extent of groundwater contamination. Results of the data review are presented as a discussion in Section 3.0 - Nature and Extent of Impacted Groundwater in the Northern Area.

The following data were obtained and reviewed as part of this northern area evaluation:

- o Historical groundwater analytical data;
- o Historical groundwater elevation data;
- o Two past Kleinfelder reports: *Evaluation Monitoring and Engineering Feasibility Study* (Kleinfelder, 2002) and *South Area Groundwater Investigation Report* (Kleinfelder, 2007);
- o Recent groundwater monitoring results, including results from SCS's *Second-Annual & Annual 2008 Detection, Evaluation, and Corrective Action Monitoring Report*, dated January 15, 2009 (SCS, 2009a); and,
- o SCS's *Engineering Feasibility Study*, dated February 13, 2009 (SCS, 2009b).

SCS determined which volatile organic compounds (VOCs) have been historically detected in groundwater in the northern area of the site. Historical data for these VOCs have been tabulated (see Appendix A) and graphed (see Appendix B) for northern area wells, including MW-13S, MW-16S, MW-17S, MW-17D, MW-18S, MW-18D, MW-21S, MW-21D, MW-22S, and MW-22D. Tabulated data or time-series graphs have not been provided for MW-20S because this well has been reported non-detect for VOCs. Historical groundwater elevations were obtained and plotted in the VOC time-series graphs in Appendix B.

Time-series graphs illustrating historical inorganic concentrations in northern area monitoring wells are also provided in Appendix B. Concentrations for chloride, nitrate, sulfate, TDS, bicarbonate, potassium, sodium, magnesium, calcium, and carbonate are graphed for shallow and deep northern area wells.

A short summary of investigative work performed by Kleinfelder, as reported in its 2002 and 2007 reports, is provided below. A significant amount of testing was performed during these studies, and results are used to help define the nature and extent of impacted groundwater in the northern area of the site (see Section 3.0 of this document).

2.1 EVALUATION MONITORING AND ENGINEERING FEASIBILITY STUDY, KLEINFELDER, 2002

Kleinfelder performed an Evaluation Monitoring and Engineering Feasibility Study in 2000 and 2001, and presented the results in its *Evaluation Monitoring and Engineering Feasibility Study*. The purpose of the study was to assess the lateral and vertical extent of volatile organic compounds (VOCs) in groundwater, to develop a site model to explain the source of VOCs in groundwater, as well as to develop a feasibility study to assess corrective action options.

Activities performed as part of the 2000/2001 study included:

- Several direct push borings to groundwater were completed to assess the lateral and vertical extent of VOC migration and to assist in the selection of locations for permanent groundwater monitoring wells. Direct push borings included DP-1, DP-2, DP-4, DP-5, DP-12, DP-15, DP-16, DP-21, DP-22, DP-23, DP-24, DP-25, and DP-26. Groundwater samples could not be collected from DP-22, DP-23, DP-25, and DP-26.
- Exploratory borings were drilled in the waste cells to evaluate the depth of fill, depth to groundwater, moisture content of the waste, presence of standing leachate, and potential for groundwater within the waste.
- Deep and shallow groundwater monitoring wells were installed in upgradient and cross-gradient locations for evaluating the groundwater gradient direction and lateral extent of VOCs in groundwater. New groundwater monitoring wells included upgradient well MW-20S, and shallow and deep well pairs MW-17S/D, MW-18S/D, MW-21S/D, and MW-22S/D.
- Leachate wells were installed within the waste to monitor for periodic contact of groundwater and landfill waste.
- Gas probes were installed and sampled to help develop the site model for VOC migration. New gas probes GP-38 and GP-39 were installed in the northern area of the landfill and several probes in the northern area were sampled, including samples from GP-17, GP-18, GP-22, GP-23, GP-24, GP-36, GP-37, GP-38, and GP-39.
- Soil vapor extraction test wells were installed and tested to help in the design of a soil gas remediation system.
- Data logging equipment was used to monitor vapor pressure in selected gas probes.
- Groundwater elevation was monitored using water level pressure sensors with data loggers in monitoring and leachate wells. The river water elevation was also monitored.
- Groundwater collected from domestic and monitoring wells was analyzed to evaluate VOC concentrations.
- Water in the Tuolumne River was sampled and analyzed for VOCs.

- Groundwater levels were measured in monitoring wells to evaluate the groundwater gradient across the landfill.

Locations of select sampling points, including direct push locations, gas probes, and new groundwater monitoring wells installed in the northern area as part of this study, are shown in Figure 2-1.

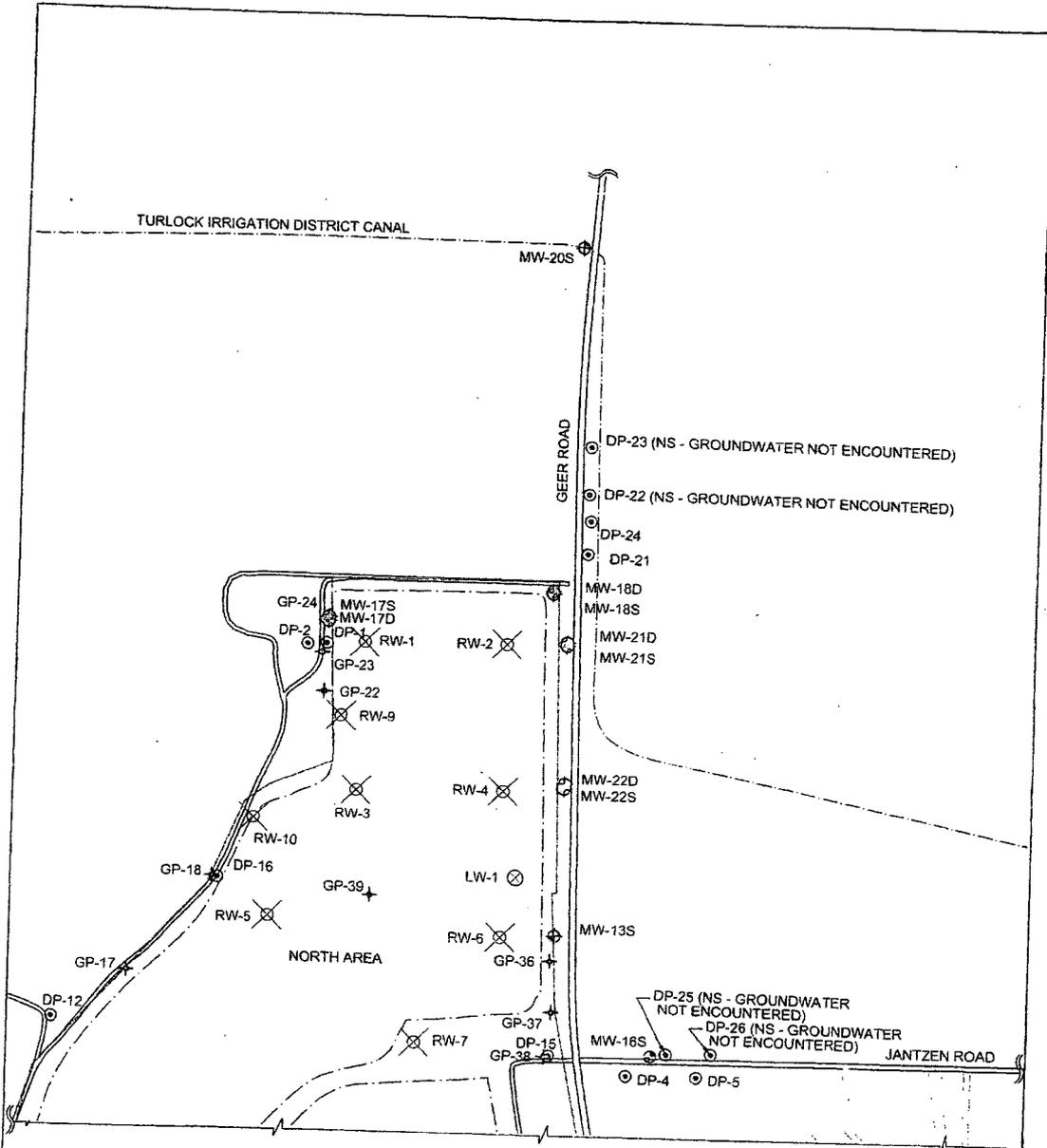
Kleinfelder's 2002 report included a site model describing how VOCs were migrating from the landfill source to groundwater. The site model was based on several observations, including landfill gas pressure data.

2.2 SOUTH AREA GROUNDWATER INVESTIGATION REPORT, KLEINFELDER, 2007

Kleinfelder performed a South Area Groundwater Investigation in 2006. The work is summarized here because it also included some portions of the north area. There were several objectives of this investigation, including assessing the lateral and vertical extent of VOCs in groundwater in the southern area of the site, as well as to determine the source of VOCs in onsite wells located down-gradient of the Pinewood Meadows Trailer Park. Results were presented in *South Area Groundwater Investigation Report* (Kleinfelder, 2007).

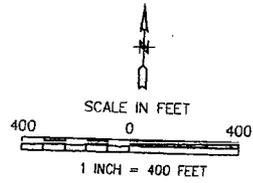
Kleinfelder's 2006 field investigation consisted of collecting groundwater, soil gas, and surface water samples from the Turlock Irrigation District canal. Sampling activities included:

- Geoprobe (hydropunch) groundwater sampling at twenty-nine locations, with soil vapor sampling at two of the twenty-nine locations (August 22 through August 30, 2006);
- Sampling of irrigation canal in two locations (August 25, 2006);
- Sampling of fifteen existing gas probes (August 30 and September 5, 2006);
- Sampling of groundwater monitoring well MW-12S (September 5, 2006);
- Hydropunch groundwater sampling at two locations, with soil vapor sampling at each location (October 9 and 10, 2006);
- Geoprobe (hydropunch) groundwater sampling of groundwater at five locations (November 2, 2006); and,
- Sampling and re-sampling of eight existing gas probe locations (December 14 and 15, 2006).



LEGEND

- MW-2S EXISTING GROUNDWATER MONITORING WELL
- GP-1 EXISTING GAS PROBE
- DP-23 TEMPORARY DIRECT PUSH SAMPLE LOCATION INSTALLED AS PART OF KLEINFELDER'S 2008 SOUTH AREA GROUNDWATER INVESTIGATION.
- RW-4 LFG RECOVERY WELL (RW-11 THROUGH RW-20 INSTALLED IN 2009)
- LW-1 LEACHATE WELL
- LANDFILL PROPERTY LINE
- LIMIT OF REFUSE
- NS NOT SAMPLED



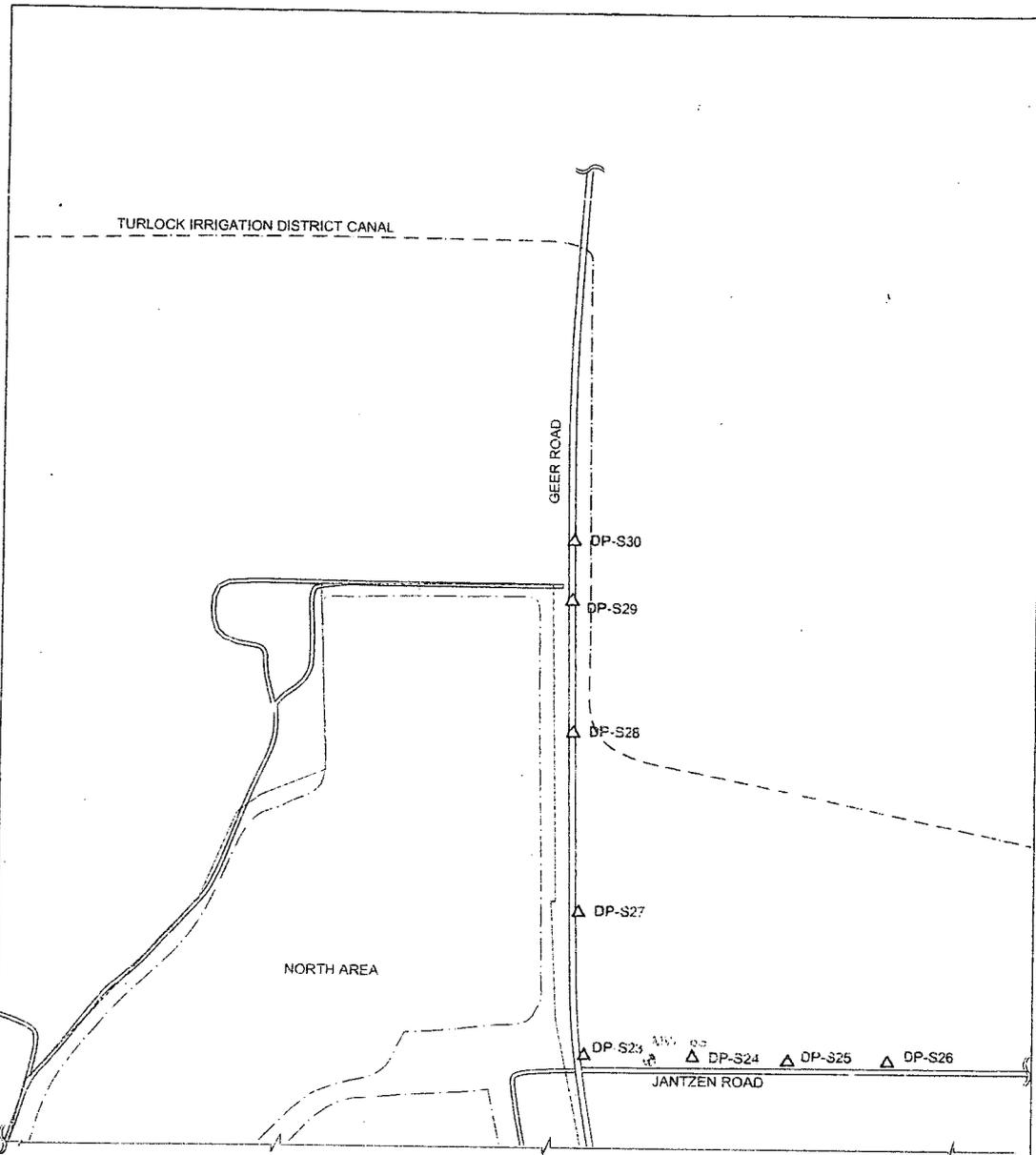
| | | | |
|---------------------|---|--|--|
| DATE: 6/11/09 | | COUNTY OF STANISLAUS ENVIRONMENTAL RESOURCES DEPARTMENT | SHEET TITLE SELECT NORTHERN AREA 2000/2001 SAMPLING POINTS |
| SCALE: 1" = 400' | | | PROJECT TITLE GEER ROAD LANDFILL MODESTO, CALIFORNIA |
| FIGURE NO. 2-1 | ENVIRONMENTAL CONSULTANTS 3117 FIRE CIRCLE, SUITE 108 SACRAMENTO, CALIFORNIA 95827 TEL (916) 361-1297 FAX (916) 361-1299 | ACAD FILE: Figure 2-1 DWG. BY: JIV CHK. BY: NF APP. BY: EWP | |

GEER ROAD LANDFILL
EVALUATION OF IMPACTED GROUNDWATER IN NORTH AREA

SCS ENGINEERS

Several direct push samples were located along Geer Road and Jantzen Road, east of the landfill boundary and in the vicinity of MW-16S. Locations of these samples (DP-S23, DP-S24, DP-S25, DP-S26, DP-S27, DP-S28, DP-S29, and DP-S30) are shown in Figure 2-2. Since refuse was encountered during the drilling of DP-S27, a groundwater sample was not collected.

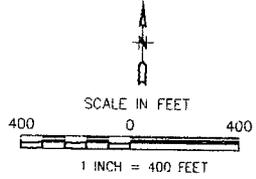
SCS has tabulated VOC data for gas probes reported in Kleinfelder's 2002 and 2007 reports (see Appendix A).



LEGEND

- ▲ SELECT MONITORING WELL
- ▲ DP-S25 KLEINFELDER'S SAMPLING POINTS 2006
- LANDFILL PROPERTY LINE
- - - LIMIT OF REFUSE

NOTE:
THIS FIGURE SHOWS NORTH AREA MONITORING POINTS
FROM KLEINFELDER'S 2006 SOUTH AREA GROUNDWATER
INVESTIGATION.



| | | | | | |
|---------------------|--|------------------|--------------------------|---|---|
| DATE: 6/11/09 | SCS ENGINEERS | | | COUNTY OF STANISLAUS ENVIRONMENTAL RESOURCES DEPARTMENT | SHEET TITLE SELECT NORTHERN AREA 2006 SAMPLING POINTS |
| SCALE: 1" = 400' | ENVIRONMENTAL CONSULTANTS 3117 FIVE CIRCLE SUITE 108 SACRAMENTO, CALIFORNIA 95807 TEL: (916) 391-1227 FAX: (916) 391-1259 | | | | PROJECT TITLE GEER ROAD LANDFILL MODESTO, CALIFORNIA |
| FIGURE NO. 2-2 | PROJ. NO.: 03196022.42 | DRAWN BY: ATV | ACQ. FILE: Figure 2-2 | | |
| | CHK. BY: NF | CHK. BY: NF | APP. BY: EWP | | |

3.0 NATURE AND EXTENT OF IMPACTED GROUNDWATER IN THE NORTHERN AREA

The nature of impacted groundwater, source and migration of VOCs to groundwater, horizontal and vertical extents of impacted groundwater, and corrective actions currently in place, are summarized based on evaluated data.

3.1 NATURE OF IMPACTED GROUNDWATER

The primary contamination issue in groundwater in the northern area is the presence of VOCs. As noted in its *Engineering Feasibility Study*, SCS concluded that some change in the natural ion balance in groundwater (inorganic impacts) may be occurring beneath the site due to landfill gas or other impacts, but that these do not appear to be significant enough to warrant consideration in corrective action. Also, the presence of arsenic in groundwater has been investigated; however, this was generally a localized impact in the western part of the site, and not relevant to the northern area. (SCS, 2009b.)

3.1.1 VOC Contamination

The following VOCs have been historically reported in shallow monitoring wells in the north area (not including constituents which have only been reported at trace [J-flagged] concentrations): dichlorodifluoromethane (Freon 12), trichlorofluoromethane (Freon 11), 1,1,1-trichloroethane, 1,1-dichloroethene (1,1-DCE), 1,1,2-trichloro-1,2,2-trifluoroethane, tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethane (1,1-DCA), methylene chloride, methyl t-butyl ether (MTBE), n-propylbenzene, chloroform, and toluene (see Appendix A).

The following VOCs have been historically reported in deep monitoring wells in the north area (not including constituents which have only been reported at trace concentrations): PCE, Freon 11, Freon 12, and 1,1-DCA (see Appendix A).

VOC constituents observed in northern area monitoring wells are consistent with those typically observed at landfill sites. One exception is chloroform, which is a byproduct of chlorinated drinking water; these detections likely represent another impact source other than the landfill, or false positive results. Other exceptions are MTBE and toluene, which are associated with fuel range petroleum hydrocarbons. The landfill closed in 1990, which pre-dated the use of MTBE in fuels (1992). An additional upgradient source has been suspected for these constituents. (Kleinfelder, 2007.)

VOC concentrations in the northern area are currently very low, and decreasing concentrations are observed for wells where there is sufficient historic data. Two northern area monitoring wells (MW-13S and MW-16S) were installed before the GWETS and LFG collection and flaring system were installed. VOC time-series graphs for these wells show a reduction in VOCs occurring after the implementation of the remedial systems (see Appendix B). The remaining wells (MW-17S, MW-17D, MW-18S, MW-18D, MW-21S, MW-21D, MW-22S, and MW-22D) were installed after the remedial systems were operational. VOC concentrations may have been higher in these areas prior to implementation of the remedial systems; however, there is

insufficient data to determine the long-term efficacy of the remedial systems of these wells. However, VOC concentrations in these wells were low at the time of installation, and have remained low since that time (see Appendix B).

3.2 SOURCE AND MIGRATION OF VOCs TO GROUNDWATER

3.2.1 Landfill Gas

It is believed that landfill gas (LFG) has been the primary source of VOCs in groundwater in the northern area of the site. This conclusion is supported primarily by the fact that VOC impacts have been observed upgradient of the waste cells (groundwater flow is generally from northeast to southwest). There does not appear to be a mechanism other than LFG migration that could have caused low-level VOCs in groundwater upgradient of wastes.

LFG is comprised primarily of methane and carbon dioxide, with VOCs entrained in the gas. LFG in the vadose zone migrates away from the center of the waste cells, towards the perimeter of the landfill, by means of pressure gradients. This migration happens in a radial pattern and, as is typical for all landfills that do not have LFG control systems, the gas can migrate beyond the limits of the waste cells, producing a LFG "halo" around the site. As the LFG migrates, methane is consumed, in part, by methanotropic bacteria; however, VOCs are not consumed and enter groundwater via molecular diffusion at the LFG/groundwater interface. Rainwater migrating down into the soil also transports VOCs to groundwater. (Kleinfelder, 2002.)

VOC constituents detected in northern area groundwater were also present in northern area landfill gas samples collected by Kleinfelder in 2000 and 2001, except MTBE and n-propylbenzene (see Appendix A). This is further evidence supporting the conclusion that landfill gas is the source of VOCs in groundwater.

3.2.2 Other Sources

Based on drilling investigation results and firsthand accounts from Stanislaus County staff (Kleinfelder, 2002), it has been speculated that some of the waste cells at the Geer Road Landfill were excavated to groundwater; therefore, there may also be potential for VOC migration into groundwater due to direct contact of groundwater with wastes. If this is occurring, VOCs would migrate with groundwater downgradient (southwest) from the source, but would not be expected to migrate upgradient, beyond the waste boundaries.

MTBE and toluene detections seen in monitoring locations such as MW-16S, DP-S25, and DP-S26 are believed to be due to a localized, upgradient fuel source. (Kleinfelder, 2007.)

3.3 HORIZONTAL EXTENT OF IMPACTED GROUNDWATER

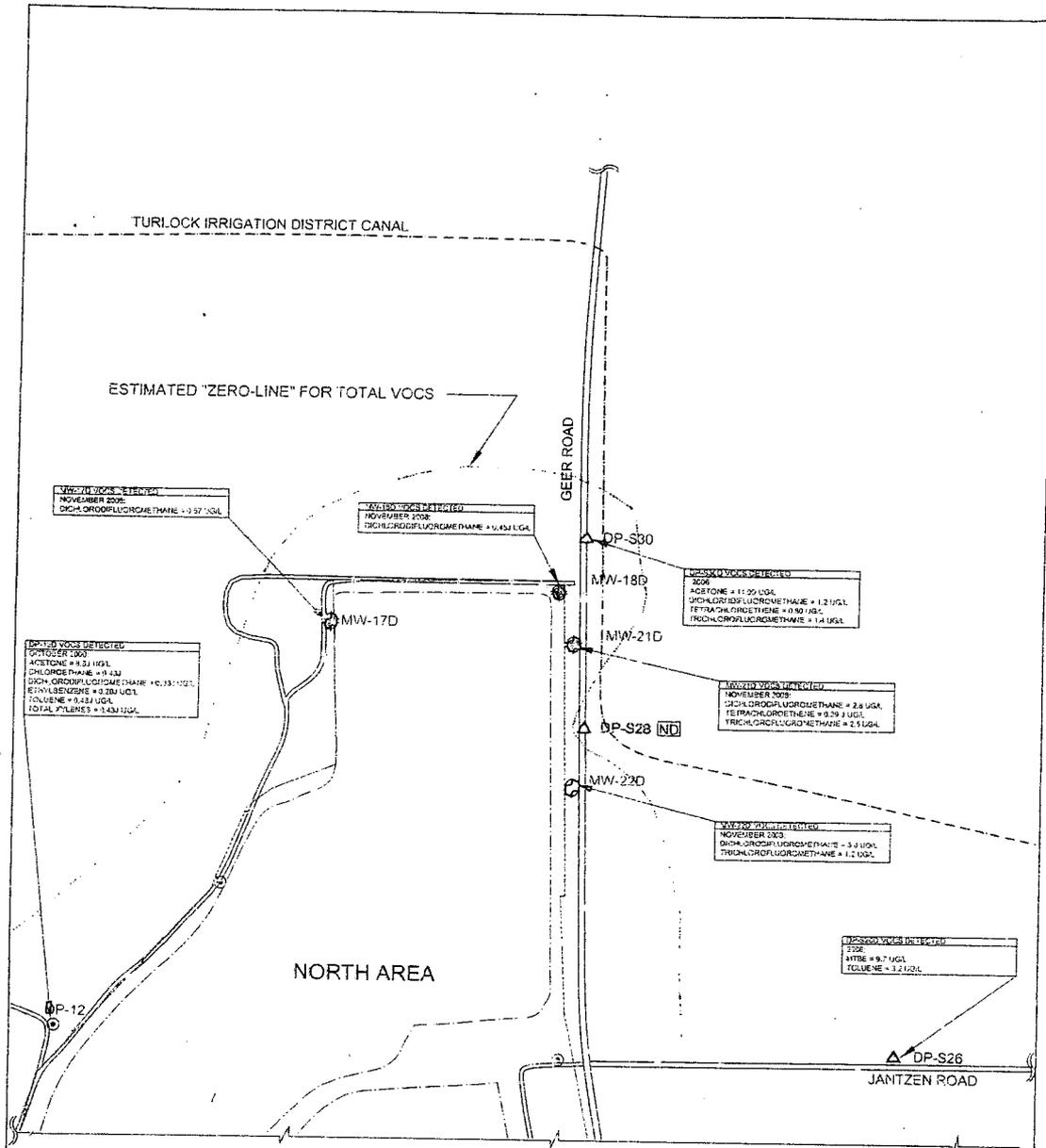
The horizontal extent of impacted groundwater can generally be defined for the northern area of the site. In its *Engineering Feasibility Study*, SCS previously submitted iso-concentration maps for shallow and deep zones, for total VOCs and several individual VOCs, using June 2008 groundwater monitoring analytical results. The horizontal extent of VOCs in the northern area were illustrated in those maps. Using these total VOC maps, data collected during Kleinfelder's 2000/2001 study and 2006 investigation, as well as recent analytical results, an estimated "zero-line" has been developed for shallow and deep zones (see Figures 3-1 and 3-2). This "zero-line" estimates the extent of VOC detections in groundwater.

3.3.1 Shallow Zone

The horizontal extent of shallow groundwater is shown on Figure 3-1. The zero-line was approximated using VOC results for individual shallow groundwater monitoring points, including shallow wells and past temporary sampling locations (VOC results are shown on the figure). MW-20S, DP-S28, and DP-S24 are shown in green and represent locations that are non-detect for VOCs, while VOCs have been reported at other points.

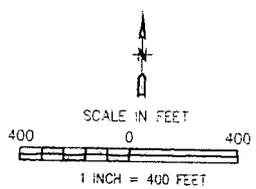
For the shallow aquifer zone, it is known that impacted groundwater does not extend north to MW-20S. MW-20S was installed upgradient and north of the site as part of Kleinfelder's *Evaluation Monitoring and Engineered Feasibility Study* (Kleinfelder, 2002). Groundwater samples collected from this well have been reported non-detect for VOCs and have contained significantly lower inorganic concentrations (except carbonate) compared to other northern area monitoring wells (see inorganic time-series graphs in Appendix B). Results have also been consistent over time, with no fluctuations or increasing or decreasing trends. Fluctuations, increases, and decreases in inorganic concentrations are generally observed in all of the other northern shallow monitoring wells. These observations suggest inorganic concentrations in MW-20S are different compared to other northern wells.

MW-16S was originally installed in 1990 as a background well to replace MW-13S, which had been considered a background well, but was later reported to contain VOCs. The new WDRs state MW-16S is no longer a background well since groundwater samples have been reported to contain VOCs. It should be noted that, while VOCs started to appear in MW-16S in 1992 and showed an increasing trend for some time, these concentrations have been decreasing during the last few years (see Appendix B). In fact, VOCs have been nearly absent during recent sampling events. During the second semi-annual 2008 monitoring event, only one VOC was reported, and was "J-flagged" (0.23 µg/L "J-flagged" of dichlorodifluoromethane), which means it was an estimated concentration above the method detection limit, but below the method reporting limit. Several inorganic constituents (nitrate, sulfate, magnesium, and calcium) have also been observed to be recently decreasing in MW-16S. Current VOC concentrations in MW-16S is evidence that this well is at approximately the extent of VOC detections and a replacement well east of MW-16S is not necessary to define the horizontal extent of impacted groundwater in the shallow zone.



LEGEND

- MW-25 GROUNDWATER MONITORING WELL
- DP-S25 KLEINFELDER'S SAMPLING POINTS 2006
- GP-1 EXISTING GAS PROBE
- DP-23 TEMPORARY DIRECT PUSH SAMPLE LOCATION INSTALLED AS PART OF KLEINFELDER'S 2006 SOUTH AREA GROUNDWATER INVESTIGATION
- RW-4 LFG RECOVERY WELL (RW-11 THROUGH RW-20 INSTALLED IN 2009)
- SW-1 APPROXIMATE LOCATION OF GROUNDWATER SUPPLY WELL
- LW-1 LEACHATE WELL
- J ESTIMATED VALUE BELOW THE PRACTICAL QUANTITATION LIM
- LANDFILL PROPERTY LINE
- LIMIT OF REFUSE
- ESTIMATED "ZERO LINE" FOR TOTAL VOCs-BASED ON SHALLOW



| | | | |
|---------------------|--|---|---|
| DATE: 6/29/09 | SCS ENGINEERS | COUNTY OF STANISLAUS ENVIRONMENTAL RESOURCES DEPARTMENT | SHEET TITLE: HORIZONTAL EXTENT OF IMPACTED GROUNDWATER IN DEEP ZONE |
| SCALE: 1" = 400' | ENVIRONMENTAL CONSULTANTS 3117 RITE CIRCLE, SUITE 100 SACRAMENTO, CALIFORNIA 95827 PH: (916) 561-1257 FAX: (916) 561-1259 | | PROJECT TITLE: GEER ROAD LANDFILL MODESTO, CALIFORNIA |
| FIGURE NO. 3-2 | PROJ. NO. 05196022.42 SHEET NO. NF | DRW. BY: ATV CHK. BY: NF | NO. OF PLS. Figure 3-2 APP. BY: EWP |

In 2006, MW-16S was reported to contain VOCs; however, results for three 2006 "step-out" direct push locations (see DP-S24, DP-S25, and DP-S26 on Figure 2-2) indicated contamination from the landfill generally did not extend east beyond MW-16S. DP-S24 was located just east of MW-16S, and was reported non-detect for all VOCs. DP-S25 and DP-S26 were located further east past DP-S24, and were only reported to contain MTBE and toluene, which were believed to be due to an off-site fuel source. (Kleinfelder, 2007.)

In 2006, impacted groundwater did not extend east to DP-S28. Groundwater samples collected from DP-S28 (shallow and deep) were reported non-detect for VOCs and contained the lowest concentrations of many inorganic constituents compared to other direct push groundwater samples collected during the same investigation. (Kleinfelder, 2007.)

Several direct push groundwater samples were collected from northern area locations in 2000/2001, including: DP-1, DP-2, DP-4, DP-5, DP-12, DP-15, DP-16, DP-21, and DP-24. Samples could not be collected from DP-22, DP-23, DP-25, and DP-26 (see Figure 2-1). All of the samples were reported to contain VOCs, but most concentrations were minor. (Kleinfelder, 2002.)

3.3.2 Deep Zone

The horizontal extent of VOCs in deeper groundwater is shown in Figure 3-2. The zero-line was approximated using VOC results for individual deep groundwater monitoring points, including deep wells and past temporary sampling locations (VOC results are shown in the figure). DP-S28 represents a non-detect location, while VOCs have been reported at other deep monitoring points.

While upgradient sample locations have been reported non-detect for VOCs for the shallow aquifer zone, many of these locations do not have deep sampling points. Therefore, defining the horizontal extent within the deeper aquifer zone is generally based on the assumption that if the shallow zone is non-detect for VOCs, the corresponding deep zone is also non-detect for VOCs.

Historic analytical results for the site indicate that the shallow groundwater zone is generally more impacted compared to the deeper aquifer zone. An assumption can be made that if shallow monitoring points located upgradient from the landfill have been reported non-detect for VOCs, the deeper zone in those locations should also be non-detect. There is no reasonable transport mechanism that would result in VOCs upgradient of the site in deeper groundwater, but non-detectable in the shallow groundwater. In the case of DP-S28, both shallow and deep aquifer zones were reported non-detect for VOCs, which supports this assumption. MW-20S and DP-S24 did not have deeper aquifer zone sampling points, but shallow points were reported non-detect for VOCs. DP-S26 did have a deeper sampling point. Only MTBE and toluene were reported in both shallow and deep DP-S26 locations, but are believed to be due to an offsite fuel source.

Inorganic concentrations over time have been similar in deep wells MW-17D, MW-18D, MW-21D, and MW-22D. In general, inorganic concentrations do not appear to have decreased or increased; however, there is a common pattern of concentration fluctuations.

3.4 VERTICAL EXTENT OF IMPACTED GROUNDWATER

Shallow and deep monitoring well pairs MW-17S/D, MW-18S/D, MW-21S/D, and MW-22S/D were installed in the northern area of the site as part of Kleinfelder's 2002 *Evaluation Monitoring and Engineered Feasibility Study*. All of these shallow and deep wells have been reported to contain VOCs since their installation. In general, shallow wells have been reported to contain higher concentrations and a greater number of VOC constituents compared to their deep well counterparts. One exception is MW-22D, which has historically been reported to contain higher concentrations of dichlorodifluoromethane compared to MW-22S (see tabulated historical VOC data in Appendix A).

As recently stated in SCS's *Engineering Feasibility Study*, the vertical extent of VOCs in groundwater has not been fully determined. Further, a lower confining unit has not been confirmed for the "deep" zone aquifer. All of the deep zone monitoring wells are screened in the very top of what may be the Riverbank Formation; this formation of interbedded sand, silts, and clays may extend deeper than the current monitoring points. However, a significant clay zone exists above the deep zone, and the deep zone is under mild artesian pressure with an upward potential gradient to the shallow zone. Various documents have cited greater confinement with depth due to interbedded clays, and at depths around 600 feet, the confining pressure is significant. The Riverbank Formation is also known to be coarser at the top of the formation and becomes finer with depth. Therefore, it is likely that VOCs may have entered the deep zone where breaks exist in the clay bed between zones, and probably have remained relatively near the top of that zone in the coarser material. (SCS, 2009b.)

4.0 CORRECTIVE ACTIONS IN PLACE

Corrective action activities are currently in effect at the site, including operation of the groundwater extraction and treatment system (GWETS) and landfill gas (LFG) collection and flaring system. Both systems are collectively addressing the mechanisms of VOC migration for the site as a whole, including the northern area. These corrective actions have resulted in reductions of VOCs in the shallow groundwater zone by as much as 90% compared to pre-corrective action maximum concentrations. (SCS, 2009b.)

As stated in SCS's *Engineering Feasibility Study*, the LFG extraction system is very effective in the removal of LFG within the waste unit, as well as reduction of LFG around the waste perimeter. In May 2008, test results showed the LFG incoming to the flare was 43% nitrogen, 31% methane, 24% carbon dioxide, and 2% oxygen (based on Mole %). By comparison, gas probe monitoring conducted around the landfill in 2008 recorded gas concentrations monthly at 71 probes (852 observations), and methane was only recorded one time, in gas probe GP-17S at 0.1%. Carbon dioxide ranged from zero to 12.7% (also at MW-17S), with the majority of readings below 2%. This shows that the LFG extraction system has effectively reduced LFG outside of the waste cell to almost zero (SCS, 2009b).

While the GWETS is positioned in the southern area of the site, groundwater in the northern area moves towards the south according to the direction of groundwater flow patterns. Therefore, groundwater extraction is believed to have an overall positive remedial impact on groundwater in both the northern and southern areas of the site. SCS recently submitted its *Engineering Feasibility Study* to the RWQCB, and additional remedial alternatives will soon be tested and implemented in order to improve the current systems. This includes measures to remediate the deeper groundwater zone. The conceptual model currently being tested is to increase the GWETS systems from 12 wells pumping approximately 60-70 gallons per minute only from the shallow groundwater zone, to as many as 20 wells pumping a total of 400 gallons per minute from both the shallow and deep groundwater zones (dual screened wells). Implementation of this system should greatly improve the removal of VOCs from the groundwater system at the site.

5.0 ONSITE SUPPLY WELLS

Two groundwater supply wells have been identified on-site (see Figure 1-2, locations are labeled as SW-1 and SW-2). One well (SW-1) is located in the northeast corner of the landfill (near MW-18S/D). SCS has obtained a well log for this well through the Department of Water Resources (well log is provided in Appendix C). The second well is located near the scale house (SW-2); and a well log is not currently available for this well. Based on available information, both wells are believed to be approximately 300 feet deep, 16-inch in diameter, and screened the entire length. Neither well is currently in use or planned for future use.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The new WDRs require the discharger to define the nature and extent of groundwater contamination beneath the north area of the site. Extensive investigative work has already been performed for the site and for the northern area. Kleinfelder has previously performed substantial data collection and evaluation, and this work was reported in its 2002 *Evaluation Monitoring and Environmental Feasibility Study* and its 2007 *South Area Investigation Report*.

SCS has reviewed available data and characterized the nature and extent of impacted groundwater in the northern area of the site. The primary issue of concern is low-level VOCs in groundwater. For the areas around the northern area of the site, landfill gas is almost certainly the source of these VOCs. This is based on a comparison of VOC species and concentrations in LFG samples from the vadose zone, to VOCs in groundwater. Further, the "halo" effect of VOCs extending just beyond the boundary of the waste units, including upgradient of groundwater flow, is typical of landfills with LFG impacts. These LFG effects probably occurred prior to the installation of the LFG collection and control system. The site began operation in 1970 and stopped receiving wastes in 1990, when it was covered with a native soil cap. The northern portion of the LFG collection system was installed in 1992. Therefore, for up to 22 years the landfill generated LFG without a control system. This would have allowed LFG to migrate laterally under and around the site. Since that time, monitoring of perimeter LFG probes has indicated that LFG (as methane) at the perimeter has been reduced to essentially non-detectable. However, the residual effects of the LFG migration prior to the collection system can still be seen in groundwater, which is much slower to respond to corrective actions. Monitoring data do show a reduction in VOC concentrations in wells existing prior to the LFG collection system, so there are positive effects occurring due to LFG removal.

Although data suggests remediation efforts have reduced VOC concentrations in groundwater, VOCs remain in groundwater beneath all areas of the site. Based on iso-concentration plots included in SCS's *Engineering Feasibility Study*, VOCs in the northern area are, in most cases, less significant compared to impacts in the southern area of the site.

