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S.S. PAPADOPULOS & ASSOCIATES, INC.
ENVIRONMENTAL & WATER-RESOURCE CONSULTANTS

July 26, 2010

Mr. Chuck Hendrickson
U.S. Environmental Protection Agency
Multimedia Planning and Permitting Division
1445 Ross Avenue
Dallas, TX 75202-2733

Mr. John Kieling
Permits Program Manager HWB
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: **Sparton Technology, Inc., Former Coors Road Plant Remedial Program Approval of the 2007 and 2008 Annual Reports and of the "Evaluation of Alternative Systems and Technologies for Aquifer Restoration" Report, and Comments on the 2008 Annual Report.**

Dear Messrs. Hendrickson and Keiling:

On behalf of Sparton Technology, Inc. (Sparton), S.S. Papadopulos & Associates, Inc. (SSP&A) thanks the United States Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) for the subject approvals and comments transmitted to Mr. Joseph S. Lerczak of Sparton through your letter dated July 9, 2010. The purpose of this letter is to address your comments on the 2008 Annual Report.

With exception of Comments 1, 3, and 10 through 13, these comments were transmitted earlier to SSP&A (e-mail dated May 11, 2010 from Mr. Hendrickson to Stavros Papadopulos), and were addressed in the 2009 Annual Report. However, since there are some additional comments and since your letter of July 9, 2010 requests that corrected pages be submitted for the 2008 Annual Report, we present below Sparton's response to each of your comments and we attach to this letter corrected or revised pages, whenever necessary. Each comment is presented below followed by its response.

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1. p. ES-3, 2nd ¶: "separate, DCE-dominated plume that did not originate from the Sparton facility was taken into consideration"... EPA and NMED believe that this plume is from the Sparton facility.

A footnote indicating that EPA and NMED believe that this plume is from the Sparton facility has been added to this page. The revised page is attached.

2. Page 5-5, 1st full ¶: There is a typographical error that should be corrected: the solubility of TCE is 1,100,000 µg/L, not 11,000,000 µg/L.

A corrected page 5-5 is attached.

3. Note: Page 5-6 has Sparton's arguments that DCE-dominated plume is not from Sparton; EPA and NMED disagree with this for several reasons; these reasons are not presented in the report [which is probably okay].

Sparton is not presenting the reasons EPA and NMED disagree with its technical arguments that the separate DCE-dominated plume is not originating from the Sparton facility because Sparton is not familiar with these reasons.

4. Page 5-6, 2nd bullet: Please mark this text with the footnote that is currently footnote number 17.

A revised page 5-6 where this text has been marked with Footnote 15 (formerly Footnote 17) is attached.

5. Page 5-6, footnote 16: Well MW-36, not MW-35, was located next to MW-44. So the text should be "Well MW-36 became dry in 2002 and was plugged and abandoned in 2007."

The wells that were historically free of contaminants were MW-34 and MW-35; the text of Footnote 17 (formerly Footnote 16) has been revised to correct the reference to the location of well MW-35 (see attached revised page 5-6). Note, however, that well MW-36, which was located next to MW-44, had been historically free of DCE; this further supports Sparton's argument that the DCE-dominated plume did not originate at the Sparton facility.

6. Page 7-3, 2nd ¶: Because EPA and NMED disagree with Sparton on the DCE-dominated plume, please change "plume that did not originate from the Sparton facility" to something like "plume that Sparton does not believe to have originated from the Sparton facility."

A footnote similar to that placed on page ES-3 (Comment 1) has been placed in this page. A revised page is attached.

7. Page 7-5, 1st ¶: EPA and NMED agree with proposal to discontinue specific TCA evaluation as long as TCA remains below the regulatory limit.

Sparton discontinued specific evaluations of TCA effective the 2009 Annual Report; however, data on TCA concentrations in samples from monitoring wells and in the influent to and effluent from the treatment facilities will continue to be collected and reported in Annual Reports. Evaluations will resume if TCA concentrations begin to exceed regulatory limits.

8. Figure 2.4: Please label the water table as the 1998 water table.

A corrected Figure 2.4 is attached.

9. Plume boundary: Sparton presented a new plume boundary on figures following Figure 5.9, apparently intended to depict a separate plume, with a DCE-dominated signature, flowing through the location of Well-65. This depiction constricts the plumes too much: it excludes MW-52R, a mixed-signature well, from the TCE plume and does not include MW-62, a DCE-dominated well, in the DCE-dominated plume. The plume boundary lines should be expanded at least as much as necessary to fit these wells into their plumes, with consideration of flow paths and contaminant histories.

Well MW-52R is not excluded from the boundary of the 2008 TCE plume (Figure 5.18), it is within this boundary; however, the boundary of the TCE plume (defined by the 5 µg/L contour) was slightly modified to the east of this well to reflect that the well is affected by both the main TCE-dominated plume and the separate DCE-dominated plume. The modified Figure 5.18 is attached. Also attached are Figures 5.10, 5.11, and 5.12 which have been revised using the modified boundary of the 2008 TCE plume.

Well MW-62, with a concentration of 5.1 µg/L, is within the boundary of the 2008 DCE plume (Figure 5.19). Figure 5.19 may be giving the impression that this well is outside the plume boundary, but note that the well is immediately inside the northern boundary of the separate DCE-dominated plume; the impression that the well is outside the boundary is due to the absence of the southern and eastern boundaries of this plume which have been omitted from the figure due to the uncertainty of their location.

