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6 September, 2007

Proj. No.: H0562C
File Loc.: Westminster

California Regional Water Quality Control Board
Central Coast Region
895 Aero Vista Drive, Suite 101
San Luis Obispo, CA 93401
Attention: Hector Hernandez

Dear Mr. Hernandez:

RE: REVIEW OF OLIN CORPORATION REPORTS: (1) LLAGAS SUBBASIN CLEANUP WORKPLAN, JUNE 15, 2007; (2) SECOND QUARTER 2007 GROUNDWATER MONITORING REPORT, JULY 30, 2007

On behalf of the City of Morgan Hill (the City), WorleyParsons Komex has reviewed the Olin Corporation (Olin) June 15, 2007 report, "Llagas Subbasin Cleanup Work Plan" (the Workplan) and the July 30, 2007 report "Second Quarter 2007, Groundwater Monitoring Report" (the Q2 Report) for the Olin property at 425 Tennant Avenue, Morgan Hill, California (the Site), submitted to the Central Coast Regional Water Quality Control Board (RWQCB). For reader convenience, figures from these reports cited in this letter are included in Attachment A.

LLAGAS SUBBASIN CLEANUP WORKPLAN

The Workplan is based on an earlier feasibility study report, the December 6, 2006 report, "Llagas Subbasin Cleanup Feasibility Study - Revised" (The FS). Both reports result from a sequence of regulatory directives, particularly the March 10, 2005 RWQCB Cleanup and Abatement Order R3-2005-0014 [2005 CAO]. Comments on the FS by WorleyParsons Komex have been previously provided to RWQCB on January 19, 2007, the text of which is included with this letter as Attachment B.

The Workplan carries forward the overall strategy described by the FS; therefore, many concerns identified with the FS, described in detail in the WorleyParsons Komex January 19, 2007 comment letter, recur in the Workplan. These concerns are summarized as follows:

a) Background perchlorate levels in the Llagas Subbasin still have not been determined by Olin, by either the process for determination of background concentration of contaminants under California Code of Regulations [CCR] Title 23, Division 3, Chapter 15 Sections 2550.4 and 2550.7, or CCR Title 27, Division 2, Subdivision 1, Chapter 3, Subchapter 3, Article 1 Section 20400 as required by the RWQCB in their letter of October 6, 2006 commenting on the original June 30, 2006 FS report. The RWQCB has been very explicit

in asking that this be accomplished; however, it is unclear why Olin has not complied with the RWQCB directive.

b) State Water Resources Control Board (SWRCB) Resolution Number 92-49 requires that background concentrations be determined in accordance with the above methods if a cleanup level greater than background is proposed. Until a background level is developed in accordance with the above-referenced regulations the RWQCB must continue to hold Olin to a cleanup level of background, that is, 1.4 micrograms per liter (ug/L) as defined by the RWQCB in their October 6, 2006 letter to Olin. The technical and economic feasibility of cleanup to background was addressed in the WorleyParsons Komex comment letter of January 19, 2007 (Attachment B).

c) Resolution Number 92-49 specifies the conditions under which a cleanup level other than background can be proposed, as summarized in the RWQCB October 6, 2006 comment letter. A key condition is that the proposed cleanup level be the lowest concentration technically and economically achievable. The Workplan contains no technical or economic justification for the proposed 6 ug/L cleanup level, since the FS showed that cleanup to less than 2 ug/L was both technically and economically feasible.

Detailed comments specifically related to the Workplan are provided below.

a) The Workplan fails to acknowledge or address the ongoing occurrence of perchlorate in the Deep Aquifer in the area northeast of the Olin Site, which is impacting operating water supply wells of the City of Morgan Hill. Groundwater impacts in this area due to the Olin Site are well documented for several consecutive quarters. None of the Priority Zone B or C monitored attenuation (MA) performance monitoring wells listed in Table 4.1 of the Workplan in either the Intermediate or Deep Aquifer zones are located within 2,500 feet south of the Site, let alone north or east of the Olin Site. Moreover, as shown in Cleanup Workplan Figure 4.4, the nearest Deep Aquifer zone MA performance monitoring well is 6,700 feet south of the Olin Site, at MP-21/MW-21. The Workplan by Olin for Priority Zones B and C must address cleanup of impacted groundwater east, north, and northeast of the Olin Site, which it fails to do; and, at the very least, provide a detailed MA performance monitoring program for these areas, as well as other areas, in closer proximity to the Olin site than 2,500 feet away, and definitely closer than 6,700 feet in the Deep Aquifer zone.

b) Olin states that "…declining concentrations due to overall attenuation should follow an exponential decay curve over long periods of monitoring…". (Workplan p 2-11). However, Olin presents no data from the Llagas Subbasin to validate the proposed first-order decay model or to support either the length of time expected to either reach the cleanup goal or asymptotic leveling off at some concentration other than the cleanup goal. Such assertions require some demonstration of validity. In fact, the existing data seem to indicate otherwise. High levels of perchlorate in Zone I groundwater persist downgradient of the active on-Site source zone soil and groundwater remediation that has be ongoing for over three years (since February 2004), contradicting Olin's contention of rapid perchlorate attenuation downgradient of active remediation. Evaluation of concentration trends in monitoring wells, discussed in the FS (Appendix C) indicated that more than two-

thirds of wells do not show a decreasing trend in perchlorate concentrations. Consequently, it appears that dilution and dispersion are, in fact, not actively reducing perchlorate concentrations and that natural attenuation of the perchlorate plume in the B and C zones is likely to be a very long-term proposition. Consequently, the technically and economically feasible option of active groundwater extraction and treatment should be implemented for B and C zone remediation.

c) Olin suggests that biological degradation of perchlorate will be a significant attenuation mechanism in the Deep Aquifer. Olin notes that such degradation would coincide with dentrification and would be mediated by the same facultative anaerobic bacteria (Workplan p 2-12 and 4-16 to 19). However, Olin has again provided no evidence to support the contention that dentrification or perchlorate reduction is occurring in the Deep Aquifer. And again, as noted above, in fact, Olin's own data show that nitrate concentrations in the Deep Aquifer downgradient of the Site are nearly everywhere in excess of 20 milligrams per litre (mg/L). Similarly, perchlorate concentrations above the public health goal (PHG) are observed extensively in the Deep Aquifer downgradient of the site. Both of these facts clearly suggest that neither dentrification nor perchlorate reduction are occurring to any appreciable extent in the Deep Aquifer zone downgradient of the Site. The mere absence of high nitrate concentrations in the Deep Aquifer at a few isolated locations is certainly no evidence of dentrification, since it cannot be demonstrated that nitrate was ever present in groundwater at these locations.

   Olin also proposes to analyze groundwater samples for the presence of bacteria capable of degrading perchlorate. However, the presence of bacteria that can degrade nitrate or perchlorate will not be evidence that either dentrification or perchlorate reduction are occurring since these facultative anaerobic bacteria can also use dissolved oxygen as their terminal electron acceptor and are commonly found under aerobic conditions that do not support dentrification or perchlorate reduction. Under the groundwater conditions present in the Llagas Subbasin, perchlorate must be considered as a persistent contaminant. Consequently, active remediation, including groundwater extraction and treatment, should be conducted by Olin in all priority zone, including the B and C zones.

SECOND QUARTER 2007 GROUNDWATER MONITORING REPORT

The Q2 Report, like other recent Olin groundwater monitoring reports, does not include a detailed discussion of northeast flow conditions or perchlorate distribution. Northeast flow data are provided in Appendix C, with the exception of Figures 3.20 and 3.21 in the body of the report. Major comments on the Q2 Report are as follows:

a) Like previous groundwater monitoring reports, the Q2 Report does not provide an integrated interpretation of perchlorate data in groundwater in the area beneath the Site and to the northeast of the Site. This deficiency remains in spite of the fact that eight Deep Aquifer monitoring wells north of Tennant Avenue had perchlorate concentrations above 4 ug/L during the second quarter 2007. Also, the consistently northward component of flow in the Middle Deep Aquifer and the continuous presence of elevated perchlorate concentrations from the Olin site to the northernmost extent of instrumentation are irrefutable evidence of a

contiguous plume of perchlorate from the Site to the northeast, including several of the City's wells. Olin's mapping of the perchlorate distribution in the Deep Aquifer zone continues to show northeast perchlorate detections as isolated occurrences, detached from the main perchlorate plume emanating from the Site. Absolutely no rational explanation has been provided by Olin for such contouring of the data. It is noteworthy, however, that in the Q2 Report Figure 3.24 for the first time Olin's mapping of the Deep Aquifer perchlorate plume encompasses location PZ-02, located northeast of the Site.

b) For the eighth consecutive quarter (third quarter 2005 to second quarter 2007) there is a consistent northerly component of groundwater flow in the area northeast of the Olin Site, as reflected in the hydraulic gradient measured between the triad of piezometers PZ-02-315, PZ-01-333 and PZ-03-325. The start-up of the Nordstrom Well in early May 2007 was accompanied by a 10 degree northerly shift in groundwater flow direction that persisted for the remainder of the data record.