Based on the facts that VOC impacts to groundwater in the northern area of the site appear to be limited to areas immediately surrounding the landfill; have been caused by prior LFG impacts that are now being controlled; have relatively low concentrations and concentrations have declined since the implementation of the LFG control systems; and greater corrective action measures are planned and are currently being tested for the landfill, there appears to be no reason to further study this area or to implement additional corrective action measures specific to the area. One exception may be the investigation and possible destruction of the old supply wells that could serve as a vertical migration pathway for VOC transport.

6.2 RECOMMENDATIONS

Since the nature and extent of groundwater in the northern area has already been investigated and defined, and since remedial activities have been effective and additional system improvements are underway, additional work to investigate the northern area does not appear warranted at this time. Ongoing monitoring of the groundwater wells in the area should provide continued assurance that the VOC impacts are not worsening. If, however, long-term groundwater monitoring shows increasing VOC trends in these wells, additional investigation may be warranted.

Since LFG is already being mitigated in the northern area of the site, and there is evidence of a positive effect on groundwater, no additional corrective action measures are recommended other than continuing plans for enhanced groundwater extraction and treatment. Groundwater extraction and treatment in the northern area of the site is not recommended as it may cause greater problems by drawing higher VOC concentrations upgradient, away from the planned enhanced collection and treatment system.

Further investigation of the two onsite supply wells (SW-1 and SW-2) should be performed. SCS recommends the current status and construction of these two wells be investigated and, if necessary, abandoned so cross-contamination will not occur. As a first step, any pumping equipment that may remain in these wells should be removed and a down-hole video survey of the wells conducted. If abandonment is required, specialized drilling capabilities may be required since the wells are relatively deep, likely screened for significant lengths, and are relatively large diameter.

7.0 REFERENCES

California Regional Water Quality Control Board, Central Valley Region (RWQCB), 2009. *Order No. R5-2009-0051, Waste Discharge Requirements for Stanislaus County Department of Environmental Resources, Geer Road Class III Landfill, Post Closure Maintenance and Corrective Action.*

Kleinfelder, 2002. *Evaluation Monitoring and Engineering Feasibility Study.*

Kleinfelder, 2007. *South Area Investigation Report.*

SCS Engineers, 2009a. *Second Semi-Annual & Annual 2008 Detection, Evaluation, and Corrective Action Monitoring Report.*

SCS Engineers, 2009b. *Engineering Feasibility Study.*

APPENDIX A
TABULATED HISTORICAL DATA

MW-13S
Historic VOCs in Groundwater
Geer Road Landfill

| Date | Volatile Organic Compounds* | | | | | | | | | |
|----------|-----------------------------|-------------------------|--------------------|--------------------|--------------------|-------------------|-----------------------|-----------------|---------------------------------------|------------------------|
| | Chloroform | Dichlorodifluoromethane | 1,1-Dichloroethane | 1,1-Dichloroethene | Methylene chloride | Tetrachloroethene | 1,1,1-Trichloroethane | Trichloroethene | 1,1,2-Trichloro-1,2,2-trifluoroethane | Trichlorofluoromethane |
| | µg/L | | | | | | | | | |
| 04/30/87 | | | | | | | | | | |
| 05/16/87 | | | | | | | | | | |
| 07/28/88 | | | | | | | | | | |
| 02/13/89 | | | | | | | | | | |
| 08/15/89 | | 17 | | | | | 1.3 | | | |
| 01/19/90 | | 43 | | 0.5 | | 0.5 | 3.2 | | | |
| 05/02/90 | | 140 | | | | 1.2 | 6 | | 1.2 | |
| 09/10/90 | | 53 | | 2 | | 2 | 6.5 | | 1.4 | |
| 01/16/91 | | 25 | | 0.72 | | 1.9 | 5.3 | | | |
| 05/09/91 | | -- | | 0.68 | | 1.1 | 4.1 | | | |
| 09/06/91 | | 31 | | | | 0.83 | 3.6 | | | |
| 01/22/92 | | | | | | 1.8 | | | | |
| 09/03/92 | | 33 | | 1 | | 1.5 | 2.8 | | | 7.2 |
| 02/03/93 | | 66 | | | | 1.5 | | | | 12 |
| 05/11/93 | | 22 | 0.8 | 1 | | 1.7 | 2.4 | 0.5 | | 11 |
| 09/16/93 | | 100 | 2.4 | 1.4 | | 3.8 | 1.5 | 1.1 | -- | 6 |
| 01/27/94 | | 37 | 1.8 | 1.2 | | 2.4 | 1.6 | 0.9 | | 14 |
| 05/12/94 | | 45 | 2.7 | 1 | | 2 | 1.6 | 0.6 | 0.5 | 5.6 |
| 09/28/94 | | 85 | 1.3 | 0.7 | | 2.1 | 2.8 | 0.7 | 1.3 | 6.2 |
| 02/16/95 | | 21 | 2.5 | 1.6 | | | 2 | 0.9 | | 11 |
| 05/15/95 | | 24 | 0.7 | | | 1.4 | 1.2 | | | 3.8 |
| 09/28/95 | | 54 | 1.8 | | | 1.8 | 30 | 0.8 | 0.5 | 3.4 |
| 03/05/96 | | 25 | 2.3 | 0.48 J | 0.28 J | 2.4 | 2 | 0.72 | -- | 8.2 |
| 10/03/96 | 0.22 J | 23 | 2.3 | 0.39 J | | 2.7 | 1.8 | 0.88 | -- | 6.2 |
| 02/12/97 | | 14 | 1.7 | 0.9 | | 2 | 1.2 | 0.65 | -- | 6.8 |
| 09/25/97 | | 25 | 2.4 | | | 2 | 1.2 | 0.65 | -- | 4.1 |
| 04/09/98 | | 12 | 3.1 | 0.92 | 0.32 J | 2.6 | 1.3 | 0.9 | -- | 6 |
| 08/13/98 | | 16 | 2 | 0.21 J | | 2 | 0.74 | 0.81 | -- | 5.3 |
| 02/04/99 | | 20 | 2.5 | 0.33 J | 0.17 J | 1.9 | 0.71 | 0.65 | -- | 4.2 |
| 12/03/99 | | 17 | 2.2 | 0.5 | | 2.3 | 0.71 | 0.78 | -- | 4.6 |
| 02/22/00 | | 13 | 1.9 | 0.4 J | 0.18 J | 2.4 | 0.56 | 0.53 | -- | 5.2 |
| 10/05/00 | | 9.8 | 1.5 | 0.34 J | | 1.7 | 0.22 J | 0.56 | -- | 3.8 |
| 04/06/01 | | 14 | 1.4 | 0.36 J | | 1.6 | 0.31 J | 0.52 | -- | 4 |
| 10/05/01 | | 8.2 | 0.96 | 0.34 J | 1.4 | 1.4 | 0.31 J | 0.37 J | -- | 3.6 |
| 04/02/02 | | 8.8 | 0.85 | | | 1 | 0.17 J | 0.25 J | -- | 3.1 |
| 10/03/02 | | 5.8 | 0.73 | 0.26 J | | 0.83 | 0.08 J | 0.23 J | -- | 2.4 |
| 04/10/03 | | 6.2 | 0.81 | 0.25 J | | 0.78 | | 0.22 J | -- | 2.4 |
| 10/08/03 | | 4.9 | 0.54 | 0.26 J | | 0.6 | | 0.11 J | -- | 2.4 |
| 01/14/04 | | 4.7 | 0.41 J | 0.26 J | 0.18 J | 0.61 | | 0.18 J | -- | 2.6 |
| 07/12/04 | | 4 | 0.43 J | 0.25 J | | 0.54 | | 0.11 J | -- | 2.4 |
| 01/12/05 | | 2.2 | 0.33 J | 0.21 J | | 0.39 J | | 0.12 J | -- | 1.6 |
| 10/11/05 | | 4 | 0.51 | | | 0.56 | | | -- | 1.2 |
| 04/11/06 | | 5 | | | | 0.5 | | | -- | 1.6 |
| 11/30/06 | | 3 | 0.52 | | | 0.6 | | | -- | 2.9 |
| 05/23/07 | | 3.7 | 0.44 J | 0.17 J | | 0.6 | | 0.14 J | -- | 1.6 |
| 11/13/07 | | 3.2 | 0.38 J | 0.19 J | | 0.5 | | 0.16 J | -- | 1.7 |
| 06/07/08 | | 1.2 | | | | | | | -- | 1.6 |
| 11/20/08 | | 3.2 | 0.43 J | | | 0.54 | | | -- | 1.9 |

* = Only VOCs detected in one or more samples are listed
 Blank cell = Non-detect
 -- = Not analyzed
 J = Estimated concentration
 µg/L = micrograms per liter

MW-16S
 Historic VOCs in Groundwater
 Geer Road Landfill

| Date | Volatile Organic Compounds* | | | | | | | | |
|----------|-----------------------------|-------------------------|---------------------|--------------------|----------------------|-------------------|-----------------------|-----------------|------------------------|
| | Carbon disulfide | Dichlorodifluoromethane | 1,4-Dichlorobenzene | Methylene chloride | Methyl t-butyl ether | Tetrachloroethene | 1,1,1-Trichloroethane | Trichloroethene | Trichlorofluoromethane |
| µg/L | | | | | | | | | |
| 09/14/90 | -- | | | | | | | | |
| 01/11/91 | -- | | | | | | | | |
| 05/07/91 | -- | | | | | | | | |
| 09/04/91 | -- | | | | | | | | |
| 01/21/92 | -- | | | | | | | | |
| 09/03/92 | -- | 3.5 | | | | | | | |
| 02/05/93 | -- | | | | | | | | |
| 05/11/93 | -- | 5.7 | | | | | | | |
| 09/16/93 | -- | | | | | | | | |
| 01/27/94 | -- | 13 | | | | | | | |
| 05/12/94 | -- | 18 | | | | | | | |
| 09/27/94 | -- | 11 | | | | | | | |
| 02/16/95 | -- | 6.7 | | | | | | | |
| 05/15/95 | -- | 16 | | | | | | | |
| 09/28/95 | -- | 89 | | | | | | | |
| 03/05/96 | | 8.6 | | 0.6 J | -- | | 0.53 | | 1.1 |
| 10/03/96 | | 7.4 | | | -- | | | 0.1 J | 0.27 J |
| 02/12/97 | | 9.5 | | | | | | | 0.34 J |
| 09/25/97 | | 4 | | | -- | 0.31 J | | | 0.42 J |
| 04/09/98 | | 11 | | | -- | 0.25 J | | | 0.25 J |
| 08/13/98 | | 14 | | | -- | 0.53 | | | 0.58 |
| 02/04/99 | | 12 | | | -- | 0.37 J | | | 0.96 |
| 12/03/99 | | 5.8 | | | -- | 0.27 J | | | 0.68 |
| 02/22/00 | | 5.2 | | | | | | | 0.4 J |
| 10/05/00 | | 5.1 | | | ND | 0.25 J | | | 0.29 J |
| 04/06/01 | | 4.7 | | | ND | 0.13 J | | | 0.37 J |
| 10/05/01 | | 3.3 | | 1.2 | 0.62 | | | | 0.35 J |
| 04/02/02 | | 4.3 | | | 1.7 | | | | 0.24 J |
| 10/03/02 | 0.57 J | 1.4 | | | 3.2 | 0.099 J | | | 0.32 J |
| 04/10/03 | | 2.9 | 0.16 J | | 5 | | | | 0.15 J |
| 10/10/03 | | 2 | 0.1 J | | 3.9 | | | | 0.28 J |
| 01/16/04 | | 1.4 | | 0.3 J | 5.8 | 0.16 J | | | 0.19 J |
| 07/12/04 | | 1.6 | 0.2 J | | 8.5 | 0.1 J | | | 0.18 J |
| 01/12/05 | | 0.55 | | | 2.1 | | | | 0.14 J |
| 10/11/05 | | 1 | | | 1.3 | | | | |
| 04/11/06 | | 1.4 | | | 0.59 | | | | |
| 11/30/06 | | 0.89 | | | ND | | | | |
| 05/23/07 | | 0.36 J | | | 0.21 J | 0.11 J | | | |
| 11/13/07 | | 1.2 | | | 0.23 J | 0.14 J | | | |
| 06/07/08 | | 1.3 | | | 0.22 J | | | | 0.14 J |
| 11/20/08 | | 0.23 J | | | ND | | | | |

* = Only VOCs detected in one or more samples are listed
 Blank cell = Non-detect
 -- = Not analyzed
 J = Estimated concentration
 µg/L = micrograms per liter

MW-17S
Historic VOCs in Groundwater
Gear Road Landfill

| Date | Volatile Organic Compounds* | | | | | | | | | |
|----------|-----------------------------|-------------------------|--------------------|--------------------|--------------------|-------------------|-----------------------|-----------------|---------------------------------------|------------------------|
| | Chloroform | Dichlorodifluoromethane | 1,1-Dichloroethane | 1,1-Dichloroethene | Methylene chloride | Tetrachloroethene | 1,1,1-Trichloroethane | Trichloroethene | 1,1,2-Trichloro-1,2,2-trifluoroethane | Trichlorofluoromethane |
| | µg/L | | | | | | | | | |
| 11/07/01 | | 7.6 | 3.4 | | | | | | | |
| 04/03/02 | | 8.7 | 2 | | | 3.2 | | 1.3 | | 2.3 |
| 10/03/02 | 0.076 J | 6.1 | 2.9 | | | 1.7 | | 0.58 | | 2.2 |
| 04/11/03 | | 9.2 | 1.8 | | | 3.3 | 0.15 J | 0.98 | | 2.4 |
| 10/08/03 | | 5.5 | 1.9 | 0.11 J | 0.16 J | 1.6 | | 0.54 | | 2.2 |
| 01/15/04 | | 5 | 1.6 | 0.13 J | | 2.6 | | 0.64 | | 3.1 |
| 07/14/04 | | 10 | 2.1 | 0.23 J | 0.26 J | 2.6 | | 0.62 | | 2.7 |
| 01/06/05 | | 3 | 1.1 | 0.09 J | | 2 | 0.15 J | 0.67 | | 3.6 |
| 10/12/05 | | 11 | 2.1 | | | 2.1 | | 0.4 J | | 1.8 |
| 04/12/06 | | 4.5 | 1 | | | 3.2 | | 0.56 | | 4.1 |
| 11/29/06 | | 4.2 | 1.7 | | | 1.5 | | | | |
| 05/10/07 | | 15 | 2.1 | 0.2 J | | 2.6 | | 0.44 J | | 2.4 |
| 11/15/07 | | 7.5 | 1.4 | 0.14 J | | 1.9 | | 0.7 | 0.24 J | 4 |
| 06/05/08 | | 0.32 J | | | | 1.9 | | 0.56 J | | 3 |
| 11/19/08 | | 11 | 0.81 | | | 1.2 | | 0.33 J | | 2.9 |

MW-17D
Historic VOCs in Groundwater
Gear Road Landfill

| Date | Volatile Organic Compounds* | | | | |
|----------|-----------------------------|--------------------|-------------------|---------|------------------------|
| | Dichlorodifluoromethane | 1,1-Dichloroethane | Tetrachloroethene | Toluene | Trichlorofluoromethane |
| | µg/L | | | | |
| 11/06/01 | 3.9 | 0.57 | 0.39 J | | 0.48 J |
| 04/03/02 | 0.66 J | | | | |
| 10/07/02 | 0.57 | 0.067 J | | 0.059 J | |
| 04/11/03 | 0.55 | | | | |
| 10/08/03 | | | | | |
| 01/15/04 | | | | | |
| 07/14/04 | 0.21 J | | | | |
| 01/06/05 | 0.21 J | | | | |
| 10/12/05 | | | | | |
| 04/12/06 | | | | | |
| 11/29/06 | 0.23 J | | | | |
| 05/10/07 | | | | | |
| 11/15/07 | 0.36 J | | | | |
| 06/05/08 | 0.25 J | | | | |
| 11/19/08 | 0.57 | | | | |

* = Only VOCs detected in one or more samples are listed
Blank cell = Non-detect
- = Not analyzed
J = Estimated concentration
µg/L = micrograms per liter

MW-18S
 Historic VOCs in Groundwater
 Geer Road Landfill

| Date | Volatile Organic Compounds* | | | |
|----------|-----------------------------|--------------------|-------------------|------------------------|
| | Dichlorodifluoromethane | Methylene chloride | Tetrachloroethene | Trichlorofluoromethane |
| | µg/L | | | |
| 11/06/01 | 2.7 | | 2.7 | 3 |
| 04/02/02 | 1.8 | | 1.4 | 1.7 |
| 10/02/02 | 2.5 | | 1.5 | 2 |
| 04/11/03 | 2.1 | | 1.2 | 1.7 |
| 10/08/03 | 1.7 | | 0.96 | 2 |
| 01/15/04 | 1.9 | 0.24 J | 1.2 | 2 |
| 07/14/04 | 2.8 | | 1.4 | 2.6 |
| 01/06/05 | 2 | | 0.94 | 1.9 |
| 10/12/05 | 1.5 | | 0.71 | 0.94 |
| 04/12/06 | 3.5 | | 0.78 | 1.1 |
| 12/01/06 | 2.1 | | 0.71 | 2 |
| 05/09/07 | 3.5 | | 1 | 2.1 |
| 11/15/07 | 2 | | 0.57 | 1.7 |
| 06/05/08 | 1.1 | | 0.87 | 0.85 |
| 11/19/08 | 2.3 | | 0.44 J | 1.4 |

MW-18D
 Historic VOCs in Groundwater
 Geer Road Landfill

| Date | Volatile Organic Compounds* | | | |
|----------|-----------------------------|--------------------|-------------------|------------------------|
| | Dichlorodifluoromethane | Methylene chloride | Tetrachloroethene | Trichlorofluoromethane |
| | µg/L | | | |
| 11/06/01 | | | | |
| 04/03/02 | | | | |
| 10/02/02 | | | | |
| 04/11/03 | | | | |
| 10/08/03 | | | | |
| 01/15/04 | | 0.21 J | | |
| 07/14/04 | | 0.25 J | | |
| 01/06/05 | | | | |
| 10/12/05 | | | | |
| 04/12/06 | | | | |
| 12/01/06 | | | | |
| 05/09/07 | 0.44 J | | | |
| 11/15/07 | | | | |
| 06/05/08 | 0.77 | | 0.7 | 0.55 |
| 11/19/08 | 0.45 J | | | |

* = Only VOCs detected in one or more samples are listed
 Blank cell = Non-detect
 - = Not analyzed
 J = Estimated concentration
 µg/L = micrograms per liter

MW-21S
Historic VOCs in Groundwater
Geer Road Landfill

| Date | Volatile Organic Compounds* | | | | | | |
|----------|-----------------------------|-------------------------|--------------------|-----------------|-------------------|-----------------------|------------------------|
| | Carbon Disulfide | Dichlorodifluoromethane | Methylene chloride | n-Propylbenzene | Tetrachloroethene | 1,1,1-Trichloroethane | Trichlorofluoromethane |
| | µg/L | | | | | | |
| 11/30/01 | | 15 | | 1 | 0.92 | 0.19J | 9.6 |
| 11/30/01 | | 15 | | 1 | 0.92 | 0.19J | 9.6 |
| 04/11/02 | 0.22J | 8.6 | | | 0.97 | 0.31J | 5.3 |
| 10/09/02 | | 8.8 | | | 0.71 | | 5.3 |
| 04/17/03 | | 11 | | | 1 | 0.21J | 5.5 |
| 10/08/03 | | 6 | | | 0.27J | | 4.2 |
| 01/13/04 | | 6.7 | 0.2J | | 0.34J | 0.08J | 4.2 |
| 07/13/04 | | 4.8 | | | 0.33J | | 3.3 |
| 01/11/05 | | 4.9 | | | 0.23J | | 2.8 |
| 10/10/05 | | 3.4 | | | | | 1.2 |
| 04/11/06 | | 7.8 | | | | | 3.4 |
| 11/30/06 | | 3 | | -- | | | 1.7 |
| 05/11/07 | | 3.4 | | | | | 1.1 |
| 11/16/07 | | 1.5 | | -- | | | 0.67 |
| 06/05/08 | | 5.6 | | -- | 0.28J | | 4 |
| 11/20/08 | | 0.66 | | | | | 0.7 |

MW-21D
Historic VOCs in Groundwater
Geer Road Landfill

| Date | Volatile Organic Compounds* | | | | | |
|----------|-----------------------------|------------|-------------------------|--------------------|-------------------|------------------------|
| | Carbon disulfide | Chloroform | Dichlorodifluoromethane | Methylene chloride | Tetrachloroethene | Trichlorofluoromethane |
| | µg/L | | | | | |
| 11/28/01 | 0.16 J | | 1.2 | | | 0.69 |
| 04/11/02 | | | 3.8 | | 0.46 J | 2.8 |
| 10/09/02 | | 0.07 J | 3.4 | | 0.31 J | 2.5 |
| 04/17/03 | | | 6 | | 0.53 | 4.1 |
| 10/08/03 | | | 3 | | 0.33 J | 2.2 |
| 01/13/04 | | | 1.8 | 0.19 J | 0.27 J | 1.2 |
| 07/13/04 | | | | 0.54 J | | |
| 01/11/05 | | | 2.3 | | 0.24 J | 1.3 |
| 10/10/05 | | | 5.5 | | | 2.6 |
| 04/11/06 | | | 1.2 | | | 0.94 |
| 11/30/06 | | | 1.5 | | | 0.84 |
| 05/11/07 | | | 5.7 | | 0.23 J | 2.8 |
| 11/16/07 | | | 1.4 | | | 0.66 |
| 06/05/08 | | | 5.7 | | 0.29 J | 4 |
| 11/20/08 | | | 2.8 | | 0.29 J | 2.5 |

* = Only VOCs detected in one or more samples are listed
 Blank cell = Non-detect
 -- = Not analyzed
 J = Estimated concentration
 µg/L = micrograms per liter

MW-22S
Historic VOCs in Groundwater
Geer Road Landfill

| Date | Volatile Organic Compounds* | | | | | | | | | | |
|----------|-----------------------------|-------------------------|--------------------|--------------------|---------------------|--------------------|----------------------|-------------------|---------|-----------------|------------------------|
| | Chloroform | Dichlorodifluoromethane | 1,1-Dichloroethane | 1,1-Dichloroethene | 1,4-Dichlorobenzene | Methylene chloride | Methyl t-butyl ether | Tetrachloroethene | Toluene | Trichloroethene | Trichlorofluoromethane |
| | µg/L | | | | | | | | | | |
| 11/28/01 | 0.69 | 1.7 | | -- | | | | | | | |
| 04/02/02 | | 1.9 | 1 | -- | | | | | | | 0.45 J |
| 10/02/02 | | 1.8 | 0.6 | -- | | | | 0.23 J | | | 0.45 J |
| 04/10/03 | | 1.1 | 1.4 | -- | | | | 0.13 J | | | 0.38 J |
| 10/08/03 | | 0.86 | 0.1 J | -- | | | | 0.29 J | | | 0.48 J |
| 01/13/04 | | 0.88 | 0.37 J | -- | | | | ND | | | 0.24 J |
| 07/13/04 | | 0.98 | 0.36 J | -- | | 0.31 J | | 0.17 J | | | 0.32 J |
| 01/11/05 | | 0.62 | 0.52 | -- | | | | 0.15 J | | | 0.55 |
| 10/11/05 | | | | -- | | | | 0.16 J | | | 0.24 J |
| 04/11/06 | | | | -- | | | | | | | |
| 11/30/06 | | | | -- | | | | | | | |
| 05/11/07 | | 0.61 | 0.39 J | | | | | | | | |
| 11/19/07 | | 8.1 | 0.19 J | 0.3 J | 0.14 J | | 0.24 J | 23 | | 0.56 | 1.4 |
| 06/05/08 | | 5.8 | | | | | | 0.32 J | | | 4 |
| 11/20/08 | | | 0.94 | | | | | | 1.1 | | |

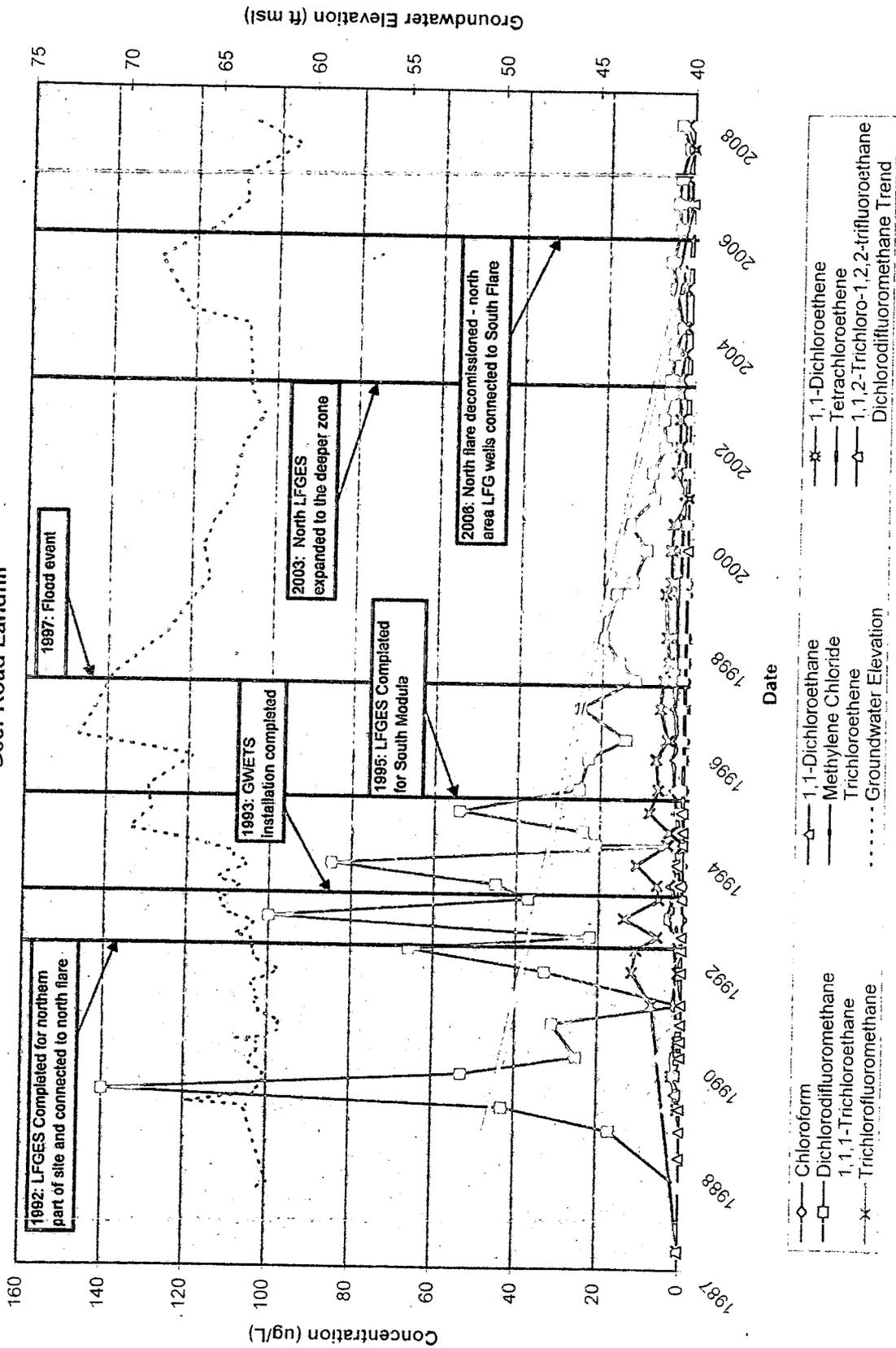
MW-22D
Historic VOCs in Groundwater
Geer Road Landfill

| Date | Volatile Organic Compounds* | | | | |
|------------|-----------------------------|--------------------|----------------------|-------------------|------------------------|
| | Dichlorodifluoromethane | Methylene chloride | Methyl t-butyl ether | Tetrachloroethene | Trichlorofluoromethane |
| | µg/L | | | | |
| 11/28/2001 | 1.4 | | | | |
| 4/2/2002 | 8.4 | | | | 3.1 |
| 10/2/2002 | 7.9 | | 0.14 J | | 1.9 |
| 4/10/2003 | 5.4 | | | | 0.83 |
| 10/8/2003 | 4.8 | | | | 1.6 |
| 1/13/2004 | 4.1 | 0.31 J | | | 0.89 |
| 7/12/2004 | 6.7 | | | | 1.8 |
| 1/11/2005 | 4.2 | | | | 0.87 |
| 10/11/2005 | 9.4 | | | | 1.8 |
| 4/11/2006 | | | | | |
| 11/30/2006 | 5.1 | | | | 1.4 |
| 5/11/2007 | 14 | | | | 2.2 |
| 11/19/2007 | 2.8 | | | 6.8 | 0.39 J |
| 6/5/2008 | 5.7 | | | | 4 |
| 11/20/2008 | 5.8 | | | | 1.2 |

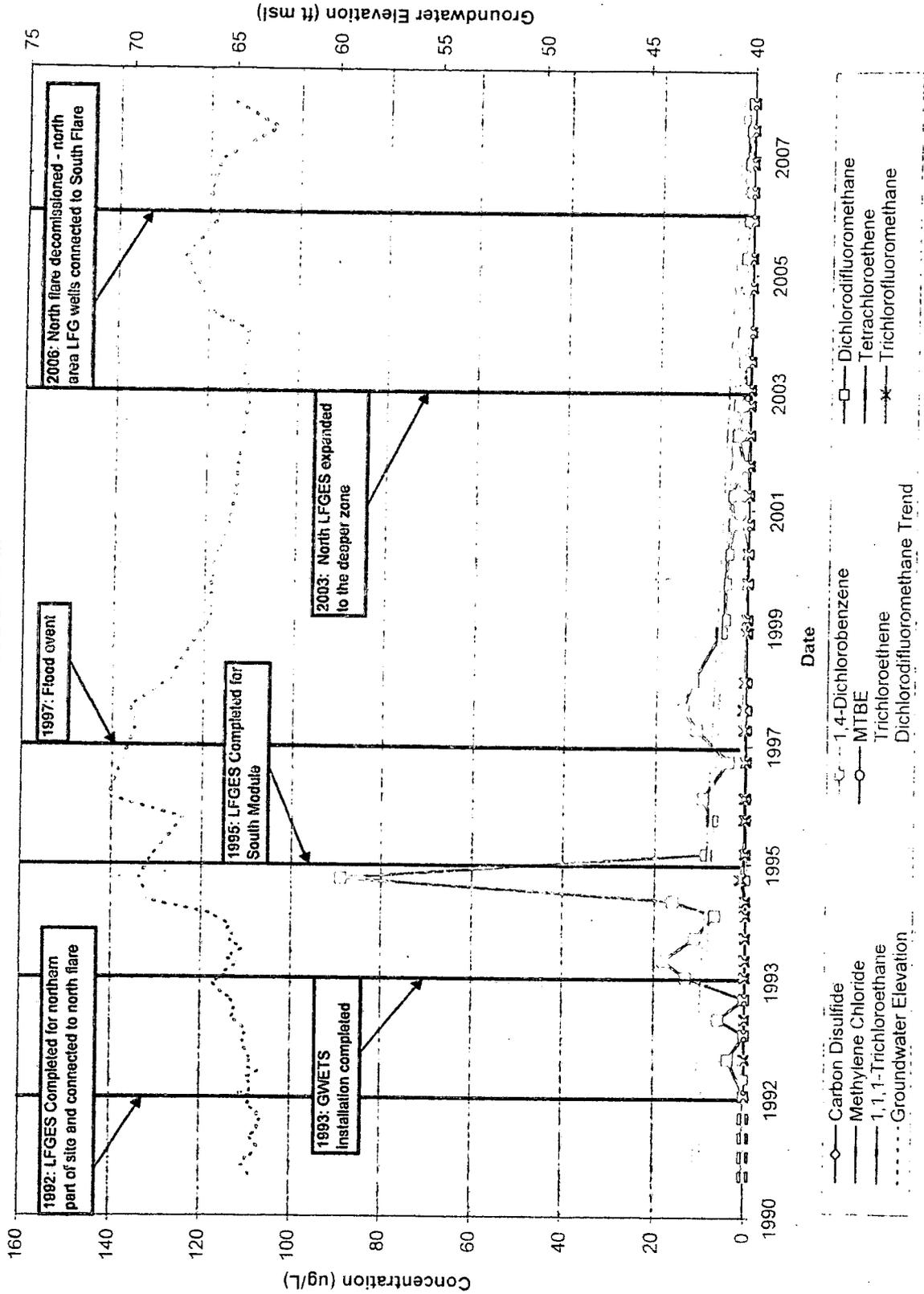
* = Only VOCs detected in one or more samples are listed
 Blank cell = Non-detect
 -- = Not analyzed
 J = Estimated concentration
 µg/L = micrograms per liter

APPENDIX B
TIME-SERIES GRAPHS (VOCS AND INORGANIC)

MW-13S
 Historical VOCs in Groundwater
 Geer Road Landfill

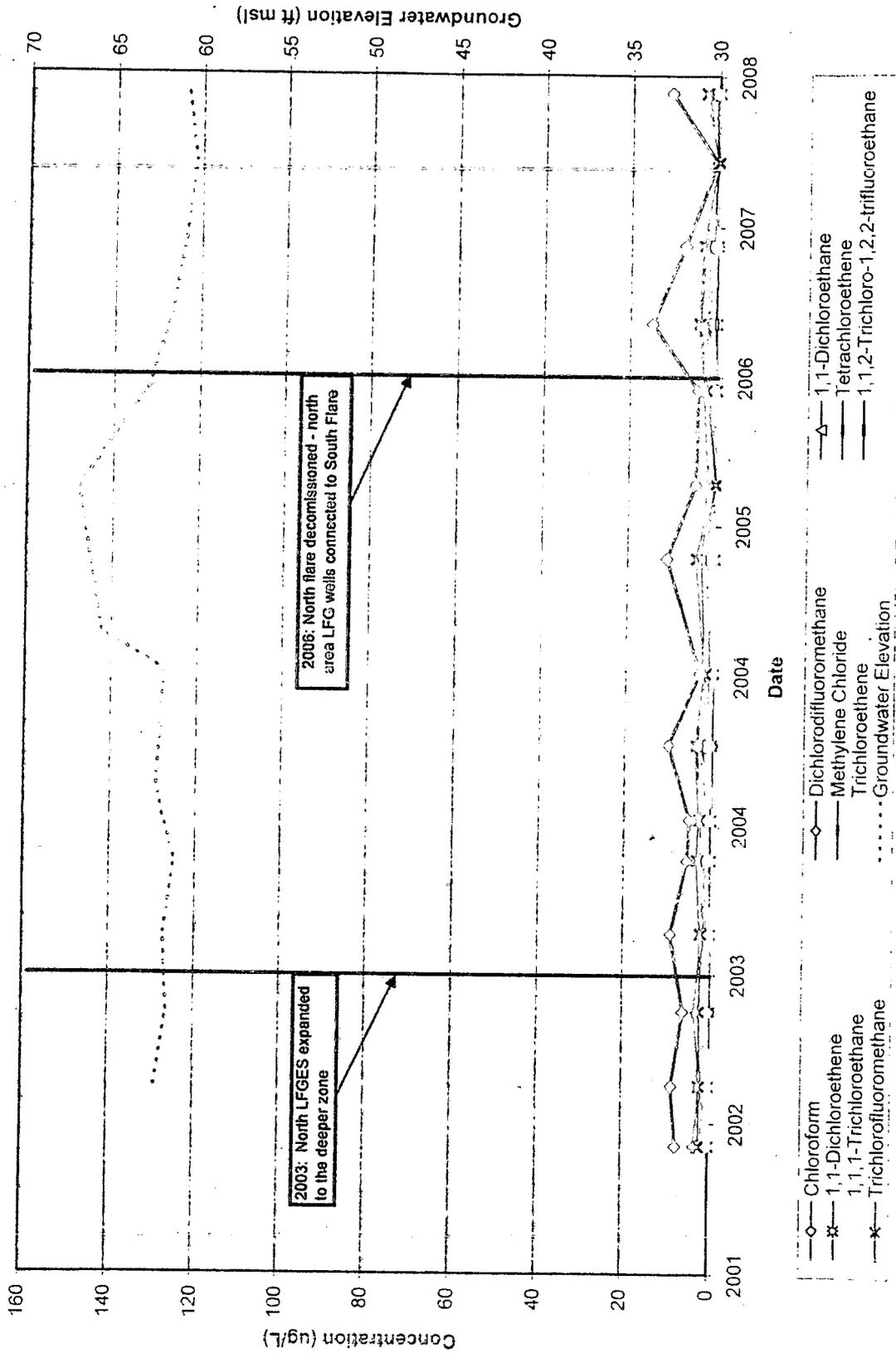


RAW-16S
 Historical VOCs in Groundwater
 Geer Road Landfill

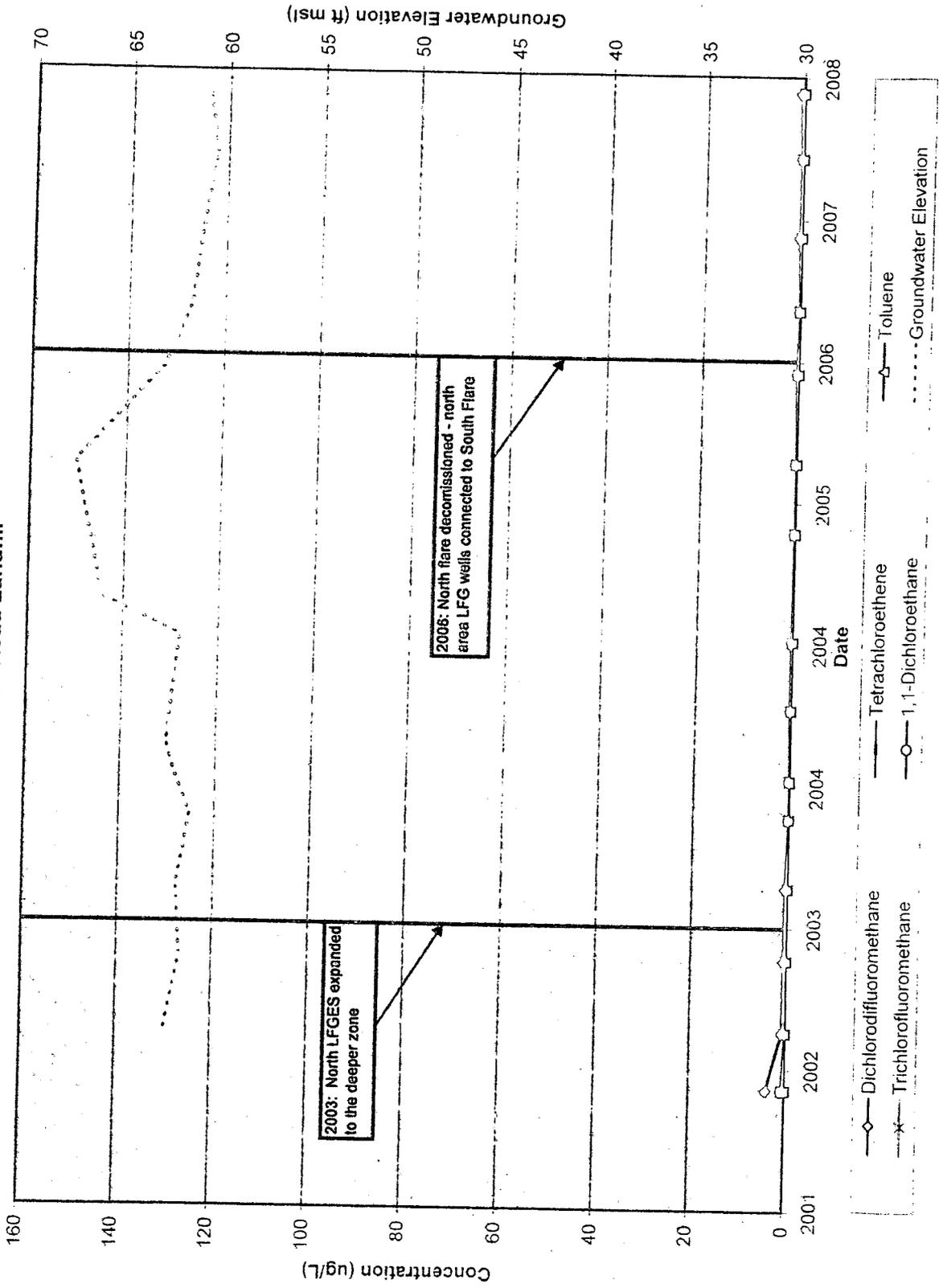


LFGES - Landfill Gas Extraction System
 GWETS - Groundwater Extraction and Treatment System