In our response above, we interpreted this comment as a misunderstanding in the relative position of wells MW-52R and MW-62 with respect to the plume boundary and we addressed it as such. If you intended the comment as a directive please let us know in writing thereby triggering the need for us to consider invoking dispute resolution

10. Figure 5.13: The Pump Intake label should be moved from OB-2 to CW-1, with the arrow at the pump elevation.

A corrected Figure 5.13 is attached.

11. Note, Figures 6.4 - 6.6: These figures show lack of full containment to the southwest, related to Well MW-65. This illustrates why there is a need for downgradient monitoring to verify containment. The increase in pumping rate at CW-1 will help alleviate this problem.

Questions concerning the lack of full containment by the model calculated capture zones that are depicted in Figures 6.4 – 6.6 were also part of an earlier comment (Comment 4) by EPA and NMED on the 2003-2007 Annual Reports.[1] Our response to that comment,[2] which is equally applicable now, was: ". . . the groundwater model is an approximation of the real system. Capture, therefore, must be evaluated using the collected data rather the model results." While the model is doing an adequate job in reproducing measured water levels, it does not reproduce them exactly. The data-based water-level maps (Figures 5.1 through 5.12) on the other hand obey all of the measured water levels and none of the capture zones calculated from these water levels indicate a lack of containment. In fact, Sparton's position is that there is no question that containment of the plume had been achieved soon after the start of the operation of the off-site containment well, and that "the approval of the Groundwater Investigation Report that assessed the performance of the off-site containment well[3] and of the first Annual Report[4] issued under the terms of the Consent Decree resolved any concerns about whether the offsite well was containing any constituents of concern in ground water that originated from the land and improvements located at 9621 Coors Road."[5]

Sparton, therefore, disagrees that there is a need for downgradient monitoring to verify containment. As Sparton has stated earlier,[5] "Sparton's agreement to install the "sentinel well" is

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[1] Certified letter dated December 30, 2008 from Chuck Hendrickson of USEPA, Region 6 and John Kieling of NMED to Tony Hurst of Hurst Engineering Services, Re: 2003-2007 Annual Reports, Sparton Technology, Inc., Former Coors Road Plant, Sparton Technology, Inc., Consent Decree, Civil Action No. CIV 97 0206 LH/JHG, EPA ID No. NMD083212332, with enclosure on "EPA/NMED Comments on Sparton, Inc., Annual Reports for 2003-2007."

[2] Letter dated February 12, 2009 from Charles B. Andrews of SSP&A to Chuck Hendrickson of USEPA Region 6, and John Kieling of NMED, on the subject: Response to EPA/NMED comments on Sparton Technology, Inc., Former Coors Road Plant Remedial Program, 2003-2007 Annual Reports (including 5 attachments), with cc to Susan Widener, James B. Harris, Tony Hurst, and Gary L. Richardson.

[3] Groundwater Investigation Report, Performance Assessment of the Off-site, Containment Well, Sparton Technology, Inc. Coors Road Facility, Albuquerque, New Mexico, prepared by S. S. Papadopulos & Associates, Inc., August 6, 1999.

[4] Sparton Technology, Inc. Coors Road Plant Remedial Program, 1999 Annual Report, prepared by S. S. Papadopulos & Associates, Inc., Original issue June 1, 2000, Modified issue February 9, 2001.

[5] Letter from Joseph S. Lerczak of Sparton to Chuck Hendrickson of EPA and John E. Kieling of NMED Re: Notice of Dispute-Resolution and Extension Request for the Receipt of the 2009 (sic) Annual Report, Sparton Technology, Inc., EPA ID No. NMD083212332, sent by certified mail on May 6, 2009.

based solely on Sparton's desire to avoid the additional cost and expense of continuing with the dispute resolution process . . ." and not because it believes that it is necessary to verify containment.

The planned increase in the pumping rate of CW-1 should definitely alleviate any concerns the agencies have concerning full capture of the plume. Sparton's proposal to increase the pumping rate of CW-1, however, was based on the results of evaluation that indicated that such an increase would accelerate aquifer restoration, and not on any concerns that the current pumping rate does not provide full capture.

12. Note, Appendix D, Figure D-1: Groundwater production well RG-04462 S-5, in NE corner of model area, came on line late 2007 with high production rate from a deeper aquifer. This could shift groundwater flow in the upper aquifer. Please submit screen intervals for the nearby wells.

The increase in regional pumping caused by the coming on line of production well RG-04462 S-5 and its relatively high pumping rate during 2008 has resulted in a steeper rate of water-level decline in site monitoring wells as well as in the nearby USGS Hunting Ridge #1 well during the last several years (see 2009 Annual Report, Figure 6.3). The effects of this increased pumping were taken into consideration during the update of the model for the 2009 Annual Report (see 2009 Annual Report, Section 6.1.1.1, Item 1), by imposing the observed steeper water-level decline rates to the constant head boundaries of the model along its western limit and along the western part of its northern and southern limits (see Figure 6.1 in 2009 Annual Report).

