RJZ ASSOCIATES

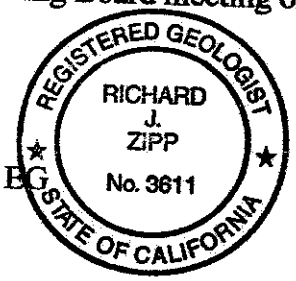
Ms. Jeanine Townsend
Clerk to the State Board
SWRCB

Re: Submittal of Comments
Draft Order WQ 2020-XXXX-UST
In the Matter of the Petition of RCH Corporation
For Review of Denial of Petroleum Underground
Storage Tank Closure Case at
7891 Stockton Boulevard, Sacramento

Dear Ms. Townsend:

Attached are comments regarding the above referenced matter. Please provide these comments to staff and the Board Members for their consideration at the upcoming Board meeting on December 14, 2010.

Cordially,



Richard J. Zipp, PG, HG, EG
Principal Hydrogeologist
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Atch.

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COMMENTS TO DRAFT WQ ORDER 2010-XXXX-UST
DENIAL OF PETROLEUM USTVCASE CLOSURE
AT 7891 STOCKTON BOULEVARD, SACRAMENTO
Presented by RJZ Associates

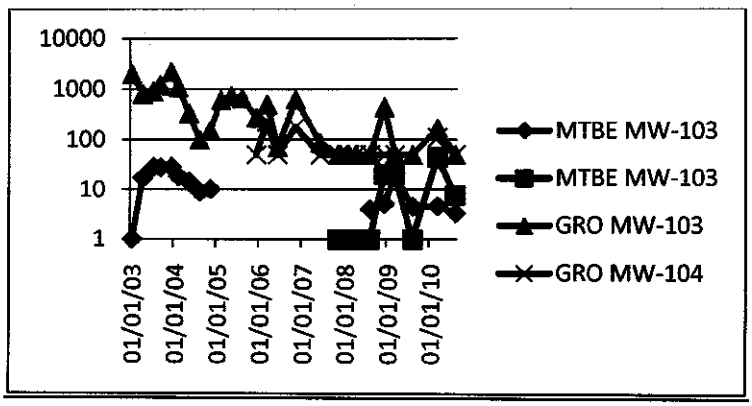
The following comments are provided as rebuttal of the above referenced draft order. We have addressed our comments in the order presented in the draft order and have provided the specific order comments as part of the text for ease of review.

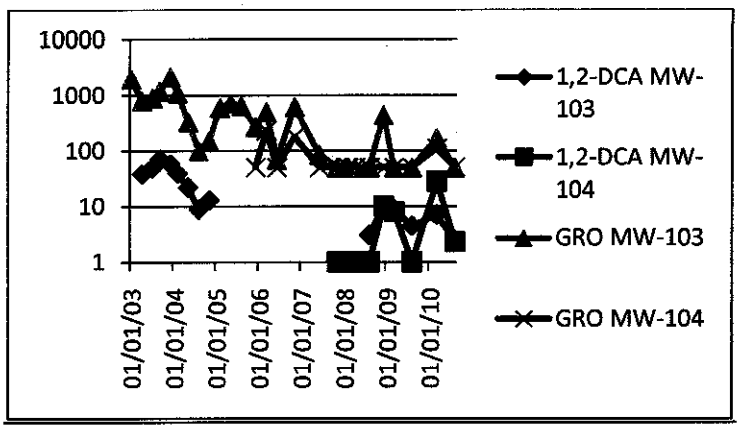
State Board Comment (SB) - There are two apparent release areas: near the former/current USTs and around wells MW-103 and MW-104 which are located near several dispensers.

Responsible Party Response (RP Response) – We concur with the SB comment that there was a release near the former/current USTs, but disagree with the second "apparent release area around MW-103 and MW-104". Wells MW-103 and MW-104 are approximately 50 feet east of the UST area and in a more or less downgradient direction from the UST area. Actually MW-103 is northeast in a sidegradient direction, but has become a focal point for both the RB and SB comments and the draft order.

A review of the extensive soil sampling conducted beneath the truck bay where the agencies claim there is another release does not show the presence of 1,2-DCA or MTBE in concentrations that could account for a TPHG release in this area. In fact most of the analytical results are presented as gasoline range organics GRO), not as TPHG. When a GRO concentration is reported, it is almost exclusively in conjunction with a much higher TPHD or diesel range organics (DRO). What this implies is the GRO is actually the lighter gasoline range fraction of a diesel release, and not actually gasoline. Diesel fuel does not contain either 1,2-DCA or MTBE, so the presence of diesel in samples does not constitute a gasoline release. We do not know where the 1,2-DCA or MTBE constituents are coming from, but the concentrations and distances to potential receptors appears to make this issue moot.