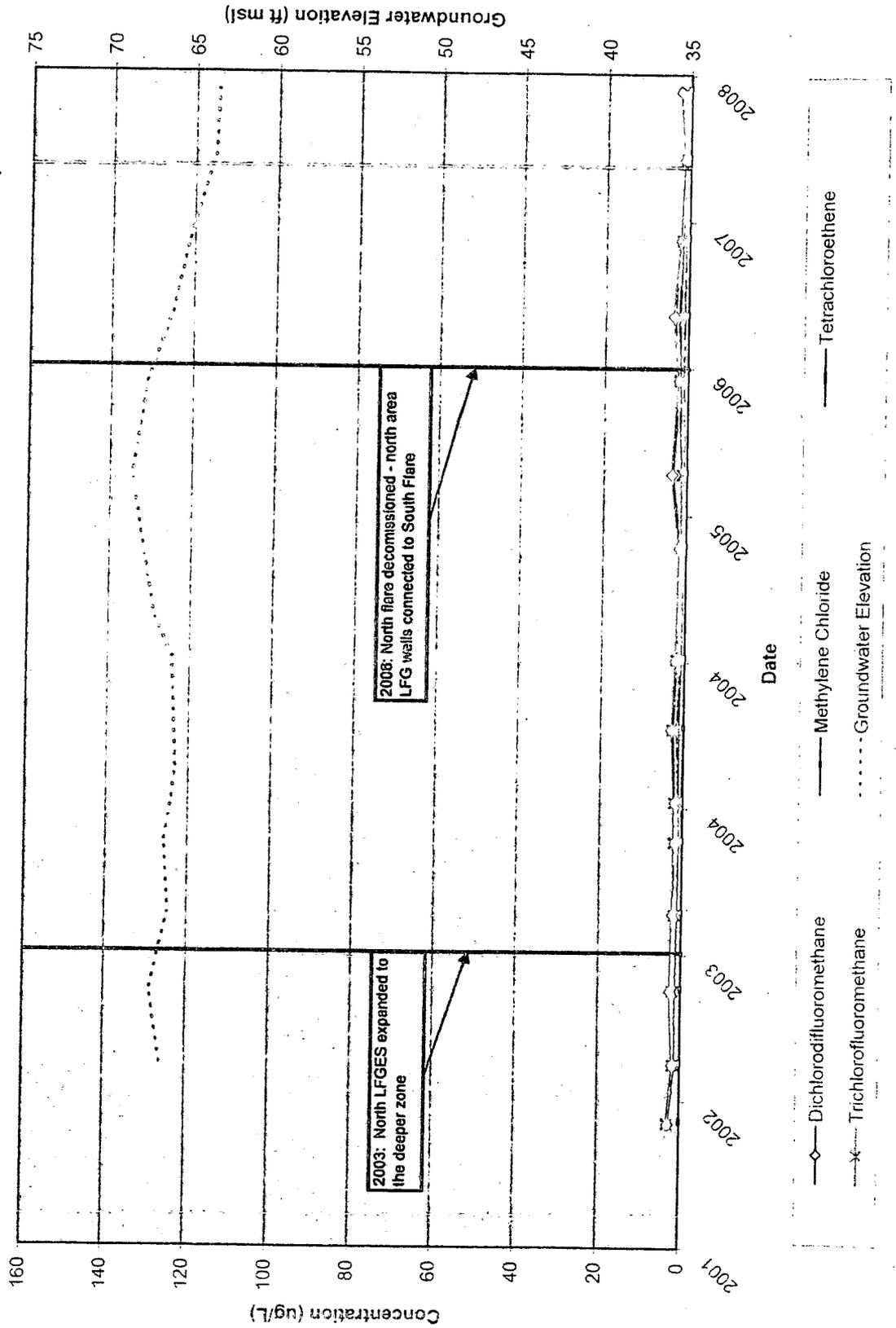
MW-17S
 Historical VOCs in Groundwater
 Geer Road Landfill



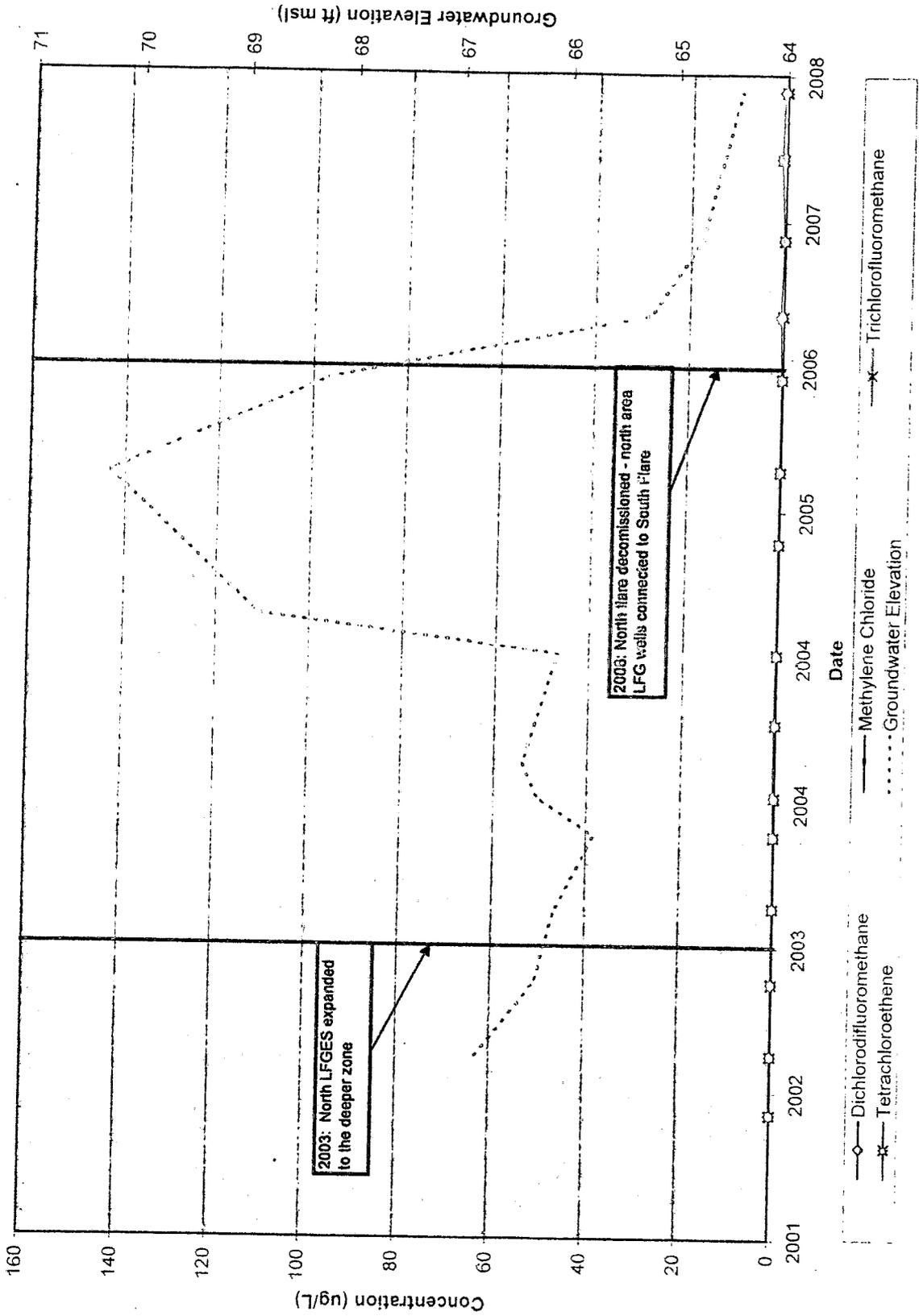
BAW-17D
 Historical VOCs in Groundwater
 Geer Road Landfill



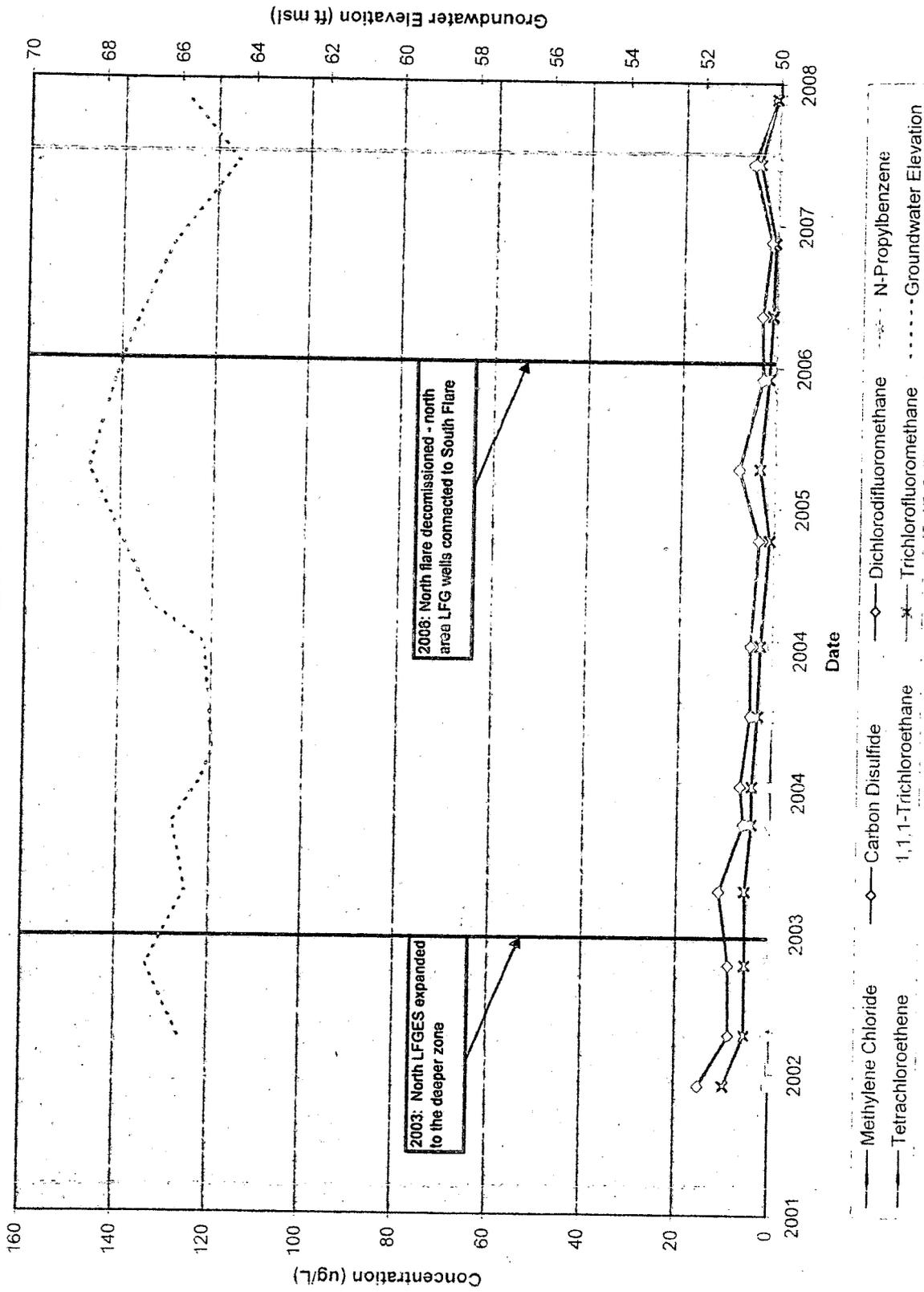
MW-18S
Historical VOCs in Groundwater
Geer Road Landfill



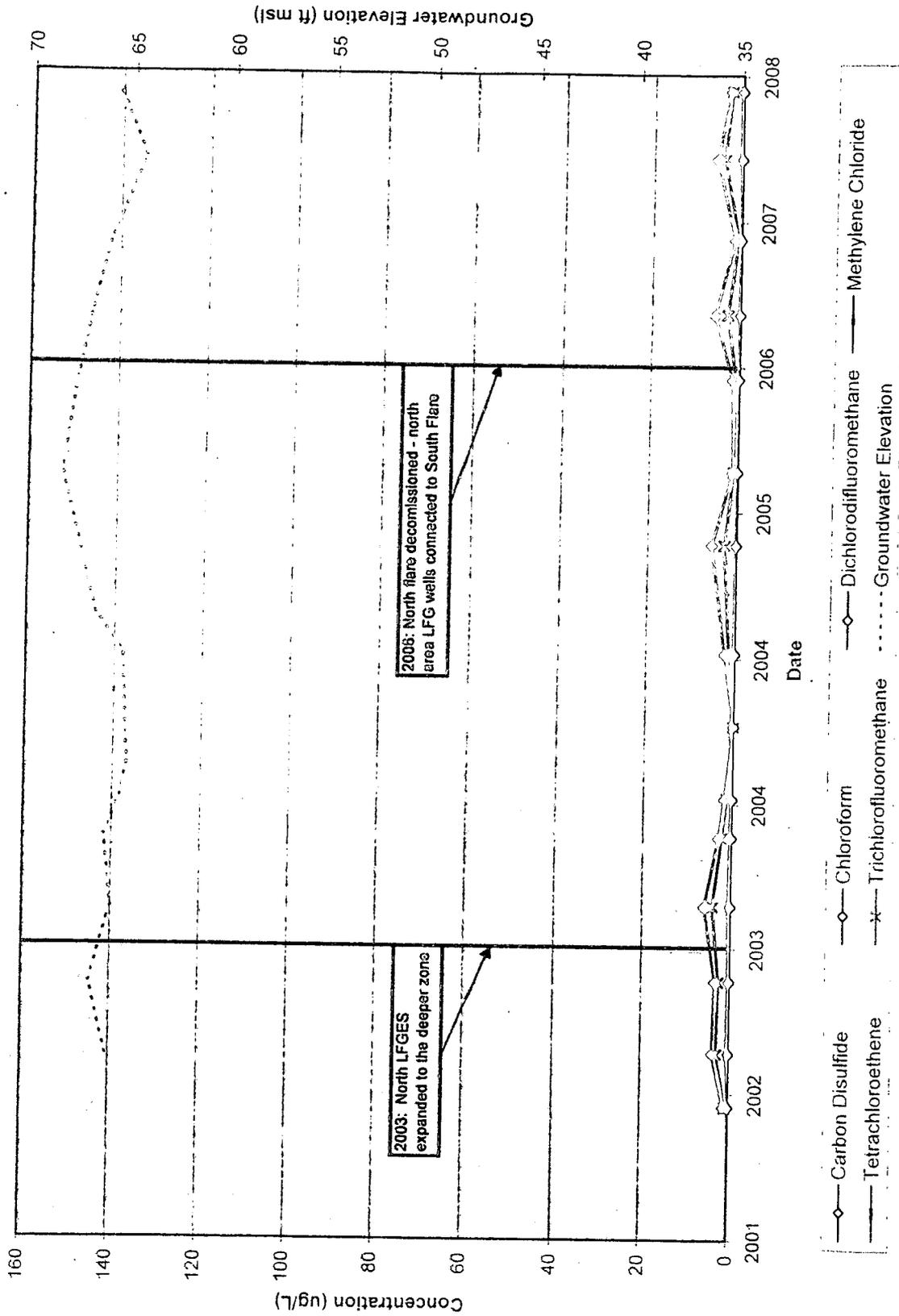
MMV-18D
 Historical VOCs in Groundwater
 Geer Road Landfill



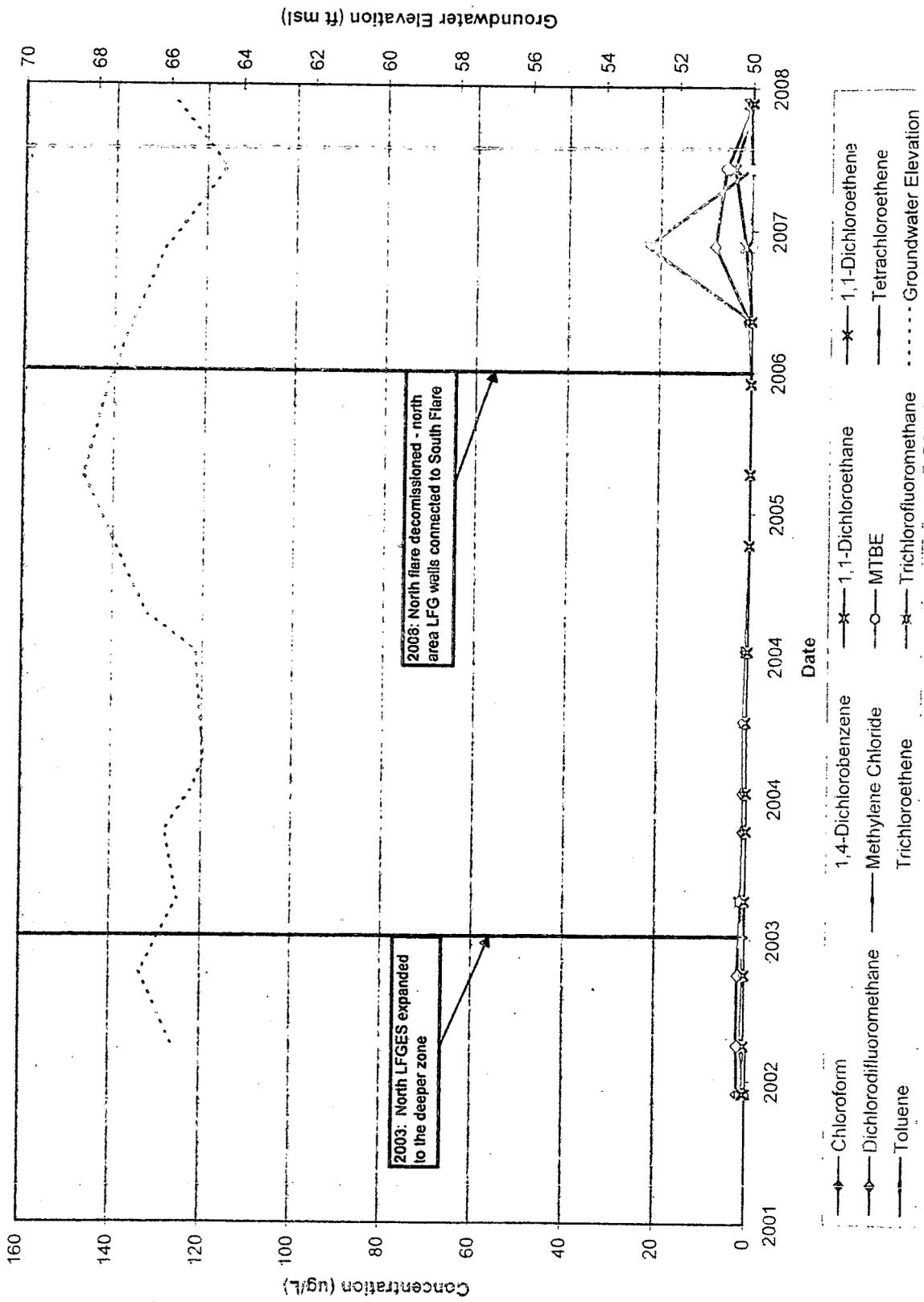
MW-21S
Historical VOCs in Groundwater
Geer Road Landfill



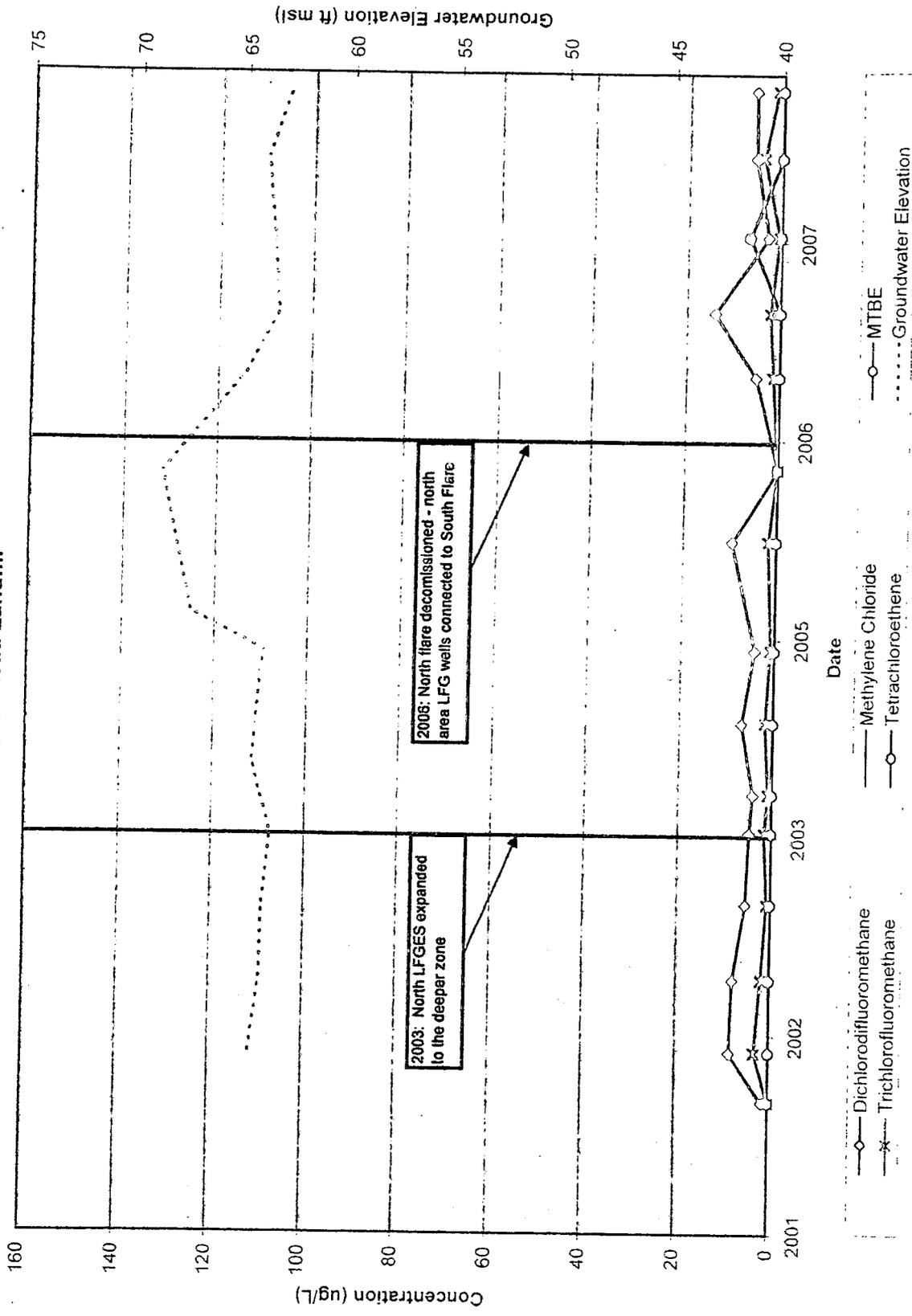
BMW-21D
 Historical VOCs in Groundwater
 Geer Road Landfill



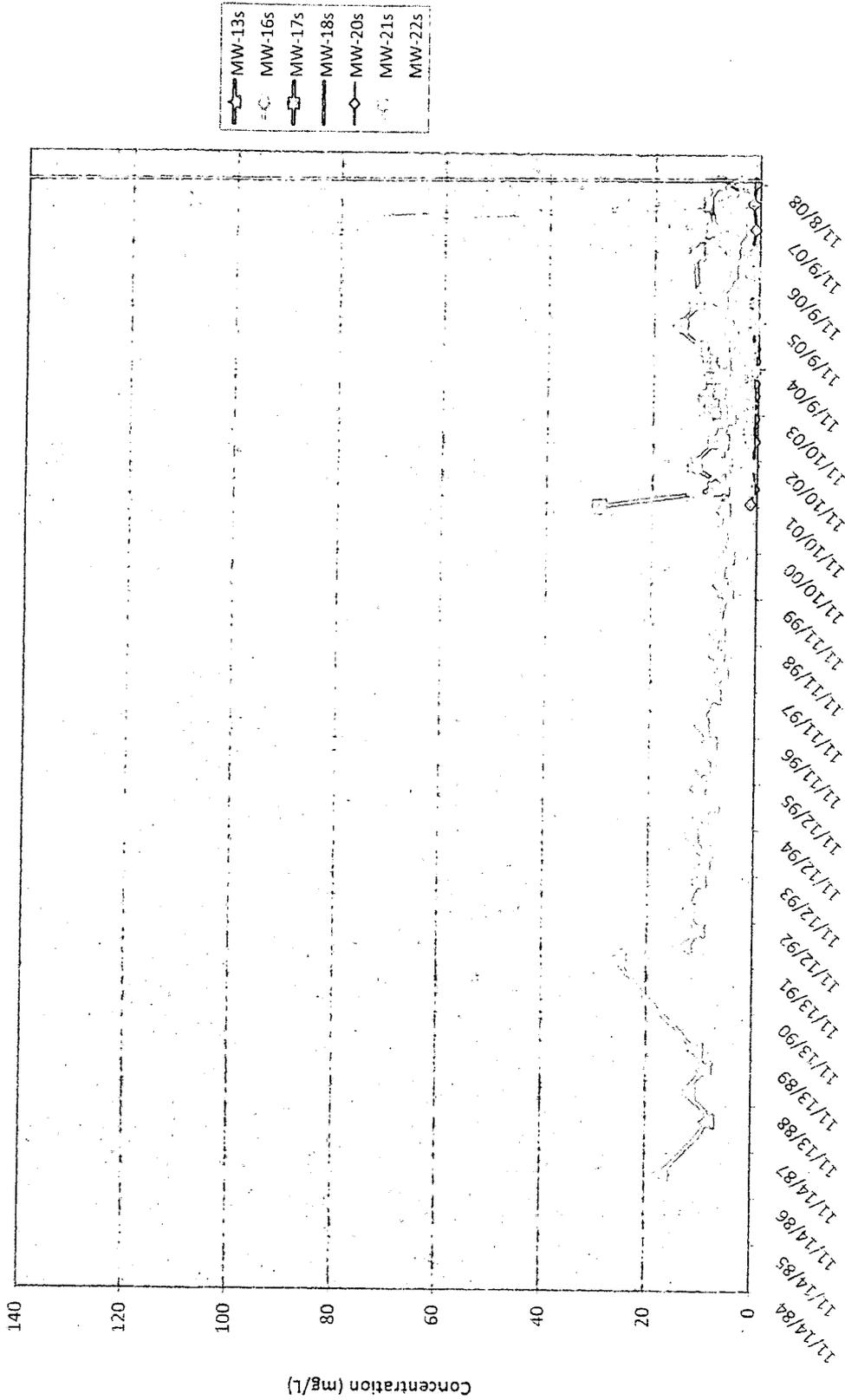
BMW-22S
 Historical VOCs in Groundwater
 Geer Road Landfill



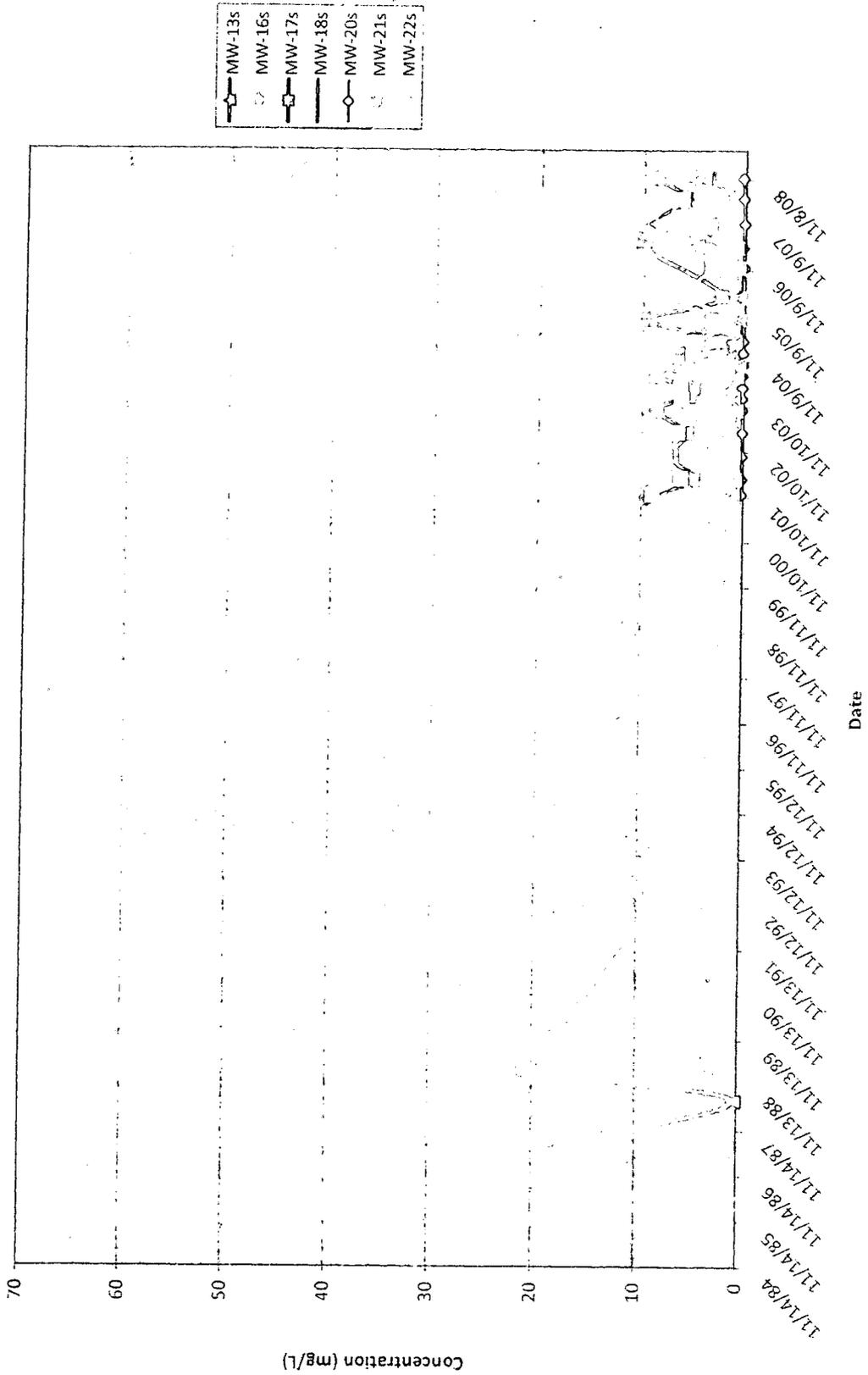
MW-22D
 Historical VOCs in Groundwater
 Geer Road Landfill



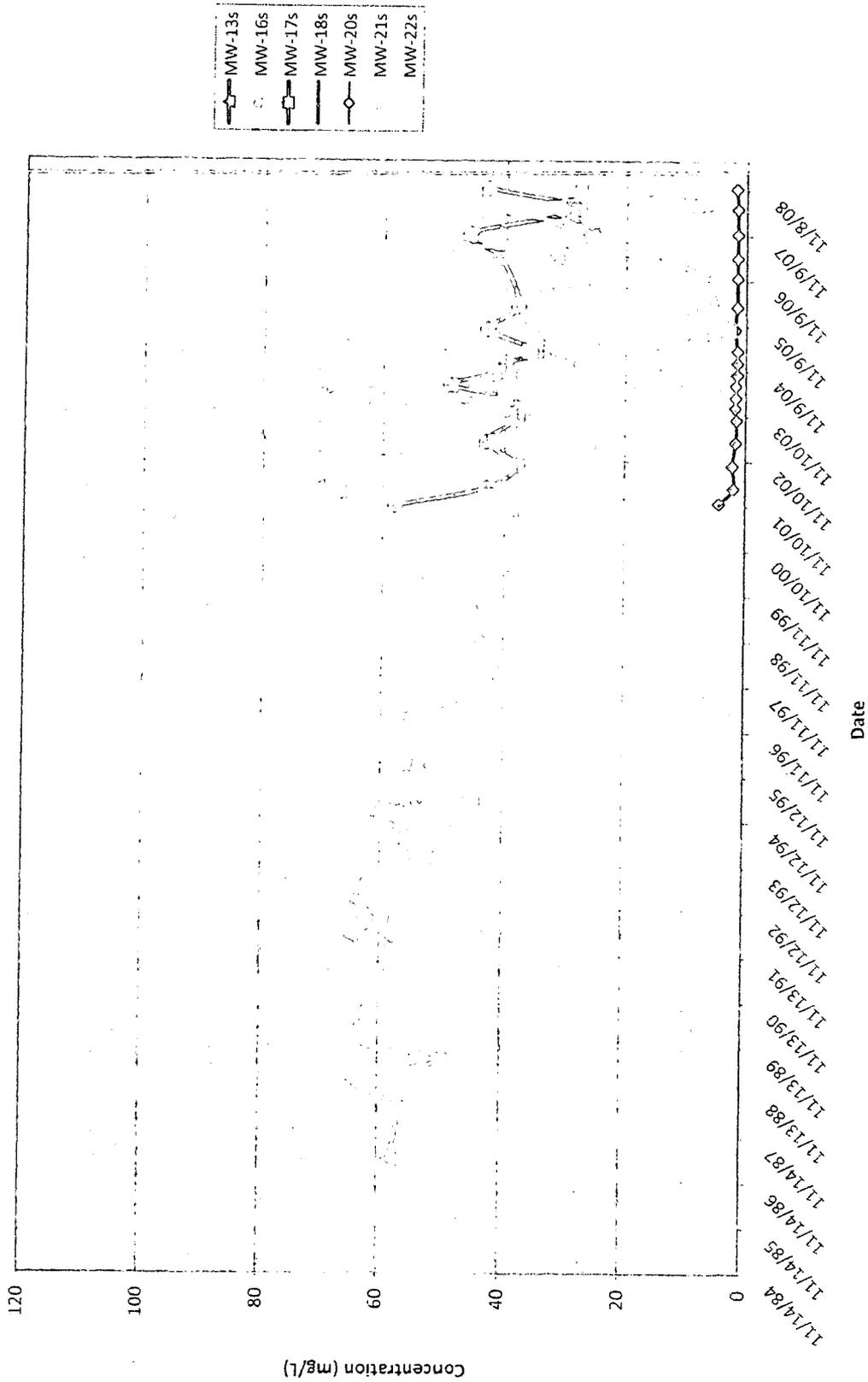
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 CHLORIDE IN SHALLOW WELLS



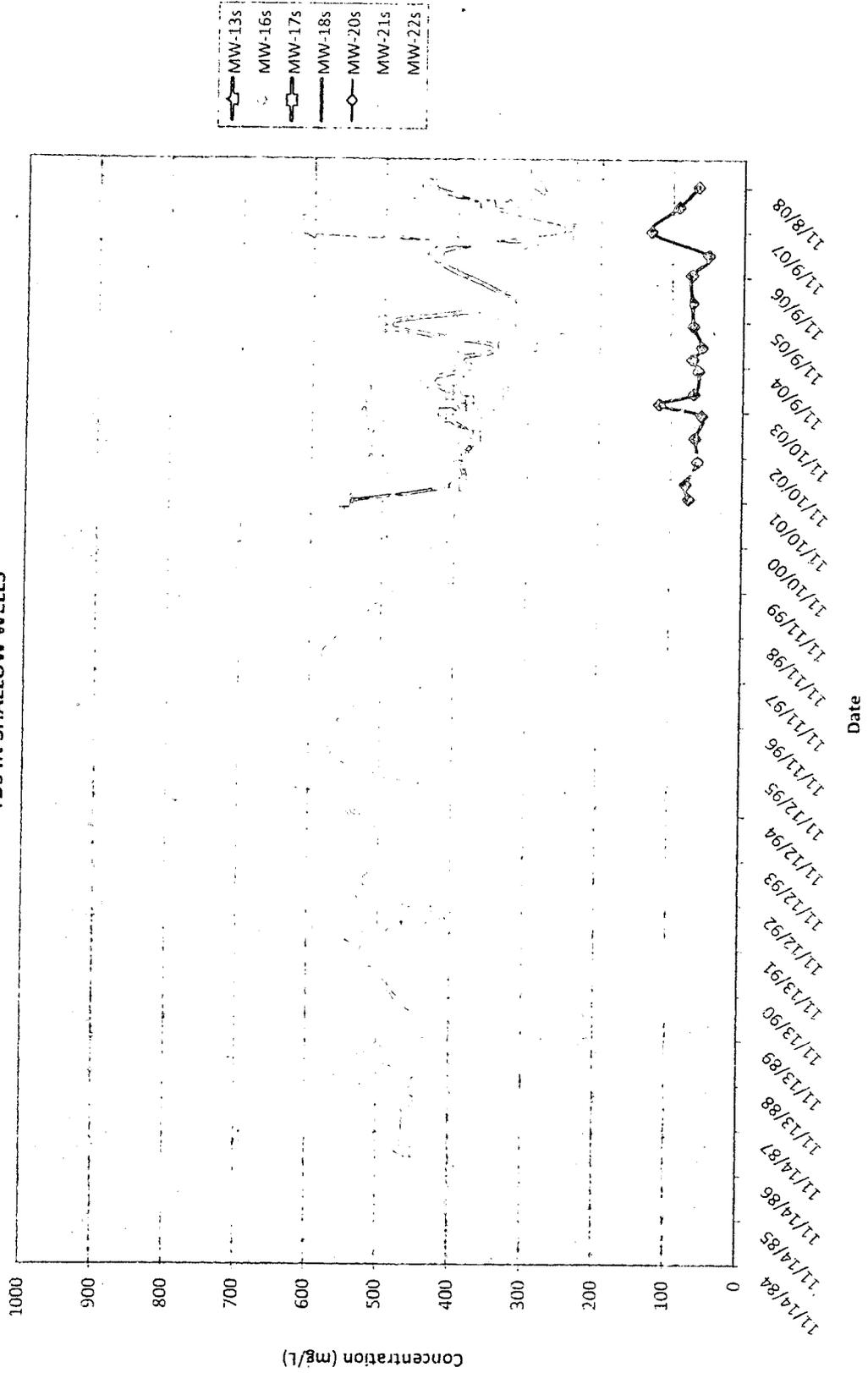
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 NITRATE IN SHALLOW WELLS



