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Section 2.1 and Figures 2-1 through 2-4	Delineation of Source Water Capture Zones "..the zone of capture that will result when the proposed Operable Unit -1 (OU-I), on-facility treatment system is implemented…. "	The discussion about capture zones (2.1) before the presentation of the geologic and hydrogeologic setting (2.1.1) is out of sequence. It is not clear what pumping rates are reflected in the capture zones presented on Figures 2-1 through 2-4, but the OU-1 extraction rates are stated. The legends for the four figures referenced are inadequate to describe what is conveyed in the text of Section 2.1.	The summary discussion associated with capture zones has been moved to and figures are now referenced in Section 2.1.2. Also, assumed pumping rates have been included in Section 2.1.3 in a new table, Table 2-1. The text has been revised to include pumping rates and a new table (Table 2-1) has been included to summarize pumping rates for each of the wells.
Figures 2-5, 2-6, 2-7, 2-8, 2-9, 2-10, 2-11, 2-12	Figure identification	Figures are not numbered. The Table of Contents only lists one sheet for Figure 2-7, but there are five separate sheets (all un-numbered), one for each fence diagram (not cross-sections as indicated in the TOC and section 2.1.1.2).	Due to a glitch in Adobe Acrobat, the figure numbers did not print out. Figure numbering has been corrected. The Table of Contents has been revised to indicate that the geologic cross section figure is shown on five separate pages.
P. 5, § 2.1.1.3	"Potentiometric surface maps that represent groundwater flow conditions during nonoperational and operational periods are shown on Figures 2-8 and 2-9, respectively."	The groundwater elevation contour map for Aquifer Layer 1 is not presented on Figure 2-8. The groundwater contours for Aquifer Layers 2 and 3 are from February 1998 and February 1996, respectively. Since significant seasonal variations are common, it is recommended that more recently collected data from a comprehensive monitoring event be used to generate groundwater contour maps for Aquifer Layers 1, 2 and 3. The pumping rates of the wells for the contours generated on Figure 2-9 are not specified in the text or on Figure 2-9. Additional detail needs to be provided to specify which production wells were used and the pumping rates used to generate the contours on Figure 2-9, and how those production rates compare to the historical "average pumping rate."	The February 1996 data are appropriate for the potentiometric surface maps associated with operational periods and no better data exists since Arroyo well was shut down in 1997. Data from [February 9, 2004] were used to create new potentiometric surface maps for Aquifer Layers 1, 2, and 3 (Figure 2-4, formerly Figure 2-8). Pumping rates have been included on Figure 2-5 (formerly Figure 2-9). Please refer to the Groundwater Modeling Report (NASA, 2004) for specific detail regarding pumping rates and production well usage.

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P. 6, § 2.1.3	"In the steady-state JPL model, the extraction and injection rates used for Monk Hill production wells were the average rates over the 1996 to 2000 time period."	The "average" groundwater extraction rates referenced for the period from 1996-2000 need to be specified. Further, since Arroyo well ceased operation in 1997, it is unclear how the average for the 1996 to 2000 period was calculated for Arroyo well. Production rates were previously referenced in Table 1-1, but it is unclear whether those pumping rates are from a pumping test performed at the time the well was installed, if they represent historical average production, or are representative of future production rates. Clarification is necessary.	Pumping rates are specified in Section 2.1.3 and are summarized on Table 2-1 (new table added to report). The pumping capacity for the Arroyo Well has been changed from 431 gpm to 2,127 gpm in Table 1-1. This value has been footnoted to indicate that the 2,127 gpm is an average pumping capacity from June 1996 to January 1997. The 431 gpm was the pumping rate used for the groundwater model and does not reflect a maximum pumping capacity, but rather is an average derived from all rates across years. The 431 gpm value was obtained from the JPL Groundwater Modeling Report (NASA, 2004). Please refer to this report for additional detail regarding derivation of the pumping rate.