The two graphs below show the historical data for wells MW-103 and MW-104 for gasoline range organics (GRO), 1,2-DCA and MTBE. The 50 ug/l flat line for TPHG is actually the detection limit, not an indication of an actual concentration at that level.





SB Comment - Concentrations of 1,2 dichloroethane (1,2 DCA), however, have primarily and consistently been reported in wells MW-103 and MW-104. The lack of 1,2 DCA in the other Site monitor wells, particularly in the wells located near the former/current USTs, suggest that there are two release areas at the Site.

RP Response – This comment not actually correct. Referring to the graphs above, we note there was a spike in MW-3 in 2003 for 1,2-DCA and MTBE followed by a five year ND gap and then in 2009 another spike for 1,2-DCA and MTBE in MW-3 and the new MW-104. The GRO observed in 2003 shows the effect of natural attenuation throughout the entire record, but without the second spike. This appears to demonstrate the effect natural attenuation is having on the presence of GRO, 1,2-DCA and MTBE in the vicinity of wells MW-103 and MW-104.

SB Comment - In spite of the mass of petroleum trapped below the water table, the dissolved plume that is monitored by the existing well network appears to be stable and not to have migrated offsite.

RP Response - This is a very important comment. The release the Regional Board is concerned about is the circa 1980 release, which has resulted in the smear zone at the 70-75 foot zone. It is this zone that did not clean up during the almost six year SVE remedial program. It is the same zone which did not yield any significant free product during the six years of free product bailing and about four years of skimmer activity. Three to three and a half gallons of product recovery during this period cannot be considered a reasonable and cost effective program commensurate with the risk to human health and the environment. That is especially true given there are wells with no free product and minimal TPH constituents within about fifty feet downgradient of the wells with free product. Also the analytical record shows a pronounced decrease in GRO concentrations due to natural attenuation. That clearly demonstrates the stability of the plume and the lack of threat to any nearby receptors.

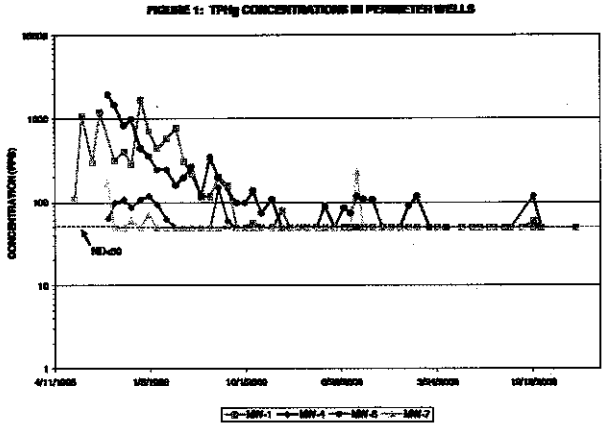
Now that the groundwater surface has risen to about 20-25 feet above this smear zone, as documented by the Sacramento County Water Resources Groundwater Contour maps, the likelihood is reduced further that TPH constituents threaten the aquifer or residents in the vicinity of the site. In fact all data appears to confirm that anything released from this submerged smear zone is being naturally attenuated within fifty to one hundred feet from the point of release. What constituents have been observed in the wells the Regional and State Board staff refer to in their criticism of the site are all at low concentrations, demonstrating the thoroughness of the natural attenuation processes taking place beneath the site. Since the closest offsite receptor is about five hundred fifty feet in a side gradient direction and over seven hundred feet in a more downgradient direction, there is virtually no way any release from the Dhami site could possibly reach these wells. If this plume did not move any appreciable distance during the past thirty years, it is less likely to move anywhere during the next thirty of more years.

A Darci's Law groundwater velocity flow calculation was performed using sand as the most permeable zone beneath the site. Using a permeability of 10^{-3} cm/sec and an average gradient of 0.0015 feet/foot, lateral groundwater beneath the site is moving at a velocity of about 15 feet per year in the most permeable layers. The permeability is the same value as used in the Lawrence Livermore National Laboratory 1995 UST report prepared for the SWRCB.

There are no domestic wells in the directly downgradient direction. The attached Figure 4 presents the Assessment Parcel map for the area and three radii of 300 feet, 600 feet and 1000 feet using the UST area as the center of the circles. Given the 15 feet/year estimated velocity the 300 foot radius represents 20 years of groundwater movement in the downgradient direction, the 600 foot radius about forty years, and the 1,000 foot radius about seventy years. Given the demonstrated natural attenuation within fifty feet of the UST area, it is difficult to envision particle movement much more than 100 feet from the source area.

And yet both the Regional Board and State Board want to expend thousands of dollars chasing a phantom plume, which cannot exist.