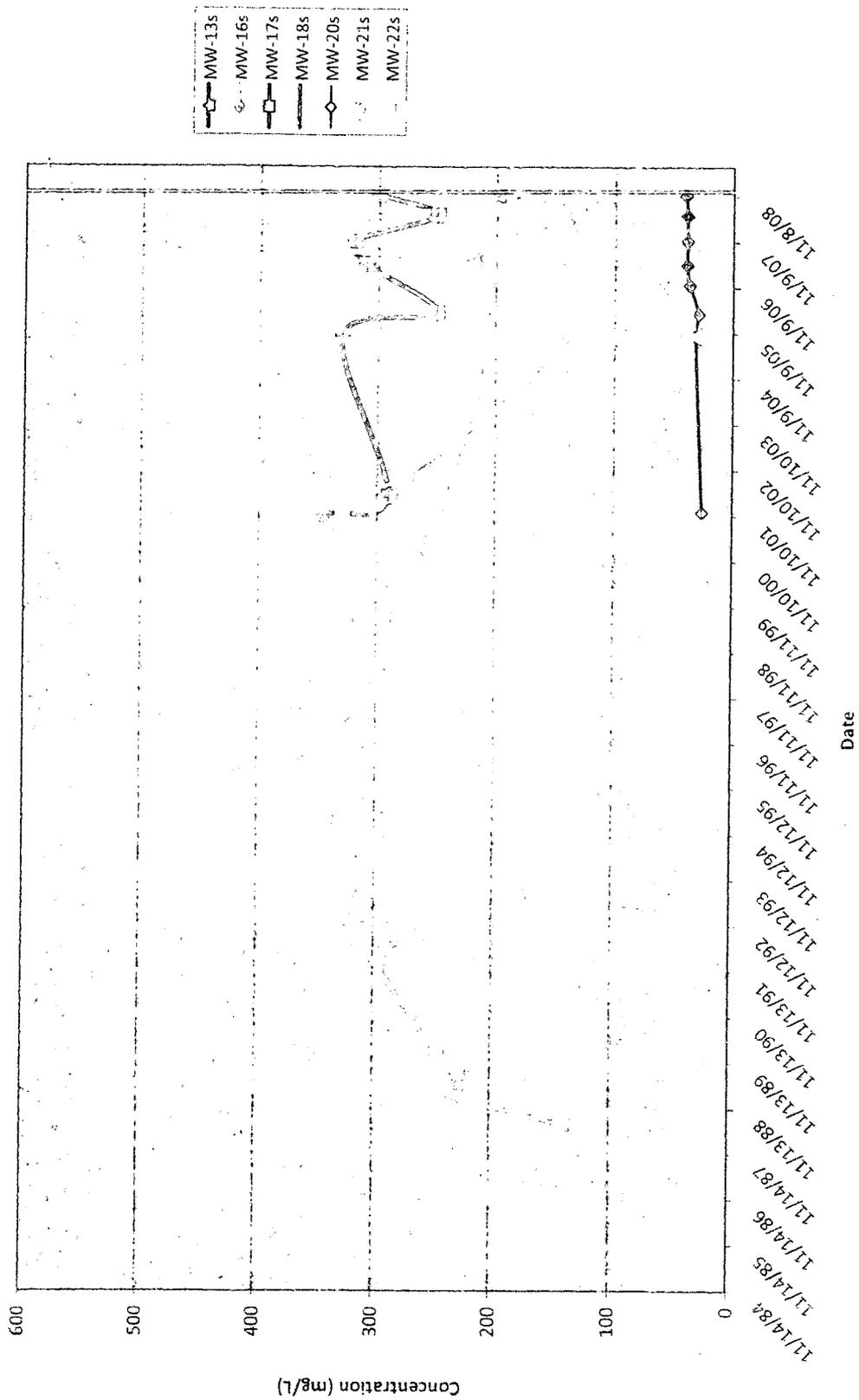
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 SULFATE IN SHALLOW WELLS



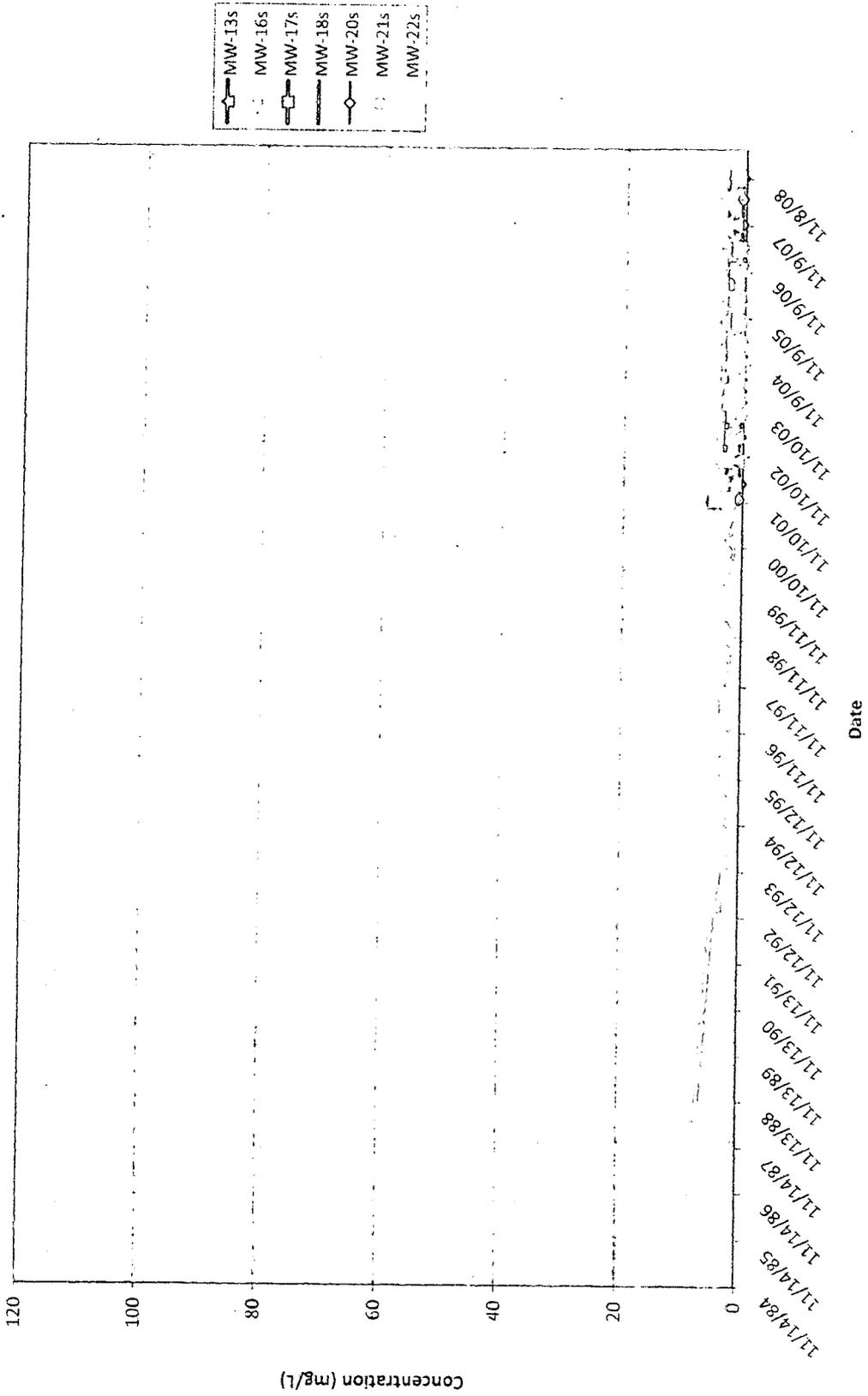
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 TDS IN SHALLOW WELLS



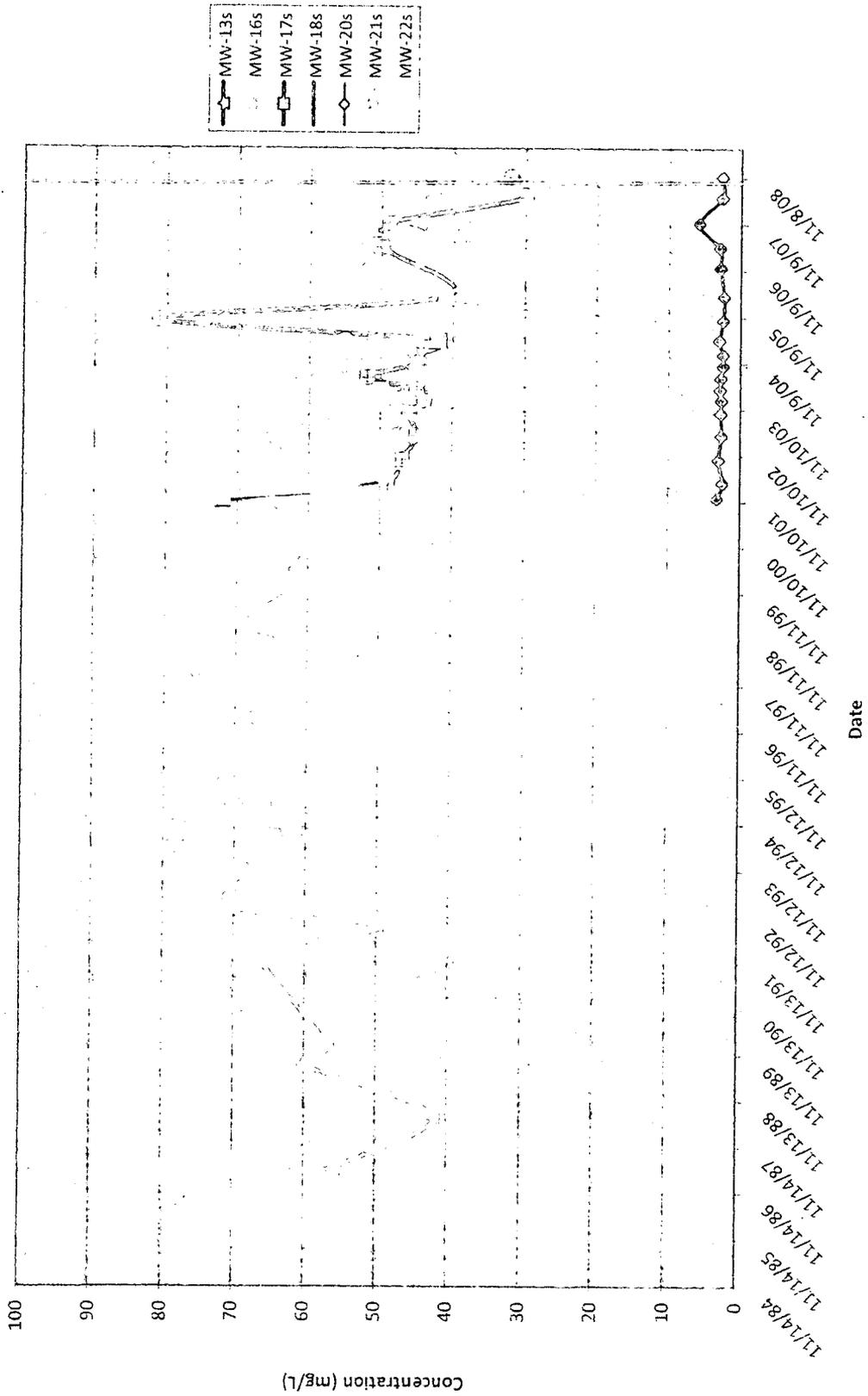
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 BICARBONATE IN SHALLOW WELLS



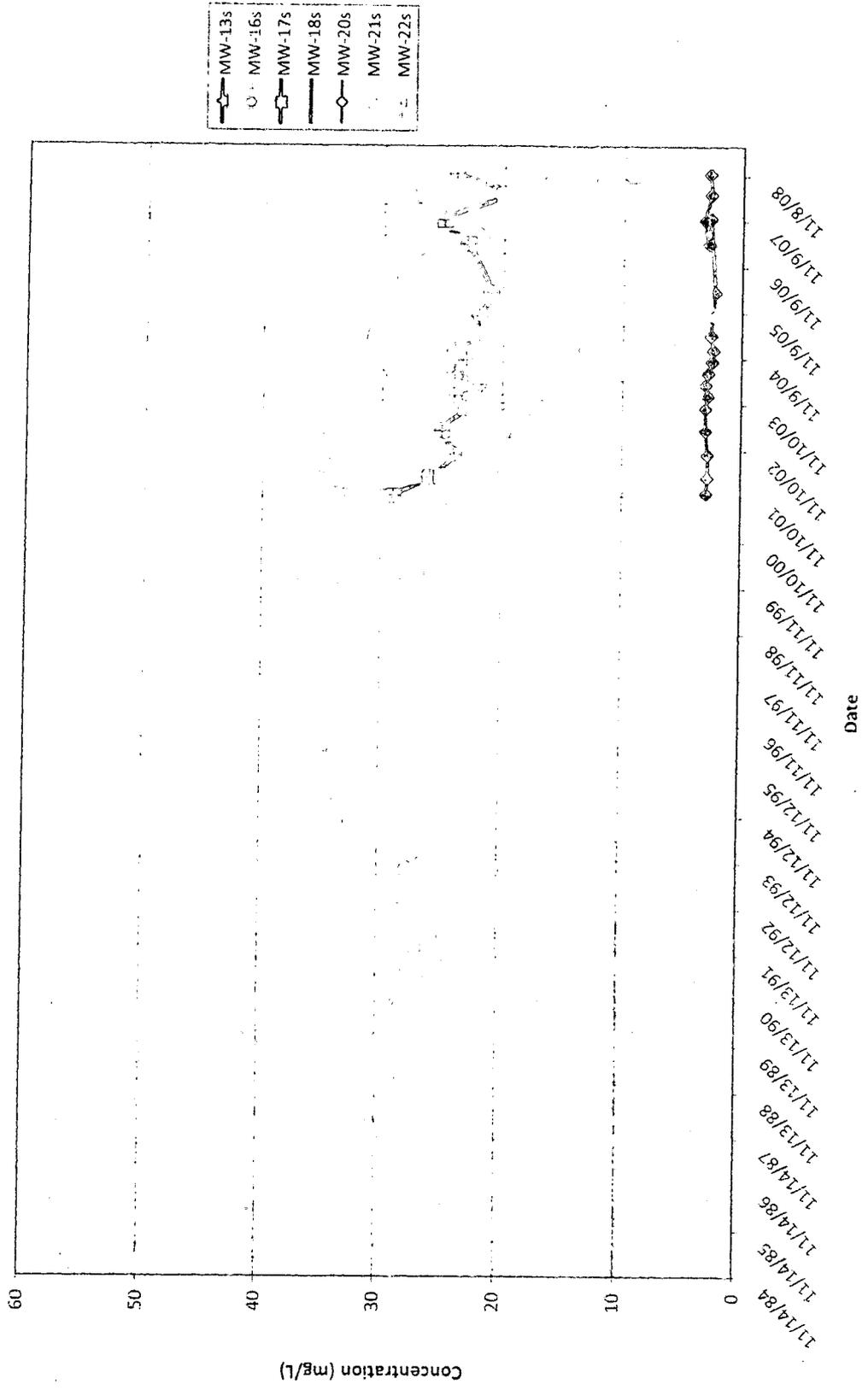
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 POTASSIUM IN SHALLOW WELLS



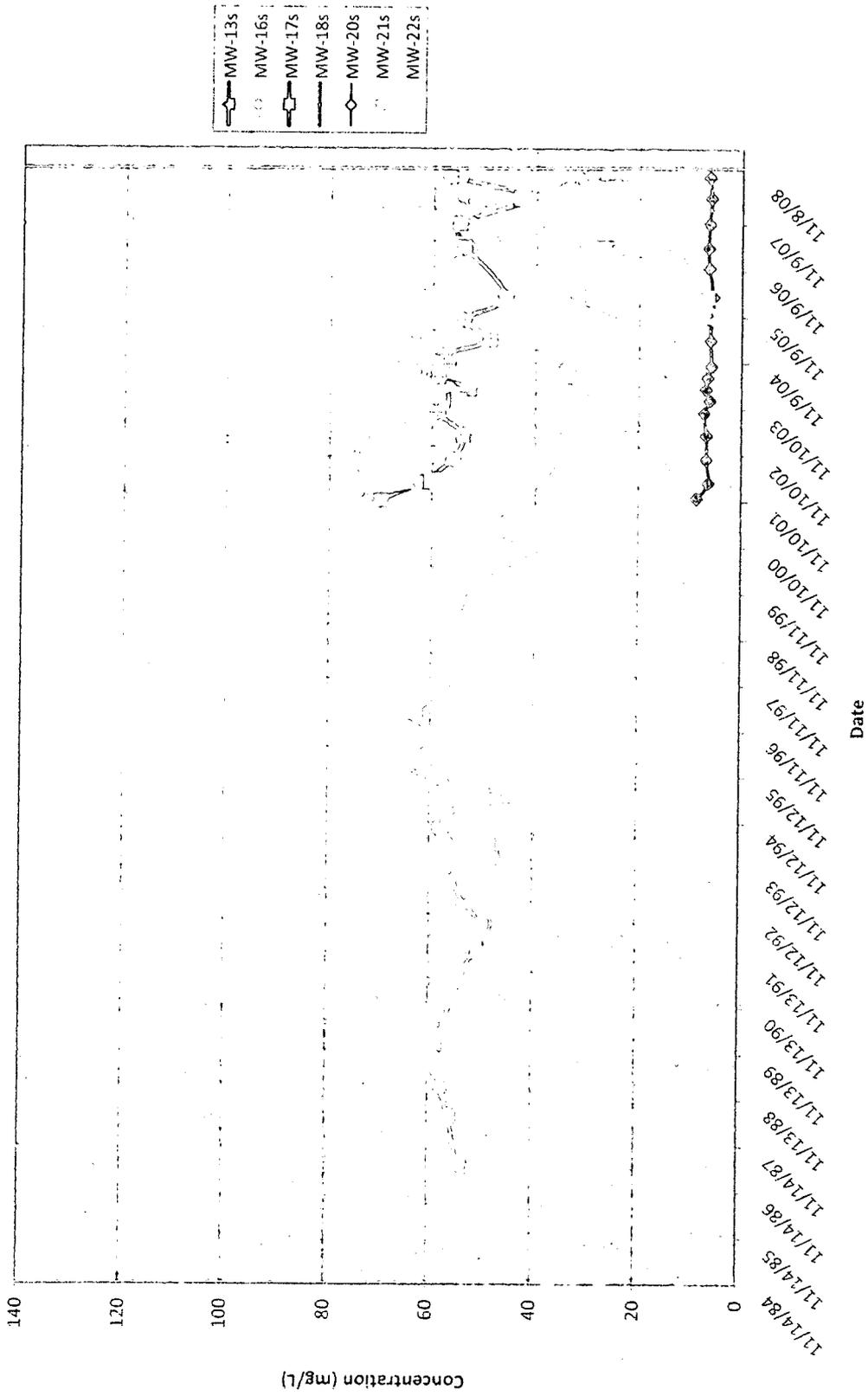
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 SODIUM IN SHALLOW WELLS



GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 MAGNESIUM IN SHALLOW WELLS

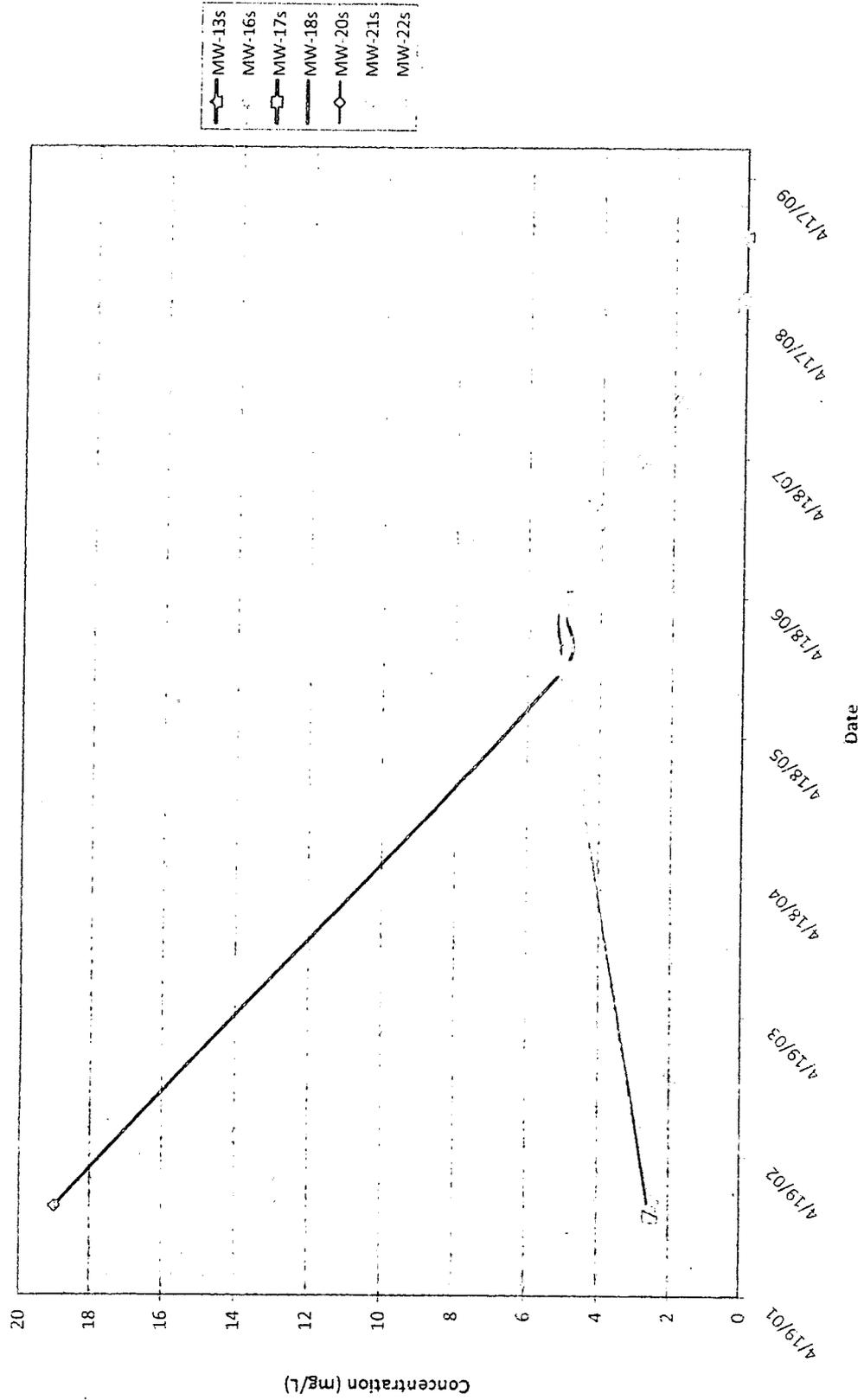


GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 CALCIUM IN SHALLOW WELLS

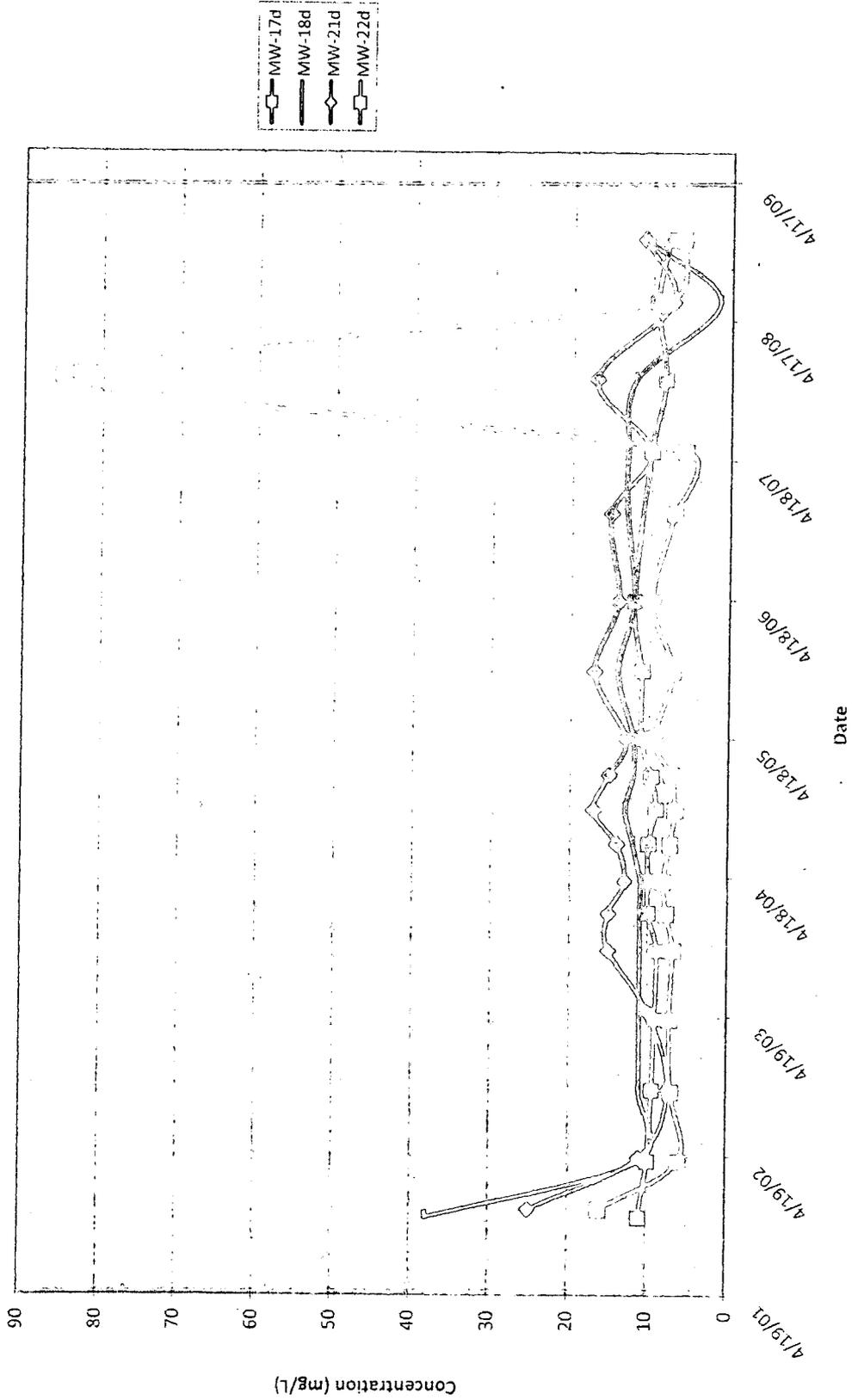


atad

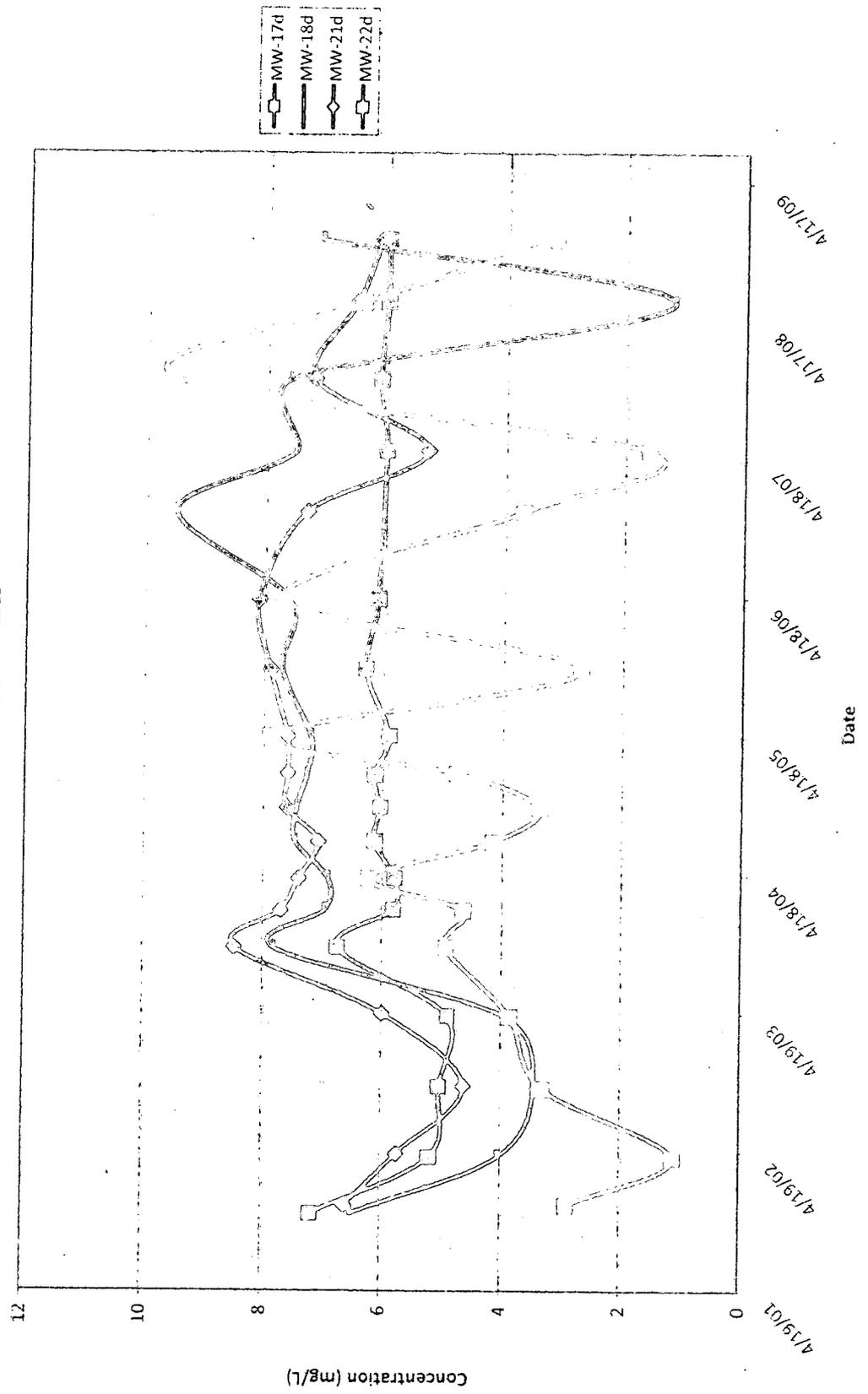
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 CARBONATE IN SHALLOW WELLS



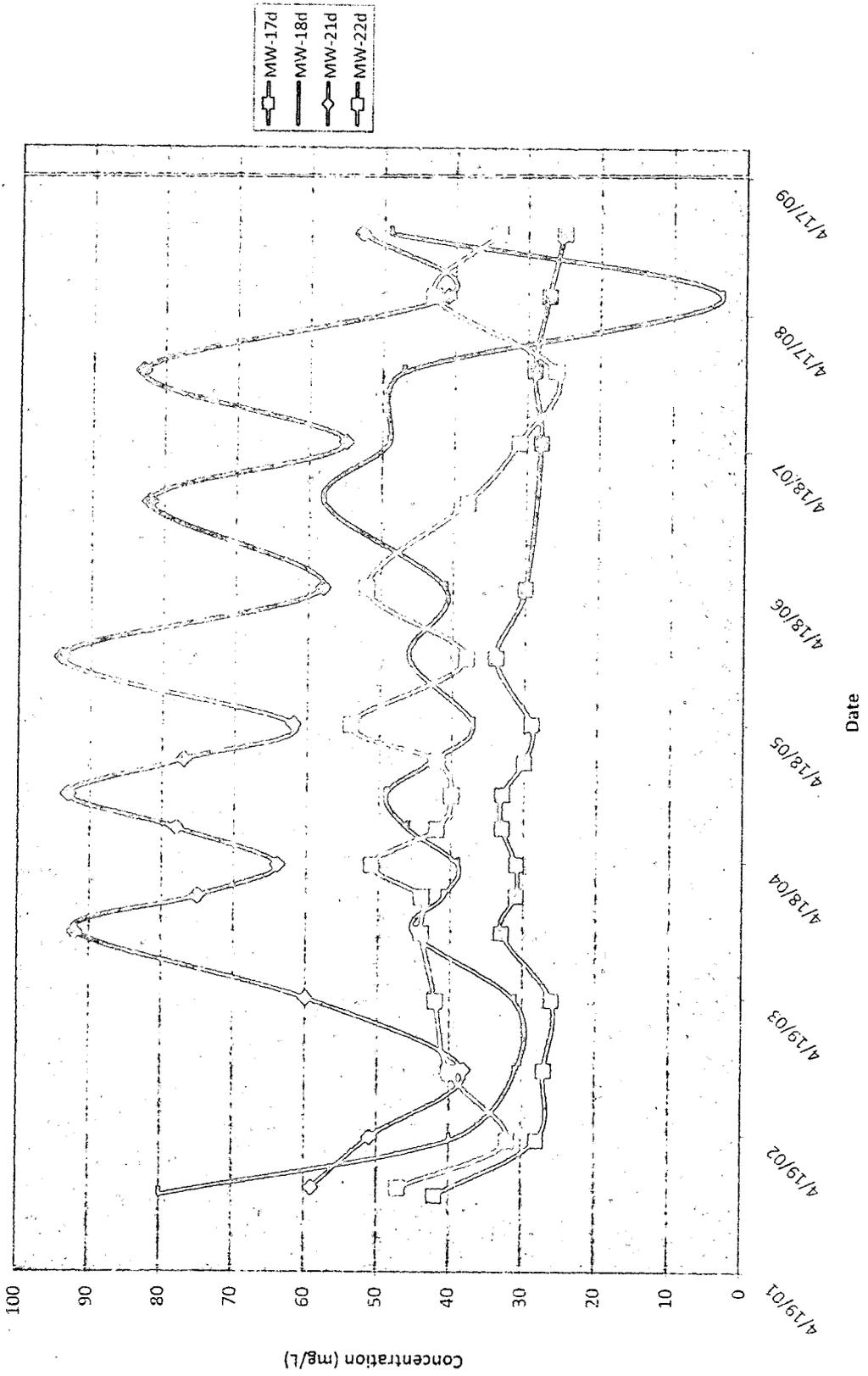
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 CHLORIDE IN DEEP WELLS



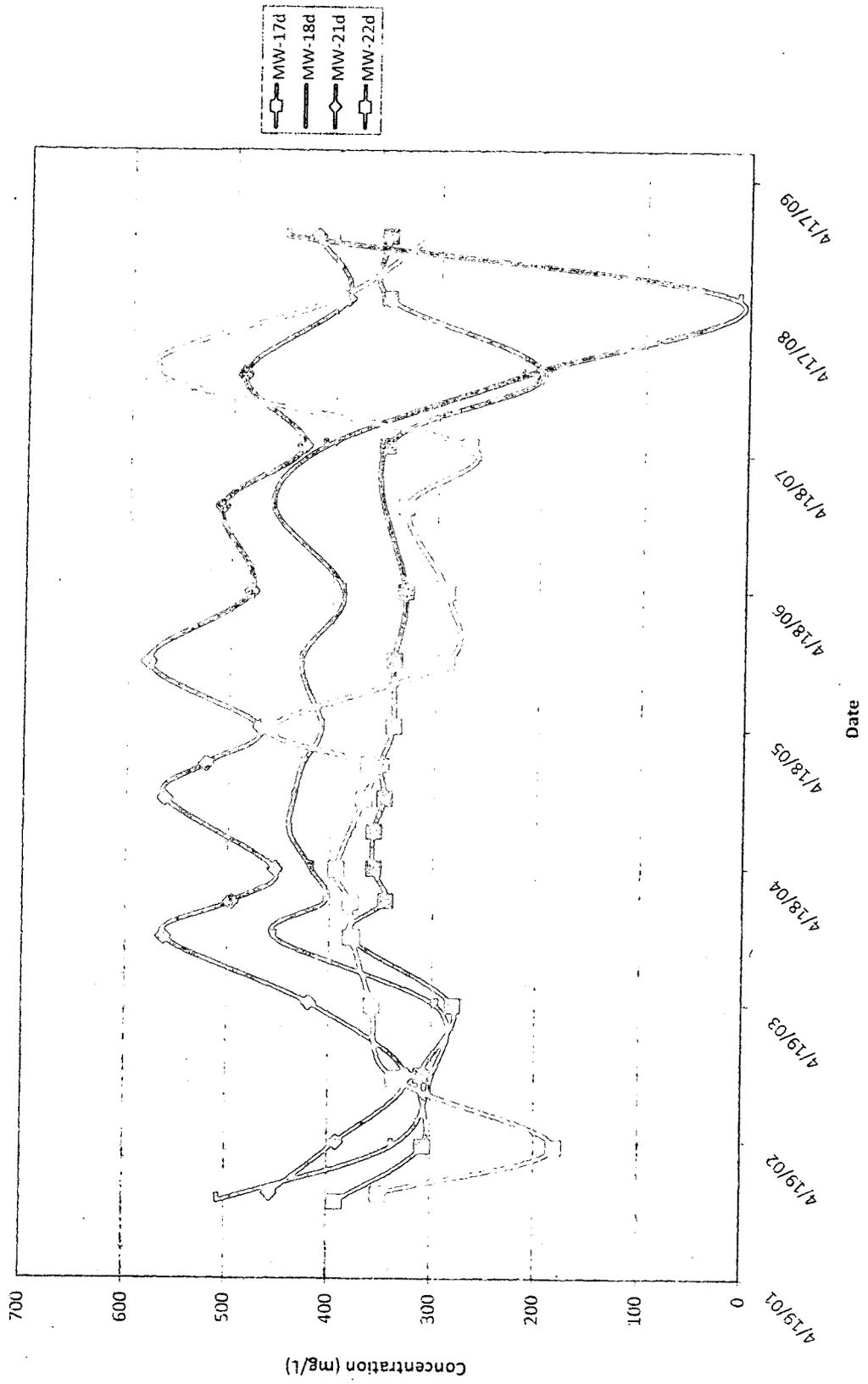
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 NITRATE IN DEEP WELLS