The screened intervals of the three production wells closest to the model area, wells RG-04462 S, RG-04462 S-4, and RG-04462 S-5 are as follows:

Well	Depth of Screened Interval, ft	Elevation of Screened Interval, ft MSL
RG-04462 S	481 - 1,511	3,864 – 4,894
RG-04462 S-4	650.4 - 1,351.1	3,927 – 4,628
RG-04462 S-5	430 - 600	4,693 – 4,863
	606 - 1,660	3,633 – 4,687

The elevations of the screened intervals given above are approximate as they have been calculated using the land-surface elevation at the well location (5,375, 5,278, and 5,293 ft MSL, respectively) estimated from the USGS Digital Elevation Model of the area.

13. Note: Appendix E (residuals of gw elevations vs. model) is adequate.

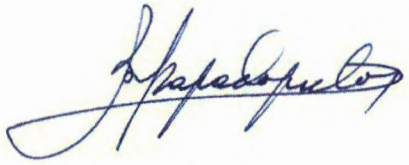
Sparton agrees.

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of either the person or persons who manage the system and/or the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify, to the best of my knowledge and belief, that this document is consistent with the applicable requirements of the Consent Decree entered among the New Mexico Environment Department, the U.S. Environmental Protection Agency, Sparton Technology, Inc., and others in connection with Civil Action No. CIV 97 0206 LH/JHG, United States District Court for the District of New Mexico. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions concerning this letter or need further information, please contact me at the phone or email listed on page one of this letter.

Sincerely,

S. S. PAPADOPULOS & ASSOCIATES, INC.



Stavros S. Papadopulos, PhD, PE, NAE
Founder & Senior Principal

Enclosures

cc: Secretary, Sparton Technology, Inc., c/o Mr. Joseph S. Lerczak
Mr. Gregory A. Slome, Senior Vice President and Chief Financial Officer of Sparton Corporation
Mr. Joseph S. Lerczak, Director of Treasury and Forecasting and Secretary of Sparton Corporation
Mr. James B. Harris, Thompson & Knight LLP
Mr. Tony Hurst, Hurst Engineering Services
Mr. Gary L. Richardson, Metric Corporation

The off-site containment well continued to provide hydraulic control of the contaminant plume throughout the year. The source containment well that began operating in early 2002 quickly developed a capture zone that controls any potential on-site sources that may be contributing to groundwater contamination.

The extent of groundwater contamination during 2008, as defined by the extent of the TCE plume, was somewhat different than in previous years because the presence of a separate, DCE-dominated plume that did not originate from the Sparton facility was taken into consideration in evaluating the water-quality data.[c] Of 55 wells sampled both in November 2007 and 2008, the 2008 concentrations of TCE were lower than in 2007 in 25 wells, higher in 8 wells, and remained the same in 22 wells (21 below detection limits). Well MW-60, at 4,800 micrograms per liter (µg/L) continued to be the most contaminated off-site well. The corresponding results for DCE were 14 wells with lower, 5 wells with higher, and 36 wells with the same (all below detection limits) concentrations. The TCA plume ceased to exist during 2003, and this condition continued through 2008, that is, throughout the year there were no wells with TCA concentrations above the maximum allowable concentration in groundwater set by the New Mexico Water Quality Control Commission.

Changes in concentrations observed in monitoring wells since the implementation of the current remedial measures indicate that contaminant concentrations in the on-site area decreased significantly. Concentrations in most off-site wells have also decreased, or remained unchanged (below detection limits). The only wells where significant increases occurred are the off-site containment well CW-1, and on-site monitoring well MW-19. The concentrations of contaminants in the water pumped from CW-1 rapidly increased after the start of its operation and remained high since then. The high concentrations in this well and in well MW-60 indicated that areas of high concentration existed upgradient from both of these wells; however, most of the groundwater upgradient from these wells has been captured by CW-1 and concentrations both in CW-1 and MW-60 have begun a declining trend.

The off-site and source containment wells operated at a combined average rate of 266 gpm during 2008. A total of about 140.1 million gallons of water were pumped from the wells. The total volume of water pumped since the beginning of the current remedial operations on December 1998 is about 1.332 billion gallons and represents 118 percent of the initial volume of contaminated groundwater (pore volume).

A total of 468 kilograms (kg) (1,030 pounds [lbs]) of contaminants consisting of 433 kg (955 lbs) of TCE, 32.6 kg (71.8 lbs) of DCE, and 1.13 kg (2.50 lbs) of TCA were removed from the aquifer by the two containment wells during 2008. The total mass that was removed since the beginning of the of the current remedial operations is 5,460 kg (12,050 lbs) consisting of 5,130 kg (11,310 lbs) of TCE, 315 kg (694 lbs) of DCE, and 15.0 kg (33.1 lbs) of TCA. This represents about 78 percent of the total dissolved contaminant mass currently estimated to have been present in the aquifer prior to the testing and operation of the off-site containment well.

[c] The United States Environmental Protection Agency and the New Mexico Environment Department believe that the separate DCE-dominated plume is from the Sparton facility.

changes in groundwater flow patterns that were caused by the operation of the off-site containment system.