P. 18 though 22 § 2.4.3	Assessment of the Vulnerability of the Drinking Water Source	A summary of how the "low," "medium" and "high" classification criteria for vulnerability of the groundwater within the study area to the chemical sources identified needs to be provided. For example, in Table 2-14, JPL (Map ID A) is classified as "High," as is G.T. Equipment (Map ID 22), which is identified as "high" because it is a small-quantity generator of hazardous waste. It seems counterintuitive that JPL and G.T. Equipment would be listed as equivalents, unless there were unlined waste ponds at the G.T. Equipment site or illegal disposal has occurred at that site. Generally speaking, a site of that nature would appear to have a relatively low potential to impact groundwater, unless information to the contrary was presented. A summary table would be helpful to the reader	The overall format of this section has been revised to make it easier to understand. Table 2-15 (formerly 2-14) and Figure 2-33 have been revised to summarize the potential source areas within and upgradient of the capture zone. The text has been revised as follows: "The vulnerability of the groundwater to individual facilities within the search area is summarized on Table 2-15. Facilities that are located within the capture zone and upgradient of the groundwater flow path were reviewed to determine whether the groundwater within the capture zone would be vulnerable to chemical releases. Because these known and potential chemical sources are located within and/or upgradient of the study area, the potential vulnerability of the groundwater to these sources is greater than compared to the other potential chemical sources identified from the database

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		which listed the distance from the production wells to each of the facilities classified as having the potential to adversely affect water quality. The text summary presented in Section 2.4.3 is difficult to read, and may be more effective in tabular format.	search (i.e., those sources outside the capture zone and downgradient). The groundwater was determined to be vulnerable if the facility had a chemical release in the past and/or if the facility had been identified as being associated with the use or storage of chemicals listed in Table 2-14. As shown on Table 2-15, the groundwater is potentially vulnerable to at least 14 facilities located directly within the capture zone. These 14 facilities are primarily comprised of automotive service/repair shops and dry cleaners. Petroleum hydrocarbons and chlorinated solvents are common chemical constituents associated with these types of facilities. In addition, there are 10 facilities located within the capture zone that were registered in at least one of the environmental databases, but chemicals associated with these facilities were not listed. For facilities located outside the capture zone, but upgradient of the study area, the groundwater is potentially vulnerable to at least nine facilities primarily comprised of automotive service/repair shops and dry cleaners. In addition, there are 14 facilities that were registered in at least one of the environmental databases, but chemicals associated with these facilities were not listed. Based on the results of the environmental database search which identified the locations of potential source facilities within and upgradient of the study area, the groundwater may be considered most vulnerable to activities associated with automotive service/repair shops and dry cleaners in addition to

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			activities associated with JPL."
P. 23 § 3.0	"The primary goal of the Raw Water Quality Characterization (R WQC) is to evaluate the water quality of groundwater extracted from the nine Monk Hill production wells. This includes…. identifying chemicals of potential concern (COPCs) in groundwater using a screening comparison.. ."	"Constituents of Potential Concern" should include the list of ***all*** constituents which have established regulatory criteria for drinking water. However, as stated in the last paragraph of Section 3.0, PHGs were not considered in the determination of the applicable regulatory limit. Although PHGs are not "legally enforceable," the presence of constituents with concentrations equal to or exceeding PHGs suggests that the **potential** exists for adverse effects to human health. Therefore, constituents with concentrations equal to or exceeding PHGs should be considered as COPCs, and then a screening process should be applied to narrow the list to the "Constituents of Concern." In the last sentence of the fourth paragraph there is a reference to Appendix E. There was no Appendix E in the materials downloaded from the website, although there were two Appendix Fs.	Because state MCLs and ALs are the controlling standards for the finished water, we feel that they are more appropriate for determining COPCs for the treatment systems. PHGs are provided in Tables [Tables 3-1 through 3-17] for comparison. Appendix references have been revised. Appendix E is the regulatory assessment, and Appendix F is the comprehensive groundwater monitoring event.