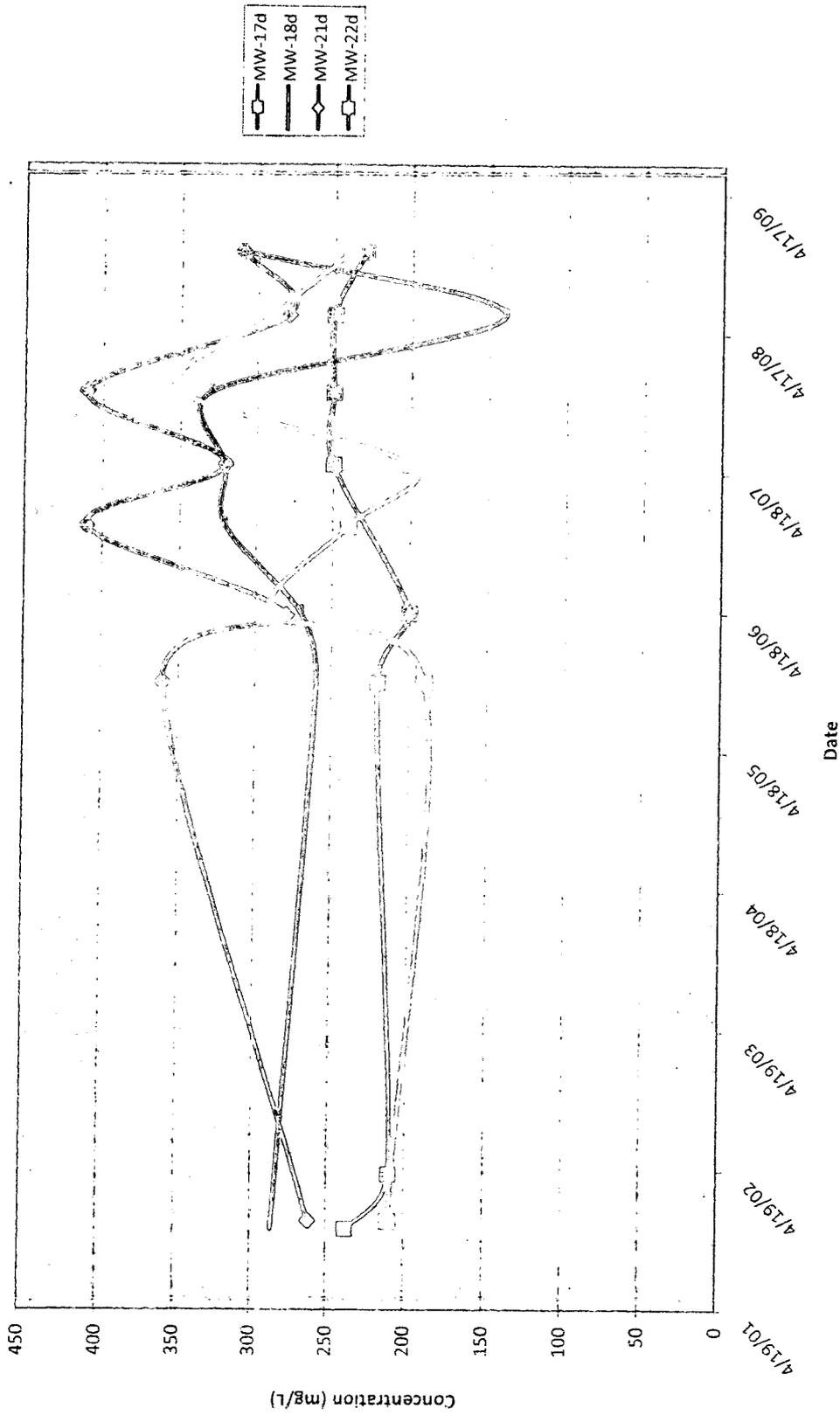
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 SULFATE IN DEEP WELLS



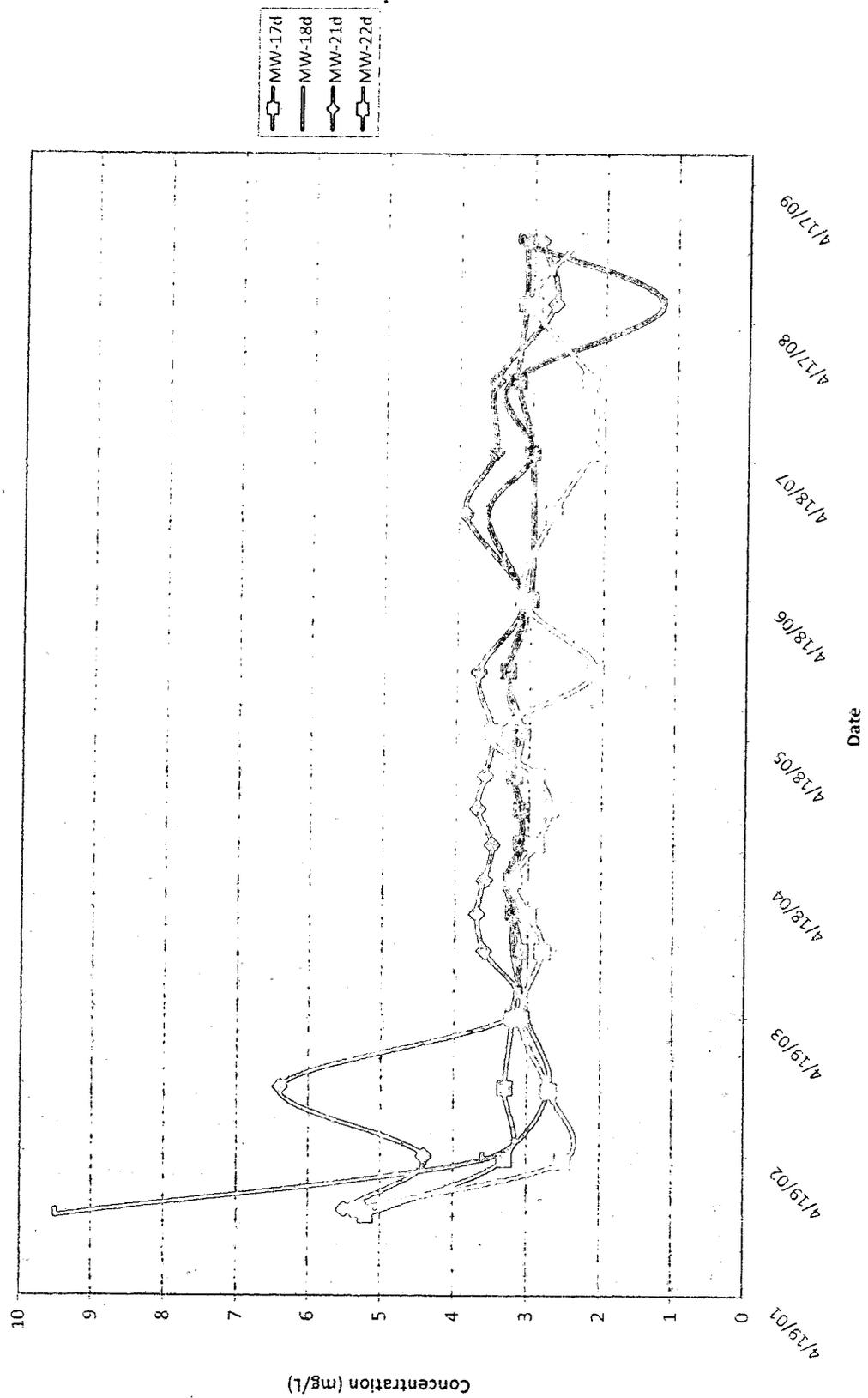
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 TDS IN DEEP WELLS



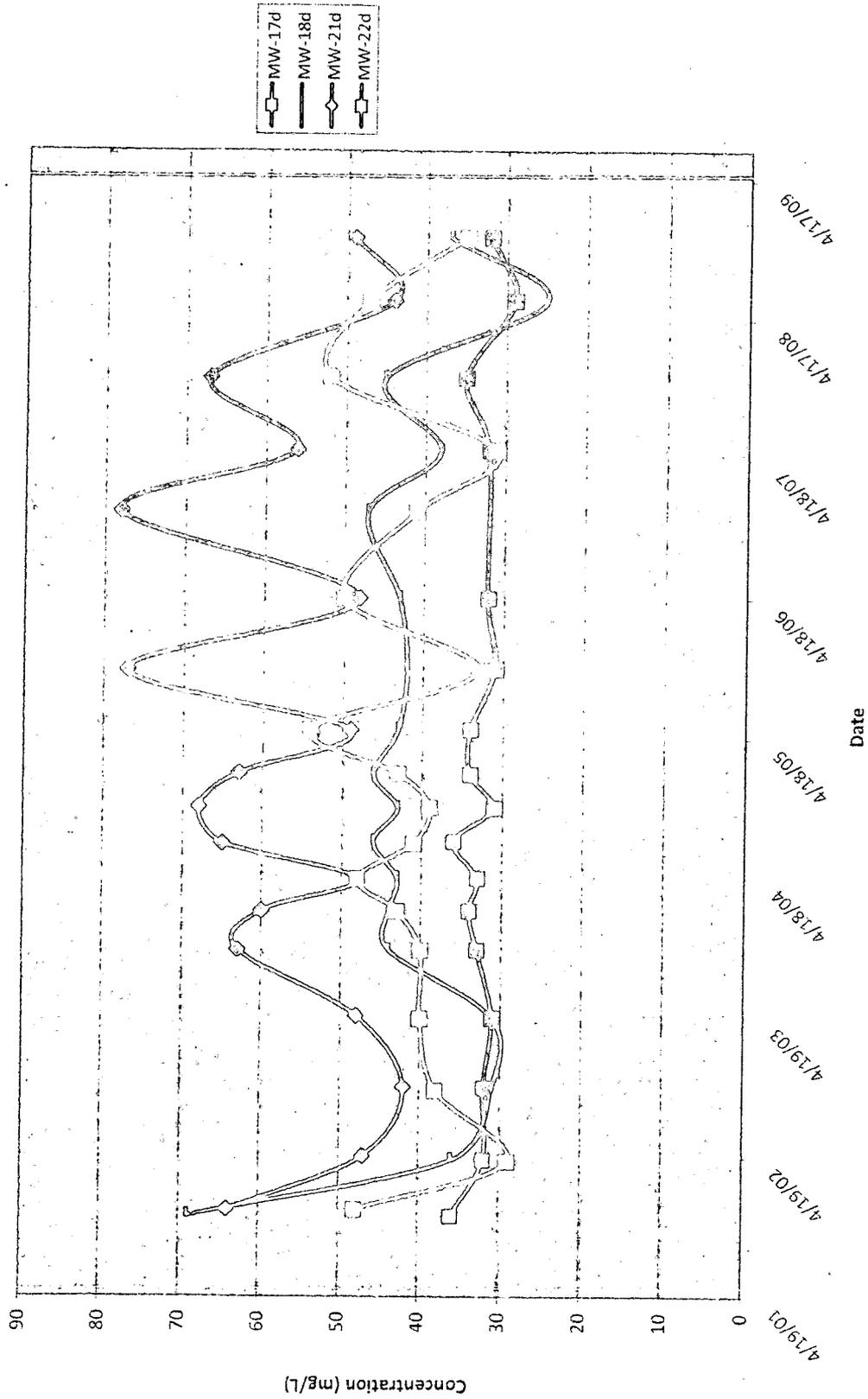
GEER ROAD LANDFILL
INORGANIC TIME SERIES GRAPH
BICARBONATE IN DEEP WELLS



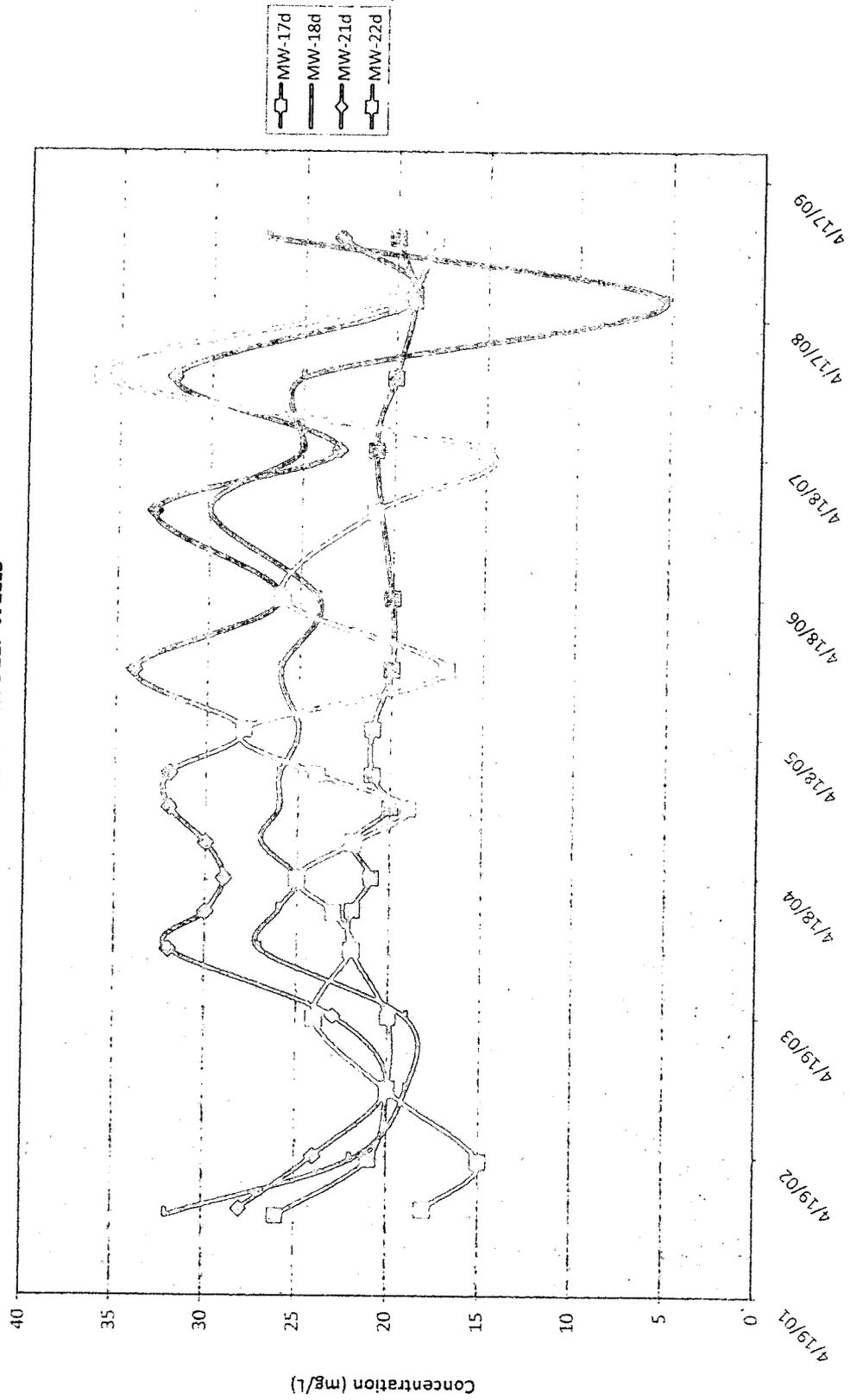
GEER ROAD LANDFILL
INORGANIC TIME SERIES GRAPH
POTASSIUM IN DEEP WELLS



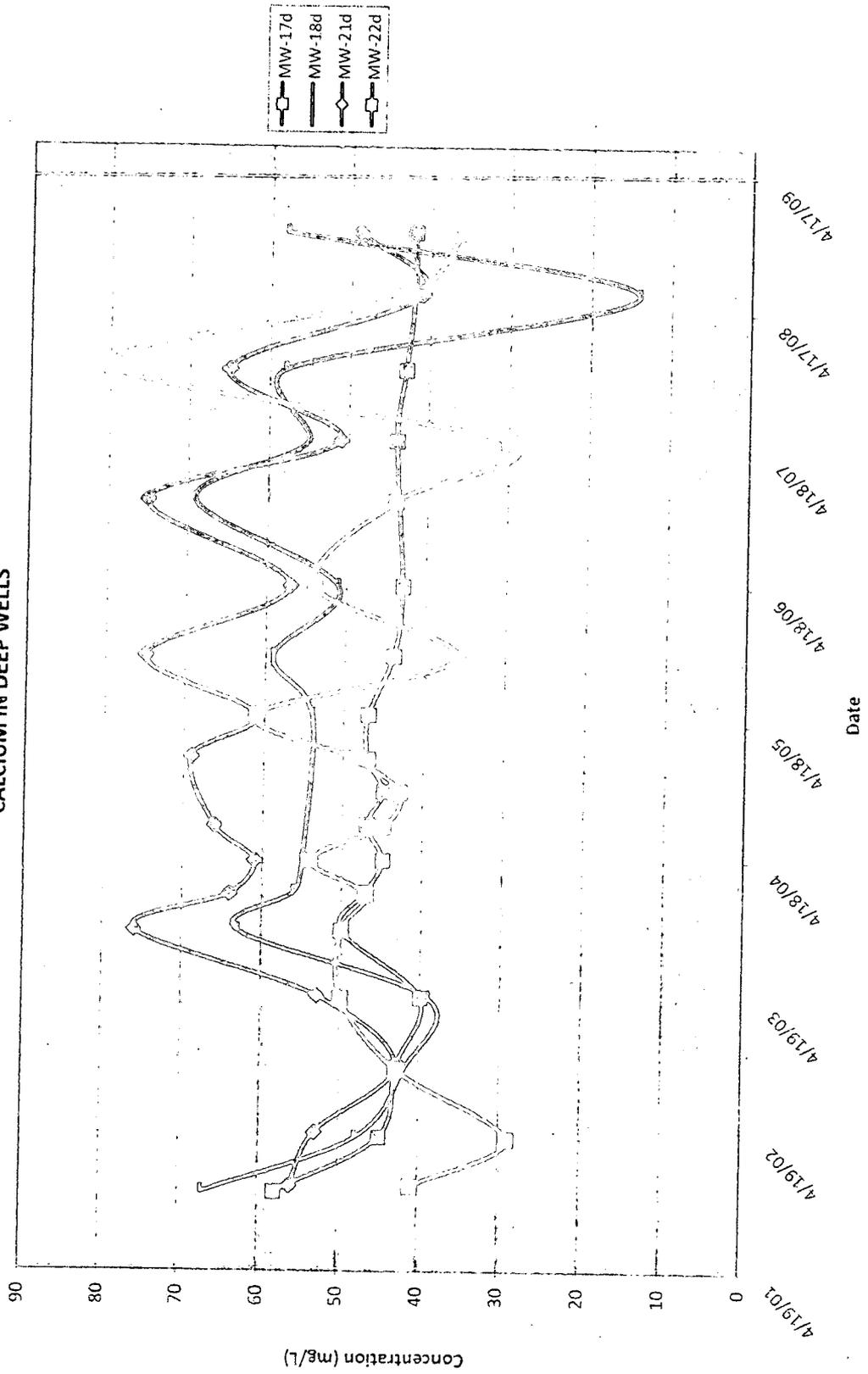
GEER ROAD LANDFILL
INORGANIC TIME SERIES GRAPH
SODIUM IN DEEP WELLS



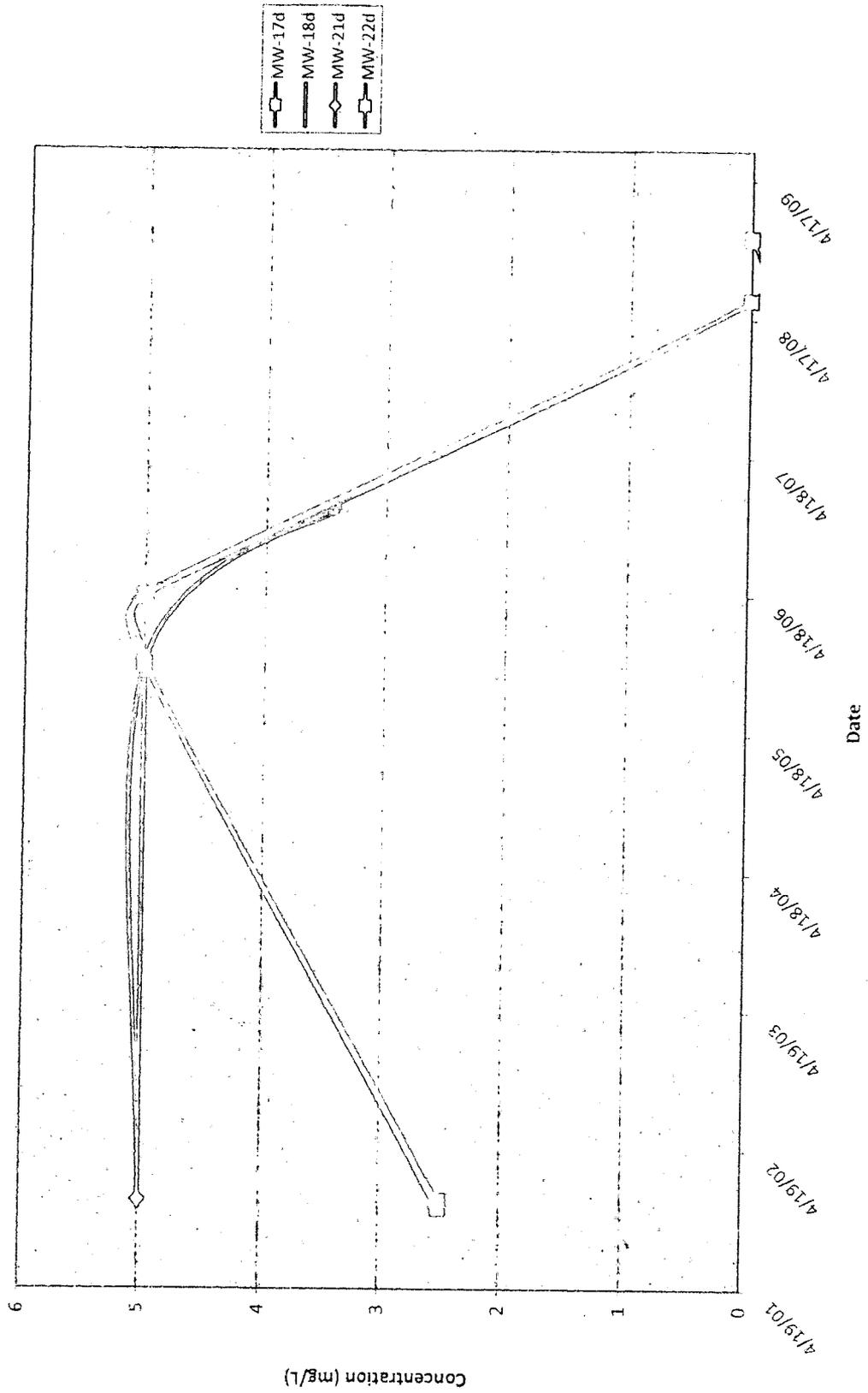
GEER ROAD LANDFILL
 INORGANIC TIME SERIES GRAPH
 MAGNESIUM IN DEEP WELLS



GEER ROAD LANDFILL
INORGANIC TIME SERIES GRAPH
CALCIUM IN DEEP WELLS



GEER ROAD LANDFILL
INORGANIC TIME SERIES GRAPH
CARBONATE IN DEEP WELLS



GEER ROAD LANDFILL
EVALUATION OF IMPACTED GROUNDWATER IN NORTH AREA

~~SECRET~~

APPENDIX C
ONSITE SUPPLY WELL (SW-1) WDR LOG

ORIGINAL

File with DWR

STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES WATER WELL DRILLERS REPORT

Do not fill in

No. 29345

State Well No. 3/10-34 Other Well No.

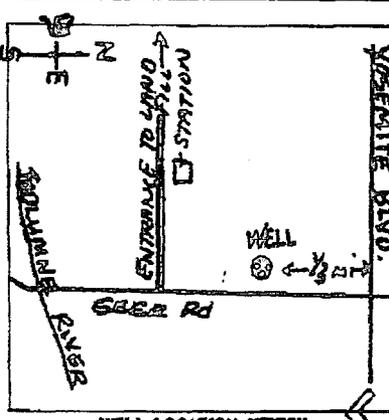
Notice of Intent No. Local Permit No. or Date.

(1) OWNER: Name Stanislaus County Address Geer Rd. Land Fill City Turlock, Calif. Zip 95380

(12) WELL LOG: Total depth 407 ft. Depth of completed well 300 ft. from ft. to ft. Formation (Describe by color, character, size or material)

(2) LOCATION OF WELL (See instructions): County Stanis. Owner's Well Number. Well address if different from above. Township Range Section. Distance from cities, roads, railroads, fences, etc.

0 - 2 Top Soil
2 - 20 Clay
20 - 70 Sand
70 - 80 Fine Sand & Clay St.
80 - 85 Clay
85 - 115 Clay & Shale St.
115 - 120 Sand
120 - 125 Clay
125 - 140 Rock
140 - 168 Clay
168 - 172 Sand
172 - 200 Clay
190 - 200 Black Sand & Clay St.
200 - 228 Clay
228 - 241 Black Sand
241 - 243 Clay
243 - 245 Black Sand
245 - 250 Clay
250 - 270 Fine Black Sand & Clay St.
270 - 277 Clay
277 - 324 Clay & Black Sand St.
324 - 326 Black Sand
326 - 407 Clay



(3) TYPE OF WORK: New Well [X] Deepening [] Reconstruction [] Reconditioning [] Horizontal Well [] Destruction [] (Describe destruction materials and procedures in item 12) (4) PROPOSED USE: Domestic [] Irrigation [] Industrial [] Test Well [] Shallow [] Municipal [] Other []

(5) EQUIPMENT: Rotary [X] Reverse [] Cable [] Air [] Other [] Bucket []

(8) GRAVEL PACK: Yes [X] No [] Size 20-40 mesh 2 1/2" Diameter of hole 81" Depth from 300'

Table with columns: From ft., To ft., Dia. in., Casing or Wall, Type of perforation or size of screen. Includes entries for 0-300, 130-180, 180-195, 195-210, 210-230.

(8) PERFORATIONS: Type of perforation or size of screen. Includes entries for 130-180, 180-195, 195-210, 210-230.

(9) WELL SEAL: Was surface sanitary seal provided? Yes [X] No [] If yes, to depth 81 ft. Were strata sealed against pollution? Yes [X] No [] Interval ft. Method of sealing Cement Conductor Pipe

Work started 7/5 1978 Completed 7/17 1978

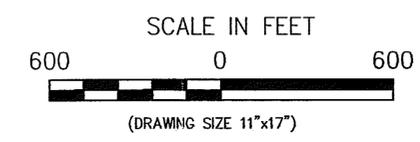
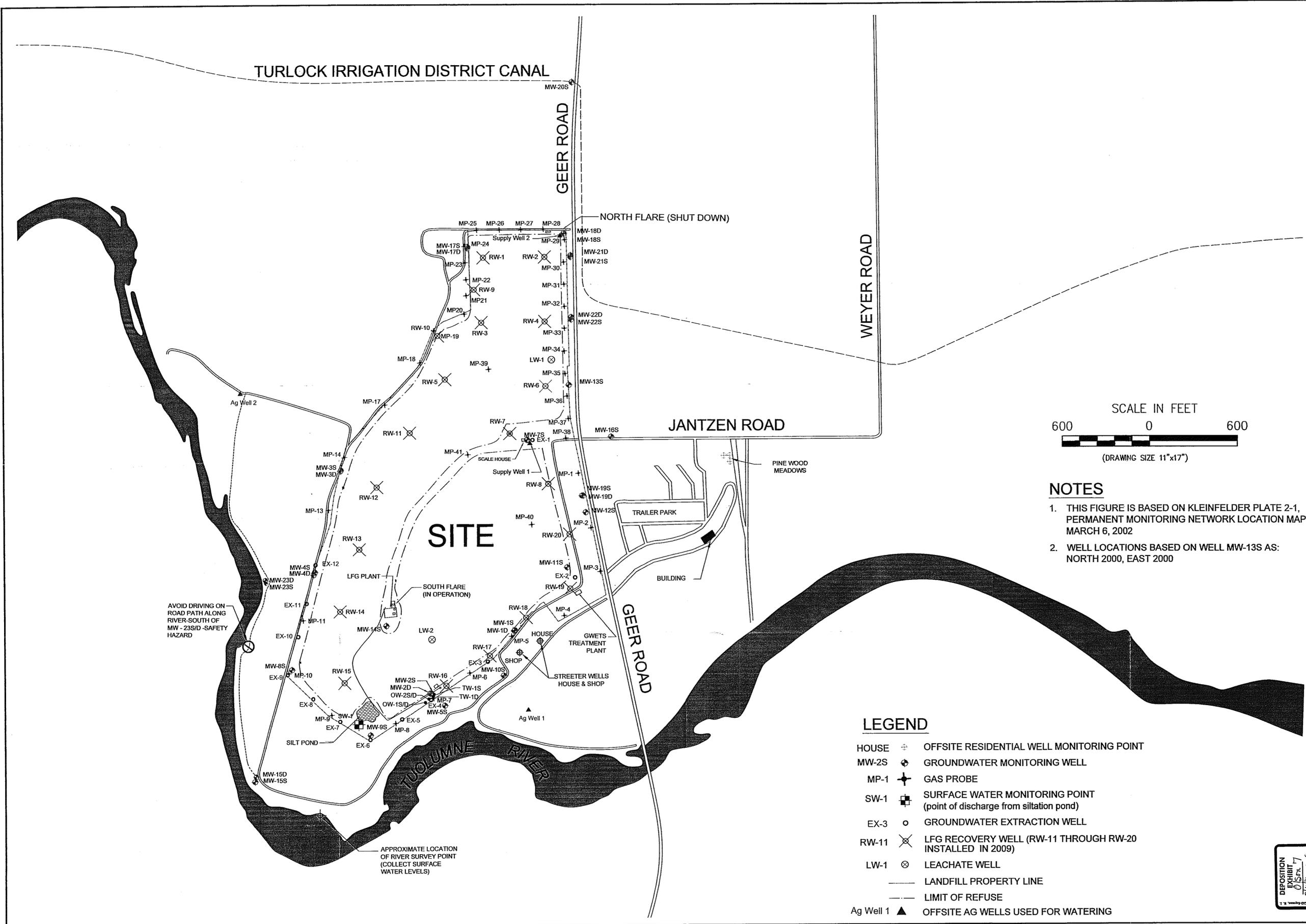
(10) WATER LEVELS: Depth of first water, if known ft. Standing level after well completion ft.

WELL DRILLER'S STATEMENT: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

(11) WELL TESTS: Was well test made? Yes [] No [] If yes, by whom? Type of test Pump [] Bailor [] Air lift [] Depth to water at start of test ft. At end of test ft. Discharge gal/min after hours Water temperature Chemical analysis made? Yes [] No [] If yes, by whom? Was electric log made? Yes [] No [] If yes, attach copy to this report

Signed C. Henning (Well Driller) NAME Calwater Drilling Co. (Person, firm, or corporation) (Typed or printed) Address 300 South Kilroy City Turlock, Calif. Zip 95380 License No. 321252 Date of this report 7/19/78





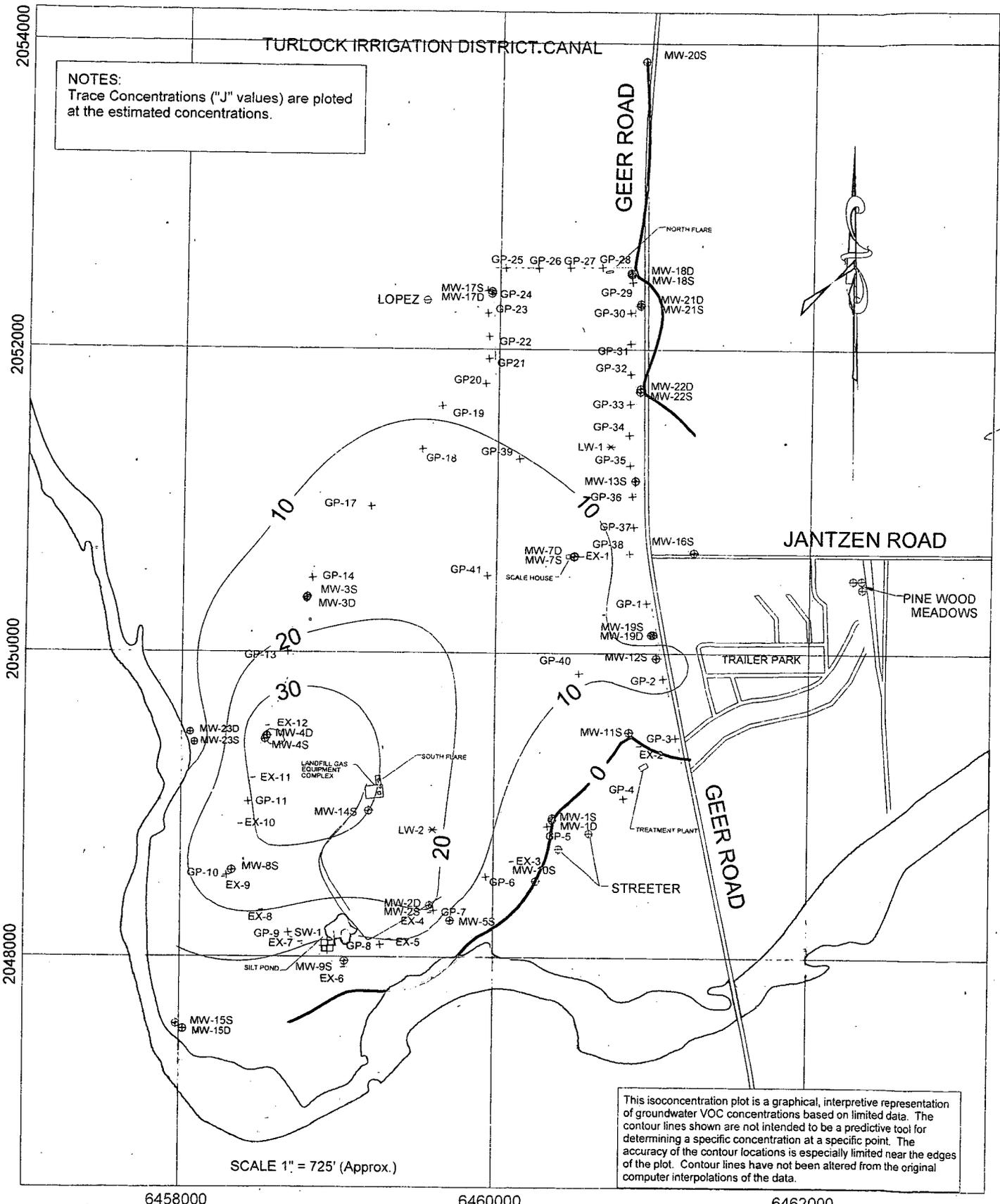
- NOTES**
1. THIS FIGURE IS BASED ON KLEINFELDER PLATE 2-1, PERMANENT MONITORING NETWORK LOCATION MAP MARCH 6, 2002
 2. WELL LOCATIONS BASED ON WELL MW-13S AS: NORTH 2000, EAST 2000

- LEGEND**
- HOUSE + OFFSITE RESIDENTIAL WELL MONITORING POINT
 - MW-2S ⊕ GROUNDWATER MONITORING WELL
 - MP-1 ⊕ GAS PROBE
 - SW-1 ⊕ SURFACE WATER MONITORING POINT (point of discharge from siltation pond)
 - EX-3 ○ GROUNDWATER EXTRACTION WELL
 - RW-11 ⊗ LFG RECOVERY WELL (RW-11 THROUGH RW-20 INSTALLED IN 2009)
 - LW-1 ⊗ LEACHATE WELL
 - LANDFILL PROPERTY LINE
 - - - LIMIT OF REFUSE
 - Ag Well 1 ▲ OFFSITE AG WELLS USED FOR WATERING

| | | | | | |
|--|-----------------------------|-----|---|----------|------|
| SHEET TITLE | LFG RECOVERY WELL LOCATIONS | NO. | ▲ | REVISION | DATE |
| | PROJECT TITLE | | EXTRACTION WELL INSTALLATION GEER ROAD LANDFILL MODESTO, CALIFORNIA | | |
| | | | | | |
| <p>SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 3117 FITE CIRCLE, SUITE 108 SACRAMENTO, CA 95827 PH. (916) 361-1897 FAX. (916) 361-1899 PROJ. NO. 03198022.42 DRAW. BY: ATY ACAD. FILE: FIGURE 2 DES. BY: AAM CHK. BY: AAM APP. BY: AAM</p> | | | | | |
| DATE: 7-24-08 | | | | | |
| SCALE: 1"=400' | | | | | |
| FIGURE: 2 | | | | | |







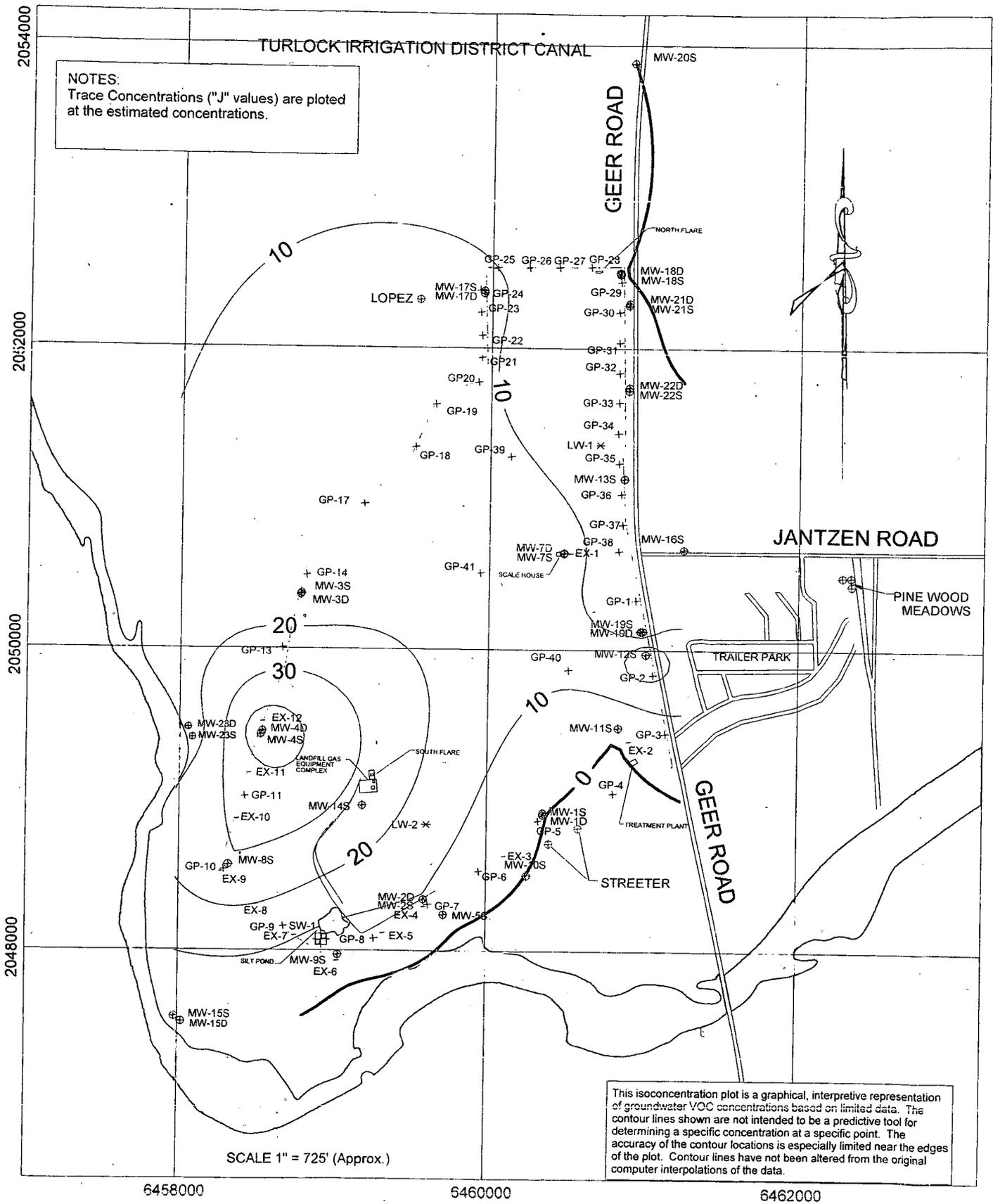
TOTAL VOCs
SHALLOW WELLS - MAY 2010
Contour Interval = 10 ug/L

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

EXHIBIT 8

8/4/11 rms

RECAD 800-831-6988



NOTES:
Trace Concentrations ("J" values) are plotted at the estimated concentrations.