Second Quarter 2007 Report Detailed Comments

a) As shown in Q2 Report Figure 3.21, groundwater flow directions between the triad of piezometers PZ-02-315, PZ-01-333 and PZ-03-325 through April 2007, with the Nordstrom well off-line, was northwestward (approximately N55ºW) when City wells were pumping, and westward (N70ºW to N90ºW) when the wells were off, reflecting the typical daily pumping cycle of the City's wells. With the start-up of the Nordstrom Well in early May (approximately May 3) there was an immediate shift in groundwater flow direction of approximately 10 degrees to the north, resulting in a groundwater flow direction of N45ºW, which was maintained for the duration of recorded data (to approximately June 19, 2007). As in the previous seven quarters (third quarter 2005 to first quarter 2007), there is no indication of a southerly component to groundwater flow in the Middle Deep Aquifer zone represented by this triad of piezometers.

b) The recently-installed PZ-05-390, in the Lower Deep Aquifer, located approximately 1,000 feet northeast of location PZ-04 (1,500 feet east of the Site), recorded a perchlorate concentration of 22 ug/L in first quarter 2007 and 14 ug/L in second quarter 2007. This piezometer was intended to provide lateral delineation of the perchlorate plume from the Site in the Deep Aquifer zone to the east; however, clearly lateral delineation in the Lower Deep Aquifer zone is incomplete. Moreover, perchlorate concentrations in three northeast monitoring well/piezometer locations (MP-02/PZ-02, MP-03/PZ-03, MP-04/PZ-04) again in the second quarter 2007 show Deep Aquifer zone perchlorate concentrations above 4 ug/L. Confirmed perchlorate concentrations greater than 4 ug/L have now been noted over consecutive quarters in several of these wells, including:

   I. At MP-02/PZ-02: PZ-02-315 (5 quarters); PZ-02-415 (5 quarters);

   II. At MP-03/PZ-03: PZ-03-427 (5 quarters); and

   III. At MP-04/PZ-04: MP-04-273 (5 quarters).

The most recent sampling data in the Deep Aquifer zone confirms the presence of a significant perchlorate plume to the northeast and east of the Olin Site. The lateral extent of this perchlorate plume beyond these wells is not delineated. Clearly, additional delineation by Olin of the perchlorate plume in the Deep Aquifer zone northeast and east of the Site is required.

c) The trend analysis for perchlorate in the Deep Aquifer does not appear to have been thoroughly analyzed by Olin, at least in terms of their mapping of perchlorate trends in the Deep Aquifer shown in Figure 3.27. In the Q2 Report, Olin makes reference to the Mann-Kendall analysis of trend only for domestic wells. There is no reference to the Mann-Kendall analysis for their own monitoring wells. This oversight is not acceptable since reliable data for the Deep Aquifer zone are almost entirely from Olin's monitoring wells, not domestic wells. The mapping of perchlorate trend in the Deep Aquifer (Figure 3.27) does appear to show data points corresponding to selected monitoring wells, however if this is the case, the related trend analysis is completely undocumented in the Q2 Report.

The following 21 monitoring wells meet Olin's criteria for Mann-Kendall analysis (greater than four samples with at least half the results above the reporting limit of 4 ug/L) and yet do not appear to have been plotted by Olin on Figure 3.27 or otherwise discussed by Olin in the Q2 Report (note: in parentheses, number of detections > 4 ug/L / number of samples):

Deep Aquifer - Upper

- MP-02-255 (3/7)
- MP-17-217 (9/9)
- MP-21-278 (6/8)
- MP-52-273 (6/6)
- MW-04B (7/8)
- MW-05B (4/9)
- MW-53-195 (6/6)
- MW-53-264 (6/6)

Deep Aquifer - Middle

- MP-21-295 (6/8)
- MP-52-295 (6/6)
- MW-04C (8/8)
- MW-05C (8/8)
- MW-16-328 (8/8)
- MW-16-363 (7/7)

- MW-21-332 (7/7)
- MW-52-347 (7/7)
- PZ-02-315 (5/6)

Deep Aquifer -Lower

- MW-52-403 (7/7)
- MW-54-400 (5/5)
- PZ-02-415 (5/8)
- PZ-03-427 (6/8)

Moreover, Olin overstates the results of the trend analysis in section 3.2.3, which states, "The number of wells in each quarter with the most recent concentrations between 4.0 and 6.0 ug/L has fluctuated since 2004, but since Second Quarter 2005 has steadily declined..." In fact, the chart embedded in this section of the Q2 Report shows that since the second quarter of 2005, the number of wells in the concentration range increased from the previous quarter four times, and decreased four times. This hardly constitutes a "steady decline". If anything, the data indicate a stable trend since 293 wells were in this range in the second quarter 2007, compared to 248 in third quarter 2005.

d) Olin proposes to eliminate a large number of monitoring wells from their sampling program, notably wells completed in the Deep Aquifer Zone, as listed in Q2 report Table 3.8. Ironically, the Deep Aquifer zone is the least well understood unit in the Llagas Basin, and is the focus of ongoing characterization activities by Olin that seem to show a greater than expected extent of perchlorate impact with each new installation. In the Lower Deep Aquifer zone, the perchlorate plume is undelineated in all directions, except possibly between sites MW-54 and MW-26, 15,000 feet downgradient of the Site. Yet Olin proposes to eliminate the two Lower Deep Aquifer monitoring wells at MW-26 from the sampling program, even though they are directly downgradient of the perchlorate plume at site MW-54 (12 ug/L) and along the center line of the plume.

   The wells proposed for elimination have generally shown low perchlorate detections or have been non-detect for perchlorate. However, these wells should be retained for the following reasons:

   I. These low concentration and non-detect wells provide important vertical and/or lateral delineation of the perchlorate plume in the Deep Aquifer zone (as illustrated above);

   II. Groundwater extraction for the interim remediation program planned by Olin may case groundwater flow patterns to shift and result in a vertical and/or lateral shift in impacted zones in the Deep Aquifer. These wells could provide valuable information on these potential changes in plume distribution;

III. Ongoing sampling could provide information on the breakthrough of perchlorate contamination in areas not previously impacted at a significant level; and

IV. Two of the wells Olin proposes to remove from the sampling program are vertical control wells that are indicated in Table 4.1 of the Workplan as required for performance monitoring (MP-44-278 and MW-54-500).

In addition, in the absence of a well-documented trend analysis of perchlorate in monitoring wells, there is no way of knowing which of these wells might be located downgradient of a well with increasing perchlorate trend, and therefore well-suited to monitoring of the breakthrough arrival of perchlorate. Therefore, all of the proposed Deep Aquifer zone monitoring wells should be retained for regular quarterly sampling.

CLOSING

WorleyParsons Komex hopes this review is helpful to the RWQCB in your ongoing efforts to cleanup perchlorate released from the Olin Site. We are at your disposal to discuss any of the comments above. If you have any questions or need additional information please call Mark Trudell at 310 547-6357, or by e-mail at mark.trudell@worleyparsons.com.