SB Comment - As the graph below depicts, there is a decreasing trend of TPHg concentrations in perimeter wells MW-1, MW-4, MW-5, and MW-7. This decreasing trend demonstrates that the remaining petroleum hydrocarbon mass is likely confined to soils in the central portion of the Site near the gasoline and diesel UST area and that the groundwater plume that is monitored by the existing well network is likely shrinking by natural attenuation (Figure 1).



RP Response – The significance of this comment appears to have been overlooked by the State Board petition reviewer. This comment seems to be saying the plume is stable and is likely shrinking. If this is the case, Resolution 92-49 logic should apply here. There are no nearby receptors and the site will meet water quality objectives within a reasonable amount of time. That looks like a low risk site closure.

SB Comment - 1) At the time the fuel release was discovered (August 1995), groundwater was around 70 feet bgs. Petroleum may be trapped deeper and the plume could be moving underneath the existing monitor wells. No samples have been collected at these depths.

RP Response - Actually groundwater was at a depth of -49 feet mean sea level in the nearby DWR monitoring well just northwest of the site. This corresponds to a depth to water at the site of about

seventy-five feet. This is the deepest level the groundwater has been in this area since monitoring began at the DWR well in 1963.

Free product has been found in wells MW-2 and MW-3, which are west and east of the UST area, respectively. Both of these wells are perforated between 60-80 feet, which puts the bottom perforations of these wells at about a -54 feet msl, or about six feet below the historical low water table.

Less than fifty feet east of MW-2 (Perf 60-80) and southeast of AS-2 (Perf 73-75) is air sparge well AS-1. .This well was installed in 1999 and is perforated between 78-80 feet, equivalent to the deepest portion of MW-2. Free product has never been observed in this well since 1999, and for that matter, little TPH compared to nearby wells has been present in this well the few times it was sampled, despite its close proximity to MW-2 and AS-2, wells with many years of free product and/or high concentrations of TPH constituents.

The lack of TPH constituents in AS-1 makes two very significant statements about the presence and attenuation of TPH constituents downgradient from the UST area. Because AS-1 is perforated at the same bottom depth as nearby MW-2 and is about five feet deeper than the historical groundwater elevation, one must conclude no free product has migrated to this close location, or it has been completely attenuated. This lack of migration applies to both lateral migration at the historical water level, and also to any fantasized deeper plume.

Something to keep in mind about the theorized deeper plume is the need for more and more free product at the time of release to depress the water table. Because TPH is lighter than water, it tends to float on the water table. Only if a large amount of TPH is released and reaches the water table can the weight of the TPH displace the water and push the TPH below the water table. It seems it would take about seven foot of TPH thickness to depress the water table five feet to allow the TPH to be later found five feet deeper. There is no evidence this large a volume ever was present beneath the UST area. Since there wasn't a large release, no TPH could have moved deeper. There is nothing to support a vertical downward gradient to move the plume deeper by that mechanism.

SB Comment - 2) Samples from wells MW-103 and MW-104 have consistently detected methyl tertiary butyl ether (MTBE) and 1,2 DCA, which are more mobile and less biodegradable than other gasoline constituents. There have been no samples collected downgradient of these points to define the extent of the impacts.

RP Respose - This comment is incorrect and misleading. The SB comment doesn't say anything about the direction of groundwater flow he is referring to in this comment. Given the long term Sacramento County elevation data, we know groundwater flow has consistently been in a south southeasterly direction, we must assume that is the real direction of flow. And yet the data and the graphs above for MTBE and 1,2-DCA do not support the idea that MTBE or 1,2-DCA are moving in a down gradient direction in significant concentrations to reach and potential receptors.

MW-103 was installed in 2003 and MW-104 in 2005. There were peaks for 1,2-DCA and MTBE in 2003 in MW-103. Concentrations dropped to ND for five years, then spiked again late 2008, with spikes in both wells. The most recent sample results for these wells are 2.5 and 2.3 ug/l respectively for 1,2-DCA, and 3.3 and 7.6 ug/l respectively for MTBE, which clearly are concentrations which should not warrant the concern and SB comments we see.

There was a gasoline island not too far from MW-103, but soil samples collected in the vicinity of this island and along the distribution pipelines did not show the presence of TPHG, MTBE or 1,2-DCA to support a

release there. An examination of the boring logs or concentration graphs above don't support a release from either well location. No other soil sample results from beneath dispensers or along pipelines support a TPHG release in this area. The only logical source would be migration from the vicinity of the UST area, where there is still free product. Hence there does not appear to be evidence of a second release in this area.

SB Comment - 3) Nearby domestic water supply wells have not been sampled for benzene, toluene, ethylbenzene, and xylenes (BTEX), MTBE and 1,2 DCA.