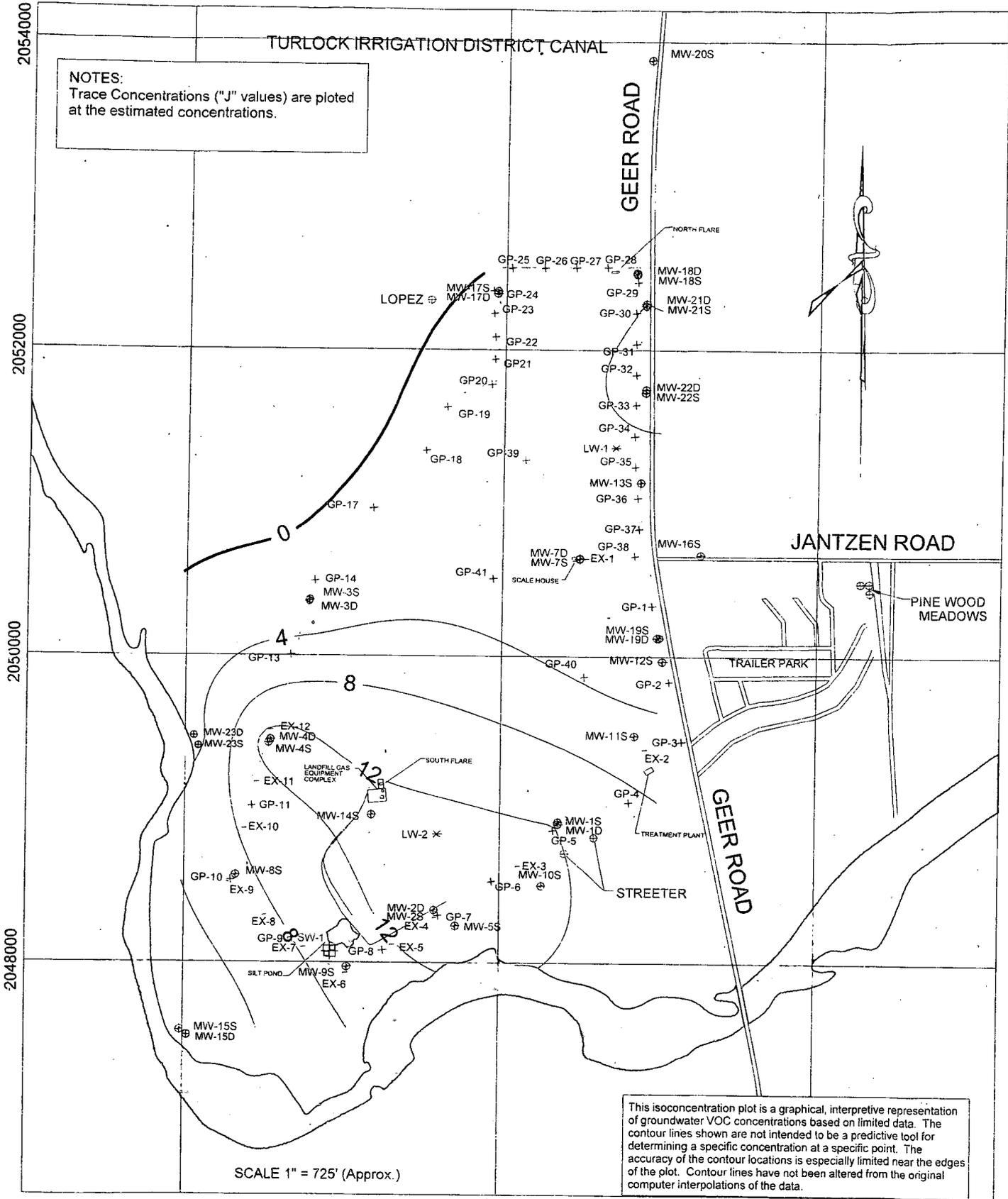
This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

TOTAL VOCs
SHALLOW WELLS - NOVEMBER 2010
Contour Interval = 10 ug/L

2054000
2052000
2050000
2048000

6458000 6460000 6462000

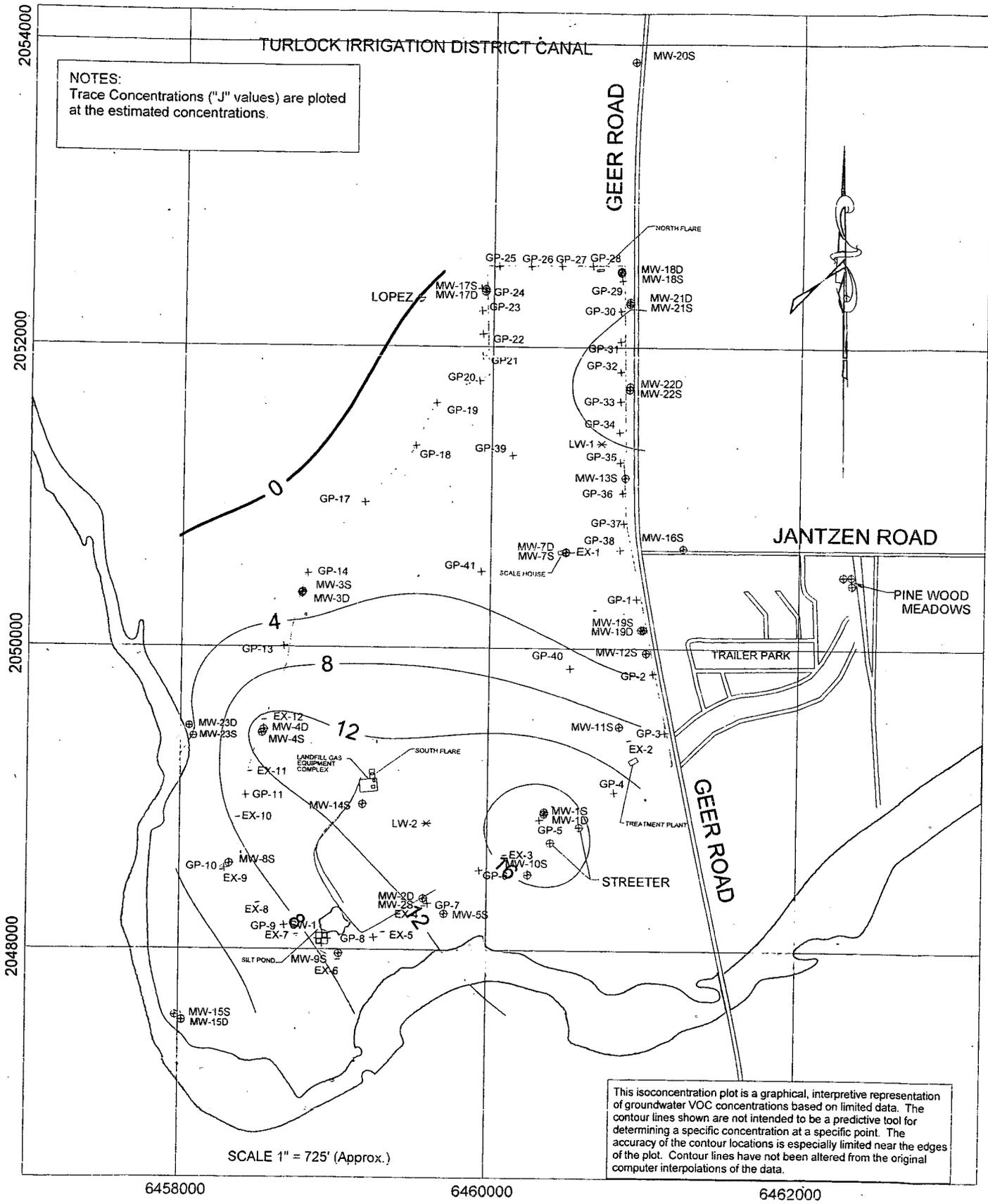


NOTES:
Trace Concentrations ("J" values) are plotted at the estimated concentrations.

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

TOTAL VOCs
DEEP WELLS - MAY 2010
Contour Interval = 4.0 ug/L

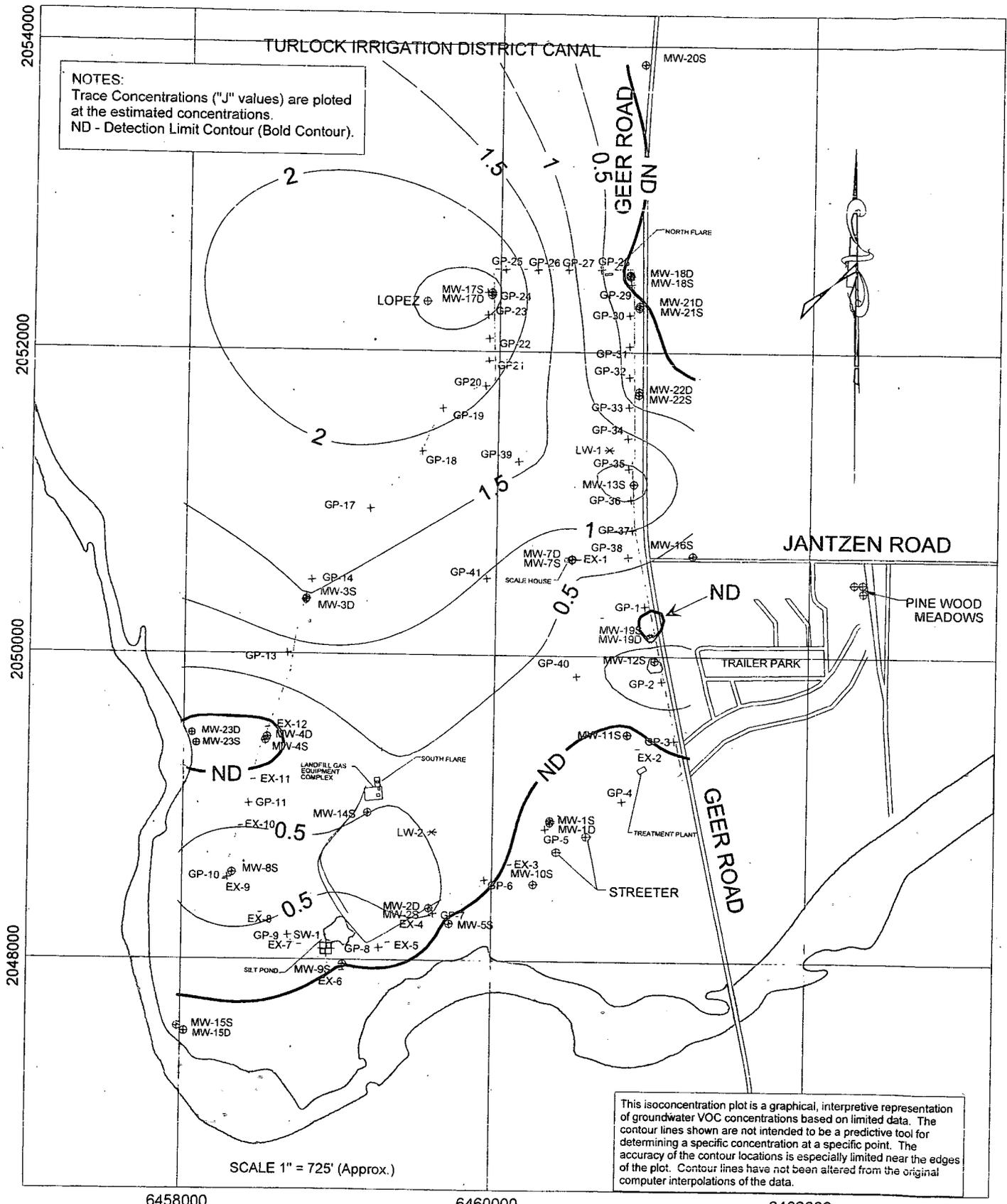


NOTES:
Trace Concentrations ("J" values) are plotted at the estimated concentrations.

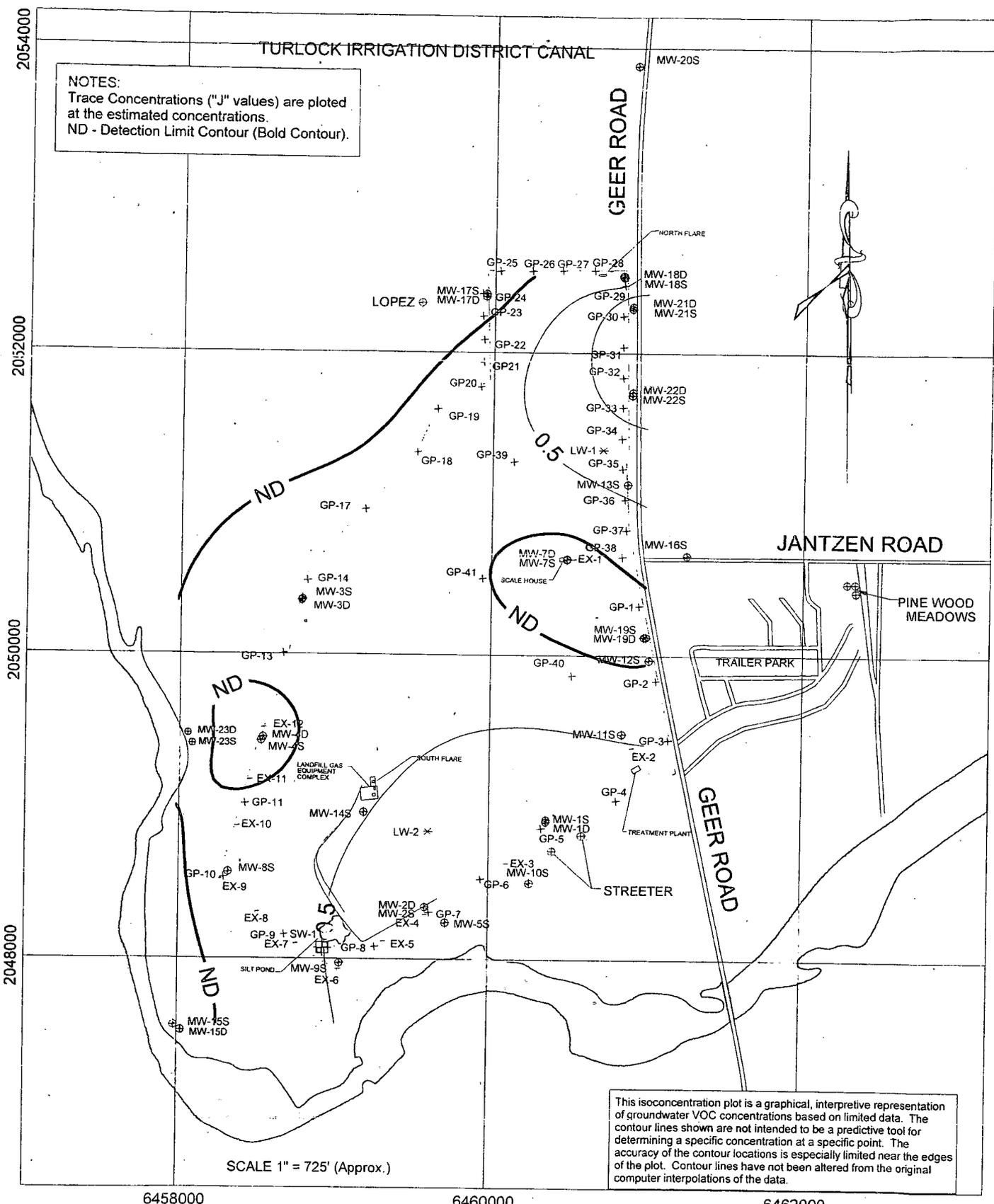
This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

TOTAL VOCs
DEEP WELLS - NOVEMBER 2010
Contour Interval = 4.0 ug/L



**TRICHLOROFLUOROMETHANE
SHALLOW WELLS - NOVEMBER 2010
Contour Interval = 0.5 ug/L**

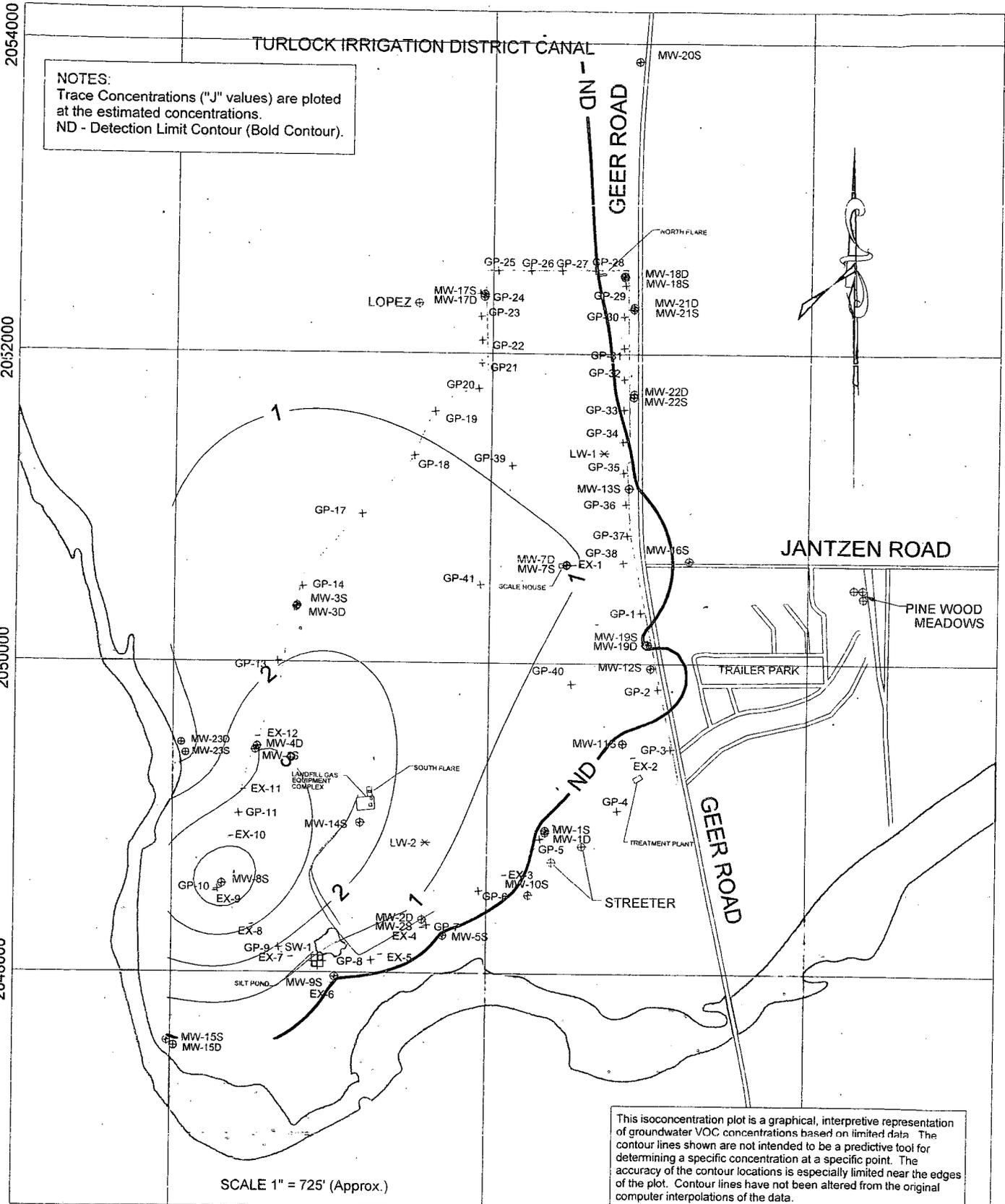


NOTES:
 Trace Concentrations ("J" values) are plotted
 at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

TRICHLOROFLUOROMETHANE
DEEP WELLS - NOVEMBER 2010
 Contour Interval = 0.5 ug/L

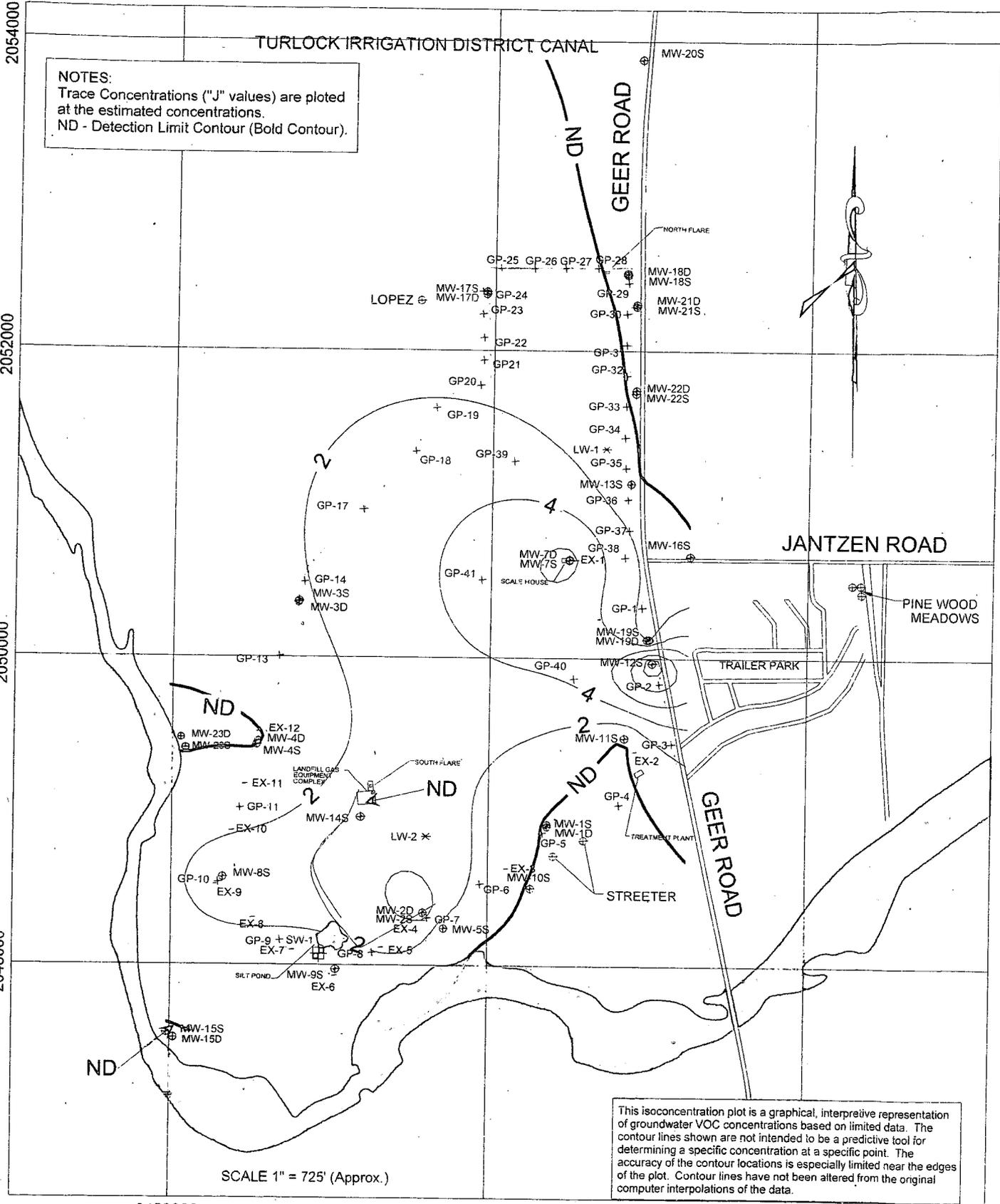


NOTES:
 Trace Concentrations ("J" values) are plotted at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

TRICHLOROETHENE
 SHALLOW WELLS - NOVEMBER 2010
 Contour Interval = 1.0 ug/L

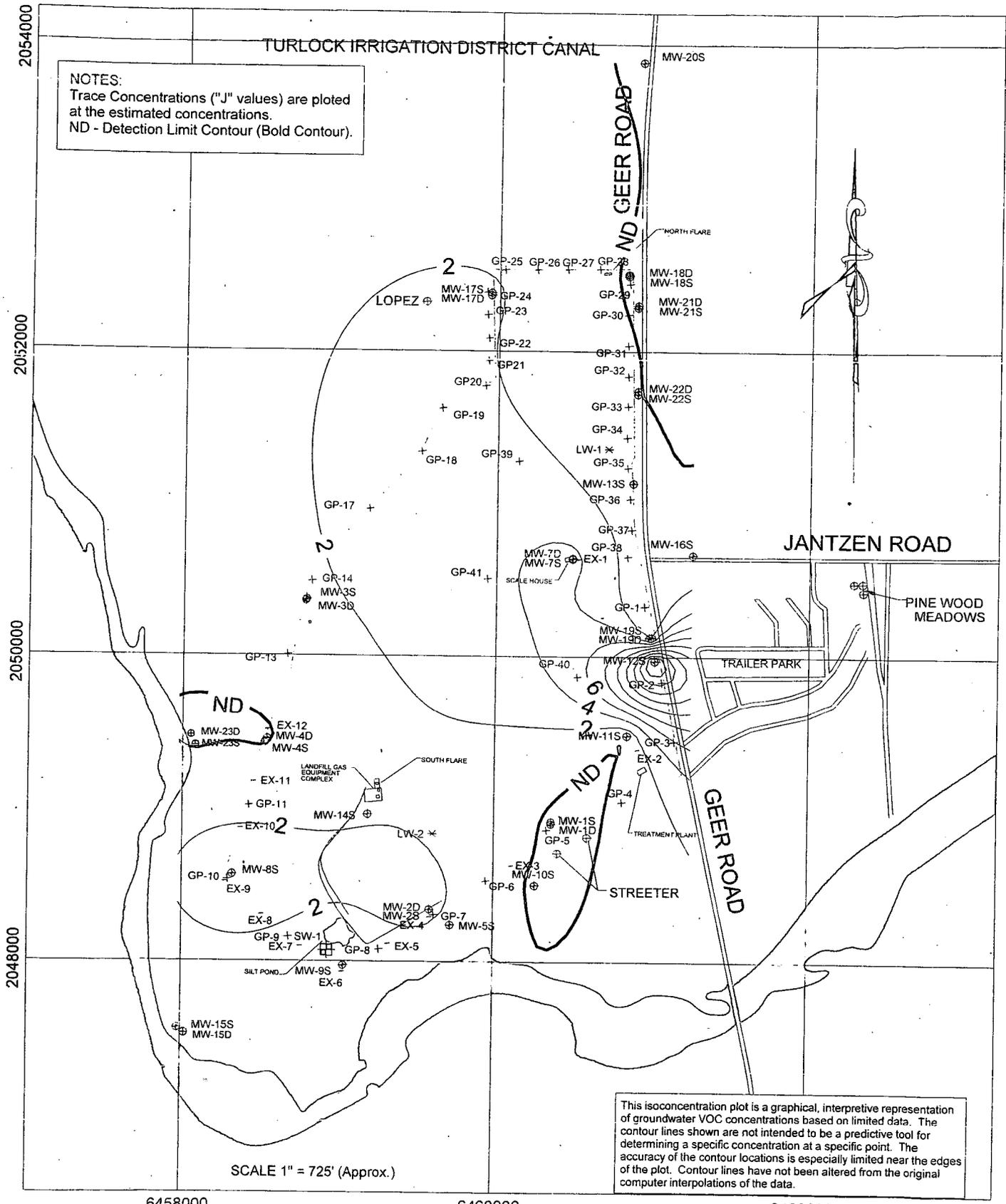


NOTES:
 Trace Concentrations ("J" values) are plotted at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

TETRACHLOROETHENE
SHALLOW WELLS - MAY 2010
 Contour Interval = 2.0 ug/L



NOTES:
 Trace Concentrations ("J" values) are plotted
 at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

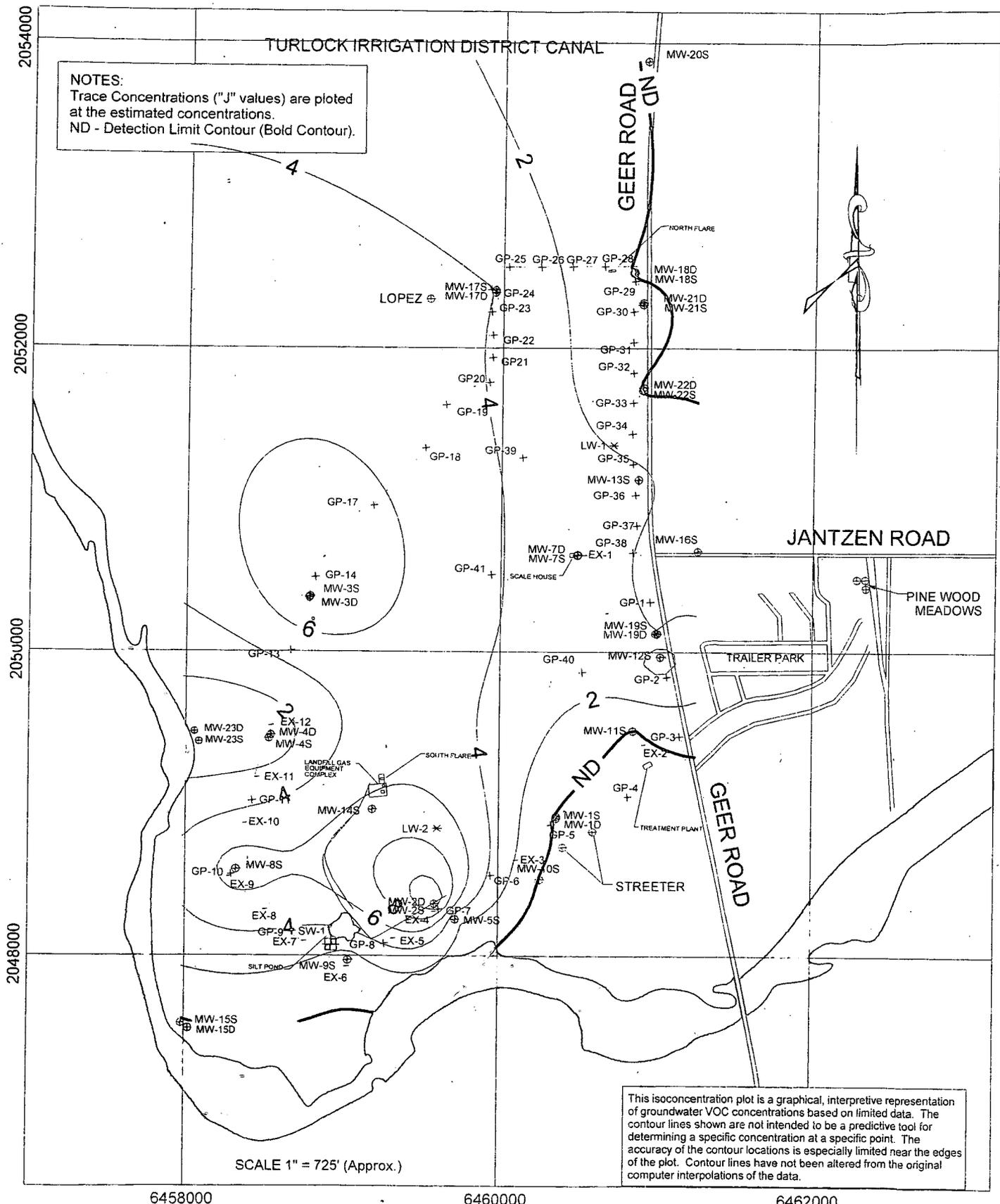
SCALE 1" = 725' (Approx.)