P. 24 § 3.1.1	Relating to water quality data for the Arroyo Well and Well 52 it is stated that"…only carbon tetrachloride and perchlorate had average concentrations that exceeded the applicable regulatory standard."	As indicated in Tables 3-1 and 3-2, bis(2-ethy1hexyl)phthalate equals the MCL and should be considered a COC. The last sentence of this section which states "Of these, only carbon tetrachloride and perchlorate had average concentrations that exceeded the applicable regulatory standard" should be modified to state "Of these, the average concentrations of carbon tetrachloride, perchlorate, nitrate as nitrogen, and bis(2-ethylhexyl)phthalate were equal to or exceeded the applicable regulatory standard." The arithmetic mean concentrations of constituents that exceed PHGs in one or both wells includes uranium, TCE, atrazine, PCE, benzene, lead and 1,2-DCA, some of which are considered	A discussion of why various constituents detected in historical samples are and are not considered COPCs has been included in Section 3.5.1 for the Arroyo and Well 52. The parameter measured was nitrate as NO3, not N as previously indicated on the tables. Thus, applicable regulatory standards were not exceeded for average concentrations (see revised section 3.5.1). Please see response to P. 23 § 3.0.

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		carcinogens, and should at least be considered COPCs, if not COCs.	
Table 3-1	Summary of Historical Water Quality Data for the Arroyo Well	Constituents historically detected in the Arroyo well with arithmetic mean concentrations exceeding the PHGs for known carcinogens such as TCE, PCE, atrazine, 1,2-DCA should be highlighted to demonstrate the significance (i.e., the PHG concentration represents a "one-in-a- million" cancer risk.). The arithmetic mean concentration of bis(2- ethylhexyl)phthalate equals the MCL and should be highlighted. Also, the arithmetic mean concentration of uranium exceeds the PHG (0.5 pci/l) but is not listed. The MCL for nitrate as nitrogen is 10 mg/l, not 45 mg/l (the MCL for nitrate as nitrate) as listed (check the nitrate results for all samples listed in all tables, and the comparison to the correct MCL for N03 as N or N03 as N03). The laboratory data used to generate these tables was not available for review, and the review suggests that the values in this table should be verified.	Please see response to P. 24 § 3.1.1.
Table 3-2	Summary of Historical Water Quality Data for Well 52	Constituents historically detected in Well 52 with arithmetic mean concentrations exceeding the PHGs for known carcinogens such as uranium, lead, TCE, PCE, benzene, 1,2- DCA should be highlighted to demonstrate the significance (i.e., the PHG concentration represents a "one-in-a-million" cancer risk.). The arithmetic mean concentration of bis(2-ethylhexyl)phthalate equals the MCL and should be highlighted. The MCL for nitrate as nitrogen is 10 mg/l, not 45 mg/l (the MCL for nitrate as nitrate) as listed (check the nitrate results for all samples listed in all tables, and the comparison to the correct MCL for N03 as N or N03 as N03). The laboratory data used to generate	Please see response to P. 24 § 3.1.1.

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		these tables was not available for review, and the review suggests that the values in this table should be verified.	
P.25 §3.1.2	Relating to water quality data for the Ventura Well and Windsor Well it is stated that "None of the average concentrations exceeded applicable standards."	This sentence in the last paragraph of this section needs to be modified to state "None of the average concentrations exceeded applicable standards except nitrate as nitrogen." Other comments are similar to those for § 3.1.1 regarding COPCs and COCs. Arithmetic mean concentrations of constituents that exceed PHGs in one or both wells include uranium, TCE, atrazine, PCE, benzene, nickel, and carbon tetrachloride, some of which are considered carcinogens, and should at least be considered COPCs, if not COCs.	Please see responses for P. 24 § 3.1.1
Table 3-3	Summary of constituents analyzed for in groundwater collected from the Ventura Production Well	Comments similar to Tables 3-1 and 3-2, and the values in this table should be verified. Verify the mean concentration of total chromium, It's higher than the max.	The mean concentration of total chromium is verified at 3.84 ug/L as listed in Table 3-3. This number is derived using results for one sample detected at 1.7 ug/L, one sample reported as <5 ug/L and three samples reported at <10 ug/L. Summing one-half non-detects with the one detect at 1.7 and dividing by 5 yields an average concentration of 3.84 ug/L.