Sincerely,
WorleyParsons Komex

Mark Trudell, Ph.D., PG, CHG.
Principal Hydrogeologist

Ralph Beck, PG
Project Director

enc.

cc: Mr. Jim Ashcraft, City of Morgan Hill
Mr. Steven Hoch, Hatch and Parent

REFERENCES

MACTEC Engineering and Consulting, Inc. (MACTEC), 2006a. Llagas Subbasin Cleanup Feasibility Study - Revised for the Olin property at 425 Tennant Avenue, Morgan Hill, California. December 6, 2006

Regional Water Quality Control Board Central Coast Region (RWQCB), 2006 Letter from Roger W. Briggs, Executive Officer, Water Board, Central Coast Region to Richard W. McClure, Olin Corporation: SLIC: 425 Tennant Ave. Morgan Hill; Llagas Subbasin Cleanup Feasibility Study. October 6, 2006.

WorleyParsons Komex 2007. Review of Olin Corporation December 6, 2006 Llagas Subbasin Cleanup Feasibility Report - Revised. Letter to Hector Hernandez, RWQCB. January 19, 2007.

ATTACHMENT A
CITED OLIN REPORT FIGURES

CLEANUP WORKPLAN FIGURES

N

0 4,000 Feet

SITE

AREA I

AREA II

AREA III

AREA IV

MORGAN HILL

SAN MARTIN

GILROY

MP-21-278
MP-21-295
MW-21-332

10S03E02H003

10S03E01M002

MW-54-260
MW-54-333
MW-54-400
MW-54-500

10S03E12B001

10S03E11F010

10S03E11H001

MP-26-215
MP-26-242
MP-26-295
MW-26-415

MP-29-242
MP-29-292

10S04E18H018

10S04E18B017

MP-51-213
MP-51-272
MW-51-320

MP-35-255
MW-35-318

10S04E19H003

10S04E19K006

10S04E20E004

10S04E29C001

MP-40-272
MW-40-365

MP-44-211
MP-44-278
MW-44-375

10S04E33P003

Condit Rd
Main Ave
Central Ave
Diana Ave
Oakridge
Dunne Ave
Murphy Ave
Carey Ave
Barrett Ave
San Pedro Ave
Tennant Ave
Hill Rd
Foothill Ave
Maple Ave
Paseo Vista Ave
Paseo Robles Ave
Fisher Ave
Middle Ave
Columbet Ave
Center Ave
Coyote Reservoir Rd
COYOTE RESERVOIR
Gwinn Ave
Coyote Lake Rd
Sycamore Ave
Lena Ave
Masten Ave
New Ave
Roop Rd
Dryden Ave
Leavesley Rd
Dunlap Ave
Furlong Ave
Gilman Rd
Holsclaw Rd
Pacheco Pass Hwy
Monterey Rd
Luchessa Ave
Maycock Rd
Day Rd
Salem Ave
Burchell Rd
Welburn Ave
Kern Ave
Wren Ave
Miller Ave
Rd
101

EXPLANATION

- DEDICATED MONITORING WELL LOCATION
- WELL LOCATION (WITH CONSTRUCTION DATA)

Perchlorate concentrations are based on analytical results from First Quarter 2007. Color-filled contours represent maximum extent of concentrations derived from two-dimensional aquifer-specific interpolations.

PERCHLORATE RESULTS (ug/L)

- 4.0 TO 6.0
- 6.1 TO 11 (PRIORITY ZONE C)
- 11.1 TO 24.5 (PRIORITY ZONE B)
- 24.6 AND GREATER (PRIORITY ZONE A)

DRAWN: GFA	PROJECT NO: 6100070002 09.05
ENGINEER:	SCALE: AS SHOWN
CHECKED: KDC	DATE: 05/2007
APPROVED: MDT	DATE: 6-15-07

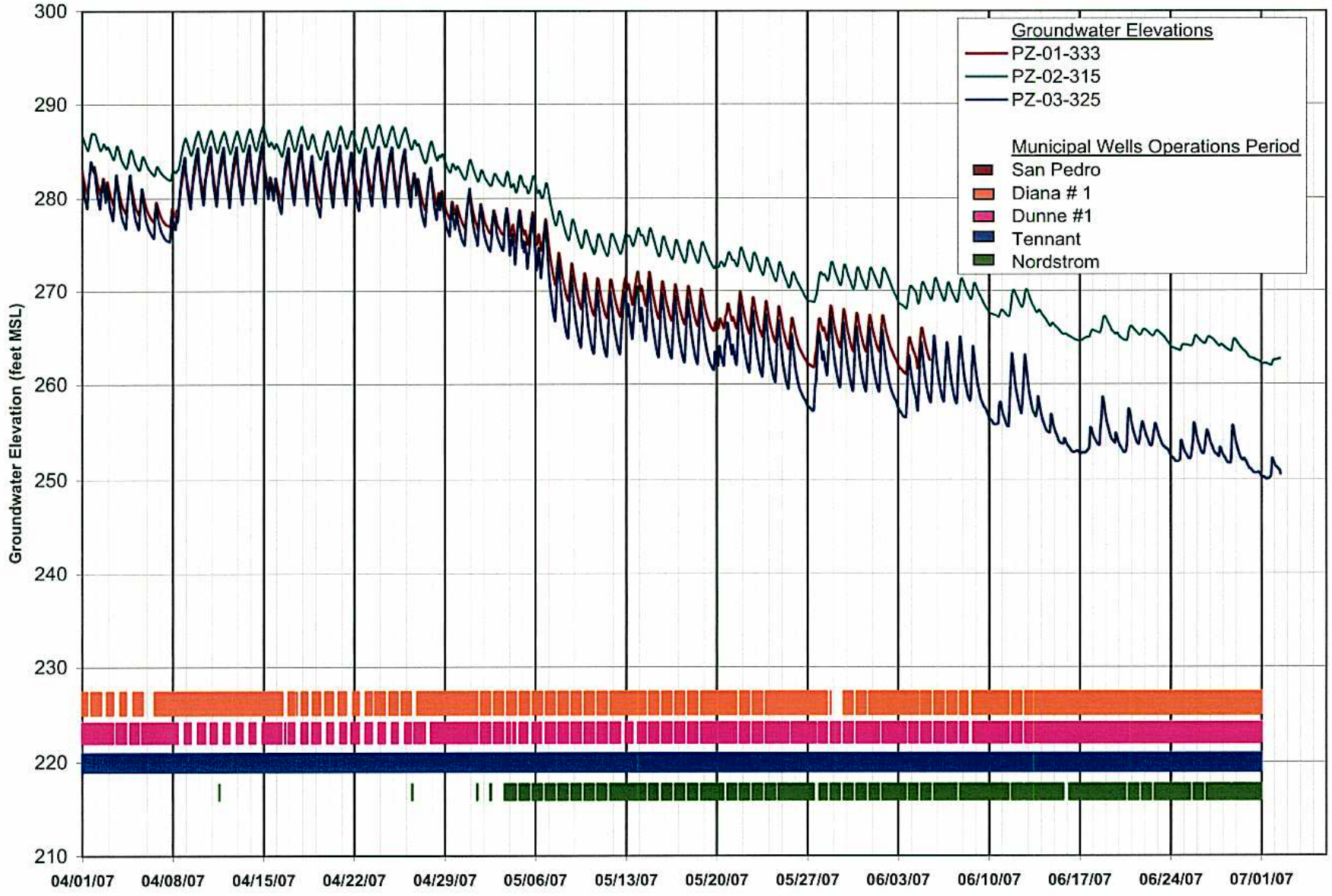
MACTEC Geosyntec consultants

Monitored Attenuation Network - Deep Aquifer
Llagas Subbasin Cleanup Work Plan
Olin/Standard Fusee Site
Morgan Hill, California

FIGURE
4.4

Figure4-4_deep.mxd - 6/14/07

SECOND QUARTER 2007 REPORT FIGURES



MACTEC

Piezometer Hydrographs and Municipal Well Operations

Second Quarter 2007 Groundwater Monitoring Report
Olin/Standard Fusee Site
Morgan Hill, California