6458000

6460000

6462000

TETRACHLOROETHENE
SHALLOW WELLS - NOVEMBER 2010
 Contour Interval = 2.0 ug/L

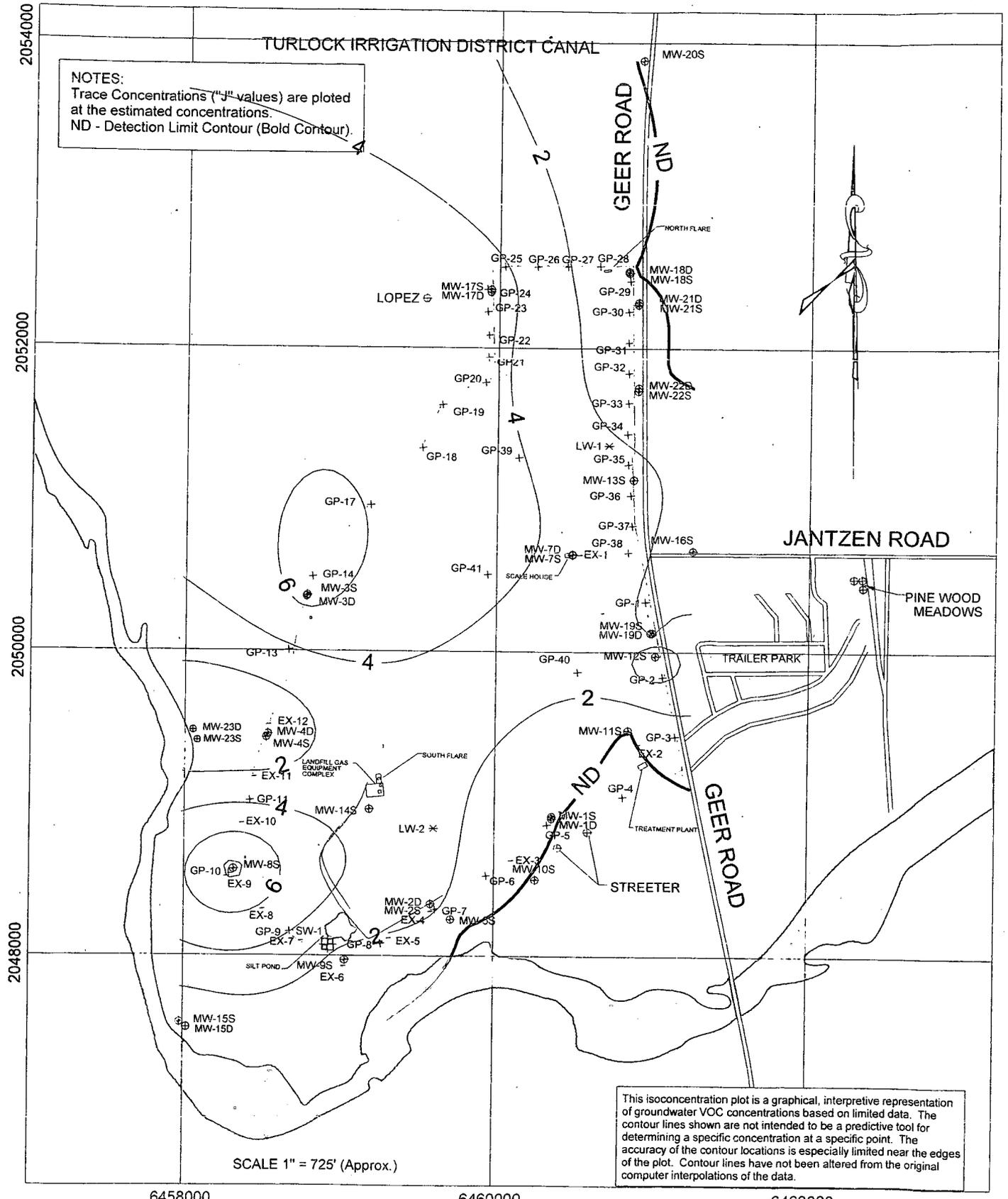


6458000

6460000

6462000

**DICHLORODIFLUOROMETHANE
 SHALLOW WELLS - MAY 2010
 Contour Interval = 2.0 ug/L**

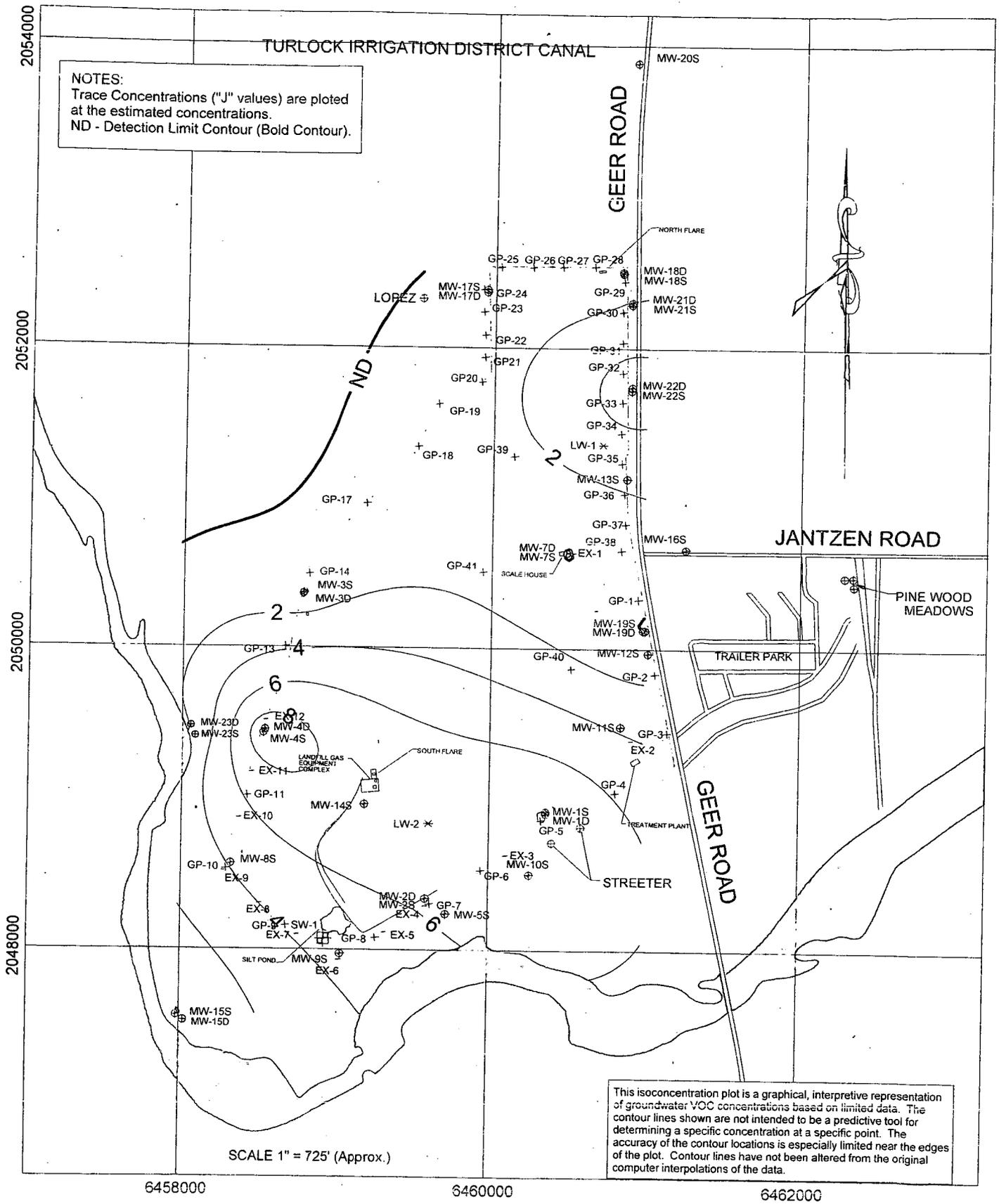


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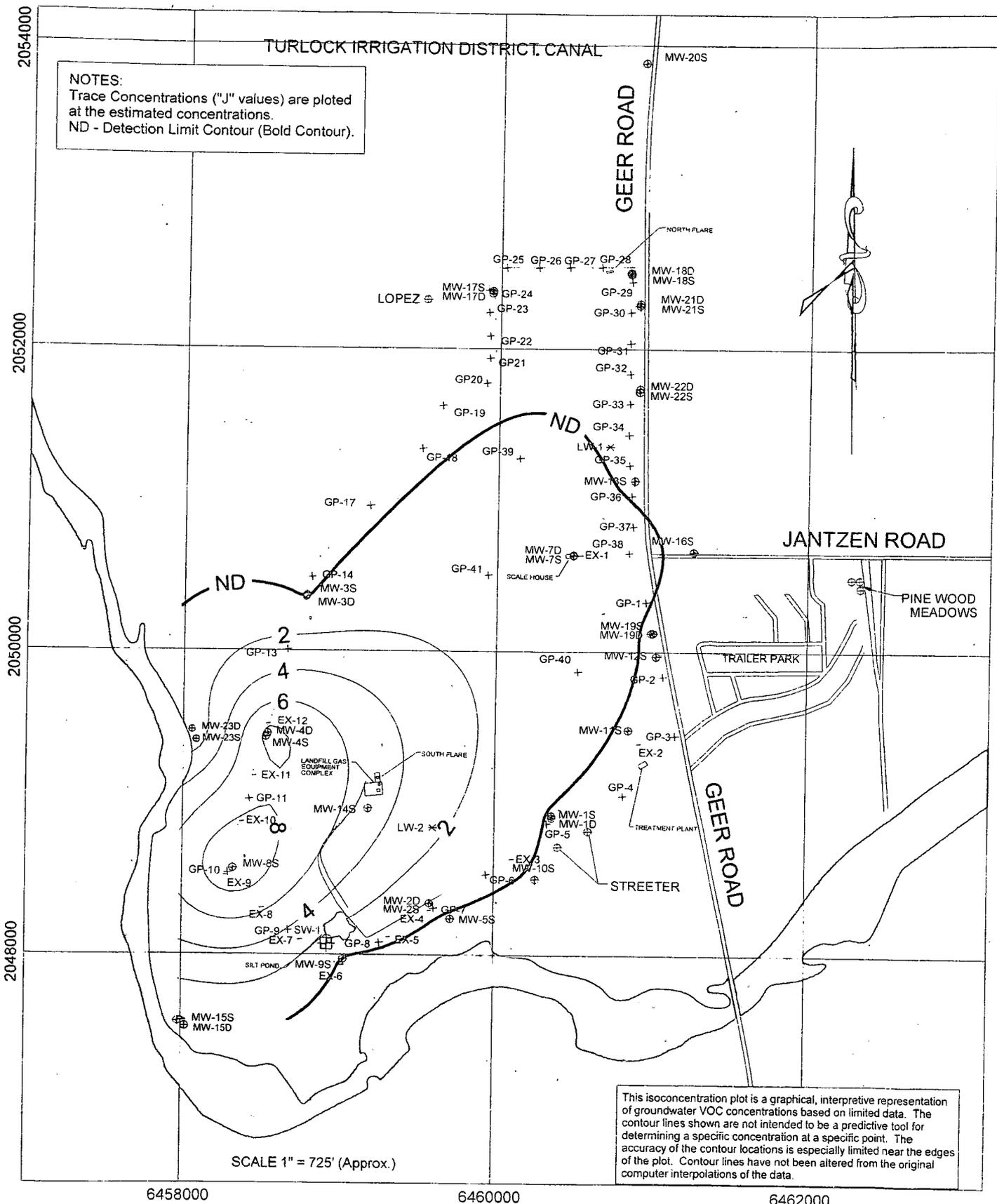
6460000

6462000

**DICHLORODIFLUOROMETHANE
 SHALLOW WELLS - NOVEMBER 2010
 Contour Interval = 2.0 ug/L**



**DICHLORODIFLUOROMETHANE
DEEP WELLS - NOVEMBER 2010**
Contour Interval = 2.0 ug/L

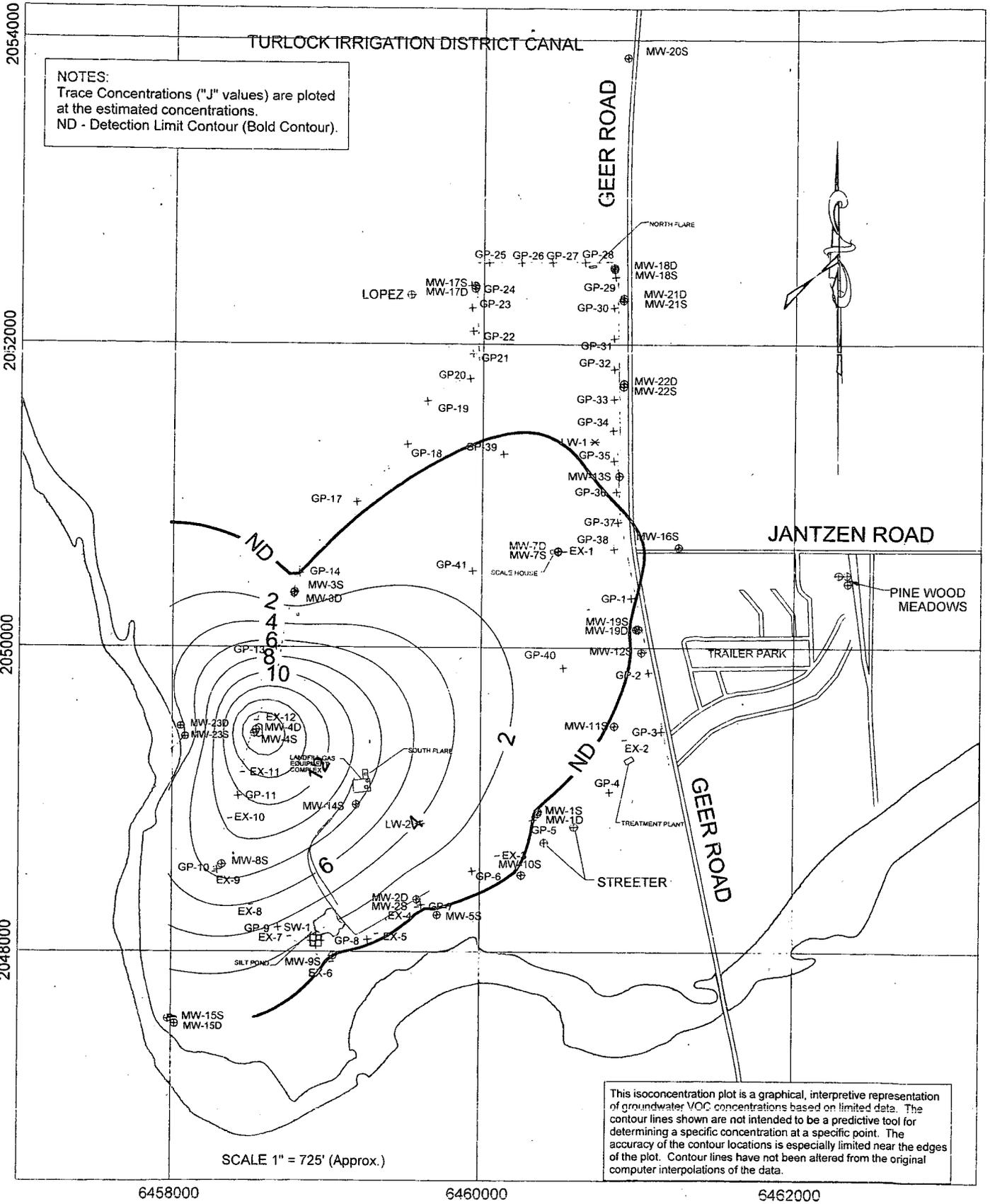


NOTES:
 Trace Concentrations ("J" values) are plotted
 at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

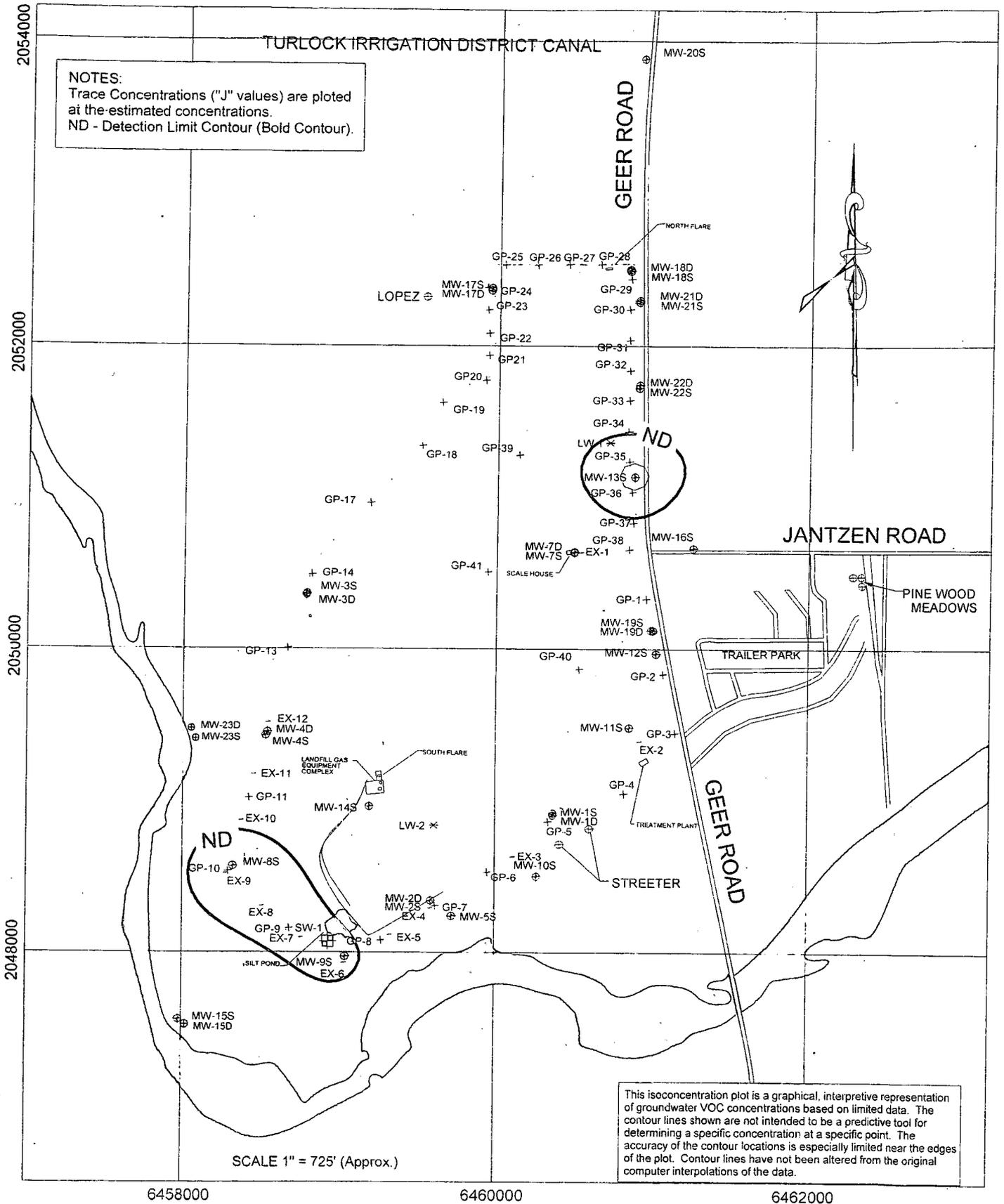
This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

CIS-1,2-DICHLOROETHENE
 SHALLOW WELLS - MAY 2010
 Contour Interval = 2.0 ug/L



CIS-1,2-DICHLOROETHENE
SHALLOW WELLS - NOVEMBER 2010
 Contour Interval = 2.0 ug/L

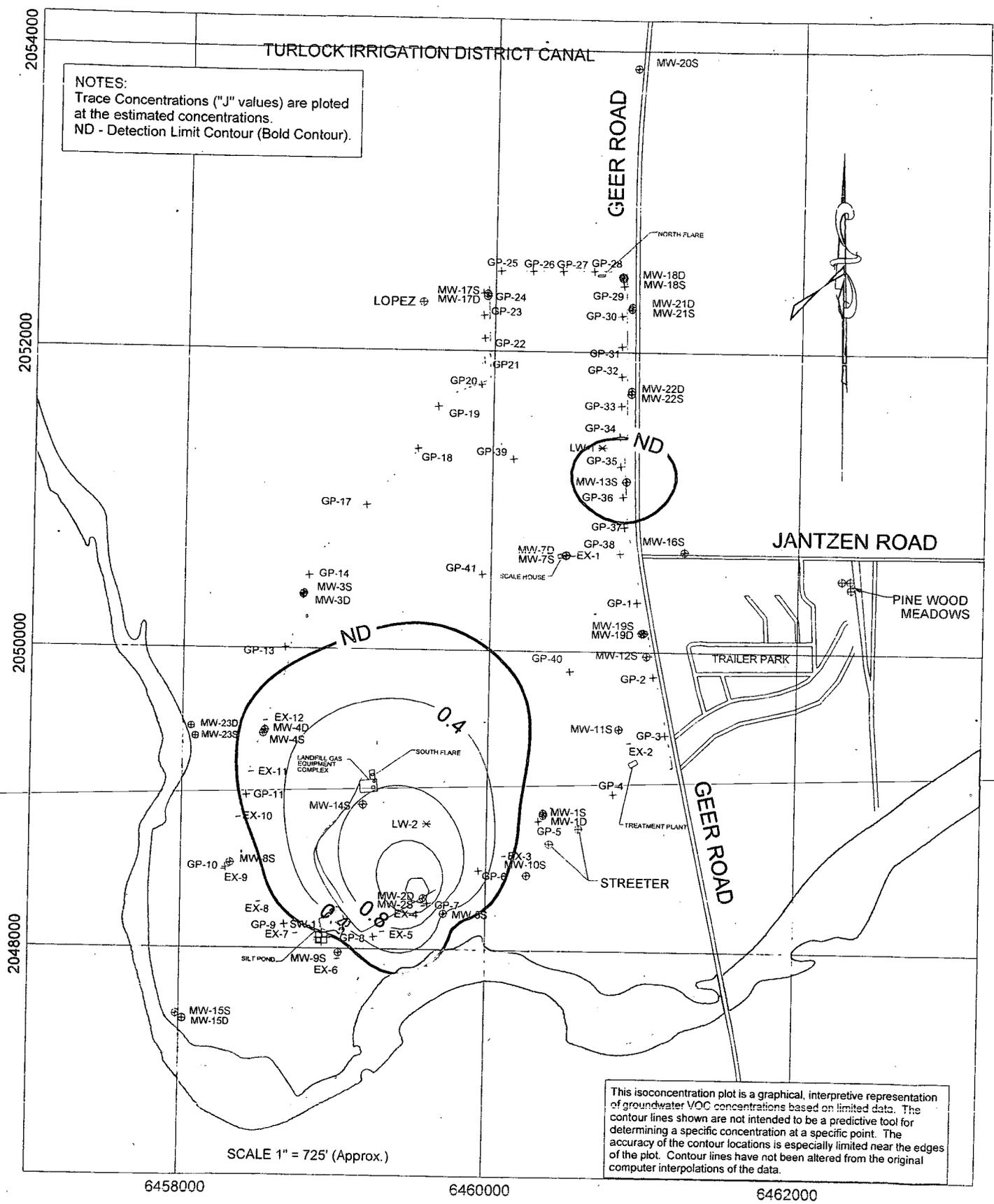


6458000

6460000

6462000

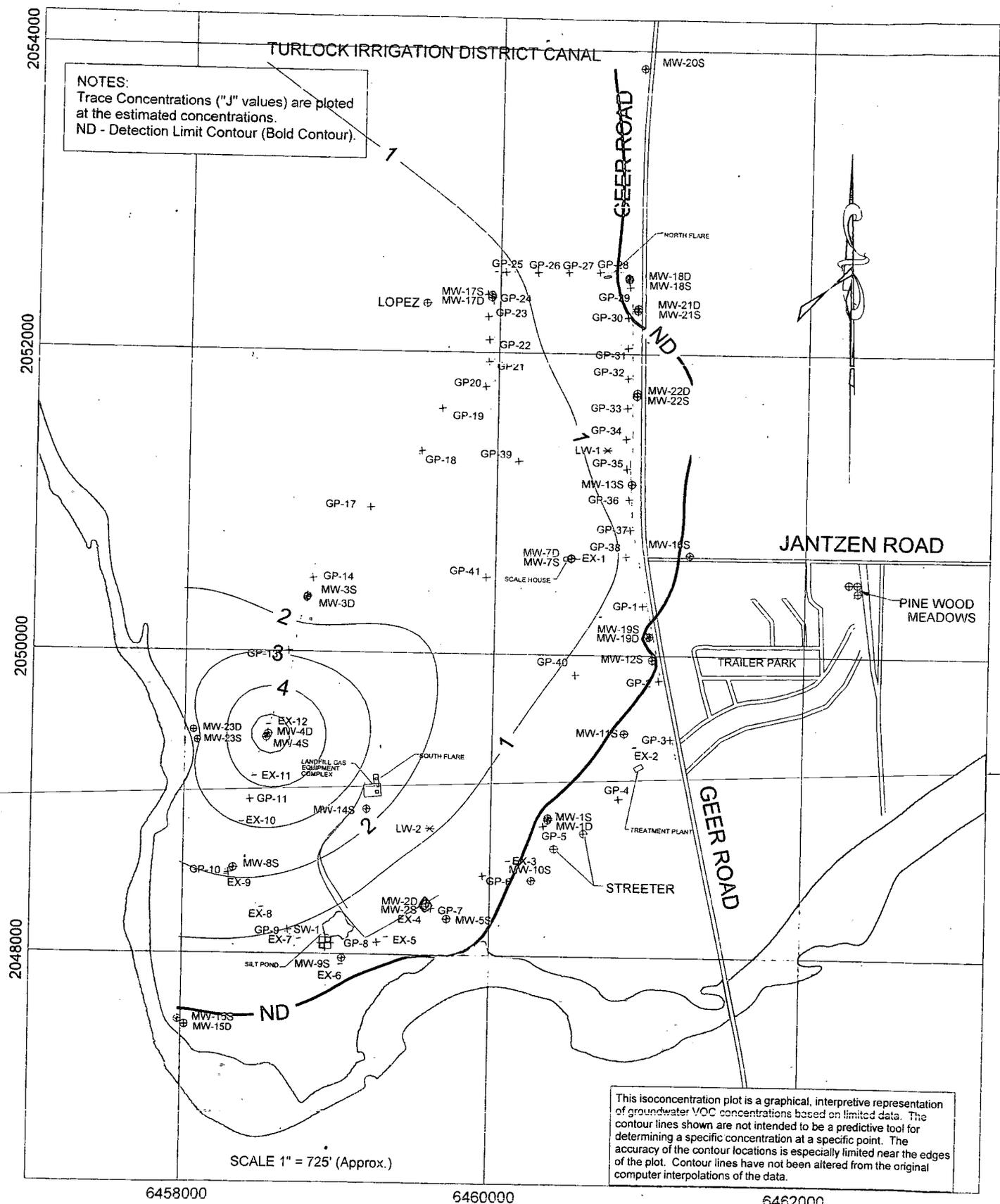
1,1-DICHLOROETHENE
SHALLOW WELLS - MAY 2010
Contour Interval = 0.2 ug/L



NOTES:
 Trace Concentrations ("J" values) are plotted
 at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

1,1-DICHLOROETHENE
 SHALLOW WELLS - NOVEMBER 2010
 Contour Interval = 0.4 ug/L



NOTES:
 Trace Concentrations ("J" values) are plotted
 at the estimated concentrations.
 ND - Detection Limit Contour (Bold Contour).

This isoconcentration plot is a graphical, interpretive representation of groundwater VOC concentrations based on limited data. The contour lines shown are not intended to be a predictive tool for determining a specific concentration at a specific point. The accuracy of the contour locations is especially limited near the edges of the plot. Contour lines have not been altered from the original computer interpolations of the data.

SCALE 1" = 725' (Approx.)

6458000

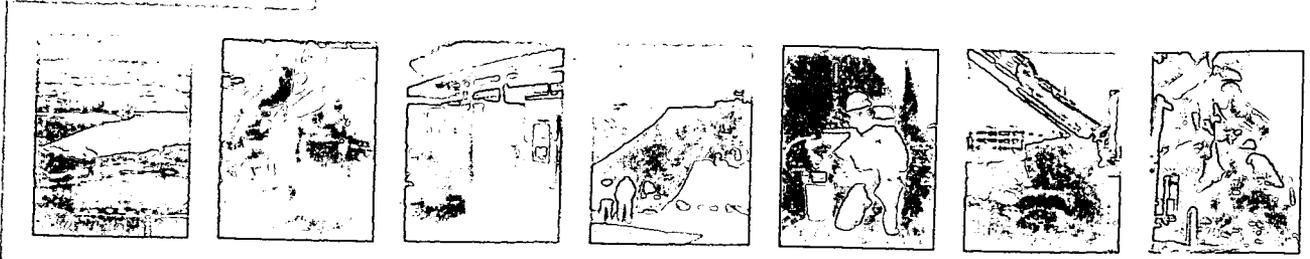
6460000

6462000

1,1-DICHLOROETHANE
 SHALLOW WELLS - NOVEMBER 2010
 Contour Interval = 1.0 ug/L



SCS ENGINEERS

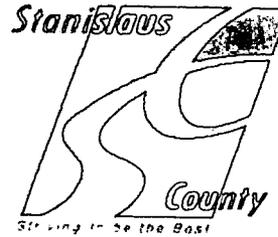


Engineering Feasibility Study

Geer Road Landfill

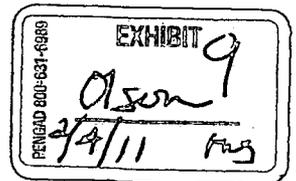
Stanislaus County, California

Prepared for:

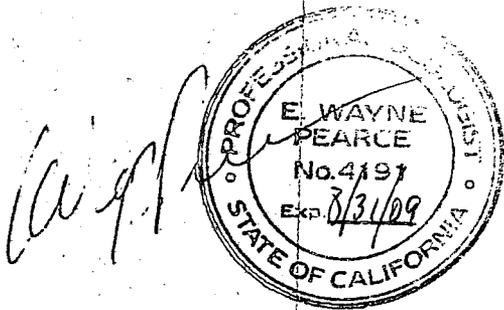


Environmental Resources, Parks & Recreation
3800 Cornucopia Way, Suite C
Modesto, CA 95358

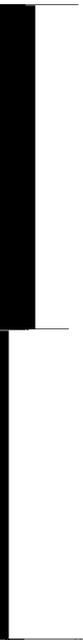
Presented by:
SCS ENGINEERS
3117 Fite Circle, #108
Sacramento, CA 95827



February 13, 2009
File No. 03196022.52



Offices Nationwide
www.scsengineers.com



SCS ENGINEERS

MEMORANDUM

DATE: June 19, 2009

TO: Ms. Jami Aggers
Environmental Resources, Parks & Recreation
3800 Cornucopia Way, Suite C
Modesto, California 95358

FROM: Ambrose A. McCready, P.E.
Wayne Pearce, R.G.

SUBJECT: Financial Assurance Cost Estimate
Groundwater Remediation For Known Release
Geer Road Landfill
Stanislaus County, California

Handwritten: JWA
10/14/09

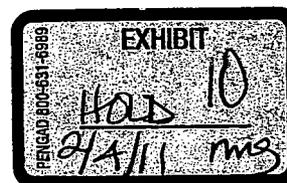
RECEIVED
SACRAMENTO
CVR WCCB
09 JUN 29 PM 12:45

This Financial Assurance Cost Estimate has been prepared for the Known Release of volatile organic compounds (VOCs) that has occurred at the Geer Road Landfill, located in Stanislaus County, California. Figure 1 shows the site location. The cost estimate is based on the Engineering Feasibility Study for Geer Road Landfill prepared by SCS Engineers (SCS) on February 13, 2009.

Corrective actions have been implemented at the site through a landfill gas (LFG) collection and treatment system; and a groundwater extraction and treatment system (GWETS). The locations of the existing systems are shown on Figure 2.

Since the late 1970s or early 1980s it has been known that the Geer Road Landfill was impacting groundwater. A series of studies have been used to characterize the types and locations of impacts. Several corrective actions have also been implemented at the site. Most of this effort has been to address VOCs. Studies have also been conducted to assess concentrations of arsenic in groundwater, which appears to be localized in the western portion of the landfill between MW-14S and MW-04S. Various studies have also concluded that some change in natural ion balance in the groundwater may be occurring due to landfill gas or other impacts, but these do not appear to be significant enough to warrant consideration in corrective action.

VOCs have been detected at least as early as the mid-1980s. In the Geohydrologic Investigation Report, Phase I, Stage II (Kleinfelder, August 13, 1986), VOCs were reported in monitoring wells both in the shallow and deep zones of groundwater, with concentrations in the deeper zone far less than in the shallow zone. Total VOCs in the shallow zone at MW-1S, for March 1986, were reported to be almost 500 ppb (ppb = $\mu\text{g/L}$). The greatest concentrations observed at this location were dichlorodifluoromethane (Freon 12) at 191 ppb; methylene chloride at 116 ppb; tetrachloroethene (PCE) at 59.2 ppb; trichlorofluoromethane (Freon 11) at 37.4 ppb;



RB00053

Ms. Jami Aggers

June 19, 2009

Page 2

chloromethane at 22.8 ppb; 1,1-dichloroethane at 19.3 ppb; and trichloroethene (TCE) at 17.6 ppb. The historic VOCs at this location could have been even higher given that the old EPA Method 601 did not report other VOCs that are commonly seen at landfills, such as cis-1,2-dichloroethene. However, recent VOC levels measured in 2008 show no higher than 30-50 ppb at any monitoring point.

The goal of this Financial Assurance Cost Estimate is to establish the level of funding required to implement an effective corrective action program to contain and remove VOCs from groundwater at the southern down-gradient boundary of the landfill site.

RECOMMENDED OPTION FOR LFG SYSTEM CORRECTIVE ACTION

The LFG collection and treatment system at the site consists of vertical gas extraction wells strategically located throughout the landfill. A pipe network collects and transmits gas from the extraction wells to the south flare facility. The LFG collection and treatment system has been installed in several phases. The northern portion of the collection system was installed in 1992 and connected to a flare located at the northern boundary of the landfill. In 1995, the collection system was expanded to the southern portion of the landfill and connected to a second flare located in the south central portion of the landfill. Additional deep gas collection wells were added to the northern system in 2003. In 2006, the north flare system was shut down after it was vandalized. Currently, all 83 LFG extraction wells are connected to the south flare facility.

Expansion of the Corrective Action LFG Collection System in the Southern Area of the Landfill

Installation of New Extraction Wells. Ten new LFG extraction points have been installed in April 2009 along the boundary of the south landfill area and connected to the existing south flare facility to increase LFG removal from the waste cell (source control) and the unsaturated soils beneath the wastes in the southern area of the site (corrective action). The wells were installed in accordance with the *Work Plan for Expansion of Corrective Action Measures, Geer Road Landfill* (SCS, April 14, 2008). The work plan outlines a program to provide for enhanced corrective action in the south area of the GRLF through expansion of the LFG collection system, and includes the locations, design, evaluations and construction/installation procedures required for the additional corrective action.

Four wells (RW-11, 12, 13, and 14) are dual completion wells, with the upper part of the well extracting LFG from the waste and the lower part extracting soil gas from the vadose zone. Wells RW-15 through 20 are single completion wells that will extract soil gas from the vadose zone.

The wells consist of one or two 4-inch diameter Schedule 80 polyvinyl chloride (PVC) well casings set in a 24-inch diameter borehole. Soil and waste materials were logged as the borings were advanced with a bucket auger. Perforated pipe sections were set in a gravel backfill in zones determined to be permeable with respect to subsurface gas migration (i.e., unconsolidated

sand or gravel lenses), and above groundwater. The remaining length of the boreholes was backfilled with bentonite or soil.

A minimum 5-foot thick soil/bentonite seal was placed in each well just above the perforated pipe sections and at the surface to seal the well annulus.

Extraction Well Testing. Testing of the new LFG extraction wells will be completed quarterly for pressure, methane, oxygen, carbon dioxide, and VOC levels to evaluate their effectiveness at removing LFG from the waste unit and vadose zone. It is recommended that the wells be sampled and tested over a period of time along with the groundwater monitoring wells to determine the effects on the VOCs in the groundwater.

Reporting. An LFG Well Installation Report will be prepared and submitted to the Regional Water Quality Control Board (RWQCB) within 60 days after installation of the wells, connection of the wells to the LFG system, and completion of initial testing. The report will present the locations, well logs, as-built diagrams, pictures and other data regarding installation of the LFG extraction wells and will include the initial testing results. Subsequent quarterly monitoring results will be submitted to the RWQCB within 30 days of each testing event.

Cost. It has been assumed that there would be no significant cost increases for Operations and Maintenance (O&M) as the monitoring and maintenance of the additional wells would be incorporated into the existing LFG collection and treatment system O&M program for the site. See Table 1 for a 20-year projection of O&M costs.

RECOMMENDED OPTIONS FOR GWETS CORRECTIVE ACTION

The expansion of the LFG recovery well system in the south area of the landfill should be allowed sufficient time demonstrate its effectiveness in remediating the VOC impacts in groundwater. If satisfactory improvement is made, then no further remedial measures are recommended.

If the LFG recovery wells result insufficient remediation, then groundwater extraction, mechanical air stripping, and disposal by injection well or infiltration trenches are recommended as outlined in this Financial Assurance cost estimate. These methods, in conjunction with source reductions, are believed to be capable of satisfying the groundwater Remedial Action Objectives (RAOs) for VOC groundwater constituents.

These options include the following components:

- Groundwater extraction from wells screened in the shallow and deep zones, with possible decommissioning of the existing shallow-zone extraction wells;
- Ex-situ treatment option by mechanical air stripper system; and
- Disposal options for treated water by injection wells or infiltration trenches.

A description of the recommended approach to implementation of GWETS options is provided below.

Phase 1 – Treatability Studies

Aquifer Pump Test. In order to reduce uncertainty during design of the extraction and treatment system, aquifer properties used in estimating the inflow from extraction wells to the treatment system should be obtained from aquifer pump tests (USEPA, 1996a). An aquifer pump test(s) would be conducted at the site by installing a pumping well that is similar to the design that is planned for remediation. The well would be fitted with a pump that is either variable speed, or plumbing that allows the flow to be controlled. The pumping well would be located near existing or new monitoring points (observation wells) so that the drawdown effect can be measured at known radii from the pumping well. Ideally there should be at least 3 observation points in each groundwater zone (i.e., shallow and deep) within the radius of influence of the pumping well. The pumping well would be pumped at a set rate (constant discharge) or in a series of stepped rates for a period of at least 72 hours. During the pump test, the drawdown in the pumping well and observation wells would be monitored. Pumping would continue until the system comes to steady-state conditions, meaning drawdown has essentially stabilized. The drawdown curves would then be analyzed by any number of methods depending on the type of aquifer (unconfined or confined), plus other factors like delayed release from storage or lateral boundary conditions. These analyses would produce the transmissivity (T) and storage coefficient (s) from which the alternative could be properly evaluated and the system could be properly designed.

Evaluation of pumping equipment would also be completed in order to select system components that would have the most dependable performance and require the least amount of maintenance and replacement.

Treatment Pilot Tests. Technologies for treating groundwater extracted during the aquifer pump test should also be tested. Air stripping by mechanical methods will need to be assessed.

Technologies for pretreatment of water prior to VOC removal should also be completed. This is particularly important because of the known concentrations of metals, particularly iron, manganese, and arsenic, in groundwater. Precipitation of these metals in the treatment system can seriously limit the system effectiveness and increase system maintenance and replacement.

Water Disposal Test. Tests will need to be completed on the options for water disposal after treatment. Percolation tests will have to be performed in the discharge area to ensure the soils and system can handle the projected flow rates.

Phase 2 – Design, Permitting and Construction

Once the treatability studies are complete, the expanded GWETS would be designed, permitted and constructed. A mechanical air stripper in conjunction with reinjection wells or infiltration trenches will be designed. It is assumed that pumped groundwater would be conveyed to the

aboveground treatment system and then either pumped or gravity drained to the disposal site, which would either be located near the extraction wells or on the 85-acre County owned parcel of land located to the northwest of the landfill, depending on the acreage required (Figure 4).

It is expected that continuous GWETS system operation would be needed to assure containment of impacted groundwater. Units that are key to system operation (i.e., process pumps, blowers, and filters) would have redundant units piped in parallel to allow servicing without downtime.

Ideally, the GWETS would be designed with sufficient flexibility to bypass components that become unnecessary as contaminants at the site degrade over time.

Conceptual Design. Available hydrogeologic data and literature values for porosity and hydraulic conductivity were used to define the configuration of viable mitigation technologies and provide a basis for developing cost estimates that could be used to evaluate the process options for extraction, treatment and disposal.

Groundwater Extraction Wells. The groundwater extraction well network would be designed to contain impacted groundwater at the landfill southern boundary, along the zone shown on Figure 3. The design flow rate of the GWETS is based on the estimated rate required for plume capture at the landfill boundary. Using Darcy's Law, $Q = KAI$ (where Q = volume, K = hydraulic conductivity, A = cross-sectional flow area, and I = groundwater gradient), and literature values for hydraulic conductivity, the volume of groundwater that would naturally flow through the shallow and deep zones was estimated between 300 gallons per minute (gpm) and 500 gpm, respectively.

The following assumptions were used in the conceptual design of the groundwater extraction well network:

- Twenty dual-completion wells installed to an average depth of 100 feet required to contain plume;
- Minimum well diameter required to accommodate expected pump size is six inches;
- Steady state pumping rate per well would be a maximum of 20 gpm;
- Radius of capture for each well (to be determined with aquifer test) estimated to be 100 feet;
- Length of capture zone along the landfill boundary is approximately 3400 feet; and
- Total horsepower (HP) of extraction well pumps (assuming 10 HP per well) is 200 HP.