RP Response – The above discussion appears to demonstrate any potential release from the UST area cannot possibly reach the nearest receptor (domestic well) located about 550 feet to the northeast. The groundwater gradient from the UST area to this well is essentially 0.00 feet/foot, resulting in zero flow in that direction, despite a theoretical anisotropic migration presented by Regional Board staff. Thus there is no need to sample wells as far away as the receptors are located. Natural attenuation processes are degrading any TPH constituents well within the property boundaries, and there is nothing suggesting this condition will change in the foreseeable future before groundwater meets water quality objectives at this site. The requested sampling does not appear to be a reasonable and cost effective use of USTCF resources, consistent with Water Code section 13267.

SB Comment - The State Water Board finds that UST case closure is not appropriate at this time. The Site has not been adequately assessed and any impacts to downgradient wells have not been evaluated.

RP Response – This comment appears to be totally inconsistent with the analysis performed by the petition reviewer. The reviewer stated the plume is stable and natural attenuation processes are breaking down TPH constituents, all consistent with justification for a low risk closure using Resolution 92-49 rationale. The comment about inadequate site assessment and need to evaluate impacts to downgradient wells appears to be an attempt to placate the Regional Board, but does not appear to have any technical merit.

RB Comment 1: Free product continues to be detected in Site wells screened across the historic water table, at approximately 75 feet bgs; free product has not been removed to the extent technologically and economically feasible and is acting as a source of the dissolved petroleum plume that may migrate away from the Site.

SB Response: Additional free product removal at the Site would require additional corrective action at considerable cost. Prior to determining if further free product removal is appropriate, the groundwater plume should be adequately delineated, and, potential receptor pathways from the affected groundwater should be assessed.

RP Response – We agree with the SB comment regarding free product removal requiring considerable cost to implement. This excessive cost in conjunction with the site hydrology and the demonstrated natural attenuation makes any further attempt to remove free product a waste of USTCF resources and inconsistent with resolution 92-49.

Regarding the perceived lack of adequate groundwater plume delineation, the record appears to clearly demonstrate the plume is restricted to the immediate vicinity of the UST area on site and within a very short distance any TPH constituent migration from this area is being rapidly degraded by natural attenuation processes. To conduct more assessment looking for a zero point between where we know the constituents are and where we know they have been attenuated is again a waste of USTCF resources.

RB Comment 2: The groundwater petroleum plume is not delineated laterally or vertically.

SB Response: We concur with the Central Valley Water Board.

RP Response – Discussions above address this response in detail. There is nothing in the record that suggests the plume has not been adequately delineated both laterally and vertically. Further assessment at this site is a gross waste of USTCF resources for a site which meets all criteria for low risk closure and should be closed..

RB Comment 3: Declining contaminant trends cannot be established for all Site wells, and a prediction of when water quality objectives will be met cannot be made for the petroleum constituents found at the Site.

SB Response: Declining concentration trends are not a requirement for case closure. While a declining trend line may indicate that natural attenuation is occurring, it is not the only indicator of natural attenuation. There are many UST cases that show stable concentrations in one or more site monitoring wells. This commonly occurs when petroleum-impacted soil is in contact with groundwater and is dissolution limited. At these sites, natural attenuation is occurring at the same rate as petroleum is dissolving into groundwater leading to stable concentrations.

RP Response – We are in agreement with the SB Response. It is for exactly the same rationale expressed by the State Board petition reviewer that this site should be closed as a low risk site. Any TPH constituents migrating away from the trapped plume will naturally attenuate to water quality objectives within a short distance from the source area. We now have fifteen years of sample results supporting this conclusion. Further work conducted at this site is a waste of USTCF resources.

RB Comment 4: Water supply wells closest to the Site should be sampled.

SB Response: We concur with the Central Valley Water Board.

RP Response – As discussed several times above, there is no valid technical rationale justifying the need to sample the offsite receptor (domestic wells). There is a reason why sampling the wells along Victory Avenue could actually be counterproductive to the evaluation and closure of this site. And that reason is the nearby closed Elsie Truck Stop, which was closed in 2001. That site left residual TPH constituents in the ground and a 1,2-DCA plume migrating directly toward the wells the Regional Board is asking the Dhami site to sample. The status of that plume and its relationship to the Dhami site is unknown. Should Dhami sample some of these wells and encounter 1,2-DCA, there would be no way of knowing where it came from, and would open the proverbial "can of worms". The presence of 1,2-DCA in the well located at 7501 Victory Avenue would much more likely come from the closed Elsie Truck Stop site than the subject site.

RB Comment 5: Public participation has not occurred and is needed to inform nearby property owners, residents, and water purveyors in the area of the release risks to their water supply.

SB Response: Subsequent to the Central Valley Water Board's response, a public notice was distributed to interested persons.

RP Response – The public participation meeting was put on hold pending a decision on the closure petition. As a public meeting is part of the closure process, this really does not appear to be an issue and should not be a criteria for State Board Member consideration.