FIGURE **3.20**

DRAWN BY	JOB NUMBER	CHECKED	CHECKED DATE	APPROVED	APPROVED DATE
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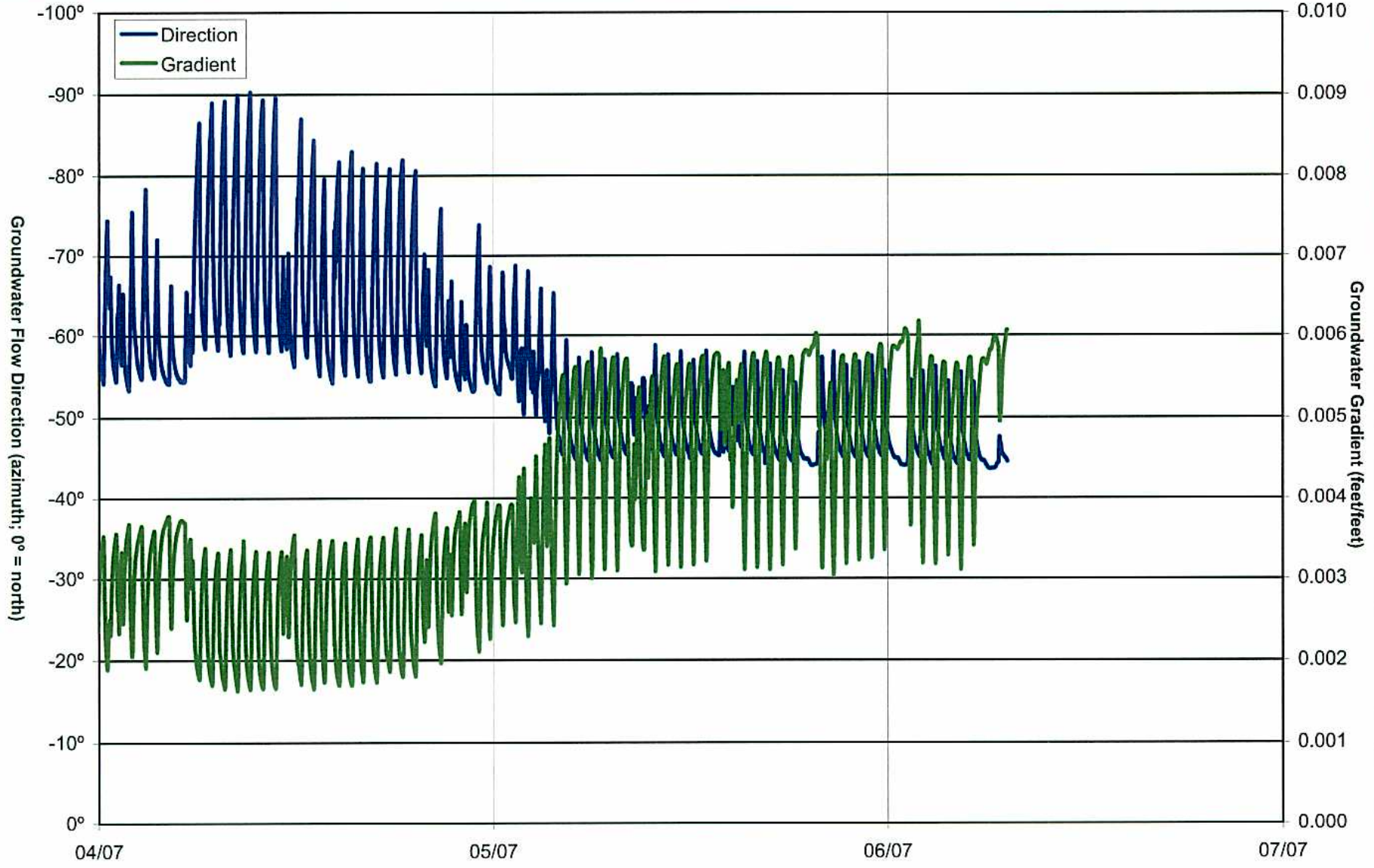

MACTEC

Groundwater Flow Direction and Gradients
Middle Deep Aquifer (Second Quarter 2007)
Second Quarter 2007 Groundwter Monitoring Report
Olin/Standard Fusee Site
Morgan Hill, California

FIGURE
3.21

DRAWN BY	JOB NUMBER	CHECKED	CHECKED DATE	APPROVED	APPROVED DATE
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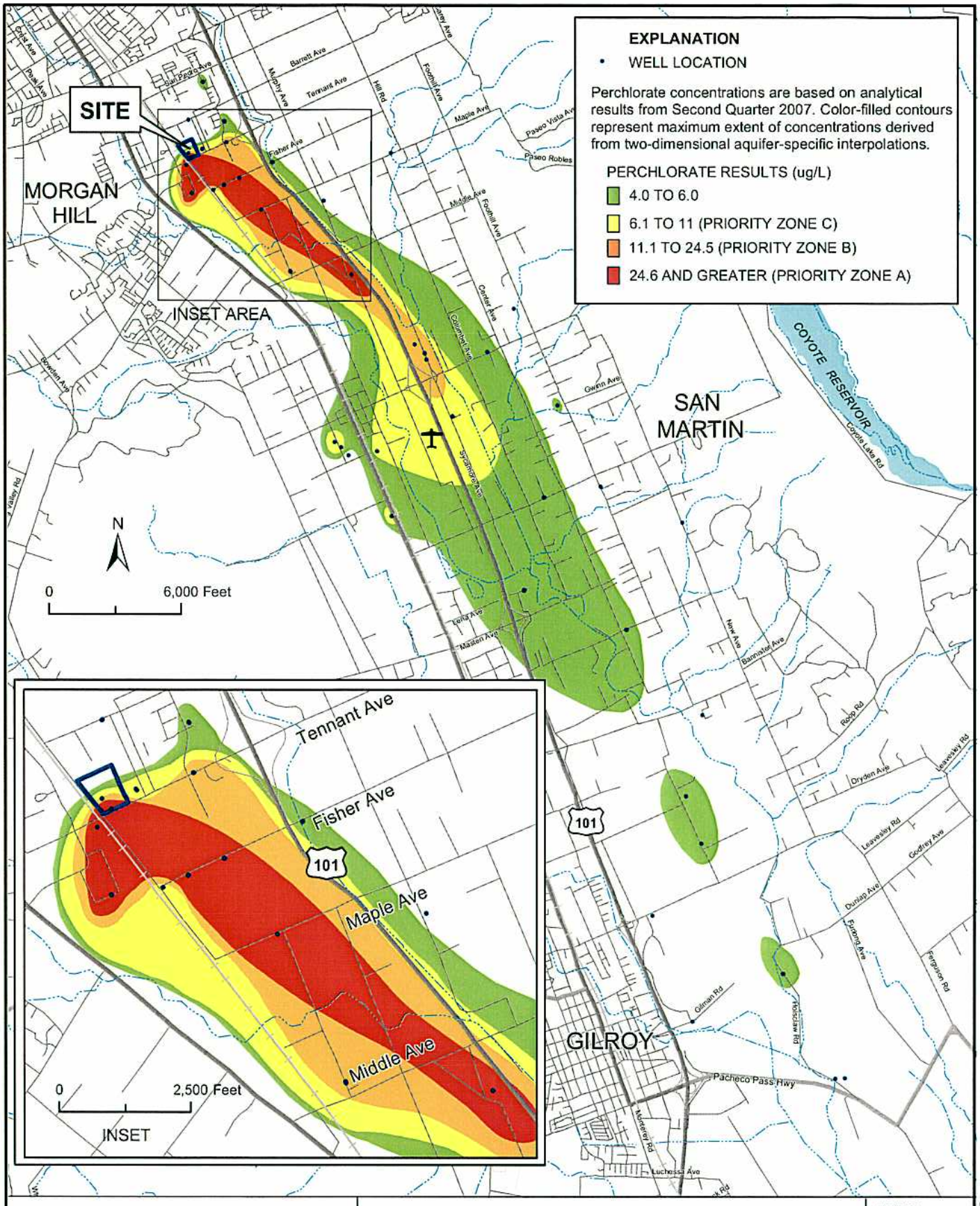