Treatment Method

Air stripping is recommended for this cost evaluation. The treatment system will be permanently constructed and is highly automated. The treatment system would be designed to treat a maximum influent concentration of 500 µg/L total VOCs at a maximum flow rate of approximately 400 gpm. Actual total VOC concentrations will probably be no more than 50 µg/L. Effluent concentrations limits would depend on the method of disposal, but would likely be more if treated water was reinjected into the aquifer. However, for purposes of preparing cost estimates for comparison, treated effluent concentrations would be required to meet the proposed CLGB (i.e., California Maximum Concentration Limits [MCLs]).

Groundwater would be pumped from the extraction wells to the treatment system. The location of the treatment system would be selected to optimize the use of gravity fed flow of the effluent to the disposal area. It is assumed for the conceptual design that the treatment system would be located on the higher ground northwest of the landfill, which will allow gravity drainage to the lower portion of the property for disposal.

Air Stripper Treatment System. Air stripper treatment systems are a well known, reliable technology that involves the mass transfer of volatile contaminants from water to air and is accomplished in a packed tower or a tray stripper. Both systems can be installed either as a permanent installation on concrete pads or on a skid.

A typical packed tower configuration includes a spray nozzle at the top of the tower to distribute contaminated water over the packing in the column, a fan to force air countercurrent to the water flow, and a sump at the bottom of the tower to collect decontaminated water. Packed towers are usually the best choice for treating flows of greater than 500 gpm. Removal efficiency can be increased by modifying packing configurations and adding auxiliary units including heaters, automated control systems with sump level switches and safety features (i.e., differential pressure monitors, high sump level switches, and explosion proof components) and air emission control and treatment systems (i.e., granular activated carbon [GAC] units, catalytic or thermal oxidizers). The tower packing is susceptible to fouling, especially when influent iron concentrations are above 5 mg/l, and may require regular acid washing, cleaning with peroxide or biocide, and periodic change-outs.

In a tray stripper, water flows over a series of trays within a chamber where air is blown in and moves upward through small holes in the trays. The tray holes are susceptible to fouling but can be easily cleaned. The tray stripper is usually the best choice for treating flows under 300 gpm. Air emissions can be treated using same equipment as that used for packed towers.

Systems can be operated continuously or in a batch mode. The batch mode ensures greater energy efficiency because mixing in the storage tanks eliminates inconsistencies in the feed water composition. Typical O&M costs for air stripping are generally low because associated labor and materials are limited, and power consumption is generally limited to the operation of a blower or fan.

The following assumptions were used in the conceptual design of the air stripper treatment system:

- System uses a packed tower air stripper;
- System operates in a continuous flow mode;
- Will not require GAC for off-gas treatment due to the "Low Emitting Unit" exemption;
- Requires pre-filtration units for metals precipitation; and
- Requires pH control unit.

Disposal Methods

The reinjection wells or infiltration trenches would be located on the County-owned 85 acres of land northwest of the landfill, Figure 4. Effluent from the treatment system would be pumped and/or gravity drained to the disposal area. The location of the disposal area would be selected to optimize the use of gravity fed flow to the disposal area. The estimated length of conveyance piping from extraction wells to treatment system is 3,600 feet (above ground conveyance piping).

Injection Wells. The following assumptions were used in the conceptual design of the injection well system:

- Wells would be designed and constructed to return water to the shallow groundwater system and unsaturated zone based on tests conducted in the area; and
- Requires twice as many reinjection wells as extraction wells (at least 40), due to reduced capacities due to fouling and recharge inefficiencies that are associated with reinjection wells.

Infiltration Trenches. The following assumptions were used in the conceptual design of the infiltration trenches:

- Trenches will consist of a series of perforated distribution pipes placed in two to three foot wide gravel filled trenches;
- The trenches will be designed to have sufficient percolation capacity throughout the treatment system lifetime (i.e., new infiltration trenches will not have to be constructed as the leach field becomes older); and
- A minimum topsoil cover will be placed over the gravel to protect the leach field and reduce infiltration from rain.

Permits. A permitting applicability review for the GWETS expansion would be conducted if required and applicable permit applications would be prepared and submitted. This would

Ms. Jami Aggers
June 19, 2009
Page 8

include developing emission/effluent calculations, preparing application forms, conducting best available control technology (BACT) analyses, and preparing a project description, draft process flow diagrams, and any other documentation required by the agency.

Reporting. An Enhanced GWETS Installation Report would be prepared and submitted to the RWQCB within 60 days after completion of the system upgrades. The report would document installation, startup, and operation of the upgraded system. The report will present the locations, well logs, as-built diagrams, pictures and other data regarding installation of the GWETS system and will include initial testing results. Subsequent monitoring results will be submitted to the RWQCB in the semi-annual and annual detection, evaluation and corrective action monitoring reports.

Cost. The costs for the various phases of the GWETS improvements are presented in Tables 2 through 5.

FINANCIAL ASSURANCE COST ESTIMATE

The combined LFG and groundwater corrective action financial assurance costs are presented in Table 6. The table shows the initial capital cost for the system improvements is \$1,601,000 and the O&M and electrical power for the next 20 years is \$3,827,000 (\$191,350 per year).

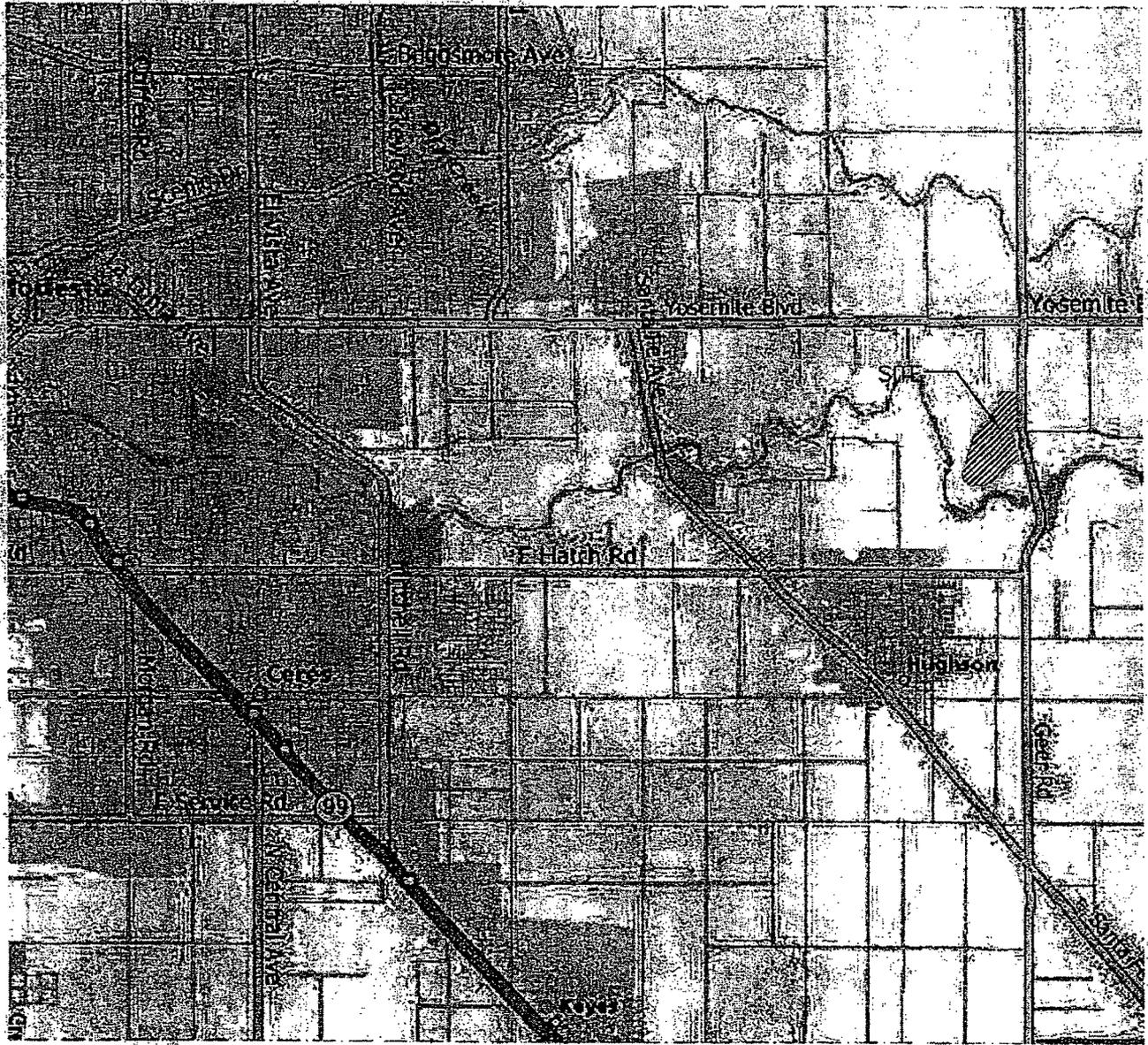
In order to satisfy the Financial Assurance requirements to correct the Known Release of VOCs at the Geer Road Landfill, the County of Stanislaus is proposing to use Fink Road Landfill tipping fees to fund the corrective actions as approved by the County of Stanislaus Board of Supervisors in a resolution dated June 16, 2009. See the attached Resolution No. 2009-405, Item 1.

Andrew M. Coody



REGISTERED PROFESSIONAL ENGINEER
ANDREW M. COODY
73390
EXPIRES 12-31-09
CIVIL
STATE OF CALIFORNIA

FIGURES



LEGEND:



SITE LOCATION



SCS ENGINEERS

ENVIRONMENTAL CONSULTANTS

3117 FITE CIRCLE, SUITE 108
 SACRAMENTO, CALIFORNIA 95827
 PH. (916) 361-1297 FAX. (916) 361-1298

| | | |
|---------------------------|------------------|--------------------------|
| PROJ. NO.: 03196022.42 | DRWG. BY: ATV | ACRD. FILED: FIGURE 1 |
| DATE: 6/12/09 | CHK. BY: AMM | APP. BY: AMM |

SHEET TITLE:

LOCATION OF GEER ROAD LANDFILL

SCALE:

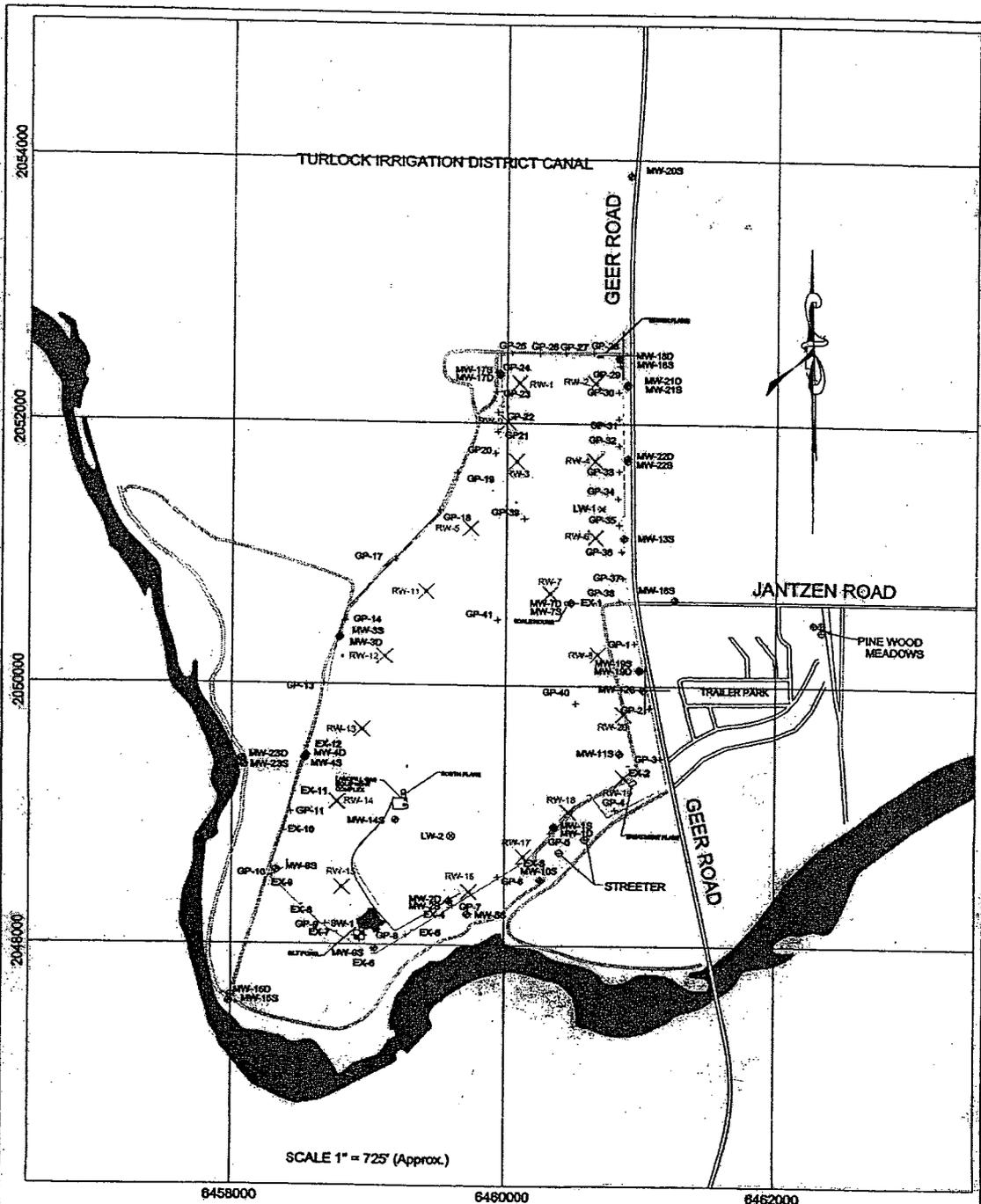
N.T.S

PROJECT TITLE:

GEER ROAD LANDFILL
 MODESTO, CALIFORNIA

FIGURE NO.:

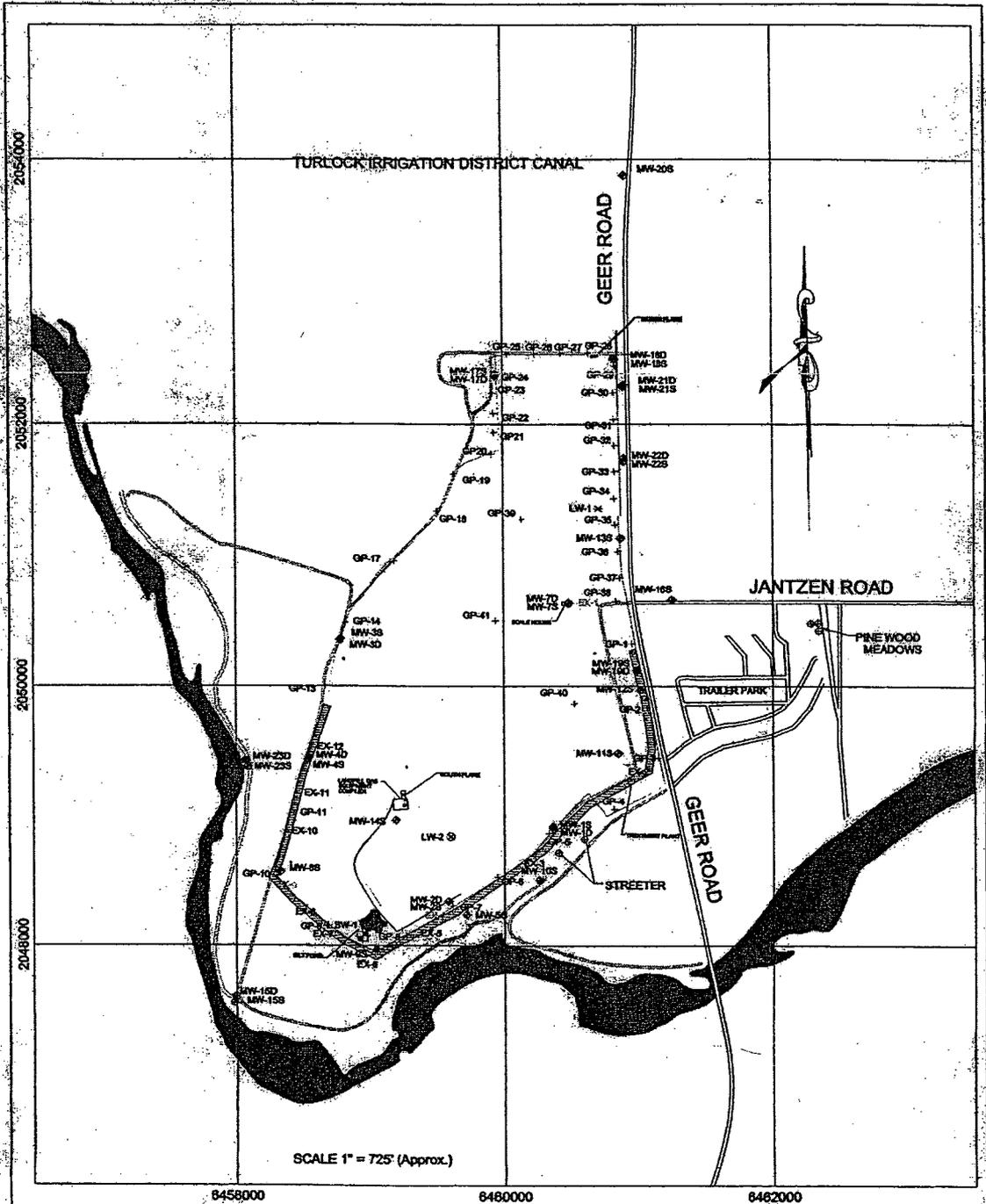
1



MW = Groundwater Monitoring Well
 EX = Groundwater Extraction Well
 LW = Leachate Monitoring Point
 GP = LFG Gas Probe
 RW = RECOVERY WELLS

FIGURE 2
SITE MAP AND MONITORING POINTS
GEER ROAD LANDFILL

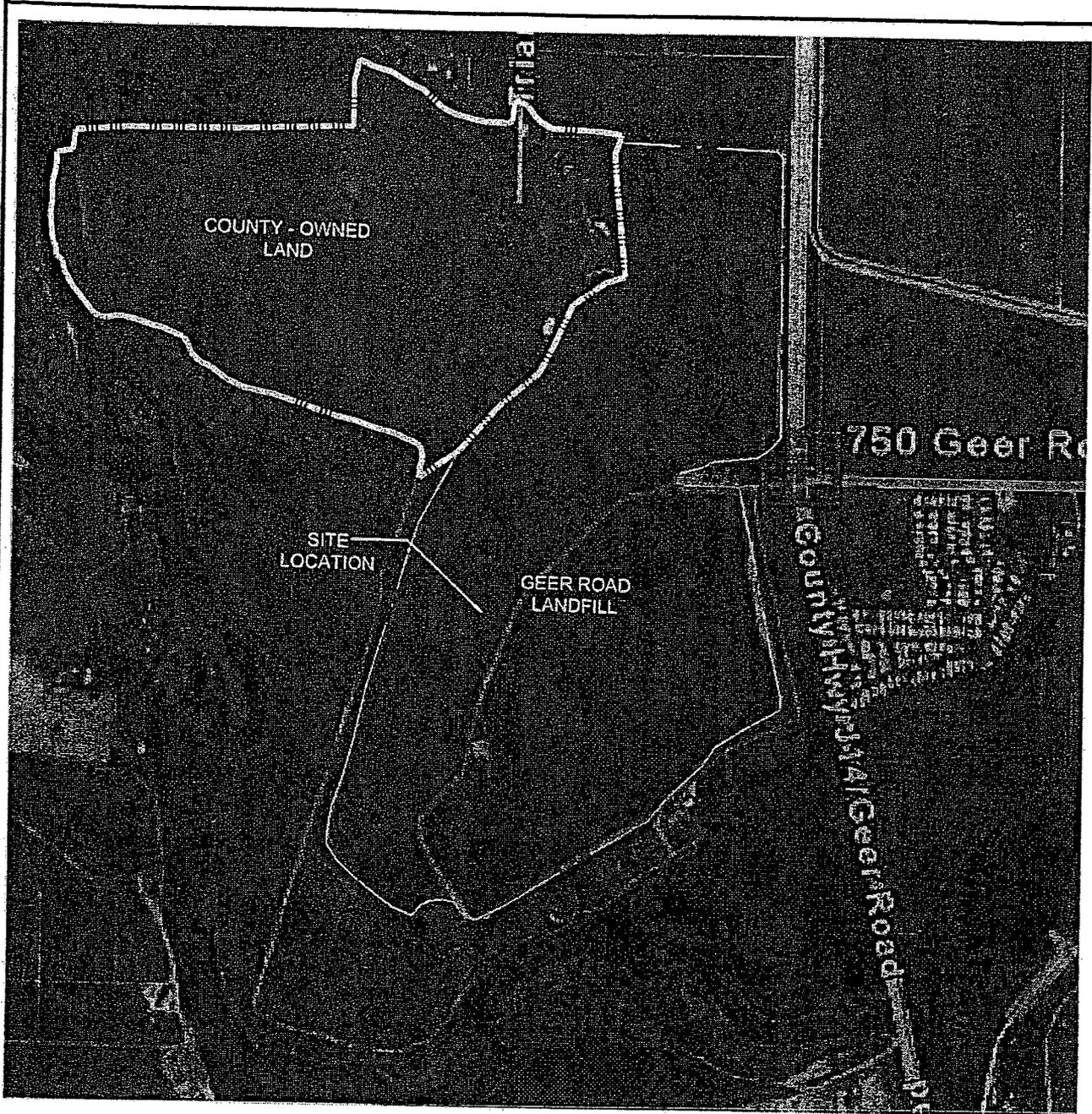
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|---------------------|---|--|--|
| DATE: 06/12/09 | SCS ENGINEERS ENVIRONMENTAL CONSULTANTS JULY REG. NO. 5172 STATE 100 SACRAMENTO, CALIFORNIA 95827 PH (916) 381-1287 FAX (916) 381-1290 | COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION | SHEET TITLE SITE MAP AND MONITORING POINTS. |
| SCALE: 1" = 725' | | PROJECT TITLE GEER ROAD LANDFILL MODESTO, CALIFORNIA | |
| FIGURE NO. 2 | PROJECT NO. 03196022.42 DRAWN BY: ATV CHECK BY: AAM ADO FILE: Figure 2 APP. BY: AAM | | |



MW = Groundwater Monitoring Well
 EX = Groundwater Extraction Well
 LW = Leachate Monitoring Point
 GP = LFG Gas Probe
 = Proposed Extraction Wells

FIGURE 3
SITE MAP AND MONITORING POINTS
GEER ROAD LANDFILL

| | | | |
|---------------------|--|--|--|
| DATE: 06/12/09 | SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 3117 FULTON ST., SUITE 100 SACRAMENTO, CALIFORNIA 95811 TEL: (916) 341-1377 FAX: (916) 341-1299 | COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION | SHEET TITLE SITE MAP AND MONITORING POINTS |
| SCALE: 1" = 725' | | PROJECT NO. 03196022.42 | PROJECT TITLE GEER ROAD LANDFILL MODESTO, CALIFORNIA |
| FIGURE NO. 3 | DRAWN BY: ATY CHECKED BY: AMM DATE: 06/12/09 | APP. FILE: Figure 3 APP. BY: AMM | |



LEGEND:

SITE LOCATION



SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
 3117 FITE CIRCLE, SUITE 108
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 PH. (916) 381-1297 FAX. (916) 361-1299

| | | |
|------------------------|--------------|---------------------|
| PROJ. NO.: 03196022.42 | DWG. BY: ATV | ACAD FILE: FIGURE 4 |
| DATE: 8/12/09 | CHK. BY: AAM | APP. BY: AAM |

SHEET TITLE: COUNTY - OWNED LAND

SCALE: N.T.S

PROJECT TITLE: GEER ROAD LANDFILL
 MODESTO, CALIFORNIA

FIGURE NO.: 4

TABLES

Table 1
Alternative SM-1
Phase 1 - LFG System Expansion

| Parameter | Design Basis | Estimated Cost |
|-----------------------|---|-----------------------|
| Design Engineering | | \$16,000 (1) |
| CQA Observation | | \$16,000 (1) |
| LFG Well Installation | Install 10 new Vadose/ Extraction Wells | \$70,000 (1) |
| O&M | 20 years monitoring, reporting, maintenance @ \$40,000/year | \$800,000 |
| Total Cost | | \$800,000 (2) |

- (1) Completed May 2009
- (2) O&M Cost only

TABLE 2
Alternative GW-1
Estimated Costs for Phase 1 Enhancements to the GWETS
Pre-Design Testing and Preliminary Design

| Parameter | Design Basis | Estimated Cost |
|--|--|-----------------------|
| Aquifer Pump Test | Install one pumping well and two observation wells (1 shallow and 1 deep), test for 72 hours, water routed to existing GAC | \$50,000 |
| Treatment Pilot Test | Testing of one selected treatment option and pretreatment option | \$40,000 |
| Percolation/Infiltration Test | Testing of lower 85 acres of County land for infiltration | \$15,000 |
| Subtotal | | \$105,000 |
| Preliminary Engineering, Reporting (15%) | | \$15,750 |
| Contingency (20%) | | \$21,000 |
| Total Costs | | \$141,750 |

TABLE 3
Alternative GW-1
Estimated Costs for Phase 2 Enhancements to the GWETS
Final Design, Installation, and Operation of Groundwater Extraction Wells

| Parameter | Design Basis | Estimated Cost |
|---|--|-----------------------|
| Extraction Wells (installed) | 19 dual completion wells installed to an average depth of 100 feet @ \$85/foot; typical contractor drilling and installation cost using stainless steel screen, and including geologic logging, plus 19 pumps at \$5,000 | \$256,000 |
| Conveyance piping and pumps | 3400 feet of above ground 8-inch HDPE pipe @\$20/foot, 2 x 400 gpm pump @ \$15,000 | \$98,000 |
| Total Capital Costs | | \$354,000 |
| Energy Cost | Removal rate @ 400 gpm; \$43,800 for 20 years | \$876,000 |
| O&M (5%) | \$25,000/year for 20 years, monitoring, reporting, operating and maintenance on extraction wells | \$500,000 |
| Final Engineering, Startup, Reporting (20%) | | \$71,000 |
| Contingency (20%) | | \$71,000 |
| Total Costs | | \$1,872,000 |

TABLE 4
Alternative GW-1
Estimated Costs for Phase 2 GWETS Enhancements
Treatment Alternative - Mechanical Aeration

| Parameter | Design Basis | Estimated Cost |
|-----------------------|--|--------------------|
| Conveyance piping | 3600 feet of above ground 8 inch HDPE pipe @\$25/foot (assume gravity drained) | \$90,000 |
| Air Stripper Tower | Packed tower system, operates in a batch mode, for groundwater treatment, pre-filtration units for metals precipitation, pH control unit | \$301,000 |
| Construction Subtotal | | \$391,000 |
| O&M | 20 years, monitoring, reporting, and maintenance on air stripper system @\$77,750/year (includes energy cost) | \$1,555,000 |
| Engineering, (15%) | | \$60,000 |
| Contingency (20%) | | \$78,000 |
| Total Costs | | \$2,084,000 |

TABLE 5
Alternative GW-1
Estimated Costs for Phase 2 GWETS Enhancements
Water Disposal Option - Infiltration Trenches

| Parameter | Design Basis | Estimated Cost |
|--|---|----------------|
| Infiltration Trench Construction Costs | 6,250 feet of trench @ \$40/foot; typical contractor installation cost for excavation, trenches, piping, pipe installation, removal and disposal of soil, and backfilling | \$250,000 |
| Conveyance piping | 3600 feet of above ground 8 inch HDPE pipe @\$20/foot (assume gravity drained) | \$72,000 |
| Total Capital Costs | | \$322,000 |
| O&M | 20 years @ \$4,800/year, maintenance on trenches and conveyance piping | \$96,000 |
| Engineering (15%) | | \$48,000 |
| Contingency (20%) | | \$64,000 |
| Total Costs | | \$530,000 |

TABLE 6
 FINANCIAL ASSURANCE
 GROUNDWATER CORRECTIVE ACTION
 GEER ROAD LANDFILL

| Component | Capital Cost | O&M/Power (20 years) | Total |
|--|-----------------------|-----------------------|-----------------------|
| LFG SYSTEM EXPANSION | | | |
| Additional LFG/Vadose Zone Wells | \$0.00 | \$0.00 | \$0 |
| O&M for Additional Wells (20 years) | \$0.00 | \$800,000 | \$800,000 |
| Subtotal | \$0.00 | \$800,000 | \$800,000 |
| GWETS IMPROVEMENTS AIR STRIPPER/INFILTRATION TRENCHES | | | |
| Design and Testing | \$142,000 | \$0.00 | \$142,000 |
| Wells and O&M (20 years) | \$496,000 | \$1,376,000 | \$1,872,000 |
| Air Stripper and O&M (20 years) | \$529,000 | \$1,555,000 | \$2,084,000 |
| Infiltration Trenches and O&M (20 years) | \$434,000 | \$96,000 | \$530,000 |
| Subtotal | \$1,601,000 | \$3,027,000 | \$4,628,000 |
| COMBINED CORRECTIVE ACTIONS | \$1,601,000.00 | \$3,827,000.00 | \$5,428,000.00 |

Prepared 6/19/09

ATTACHMENT

THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
ACTION AGENDA SUMMARY

DEPT: Environmental Resources

BOARD AGENDA # *B-7

Urgent

Routine

AGENDA DATE June 16, 2009

CEO Concur with Recommendation YES NO
(Information Attached)

4/5 Vote Required YES NO

SUBJECT:

Approval of the Use of Tipping Fees at the Fink Road Landfill as the Proposed Financial Assurance Mechanism for Corrective Action at Geer Road Landfill and Approval to Revise the Annual Transfer from the Fink Road Landfill Enterprise Fund to the Fink Road Landfill Closure/Post-closure Fund

STAFF RECOMMENDATIONS:

1. Approve the use of tipping fees at the Fink Road Landfill as the proposed financial assurance mechanism for corrective action at the Geer Road Landfill.
2. Rescind Stanislaus County Board of Supervisor's Resolution No. 92-969.
3. Direct the Auditor-Controller to make annual transfers from the Fink Road Landfill Enterprise Fund to the Fink Road Landfill Closure/Post-closure Fund in the amount of \$225,000.

FISCAL IMPACT:

The Department of Environmental Resources Fink Road Landfill Enterprise Fund currently expends \$625,000 per year to maintain a dedicated funding mechanism for closure, post-closure maintenance, and corrective actions at the Fink Road Landfill. If the Board of Supervisors approves this recommendation, this annual expenditure will be lowered to \$225,000.

(Continued on Page 2)

BOARD ACTION AS FOLLOWS:

No. 2009-405

On motion of Supervisor Chiesa, Seconded by Supervisor Grover
and approved by the following vote.

Ayes: Supervisors: O'Brien, Chiesa, Grover, Monteith, and Chairman DeMartini

Noes: Supervisors: None

Excused or Absent: Supervisors: None

Abstaining: Supervisor: None

1) Approved as recommended

2) Denied

3) Approved as amended

4) Other:

MOTION:

ATTEST:


CHRISTINE FERRARO TALLMAN, Clerk

File No.

RB00074



Linda S. Adams
Secretary for
Environmental Protection

California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>

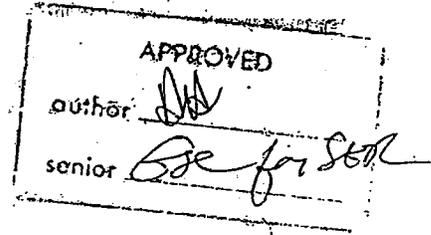


Arnold
Schwarzenegger
Governor

27 October 2009



FILE COPY



Jami Aggers,
Assistant Director
Stanislaus County—Department of Environmental Resources
3800 Cornucopia Way, Suite G
Modesto, CA 95358-9492

REVIEW OF FINANCIAL ASSURANCE COST ESTIMATE, GROUNDWATER REMEDATION FOR KNOWN RELEASE, GEER ROAD LANDFILL, STANISLAUS COUNTY

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff has received Stanislaus County's (Discharger) Financial Assurance Cost Estimate for known release of volatile organic compounds (VOCs) and arsenic for the Geer Road Landfill. This document was submitted to comply with their Waste Discharge Requirements (WDRs) Order R5-2009-0051. The Discharger has projected a cost of \$5,428,000 for 20-years of additional corrective action. Staff is requesting additional information be included with the estimate to support the final proposed cost estimate. A revised report, that addresses the comments below, needs to be submitted by **1 December 2009**.

The Discharger has proposed to continue funding the corrective action measure for the next 20-years. According to the Discharger, since the "early 1980s, it has been known that Geer Road Landfill was impacting groundwater." Staff is concerned about the effectiveness and duration of the corrective action program. The existing corrective action program is entering its third decade, therefore please include with the cost estimate tables a column for completing the cleanup within 5, 10 and 15 years.

The Discharger states that the goal of this financial cost estimate is to establish the level of funding required to implement an effective corrective action program to contain and remove VOCs from groundwater at the southern downgradient boundary of the landfill site. The cost estimate must include costs associated with the forthcoming landfill gas system expansion north of the facility. However, if the landfill gas system expansion costs have already been allocated or are already identified in the post closure cost estimate, then please make reference to that fact.

The Discharger assumes that there would be no significant cost increases for Operations and Maintenance (O&M) as the monitoring and maintenance of the additional wells would be incorporated into the existing LFG collection and treatment system O&M program for the site. Please clarify how inflation has been included in the long term O&M cost estimate.

The groundwater remediation will also address the elevated levels of arsenic. The Discharger states that the water should have a pretreatment prior to VOC removal for known concentrations of metals, particularly iron, manganese and arsenic in groundwater. Please

California Environmental Protection Agency



RB03817

expand the cost schedule to include a line item for the system pretreatment in Tables 3 and 4 and identify the cost as a corrective action measure for arsenic rather than "pretreatment".

The Discharger has proposed twenty dual-completion wells installed to an average depth of 100-feet required to contain the plume. This statement needs clarification. Please explain in greater detail, how these wells will be constructed. Because the cost associated with well construction is dependent upon the depth of each well, the proposed construction details should identify which aquifer zone it will be extracting from, shallow or deep.

The Discharger has proposed to design the GTS "with sufficient flexibility to bypass components that become unnecessary as contaminants at the site degrade over time". Please explain how the cost estimate will change overtime if the system operates with fewer components for the duration of the cleanup.

The Discharger has proposed to operate the groundwater treatment system at 400 gpm. Assuming the system operates at the required maximum capacity for 24-hours a day, the Discharger must manage 576,000 gallons of effluent per day. The discharge from a GTS to land or into injection wells must be approved by the Central Valley Water Board. Therefore, the Discharger must account for the costs associated with the preparation of the Report of Waste Discharge, the monitoring and reporting program associated with the effluent discharge, and the permit fees for the duration of the project.

For preparation of the cost estimate, the Discharger estimated the concentration in the effluent discharged from the GTS. The Discharger states: "for purposes of preparing cost estimates for comparison, treated effluent concentrations would be required to meet proposed CLGB (i.e. California Maximum Concentration Limit [MCL]). To comply with Title 27, the Discharger must account in the cost estimate for interim water storage [i.e. above ground tanks or class II surface impoundment(s)] for the effluent wastewater or treating it to background levels prior to land application or injection for the duration of the entire cleanup.

The Discharger has proposed the option to operate the groundwater treatment system in a batch mode to save energy costs. For this scenario to work, the Discharger must include a cost estimate for interim water storage.

Table 3 Alternative GW-1 proposes \$25,000 per year for 20 years for monitoring, reporting, O&M on extraction wells. Please include with the O&M cost estimate a line item for reconditioning the extraction wells. Furthermore, it is unclear if the cost associated with replacing an extraction well(s) is included with the cost estimate. Please include a separate line for this item.

The Discharger has proposed to install 3400-feet of 8-inch HDPE pipe at \$20 per foot for the groundwater conveyance piping, while the treatment system effluent has specified 3600-feet of 8-inch HDPE pipe at \$25 per foot. Please review this discrepancy and adjust accordingly.

Table 6 of the estimate summarizes all the costs. The analytical testing cost for this program is included within the O&M budget. Analytical testing is a significant cost to the Discharger. Please provide a revised table that presents analytical testing as its own line item.

Staff looks forward to working with the Discharger on this project. Should you have questions, please contact me at hhold@waterboards.ca.gov or (916) 464-4679.

HOWARD HOLD, P.G.
Engineering Geologist
Compliance and Enforcement
Title 27 and Non 15 Programs

cc: Troy Weber, CIWMB, Sacramento
Charmaine Champagne, Stanislaus County Dept. of Site Mitigation, Modesto
Nicole Damin, Stanislaus County Hazardous Materials Manager, Modesto
E. Wayne Pearce, SCS Engineers, Sacramento

6A

JAMI AGGERS

From: Howard Hold [hhold@waterboards.ca.gov]
Sent: Wednesday, October 28, 2009 2:09 PM
To: JAMI AGGERS
Subject: Fwd: RE: Geer Road Cost Estimate for Corrective Action

Jami, here is Troy's response. Thanks Howard

>>> On 10/28/2009 at 2:04 PM, in message
<98F26F267A378447B587FD64F39FC0A3BC2ADE7E1E@IWMCCR.ciwmb.calepa.local>, "Weber, Troy"
<Tweber@CIWMB.ca.gov> wrote:

Howard,
Thanks for the heads up on this.

Troy Weber
Integrated Waste Management Board
MSW Facility Inspection & Enforcement
Work: (916) 341-6312
Cell: (916) 956-5162
Fax: (916) 319-7315

From: Howard Hold [hhold@waterboards.ca.gov]
Sent: Wednesday, October 28, 2009 10:13 AM
To: Weber, Troy
Cc: JAMI AGGERS <JAGGERS@envres.org>
Subject: Geer Road Cost Estimate for Corrective Action

Troy, I have asked Stanislaus County to revise some items in their Corrective Action Cost estimate by 1 December 2009 for Geer Road Landfill. However, there is a 30 October deadline in our WDRs to provide the CIWMB with that estimate. I wanted you to be aware that they will miss that deadline. I would rather have the County submit an accurate estimate to your office rather than an incomplete one. Jami Aggers has drafted you a letter enplaning their situation. I have not worked with the County much, but they appear to understand the need to comply with the WDR dates as written. I just wanted you to know that I was the one that asked for them to revise their numbers, and I will be on them to submit their estimate ASAP. If you have any questions regarding the Water Boards comments, just give me a call. You should be receiving my letter about their cost estimate in a day or two. Thank you

Howard Hold, P.G #7466
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Title 27 Enforcement Group
Central Valley Regional Water Quality Control Board
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