SB Order - B. The matter shall be remanded to the Central Valley Water Board for further regulatory action, which shall include the completion of a site assessment to address the following issues:

a. The extent to which groundwater affected by the Petitioner's unauthorized petroleum release migrated at depths greater than the screened intervals of the existing monitor wells.

RP Response – This requirement has been discussed above and does not require additional comment. More assessment would be a further waste of USTCF resources.

SB Order - B. The matter shall be remanded to the Central Valley Water Board for further regulatory action, which shall include the completion of a site assessment to address the following issues:

....

b. The vertical and lateral extent of MTBE and 1,2 DCA in groundwater downgradient of wells MW-103 and MW-104.

RP Response – As discussed above, further assessment at of the 1,2-DCA and MTBE will do nothing to protect human health and the environment, but will be a waste of USTCF resources. The discussions above demonstrate any constituents near wells MW-103 and MW-104 will be attenuated to WQO before possibly reaching any receptors.

SB Order - B. The matter shall be remanded to the Central Valley Water Board for further regulatory action, which shall include the completion of a site assessment to address the following issues:

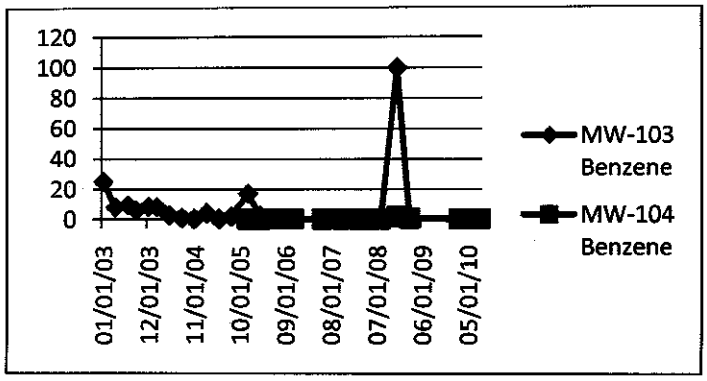
....

c. The Central Valley Water Board shall require the sampling of the domestic water supply wells within 1,000-foot radius of the Site for BTEX, MTBE and 1,2 DCA.

RP Response – Requiring the RP to sample **all** domestic water supply wells within a 1,000 foot radius would not only be a waste of USTCF resources, but would also be a gross abuse of those resources. There are wells located within 1,000 feet of the site, which are north of the Elsie Truck Stop groundwater plume. While we have presented technical arguments that TPH constituents from the Dhami site cannot reach the receptors near the site, to request sampling of wells that are double the distance away and would require migrating through an existing plume from a different site is not only ridiculous, but grossly negligent.

The rationale for requiring sampling are the findings in MW-103 and MW-104 just slightly removed from the UST area to the east and northeast. A casual review of the analytical results for these wells over the period of record questions the requirement.

We have already discussed the 1,2-DCA and MTBE found in MW-103 and MW-104. The benzene concentrations graph below for MW-103 and MW-104 shows the historical record for these wells. It appears quite obvious that the benzene concentrations in the vicinity of these wells have naturally attenuated to acceptable levels, and if the levels are acceptable within fifty feet of the source area, then one can reasonably conclude they will be acceptable five hundred or more feet down gradient and side gradient. We cannot explain the 2009 hit in MW-103, but we are inclined to discount this reading, given the detection limit findings both before and after this sample event. If the 100 ug/l hit is real, it just shows the natural attenuation process is working.