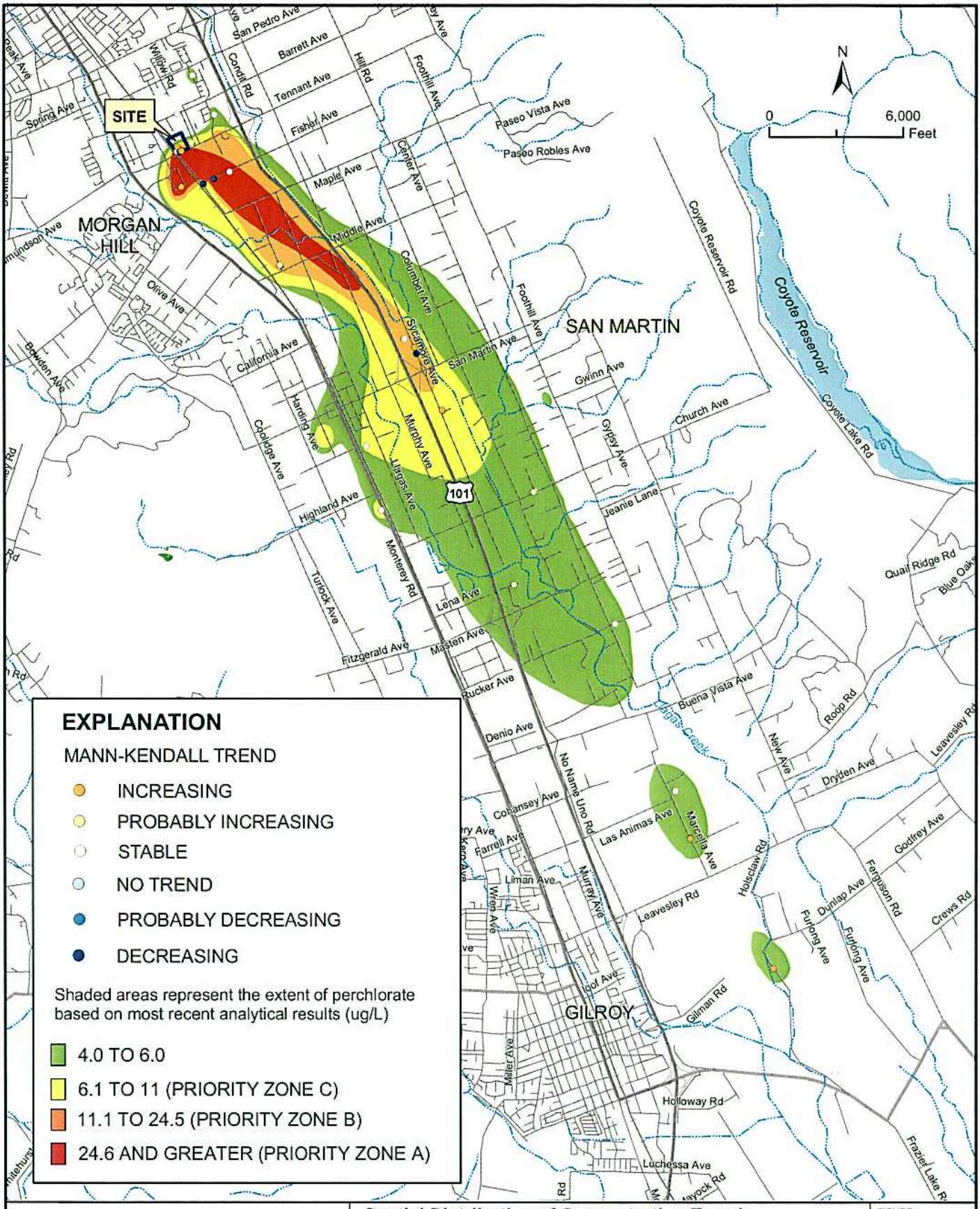
MACTEC

Perchlorate Results - Deep Aquifer
Second Quarter 2007 Groundwater Monitoring Report
Olin/Standard Fusee Site
Morgan Hill, California

FIGURE
3.24

DRAWN	JOB NUMBER	CHECKED	CHECKED DATE	APPROVED	APPROVED DATE
TJH	6100070002 09.06		7/2007		

Figure3-24.mxd - 7/25/07



EXPLANATION

MANN-KENDALL TREND

- INCREASING
- PROBABLY INCREASING
- STABLE
- NO TREND
- PROBABLY DECREASING
- DECREASING

Shaded areas represent the extent of perchlorate based on most recent analytical results (ug/L)

- 4.0 TO 6.0
- 6.1 TO 11 (PRIORITY ZONE C)
- 11.1 TO 24.5 (PRIORITY ZONE B)
- 24.6 AND GREATER (PRIORITY ZONE A)

MACTEC

Spatial Distribution of Concentration Trends
Deep Aquifer
Second Quarter 2007 Groundwater Monitoring Report
Olin/Standard Fusee Site
Morgan Hill, California

FIGURE
3.27

DRAWN	JOB NUMBER	CHECKED	CHECKED DATE	APPROVED	APPROVED DATE
GFA	6100070002 09.06	GB	7/2007	SKP	7/07

Figure3.27.mxd - 7/23/07

ATTACHMENT B

WORLEYPARSONS KOMEX JANUARY 19, 2007 COMMENT LETTER ON LLAGAS SUBBASIN CLEANUP FEASIBILITY STUDY - REVISED

(Text Only)

WorleyParsons Komex
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19 January 2007

Proj. No.: H0562C
File Loc.: Westminster

California Regional Water Quality Control Board
Central Coast Region
895 Aero Vista Drive, Suite 101
San Luis Obispo, CA 93401

Dear Mr. Hernandez:

RE: REVIEW OF OLIN CORPORATION DECEMBER 6, 2006 LLAGAS SUBBASIN CLEANUP FEASIBILITY STUDY - REVISED

On behalf of the City of Morgan Hill (the City), WorleyParsons Komex has reviewed the Olin Corporation (Olin) December 6, 2006 Report, "Llagas Subbasin Cleanup Feasibility Study - Revised" (the FS Report) for the Olin property at 425 Tennant Avenue, Morgan Hill, California (the Site), submitted to the Central Coast Regional Water Quality Control Board (RWQCB).

The FS Report is a revision of an earlier feasibility study report, the June 30, 2006 "Llagas Subbasin Cleanup Feasibility Study Report, Olin/Standard Fusee Site, 425 Tennant Avenue, Morgan Hill, California" (MACTEC 2006a; June 30th FS Report). Both reports result from a sequence of regulatory directives, particularly the March 10, 2005 RWQCB Cleanup and Abatement Order R3-2005-0014 [2005 CAO] Ordering Paragraph J. RWQCB comments on the June 30th FS Report were documented in October 6, 2006 correspondence to Olin (RWQCB 2006a). Previously, RWQCB also provided comments to Olin on their January 31, 2006 Cleanup Level Report (MACTEC 2006b) in a letter dated March 2, 2006 (RWQCB 2006b). Consequently, the current FS report is expected to address the comments and requirements provided in the March 2, 2006 and October 6, 2006 letters from RWQCB to Olin.

1. OUTSTANDING DEFICIENCIES

WorleyParsons Komex on behalf of the City of Morgan Hill provided detailed comments on the June 30th FS report in a letter to RWQCB dated July 24, 2006 (WorleyParsons Komex 2006a). While the revised FS report addresses some of the deficiencies noted by the City in the July 24, 2006 comment letter, there are many deficiencies that this current FS does not address. However, we will not reiterate our comments at this time, other than to summarize outstanding concerns:

a) Background perchlorate levels in the Llagas Subbasin still have not been determined by Olin, by either the process for determination of background concentration of contaminants under California Code of Regulations [CCR] Title 23, Division 3, Chapter 15 Sections

2550.4 and 2550.7, or CCR Title 27, Division 2, Subdivision 1, Chapter 3, Subchapter 3, Article 1 Section 20400 as required by the RWQCB in their October 6, 2006 comment letter. The RWQCB has been very explicit in asking that this be accomplished.

b) State Water Resources Control Board (SWRCB) Resolution Number 92-49 requires that background concentrations be determined in accordance with the above methods if a cleanup level greater than background is proposed. Until a background level is developed in accordance with the above-referenced regulations the RWQCB must continue to hold Olin to a cleanup level of background, that is, 1.4 micrograms per liter (ug/L) as defined by the RWQCB in their October 6, 2006 letter to Olin.

c) Resolution Number 92-49 specifies the conditions under which a cleanup level other than background can be proposed, as summarized in the RWQCB October 6, 2006 comment letter, and also summarized in the FS Report Section 4 (p. 4-1 and 4-2). A key condition is that the proposed cleanup level be the lowest concentration technically and economically achievable. The FS Report once again does not provide any technical or economic justification for the proposed 6 ug/L cleanup level, since the FS Report shows that cleanup to less than 2 ug/L (Olin's proxy for background) is both technically and economically feasible.