Table 3-4	Summary of constituents analyzed for in groundwater collected from the Windsor Production Well	Comments similar to Tables 3-1 and 3-2, and the values in this table should be verified. Verify the mean concentration of nickel, it's lower than the listed minimum.	The mean concentration of nickel is verified at 10 ug/L as listed in Table 3-4. This number is derived using results for one sample detected at 13 ug/L, one sample detected at 23 ug/L and three samples reported at <10 ug/L. Summing one-half non-detects with the two detects (at 13 and 23) and dividing by 5 yields an average concentration of 10 ug/L.
P. 30 § 3.3.1	"In order to estimate the chemical concentrations in the water treatment plant effluent (i.e., the combined extracted water) from the Arroyo Well and	The described method of "estimating" water quality should be better described to allow for an evaluation of how the calculated concentrations were derived (a brief, but also inadequate description was provided in Section 3.3.2). For	The flow rates listed on Table 1-1 have been revised to reflect data received from PWP and other state sources. Influent water quality was estimated based on assumed rates used during treatment system operation. Table 2-1 (new table) provides

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	Well 52, the data from the JPL wells representing these two wells were combined and evaluated. Table 3-13 presents the estimated water quality of the treatment plant influent, assuming equal contributions (i.e., equal flow rates) from both production wells."	instance, it is stated that equal flow was assumed from each well, but Table 1-1 suggests the production from Well 52 is about three times the production of Arroyo Well. The use of data from the JPL wells instead of historical data collected from the actual well seems to have created some significant differences in the estimated water quality. In some cases (N03, TCE, and 1,2- DCA to name a few), the estimated water quality is better than previously, and may be less than conservative. Also, as previously stated, constituents with mean concentrations exceeding PHGs should be considered COPCs, and should not be excluded because the concentration does not exceed the MCL.	the rates at which each of the production wells were assumed to be operating. These extraction rates were used to estimate influent concentrations. Text has been added to appropriate sections in the report that explain influent estimations for the wells, and table footnotes indicate extraction rates for influent estimations. Comment noted. TCE has been identified as a chemical of concern in the influent (see Table 3-20). See responses for P. 24 § 3.1.1 For 1,2-DCA: This compound was detected Comment noted. See response for P. 23 § 3.0.
P.32 § 3.3.2	"Influent concentrations were determined by multiplying the average concentrations of each constituent detected in each production well by the average flow rate of that well, summing these numbers together, and dividing by the total flow rate."	The production rates used need to be described. Table 1-1 suggests the production from the Ventura Well is about 80% higher than the production of the Windsor Well. The use of data from the JPL wells instead of historical data collected from the actual well seems to have created some significant differences in the estimated water quality. In some cases (N03 as N03, and hexavalent chromium to name a few), the estimated water quality is better than previously, and may be less than conservative. Also, as previously stated, constituents with mean concentrations exceeding PHGs should be considered COPCs, and should not be excluded because the concentration does not exceed the MCL.	Table 1-1 has been revised to reflect historical pumping rates and Section 3.3.2 has been modified to describe production rate assumptions based on assumed extraction rates for treatement system operation. A time-weighted average flow rate of 98 acre ft/month was used for both the Ventura Well and Windsor Well (explained in Section 2.1.2 of the report). See response for P. 30 § 3.3.1 See response for P. 23 § 3.0.
Table 3-13	Chemical Concentrations	Based on the data presented in the table, it is	A footnote indicating equal contributions from both

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	Estimated to be present in the Influent to Water Treatment Plant for the Arroyo Well and Well 52	unclear whether the blended influent concentrations calculated for this table were based on equal contributions from each well. In some cases, the blending results in lower concentrations of certain constituents detected in individual wells (TCE, nitrate, and perchlorate for instance). Mean concentrations which exceed MCLs and PHGs should be highlighted to demonstrate the significance.	wells has been added to Table 3-13 for clarification.