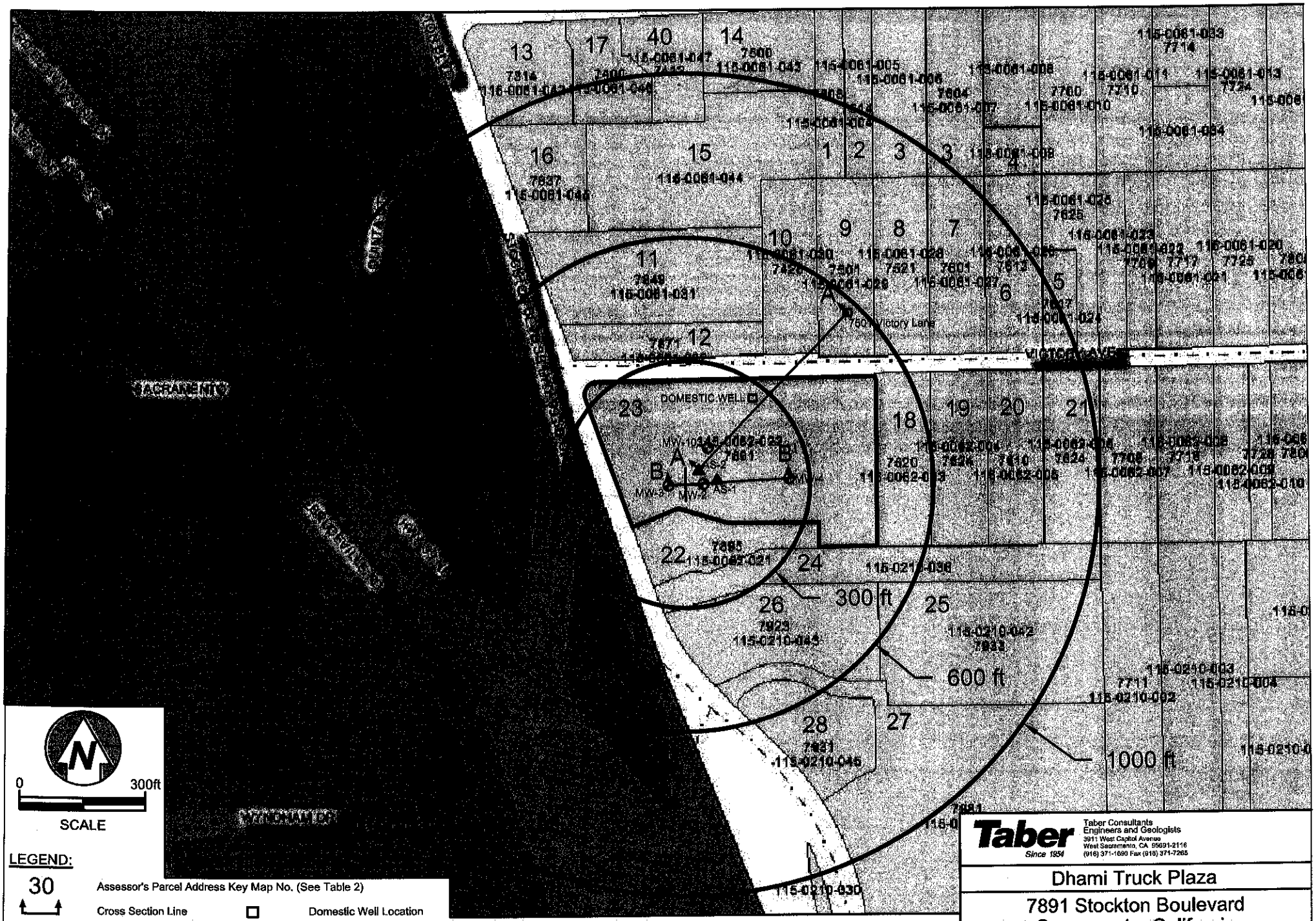
SB Order - B. The matter shall be remanded to the Central Valley Water Board for further regulatory action, which shall include the completion of a site assessment to address the following issues: ....
d. Upon completion of items B and C, above, the Central Valley Water Board shall reevaluate the UST case for closure. If the Central Valley Water Board determines that closure is not appropriate, the Central Valley Water Board shall provide the Petitioner with an updated closure review that identifies the impediments to UST case closure. The Central Valley Water Board shall not require additional free product removal before it provides the updated closure review that identifies any impediments to UST case closure.

RP Response – It is quite clear to all but apparently the State Board petition reviewer that the Regional Board, if given the choice, will not be closing this site anytime in the foreseeable future. It is also blatantly obvious that the RP will have to expend the remainder of the USTCF funds and then anything else the Regional Board can extract from the RP to address issues which clearly do not represent a threat to human health or the environment.

This site should be closed as a low risk site, as requested in the petition. Should the State Board adopt this order denying closure, then the Board should be aware they have just declared "open season" for all other sites like this one, which number in the hundreds or more on the active UST site list. We respectfully request the Board Members reject this order and direct staff to go back to review the petition.

Thank you for your consideration of these comments.

Figure 4 Modified from Site Conceptual Model Report, July 2, 2010



LEGEND:

30 — Assessor's Parcel Address Key Map No. (See Table 2)