In addition to these outstanding concerns, we note that many of the comments raised in the RWQCB October 6, 2006 letter have also not been addressed in the current FS Report as would have been expected; however, we will defer to the RWQCB for their comments on such deficiencies. The general and specific technical comments from our review of the current FS Report are discussed below.

2. DEFICIENCIES OF REVISED FS REPORT

Overall, the revised FS Report does not meet the requirements of the March 10, 2005 CAO Ordering Paragraph J, or clarifying conditions raised in the October 6, 2006 RWQCB Comment letter. Beyond the above-noted issues of undetermined background perchlorate and inappropriate cleanup level, the overriding deficiency of the FS Report is the incomplete and inconsistent evaluation of the technical feasibility of the groundwater extraction/ex-situ treatment option for Priority Zones B and C, and the sub-Public Health Goal (PHG) zone (< 6 ug/L). We note that a separate feasibility study (FS) prepared by GeoSyntec (Zone A FS Report; GeoSyntec, 2006) was submitted on December 6, 2006 by Olin for Priority Zone A; therefore, our comments below on Zone A cleanup are at present limited, and will be presented in more detail in our review of the Zone A FS Report. Please note that while we have reviewed some aspects of the groundwater flow and solute transport model discussed in Appendix B of the FS Report, detailed review of the model will be deferred until such time as the digital data files are also made available.

Specific comments on the FS Report are:

(a) The FS Report fails to acknowledge or address the ongoing occurrence of perchlorate in the Deep Aquifer in the area northeast of the Olin Site, which is impacting operating water supply wells of the City of Morgan Hill. Groundwater impacts in this area due to the Olin Site are well documented,

particularly with the most recent data from the Third Quarter 2006 Groundwater Monitoring Report submitted by Olin on October 30, 2006 (MACTEC 2006c). Any cleanup feasibility study by Olin should also address impacted groundwater east, north, and northeast of the Olin Site.

(b) Olin states that perchlorate in the Nordstrom Park well "… is unrelated to operations at the former Olin/Standard Fusee facility." (FS Report p. 5-5), with reference to the Olin Llagas Subbasin Characterization Report of March 29, 2006 (MACTEC 2006d). Although substantial evidence existed at the time of the March 29, 2006 report that the Olin Site was the source of perchlorate, additional data collected by Olin in 2006 has provided irrefutable evidence of northerly groundwater flow in the Middle and Lower Deep Aquifer zones from the Olin site toward the Nordstrom well, and extremely strong evidence that there is a continuous plume of perchlorate that extends from the Site to at least the Nordstrom well. These facts and findings are described in detail in our November 22, 2006 review comments on Olin's Third Quarter 2006 Groundwater Monitoring Report to RWQCB (WorleyParsons Komex 2006b), so they will not be repeated herein.

(c) Olin states and re-states that groundwater extraction and treatment to the proposed cleanup level for Priority Zones B and C, or to background for sub-PHG areas beyond Zone C, is infeasible because "…groundwater extraction would induce adverse effects to the aquifer, such as local dewatering, pumping well interference, and groundwater quality degradation related to over-pumping." (FS Report p. xv (two occurrences); similar statement also on p xii, 4-8, 4-11, 4-12, 7-10, 7-17), and that "Hydraulic containment and treatment of groundwater with perchlorate greater than the MDL cannot be accomplished without disrupting the operation of existing pumping operations." (FS Report p 4-17). Despite the fact that Olin has developed a sophisticated groundwater flow model that could readily document any such effects, no model results or other calculations are provided to substantiate these claims. For example, no maps of projected drawdown due to groundwater extraction alternatives are presented. Similarly, no projections of remediation-induced drawdown at existing wells are presented in the FS Report. Furthermore, this statement avoids mentioning that Olin proposes that all groundwater extracted for Zone B, C and sub-PHG zone remediation would be simultaneously re-injected into the aquifer, minimizing any long-term or large scale effects of pumping. The model and all necessary files should be provided not only to the RWQCB but to other stakeholders as well, including the City. Further, the City believes that to reach any conclusions without having the opportunity to review the model is counter indicated.

(d) Specifically with respect to groundwater extraction and treatment for the Priority B Zone, Olin states that "Any effort to pump an additional 1,000 AF per year would likely create local pumping interferences that could impact existing groundwater users. As such, …the potential adverse impacts on beneficial uses results in eliminating this alternative for further consideration for this Priority Zone." (FS Report p. 7-10). As noted above, Olin's suggestion of pumping interference due to remediation groundwater extraction is unsubstantiated by information provided in the FS Report, and represents nothing more than conjecture. Moreover, Olin notes that " annual demands by the water systems operated in the cites of Morgan Hill and Gilroy are currently about 15,000 acre-feet per year…" (FS Report p 6-2,3). The relatively small amount of 1,000 acre-feet per year of treated water from groundwater extraction in Priority Zone B could easily be used to replace some of the above-noted municipal pumping, with no little or effect on groundwater resources of existing groundwater users.

In the absence of substantiation of any adverse effects on groundwater resources due to groundwater extraction to background levels, we must conclude that there is *no* technical basis to propose a cleanup level greater than background, as required by Resolution 92-49 and Resolution 68-16 (Anti Degradation Policy). The cleanup goal of 6 ug/L proposed by Olin represents a degradation of groundwater in the Llagas Subbasin and is, therefore, not acceptable to the City nor should it be to the RWQCB as set forth in the October 6, 2006 RWQCB letter, that the proposed 6 ug/L cleanup level is "… clearly inconsistent with the State' Water Board's anti-degradation policy (Resolution no. 68-16)."

(e) As part of their explanation for establishing a cleanup level higher than background under the conditions of Resolution No. 92-49, Olin states that "Concentrations above background in groundwater will rapidly attenuate downgradient from areas of active remedial solutions" (FS Report p. 4-10). However, no technical basis to support this highly optimistic forecast is presented in the FS Report. Clearly, high levels of perchlorate in Zone I groundwater persist downgradient of the active on-Site soil and groundwater remediation that has be ongoing for nearly three years (since February 2004; FS Report p 5-1), contradicting Olin's contention of rapid perchlorate attenuation downgradient of active remediation.

(f) With reference to cleanup levels at the UTC site, Olin states that "Resolution 92-49 requires that Water Boards be consistent in comparable cases and thus the PHG, as approved for the UTC site, … should also apply in the case of the Olin Site." (FS Report p 4-19, 20). We note that Order No. R2-2004-0032 (included with this letter as Attachment A) for the UTC site from the San Francisco Bay Regional Water Quality Control Board specifies a cleanup level of 6 ug/L (PHG) for <u>on-Site water</u> (both groundwater and surface water), however the same order also specifies the following prohibition:

> "Specifically, no detectable concentrations of contaminants shall be allowed in surface waters or underflow at or beyond the property boundary…".

As explained by Keith Roberson, the San Francisco Bay Regional Water Quality Control Board regulator assigned to the UTC case, this prohibition restricts perchlorate in off-site groundwater to non-detect with respect to the analytical method detection limit (personal communication, January 17, 2007). We do not concur with Olin on this point, and conclude that it is unreasonable for RWQCB to apply these same standards to the Olin on- Site clean up level. The UTC site is huge, many times the size of the Olin Site. It is in a relatively remote area that is still largely undeveloped. The Olin site, in contrast, is small and situated in the middle of a populated area. and has already degraded water quality in the Llagas Basin that serves thousands of people with drinking water. As for off-Site cleanup level, it is reasonable that the two sites should be treated the same, that is, an off-Site prohibition of perchlorate concentrations in groundwater greater than the MDL of EPA Method 314, (i.e., 1.4 ug/L) as noted by RWQCB (October 6, 2006).