The concentrations in well MW-60 continued to be the highest observed in an off-site well, as it has been the case since the beginning of remedial operations. The concentrations of TCE in this well increased from low µg/L levels in 1993 to a high of 11,000 µg/L in November 1999 and then declined to 2,900 µg/L in November 2000. Then, they began increasing again reaching a second peak of 18,000 µg/L in November 2004; since then TCE concentrations in the well have declined to 4,800 µg/L in November 2008. The DCE and TCA concentrations in this well also declined from 830 µg/L and 59 µg/L in November 2004 to 400 µg/L and 12 µg/L, respectively, in November 2008. In general, the "rule-of-thumb" is that the presence of a contaminant at concentrations equal to or exceeding 1% of its solubility indicates the potential nearby presence of that contaminant as a free product (Newell and Ross, 1991; Pankow and Cherry, 1996) usually referred to as a non-aqueous phase liquid (NAPL). The solubility of TCE, a dense NAPL or DNAPL, is 1,100,000 µg/L; the concentrations of 11,000 µg/L and of 18,000 µg/L that were observed in MW-60 in November 1999 and 2004, respectively, meet the criteria of this rule-of-thumb. There are several factors, however, that preclude the presence of a DNAPL source near MW-60. First, the well is screened in the upper part of the aquifer and located almost 2,000 feet downgradient from the site; there is no plausible physical mechanism by which TCE could migrate to such a distance from the site as a DNAPL within a thick and fairly homogeneous aquifer. Second, although TCE concentrations above 10,000 µg/L and as high as 59,000 µg/L have been observed in several on-site wells in 1984 (Harding Lawson Associates, 1985), DNAPL has not been reported for any on-site boring or monitoring well. Finally, the gradual increase in the concentrations between 1993 and 1999, the occurrence of the high concentrations as two separate peaks with relatively lower concentrations in between, and the subsequent decrease in concentrations indicate that the contaminant concentrations in this well represent two slugs of highly contaminated groundwater that migrated from the site rather than a nearby DNAPL source. The migration of slugs of highly contaminated groundwater from the site is consistent with the high TCE concentrations that were observed at the site in 1984. It is of interest to note that Pankow and Cherry (1996, p. 459) state that "[t]he use of a 1% rule-of-thumb in any assessment of the spatial distribution of DNAPL zones must be performed cautiously, particularly in the downgradient direction. For example, the dissolved plume emitted from a very large DNAPL zone may exhibit dissolved concentrations above 1% of saturation for a substantial distance downgradient of the source zone."

Monitoring well MW-65, whose concentration trends are also shown in Figure 5.16, had low µg/L levels of TCE when first sampled after installation in 1996; TCE, at concentrations up to about 15 µg/L, was the only contaminant detected in this well before and at the start of the off-site containment system. The concentrations of TCE in the well declined rapidly after the start of the off-site containment system to "not detected" (at a detection limit of 1 µg/L) in August 1999, and remained "not detected" for almost two years. The well became contaminated again in 2001 but, as shown in Figure 5.16, the dominant contaminant this time was DCE followed by TCA and then TCE; the concentrations of these contaminants peaked around 2005 or 2006 and

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[30] USEPA and NMED believe that the separate DCE-dominated plume is from the Sparton facility.