Cross Section Line

Domestic Well Location

Monitoring Well Location

Air Sparge Well Location

Source: Sacramento County Assessor's Map, Parcel Viewer, 3/12/2010 10:50 AM

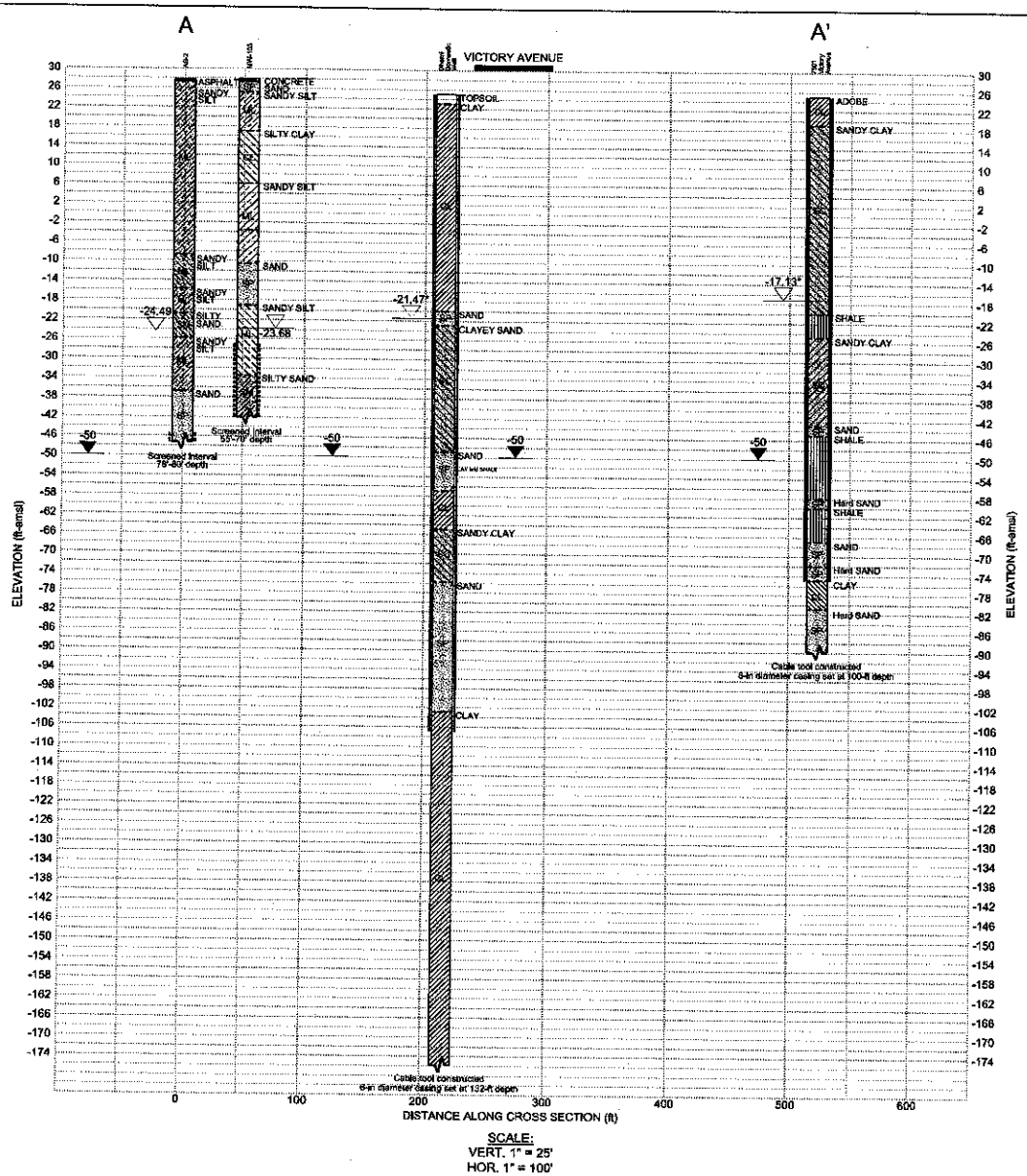
Taber
Since 1954
Taber Consultants
Engineers and Geologists
3911 West Capitol Avenue
West Sacramento, CA 95691-2116
(916) 371-1690 Fax (916) 371-7265

Dhami Truck Plaza

7891 Stockton Boulevard
Sacramento, California

Assessor's Parcel Address Key, 1000 ft Radius

051112	March 12, 2010	Figure - 4



SCALE:
VERT. 1" = 25'
HOR. 1" = 100'

LEGEND:

- Very approximate geologic unit break
- Inferred geologic unit break
- -21.47* Current Water Level (From August 2010 Groundwater Monitoring) * = Extrapolated Groundwater Level from 2010 Groundwater Monitoring
- 1980 Water Level Source: Department of Water Resources Groundwater Levels, 07N05E10M001M
- Screened Interval
- Well Casing

NOTES:

1. Soil Lithology for MW-2 and MW-3 was extrapolated from soil boring logs dated November 7, 1995 completed by Pacific Rim Environmental.
2. Soil Lithology for MW-4, MW-103, AS-1, and AS-2 was extrapolated from soil boring logs dated October 10, 1996; October 3, 2002; November 22, 1999; and September 25, 2002 completed by BSK.
3. Soil Lithology for 7520 Victory Avenue was extrapolated from the August 31, 1955 Water Well Drillers Report completed by D. Hedman Well Drilling Contractor.
4. Soil Lithology for 7501 Victory Avenue was extrapolated from the February 15, 1960 Well Log completed by D. Hedman Well Drilling Contractor.
5. Soil Lithology for the Dhami Domestic Well was extrapolated from the May 8, 1961 Well Log completed by D. Hedman Well Drilling Contractor.
6. Ground surface elevations for the three water wells were assumed at 25-ft amsl and extrapolated from the 1947 USGS Galt Quadrangle.
7. Groundwater elevations for the three water wells were extrapolated from groundwater data collected from the onsite monitoring wells measured on August 11, 2010.