(g) Olin's reliance on dilution and dispersion as dominant mechanisms allowing the feasibility of the Monitored Attenuation (MA) option may be based on optimistic expectations. Olin counts on appreciable dilution from anthropogenic recharge from the Madrone, San Pedro and other recharge ponds operated by the Santa Clara Valley Water District (SCVWD). For example, with respect to

reduction of perchlorate mass flux between Area I and Area II, Olin state that dilution of 40 to 60 % imported water between Area I and II is anticipated, and thus the "…additional source of water from the percolation ponds thus results in a reduction in perchlorate concentration" (FS Report p 3.14). Beyond this, the map of percentage pond recharge water in the Intermediate Aquifer (FS Report Figure 3.9) clearly shows that the calculated percentage of pond water in the vicinity of the plume core in Area I is much closer to 30 % or less.

Moreover, even this magnitude of dilution may be optimistic for three reasons:

(1) the main SCVWD recharge ponds are located well to the east of the Olin site and the Area I plume, and the dominant flow direction in the Shallow and Intermediate aquifers in this area is to the southeast, as shown in FS Report figures 3.2 and 3.3. Consequently, considering the likely dominance of advection as a plume migration mechanism in the Llagas subbasin, and the probable pathlines or "streamtubes" to be followed by the recharge water, it is unlikely that significant transverse lateral mixing of the recharge water and the Area I plume would occur. This could easily be demonstrated through particle tracking and solute transport modeling with Olin's groundwater model, but no such simulations were run.

(2) Evaluation of concentration trends in monitoring wells, discussed in FS Report Appendix C, indicates that over two-thirds of wells do not show a decreasing trend in perchlorate concentrations. Consequently, dilution and dispersion are not actively reducing concentrations.

(3) The development of a thin, 10-mile long plume from the Olin site suggests that advection is the dominant transport mechanism, and dilution and dispersion are not effective mechanisms for long-term reduction of perchlorate concentrations.

(h) Olin suggests that dentrification is occurring in the Deep Aquifer and the corresponding occurrence of biological reduction of perchlorate is an operational mechanism for perchlorate attenuation in the Llagas Subbasin (FS Report p 3-13 and 4-16). Other than the absence of high nitrate concentrations in some portions of the Deep Aquifer, there is *no* evidence to support the contention that dentrification or perchlorate reduction is occurring in the Deep Aquifer. In fact Figure 3-13 shows that nitrate concentrations in the Deep Aquifer downgradient of the Site are nearly everywhere in excess of 20 mg/L; similarly, perchlorate concentrations above the PHG are observed extensively in the Deep Aquifer downgradient of the site, as shown in Figure 3-18. Both of these facts clearly suggest that neither dentrification nor perchlorate reduction are occurring to any appreciable extent in the Deep Aquifer zone downgradient of the Site. This observation contradicts Olin's statement that, in part due to biological reduction of perchlorate, "… perchlorate concentrations above the hypothetical background would not persist in the presence of these attenuation processes." (FS Report p 4-16). Under the groundwater conditions present in the Llagas Subbasin, perchlorate must be considered as a persistent contaminant and, therefore, Olin's supposition is inapposite to the requirements with respect to persistence and permanence of effects for establishing an alternate cleanup level under Resolution No. 92-49.

(i) The groundwater flow and transport model used to evaluate various remediation alternatives including capture zones, groundwater extraction rates and cleanup times, is partially documented in FS Report Appendix B. Numerous deficiencies and errors in the modeling are evident from initial review of Appendix B,. The documentation is very incomplete, particularly in terms of calibration (both flow and transport) and sensitivity analysis. As noted above, a thorough review of the Olin groundwater model will be provided at later time, once the model files have been made available.

(j) Olin's analysis of remedial alternatives and scoring of those alternatives in Section 7 of the FS Report contains several inconsistencies which act to bias the ranking of the alternatives. Some of the inconsistencies are within FS Report Table 7.1 itself, whereas other are evident when the scores present in FS Report Table 7.2 are compared against the criteria analysis in FS Report Table 7.1. The issues of concern relate primarily to the analysis and ranking of Alternatives 2 (MA) and 3 (Groundwater extraction/treatment) for Priority Zones B and C. To illustrate theses inconsistencies, the relevant portions of FS Report Tables 7.1 and 7.2 are combined and reproduced in the attached Table 1. Although some differences in scoring between Zone B and C should be expected for a given Alternative and Criterion, generally the scoring should be consistent with the analysis provided.

(i) For example, in FS Report Table 7.1, the analysis of the criterion, "Reduction of Toxicity, Mobility, Volume" for Priority Zone B, Alterative 3, is given as "Significant reduction of toxicity, mobility, and volume in treatment area", whereas the analysis for this same criteria for priority Zone C is given as "Limited reduction of toxicity, mobility, and volume - due to well head treatment - tracked." Since private wells in both Priority Zones B and C are subject to wellhead treatment, the reason for this discrepancy in analysis appears unsupportable. The analysis and scoring of this criterion for both Zones B and C should be the same. Note that we have no objection to the score assigned (i.e, value of 3); however, the score value should reflect the same or similar analysis. Note that this type of inconsistency is highlighted in Table 1 with cells that are shaded brown.

(ii) Similarly, FS Report Table 1 has several inconsistencies where the different scores are assigned to criteria with the same analysis. For example, for both Priority Zones B and C, Alternative 2, the "Compliance with Regulatory Requirements" criterion analysis is stated as "Does not actively comply with Resolution No. 92-49", yet this criterion is ranked with a value of 4 for Priority Zone B, and 5 for Priority Zone C. It is hard to understand how an alternative that "Does not actively comply with Resolution No. 92-49" can be assigned a score of 5 out of 5, so presumably the scoring of 4 is more appropriate. As another example of this inconsistency, analysis of the "Overall Protection of Human Health and Environment" criterion is given as "Protects human health and environment by reducing mass of perchlorate, and by IX systems on supply wells. High degree of protection" under Alternative 3 for both Priority Zones B and C, yet the criterion is assigned a value of 5 in Zone B, but only 4 in Zone C. Based on the stated analysis, presumably the ranking for both zones should be more appropriately scored as 5. Yet another, more extreme example of this inconsistency is seen under the "Stakeholder Acceptance" criterion for Alternative 3, where the same analysis, "High Stakeholder Acceptance", is scored as 4 for Priority Zone B, but scored as only 2 for Priority Zone C. Again, based on the common analysis, presumably a value of 4 would apply to both zones. Note that this type of inconsistency is highlighted in Table 1 with cells that are shaded blue.

(iii) A third type of scoring inconsistency in FS Report Tables 7.1 and 7.2 are criteria where appreciably different analysis is assigned the same scoring value. For example, for both Priority Zones B and C, the analysis for criterion "Short Term Effectiveness" is given as "Not effective in short term" for Alternative 2, and "Moderate effectiveness in short term" for Alternative 3, yet both are assigned the same score of 3. Presumably, an alternative that is "not effective" should not be scored the same as one that is moderately effective, so a more appropriate scoring might be a value of 3 for moderately effective and a value of 1 or 2 for not effective. Another example of this type of scoring inconsistency is seen for the criterion "Compliance with Regulatory Requirements" in both Priority Zones B and C, which is described as "Does not actively comply with Resolution No. 92-49" for Alternative 2, and "Complies with regulatory requirements" for Alterative 3, yet both are assigned a score of 4. Again, presumably a lower score, perhaps 2 or 3, should be assigned to the alternative that does not comply with regulatory requirements, whereas an alternative the does comply could be assigned a score of perhaps 5. Note that this type of inconsistency is highlighted in Table 1 with cells that are shaded green.

(iv) WorleyParsons Komex undertook a re-scoring of the criteria and alternatives in Table 1 (from FS Report Table 7.1 and 7.2) to make the scores consistent with analysis for each criterion and alterative. The proposed revised scoring is included in Table 1 below Olin's scoring (from FS Report Table 6.1). Note that other than addressing the types of inconsistencies noted above, the proposed revised scoring preserves the integrity of Olin's original scoring. The proposed re-scoring shows that Alternative 3 (Groundwater Extraction/Treatment) ranks higher than Alternative 2 (MA) for both Priority Zones B and C. Consequently, the preferred remedial alternative for both Priority Zones B and C is groundwater extraction and treatment, not monitored attenuation, as scored by Olin.