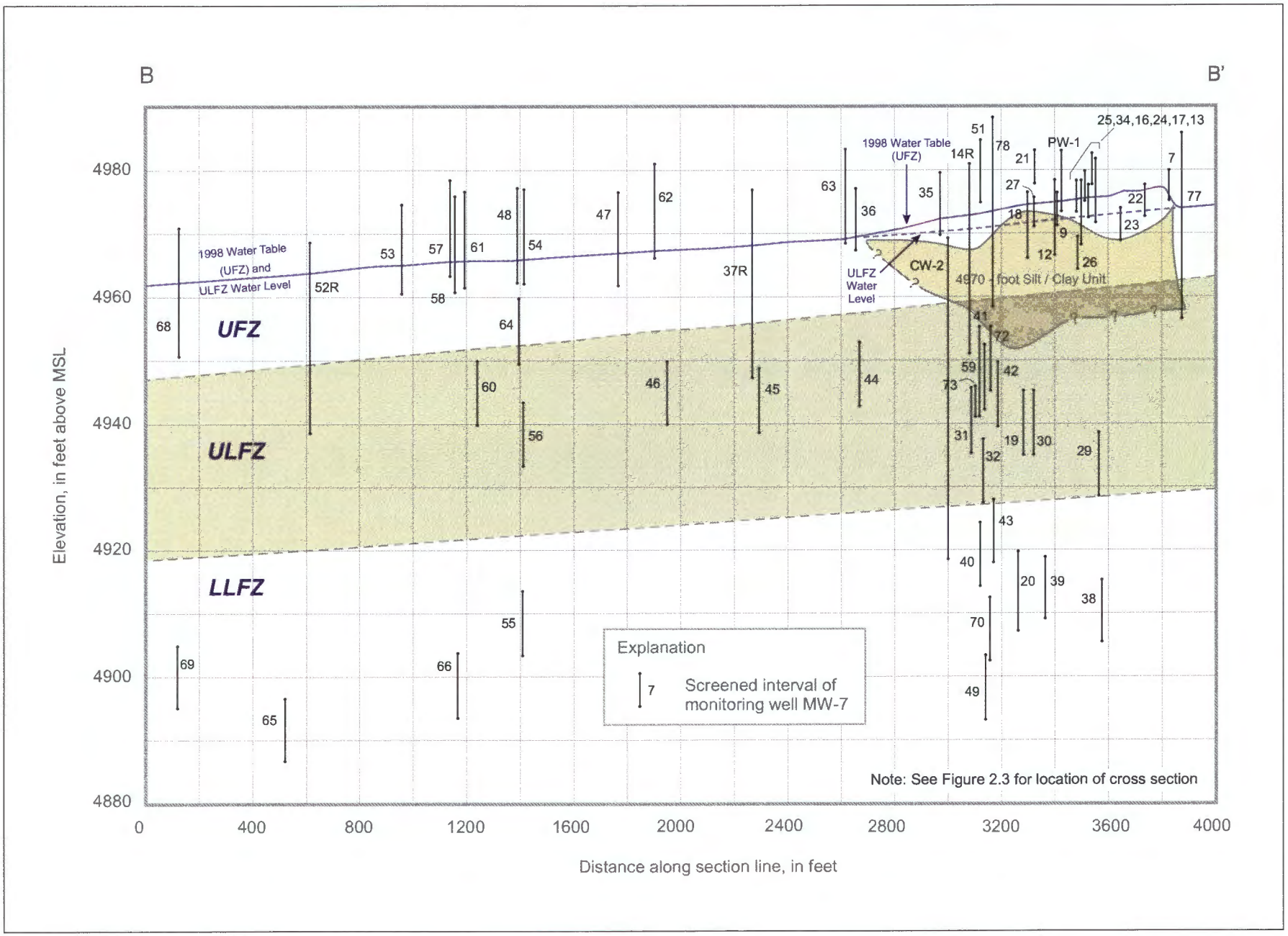

Figure 2.4 Schematic Cross-Section Showing Screened Interval of Monitoring Wells and Relation to Flow Zones