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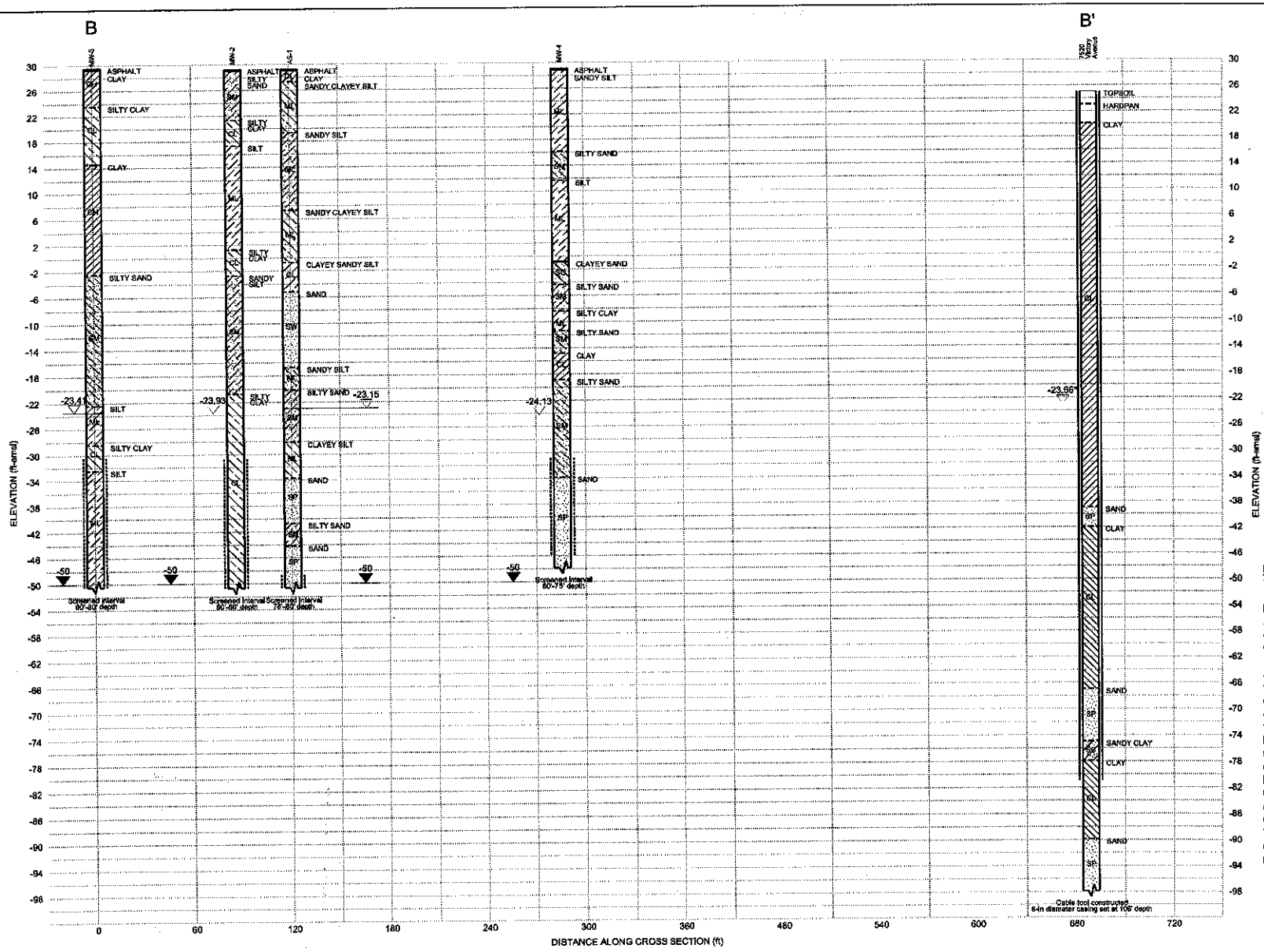
Cross Section A:A'

051112	November 9, 2010	Figure - 5



SCALE:
VERT. 1" = 15'
HOR. 1" = 60'

LEGEND:

- Very approximate geologic unit break
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- -21.47* Current Water Level (From August 2010 Groundwater Monitoring) * = Extrapolated Groundwater Level from 2010 Groundwater Monitoring
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Sacramento, California
Cross Section B:B'

051112	November 9, 2010	Figure - 6