(k) Olin's projections of cleanup time for remediation Alternatives 1 (Priority Zone A groundwater extraction/treatment) and 3 (Priority Zones B and C, plus sub-PHG groundwater extraction/treatment) are based on simulated concentrations versus time from the groundwater flow and transport model at a very small number of selected locations, corresponding to existing monitoring wells: 5 in the shallow aquifer, and 4 each in the intermediate and deep aquifer, with only one depth per location (FS Report p 7.4, Figures 7.4, 5, 6 (Zone A); p. 7-9, Figures 7.10, 11, 12 (Zone B); p. 7-16, Figures 7.16, 17, 18 (Zone C); and p 7.20, Figures 7.22, 23, 24 (Sub-PHG zone). Based on the information provided in the FS Report, there is no way of knowing how representative these few locations are of overall plume remediation. The four to five selected locations generally include one plume core location situated within or near the core of the plume in Priority Zone A (MW-16 or 17), one location downgradient of Priority Zone B (e.g., MW-21), and two further down-gradient locations located on the western fringe of the plume in the sub-PHG zone (MW-26 and 51). None of these locations appear to be located within Priority Zone B or C; however, this is difficult to distinguish accurately since no map of the extent of these Priority Zones is presented in the FS Report. Consequently, the reliability of Olin's projected cleanup times based on the time-concentration plots from this limited number of locations must be questioned. A far better representation would have numerous additional target locations including a range of geographic and depth locations, focusing on the plume centerline, but also including fringe areas and locations directly downgradient of the plume leading-edge at various concentration levels. In addition, a series of plume maps over a range of

snapshot times (e.g. 2, 5, 10, 15, 20 years) would better show the overall progress of each remedial alternative.

(l) There are numerous inconsistencies between the narrative explanation of remedial alternatives presented in the text of Section 7, the listed quantities presented in the associated tables, and estimated costs presented in Appendix D. For example, Section 7.4.3 presents a narrative explanation of the Alternative 3, Ex Situ treatment of groundwater for Priority Zone C, and references numbers of pumping wells and flow rates presented in Table 7.4, and estimated costs presented in Appendix D, Table D.6. The number of pumping wells for this alternative presented in Table 7.4 is 7 wells, the number of pumping wells presented in Table D.6 is 3 wells. The flow rates for the pumping wells presented in Table 7.4 total 2,200 gallons per minute (gpm). The flow rates for the pumping wells presented in Table D.6 total 600 gpm. With Table D.6 itself, the unit cost for conveyance piping is presented as 100 $/LF under "Assumptions" and the applied at a rate of 200 $/LF under "Capital Costs".

(m) Costs presented in Appendix D were not estimated in a manner consistent with guidance published by the United States Environmental Protection Agency (EPA 2000). EPA has a published guidance document titled, "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study." The document was published in July 2000 and presents EPA policy on use of a discount rate for NPV calculations. The NPV discount rate recommended by the EPA is 7 percent, which has been adjusted to eliminate the effect of expected inflation. The Report uses an escalation rate of 3 percent and a NPV discount rate of 5 percent. As a results, the costs presents in the Report are significantly higher than the EPA would accept. For example, for Priority Zone B, Alternative 3, Ex Situ, the Report estimates a cost of $43.7M (however, there appears to be a calculation error in this item; the correct total cost should be $24.0M). The cost for this alternative using EPA protocol would total $16.8M, a significant difference in either case.

(n) There are numerous instances where insufficient information is provided in Section 7.0 to support the implementability, effectiveness, and cost of the remedial alternatives, let alone support the detailed analysis using the criteria presented in Table 7.1. For example:

- The extraction wells and reinjection wells presented in the cost estimating tables in Appendix D and Table 7.4 are not identified on the figures presented in the report.
- The route of the conveyance piping between the extraction wells and reinjection wells is not identified on the figures presented in the report.
- The size of the storage tanks are not provided.
- The capacities of the components of the ion exchange based treatment system are not provided.
- The basis for the ion exchange resin usage estimate is not provided.
- The basis for pumping costs is not provided.

This information is necessary to validate the costs and related conclusions presented in the report.

(o) Costs presented in Appendix D apply higher percentages for engineering services than EPA recommends. The Report applies a total percentage to the remedial alternative capital cost of 45% for the design, construction management, and project management services. The EPA recommends a total percentage of 17% for the services. Therefore, the Report presents a capital cost for Priority Zone B, Alternative 3, Ex Situ treatment of $9.5M, whereas following EPA guidance would lead to an estimate of $7.9M; a significant difference.

(p) Costs presented in Appendix D use the worst case times projected to achieve cleanup levels, not considering that portions of the aquifers will cleanup sooner than others. For example, Table 7.5 lists times to achieve cleanup goals if Alternative 3, Ex Situ Treatment were implemented in Priority Zone C. The table identifies four well locations each in the shallow, intermediate, and deep aquifers, and the respective times to achieve the cleanup goals at each well location. The times listed in Table 7.5 are from 0 years to 5 years for wells in the shallow aquifer, 0 years to 5 years for wells in the intermediate aquifer, and 1 year to 20 years for wells in the deep aquifer. Only one well location in the deep aquifer is projected to require 20 years to achieve the cleanup goal. The other well locations in the other aquifers are projected to reach the cleanup goal in 5 years or less. However, the cost estimate prepared for the alternative does not take in consideration the fact that portions of the aquifers will cleanup sooner than others. In the case of portions of the aquifer reaching the cleanup goal sooner than others, 7 wells pumping 2,200 gpm from year 5 to year 20 at a cost of $9.5M may not be required. It may only require 1 well pumping 900 gpm from year 5 to year 20 at a significantly lower cost. However, this analysis has not been performed. Therefore, the cost estimates may be excessive.

WorleyParsons Komex hopes this review is helpful to the RWQCB in your ongoing efforts to cleanup perchlorate released from the Olin Site. We are at your disposal to discuss any of the comments above. If you have any questions or need additional information please call Mark Trudell at 714 379-1157, extension 161.

Sincerely,
WorleyParsons Komex

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Steve Winners, PE
Senior Engineer

enc.

cc: Mr. Jim Ashcraft, City of Morgan Hill
Mr. Steven Hoch, Hatch and Parent

REFERENCES

MACTEC Engineering and Consulting, Inc. (MACTEC), 2006a. Llagas Subbasin Cleanup Feasibility Study for the Olin property at 425 Tennant Avenue, Morgan Hill, California. June 30, 2006

MACTEC 2006b. Cleanup Level for Perchlorate in Off-Site Groundwater, 425 Tennant Avenue Site, Morgan Hill, California. January 31.

MACTEC 2006d. Llagas Subbasin Characterization Report, Santa Clara County, Olin/Standard Fusee, Morgan Hill, California. March 29.

MACTEC 2006c. Third Quarter 2006 Groundwater Monitoring Report, Olin/Standard Fusee Site, 425 Tennant Avenue, Morgan Hill, California. October 30.

GeoSyntec Consultants (GeoSyntec), 2006a. Soil In Situ Bioremediation System Closure Report. July 18.

Regional Water Quality Control Board Central Coast Region (RWQCB), 2006a Letter from Roger W. Briggs, Executive Officer, Water Board, Central Coast Region to Richard W. McClure, Olin Corporation: SLIC: 425 Tennant Ave. Morgan Hill; Llagas Subbasin Cleanup Feasibility Study. October 6, 2006.

RWQCB 2006b. Letter from Roger W. Briggs, Executive Officer, Water Board, Central Coast Region to Richard W. McClure, Olin Corporation: SLIC: 425 Tennant Ave. Morgan Hill; Proposed Cleanup Level for Perchlorate in Off-Site Groundwater. March 2, 2006.

United States Environmental Protection Agency (US EPA), 2000. A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, Report No. EPA 540-R-00-002, OSWER 9355.0-75. July 2000.

WorleyParsons Komex 2006a. Review of Olin Corporation June 30, 2006 Llagas Subbasin Cleanup Feasibility Report. Letter to Hector Hernandez, RWQCB. July 24, 2006.

WorleyParsons Komex 2006b. Review of Olin Third Quarter 2006 Groundwater Monitoring Report. Letter to Hector Hernandez, RWQCB. November 22, 2006.23 CCR s 2550.4. Concentration Limits.