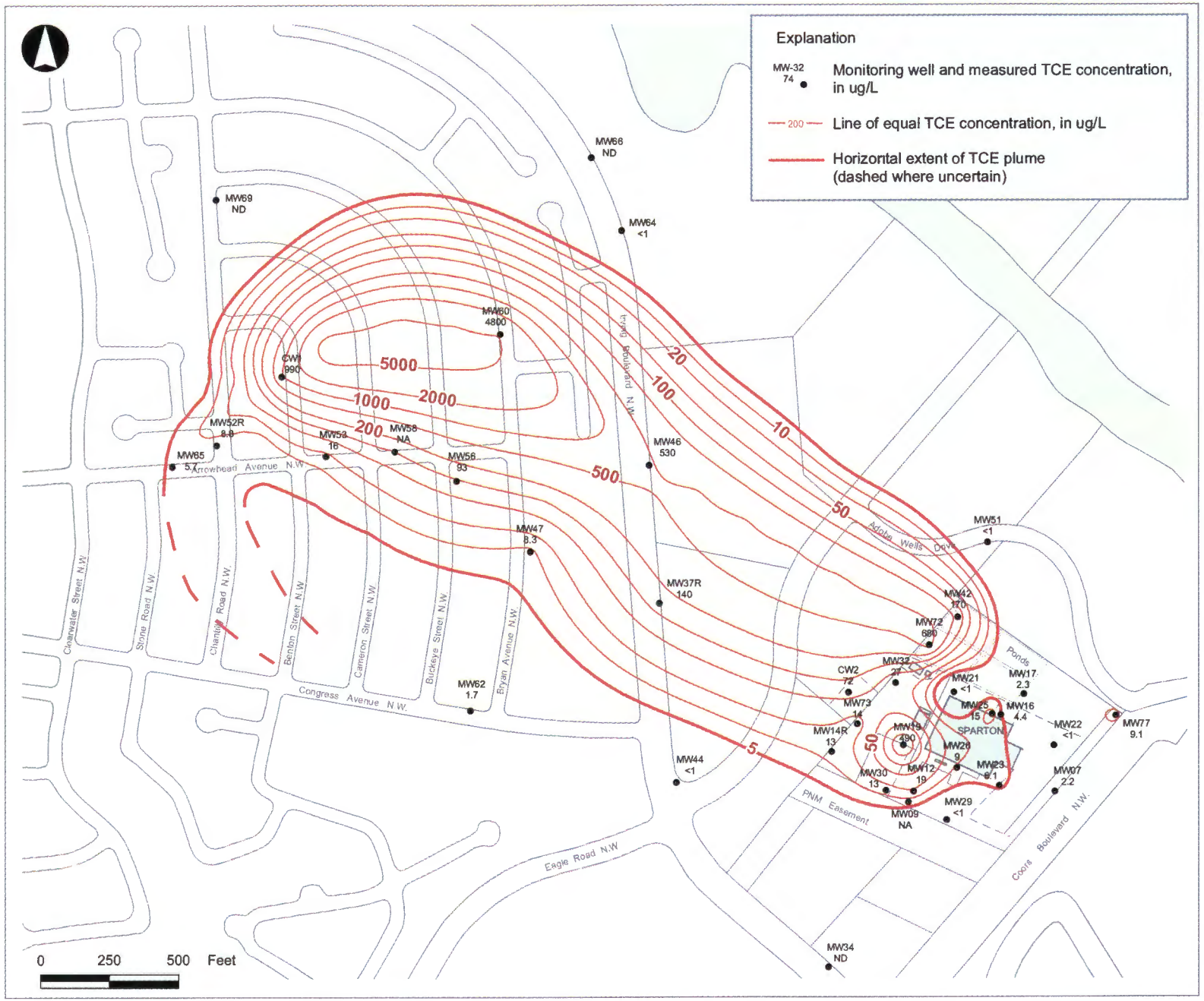

Figure 5.18 Horizontal Extent of TCE Plume - November 2008

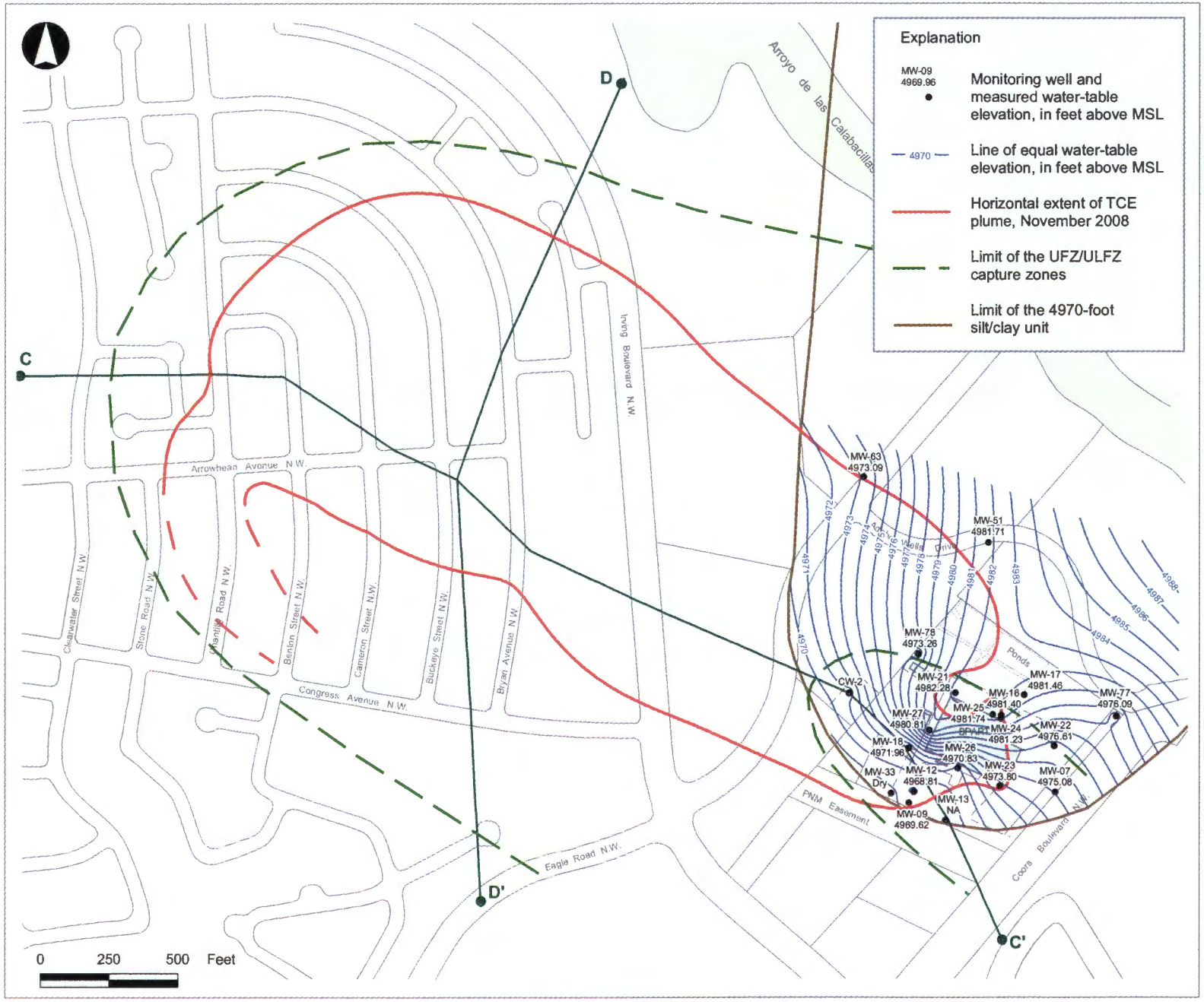

Figure 5.10 Elevation of the On-Site Water Table - November 3, 2008

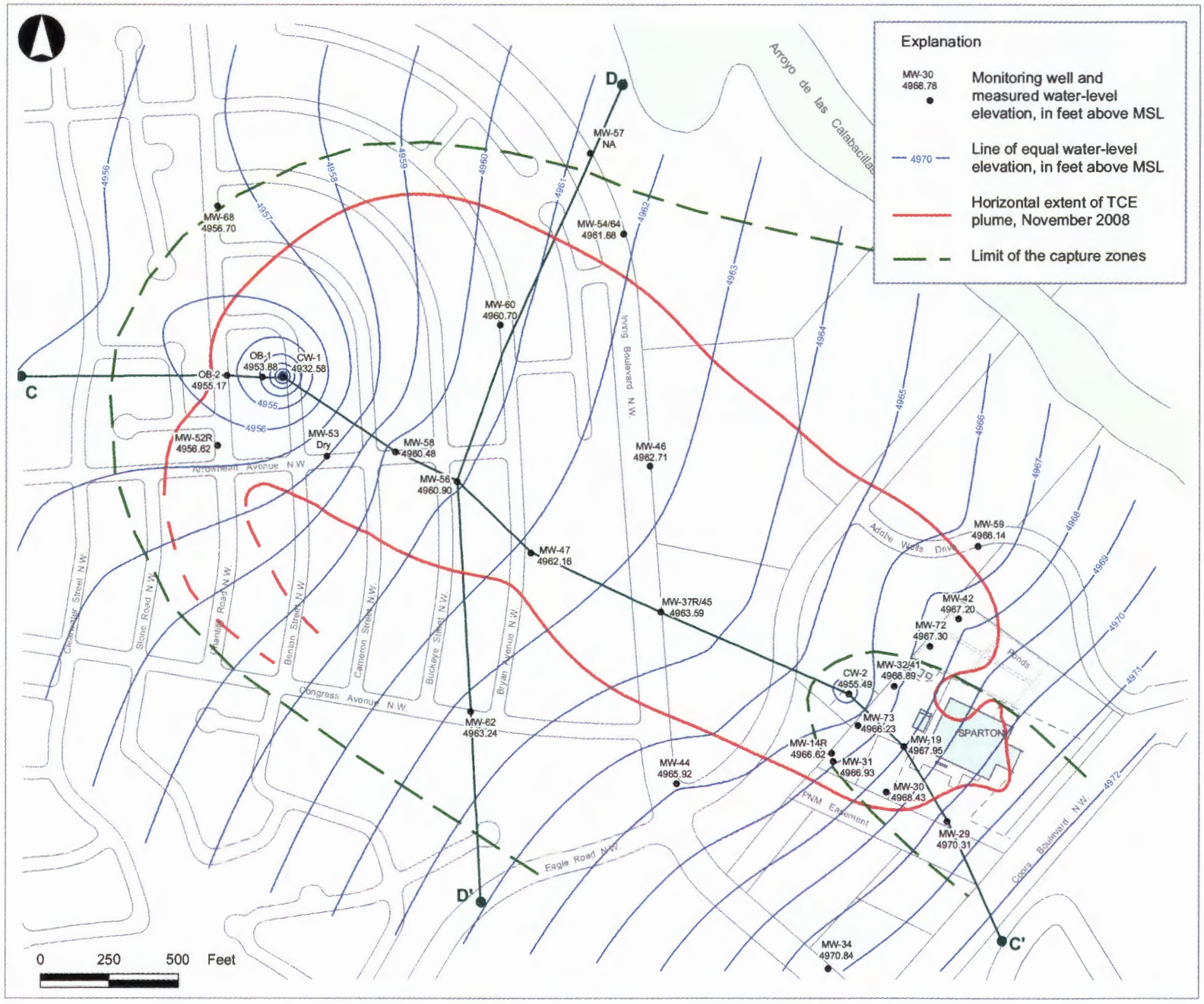

Figure 5.11 Elevation of Water Levels and Limits of Containment Well Capture Zones in the UFZ/ULFZ - November 3, 2008

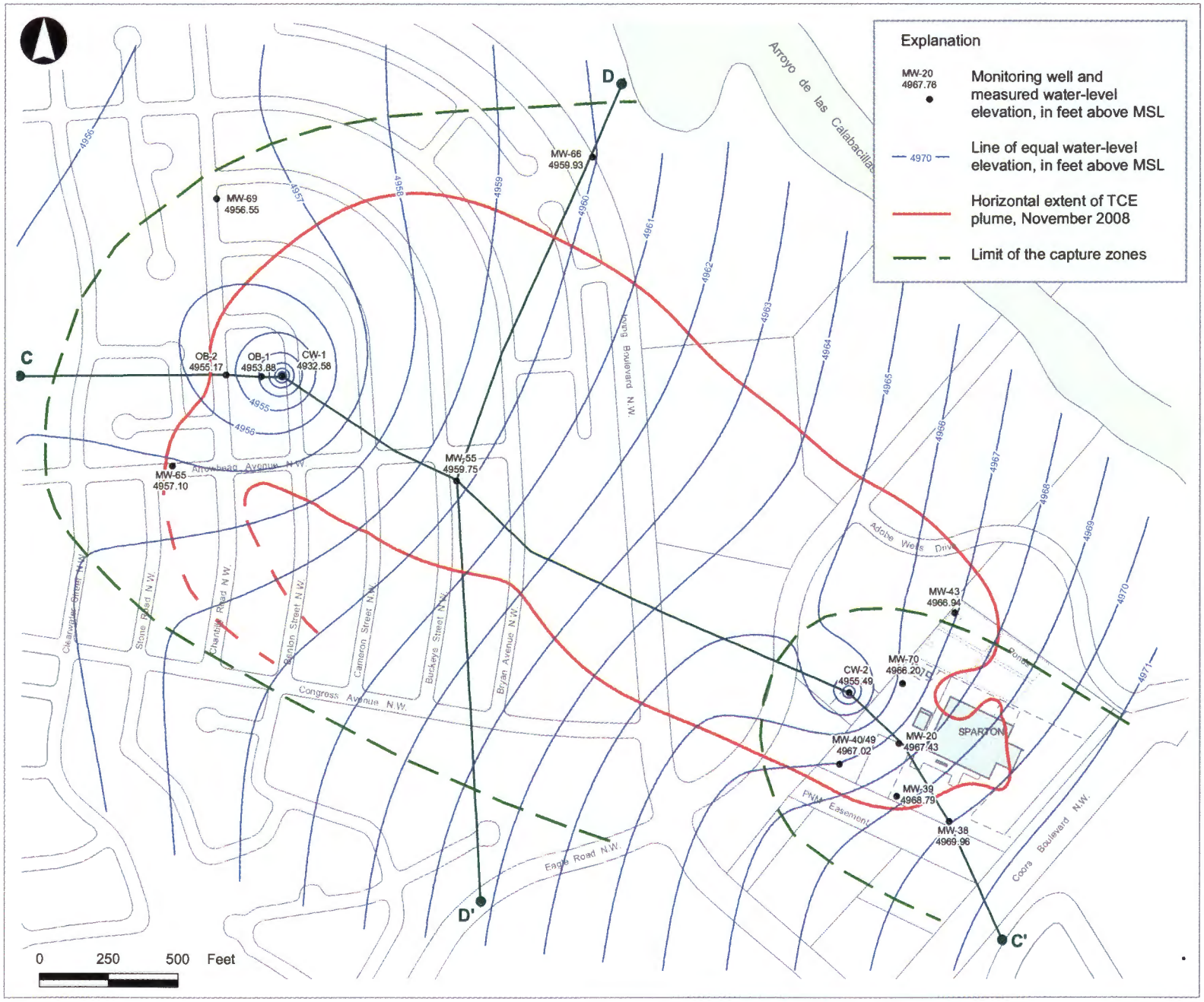

Figure 5.12 Elevation of Water Levels and Limits of Containment Well Capture Zones in the LLFZ - November 3, 2008

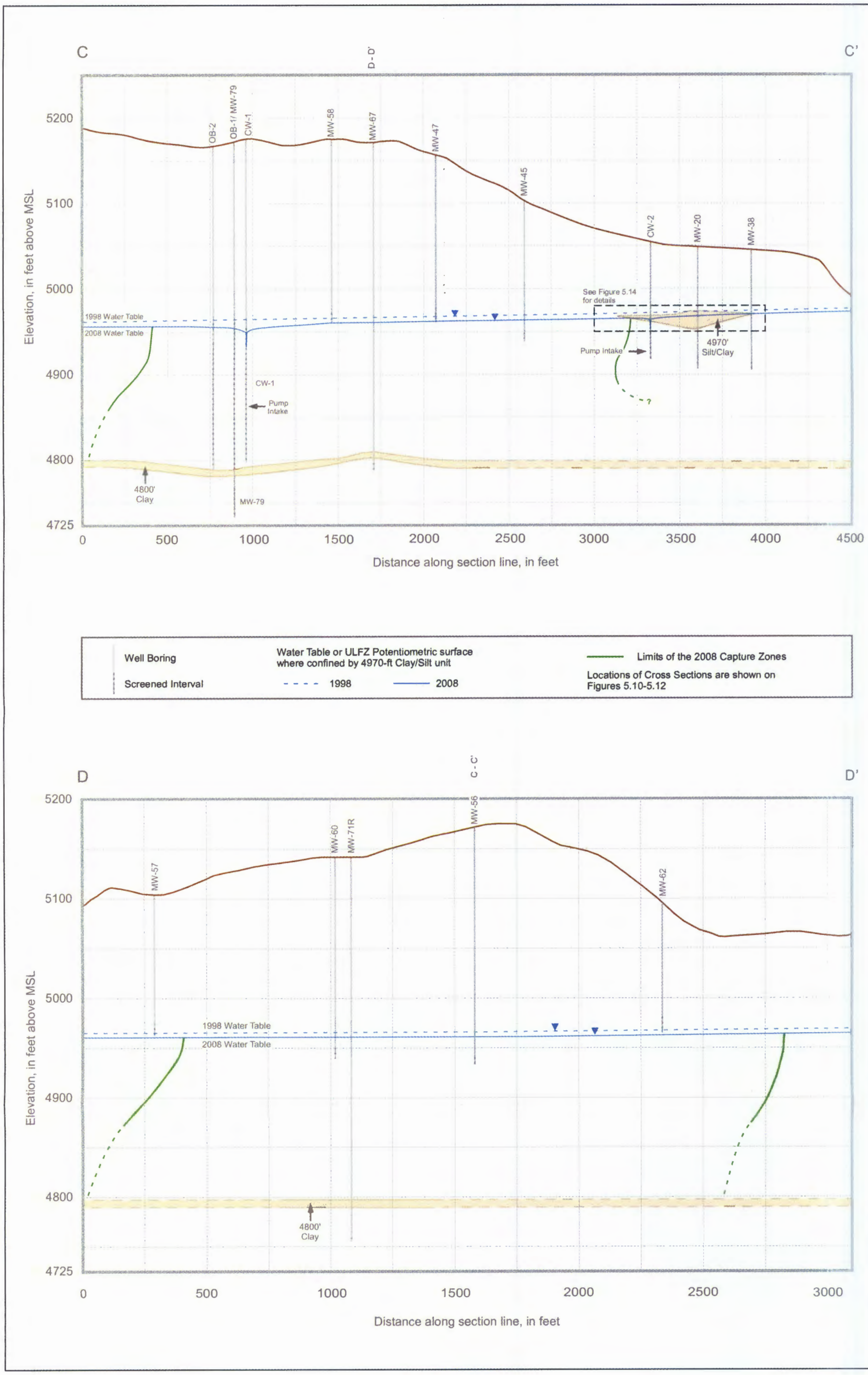

Figure 5.13 Schematic Cross-Sections Showing November 1998 and 2008 Water Levels and Containment Well Capture Zones