Table 3-14	Chemical Concentrations Estimated to be present in the Influent to Water Treatment Plant for the Ventura and Windsor Production Wells	Mean concentrations which exceed MCLs and PHGs should be highlighted to demonstrate the significance. In the footnotes, it is stated that the average flow rate for the Ventura Well is 105 acre-ft/month and the average flow rate for the Windsor Well in 88 acre- ft/month. Using the production rates listed in Table 1-1 yielded about 177 acre-ft/month from the Ventura Well and 98 acre-ft/month from the Windsor Well. Mean concentrations which exceed MCLs and PHGs should be highlighted to demonstrate the significance.	Table 1-1 has been revised to reflect historical pumping rates and Section 3.3.2 has been modified to describe production rate assumptions based on assumed extraction rates for treatement system operation. A time-weighted average flow rate of 98 acre ft/month was used for both the Ventura Well and Windsor Well (explained in Section 2.1.2 of the report). See response for P. 23 § 3.0.
P.35 § 3.5.1	"Seven chemical constituents and one water quality parameter were detected at concentrations above the applicable regulatory standard (Table 3-20)."	The quoted sentence appears to refer to constituents detected at concentrations above the applicable regulatory standard in all of the wells in the study and not the Arroyo Well and Well 52. As such, this sentence should be revised to address the Arroyo Well and Well 52 as follows: Five chemical constituents and one water quality parameter were detected at concentrations above the applicable regulatory standard (Table 3-20)." Table 3-20 has some errors which are noted in a comment below.	The text has been revised to: “Four chemical constituents have been identified as a COPC in the influent for the Arroyo and Well 52 (Table 3-20).”
P.36 § 3.5.1	"Concentration of nitrates in the JPL wells (Tables 3-11 and 3-12) were detected at	Average concentrations of nitrate as nitrogen in the Arroyo Well and Well 52 were 12.51 and 19.96 (data obtained from Tables 3-1 and 3-2), which	The analyte has been confirmed to be nitrate as NO3, not N. Therefore, nitrate concentrations have not exceeded the MCL of 45 mg/L. For bis(2-

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	concentrations much less than the applicable regulatory standard. Therefore, it is unlikely that these three chemicals will be a concern for treatment plant design."	exceeds the MCL of 10 mg/L. In addition, the average concentration of bis(2-ethylhexyl)phthalate in both wells equaled the MCL and should not be disregarded. As stated previously, mean concentrations of constituents which exceed PHGs should at least be considered COPCs, and if appropriate, COCs, since PHG concentrations represent a "one-in-a-million cancer risk." Also, as previously stated, the calculations for blending should be checked since the production volumes do not appear to be representative of the rates listed in Table 1-1, and the "estimated" concentrations of constituents in the blended water are in some cases, lower than actual measured "average" concentrations in the wells, due to the assumption that each well contributes equally (contradicts Table 1-1), and the concentrations of certain constituents in the blended water are lower than the mean concentration in individual wells.	ethylhexyl)phthalate, additional text has been added to support why this compound has not been selected as a COPC. See response for P. 23 § 3.0. Table 1-1 has been revised to reflect historical pumping rates and Section 3.3.2 has been modified to describe production rate assumptions based on assumed extraction rates for treatement system operation. A time-weighted average flow rate of 98 acre ft/month was used for both the Ventura Well and Windsor Well (explained in Section 2.1.2 of the report).
P.36 § 3.5.2	"Three chemicals and one water quality parameter exceeded applicable standards based on sampling and analyses of these wells."	A review of Table 3-20 shows only perchlorate and nitrate listed as exceeding the water quality standards.	The text has been revised as follows: “Perchlorate is identified as a COPC for the water treatment plant (Table 3-20), even though the estimated groundwater treatment plant influent for the Ventura and Windsor Wells is not expected to contain analytes with average concentrations that exceed MCLs or ALs (Table 3-14). Carbon tetrachloride has not been detected in either of the production wells since 2000. JPL monitoring wells MW-19 and MW-21 were nondetect for carbon tetrachloride in the comprehensive monitoring event. Based on these observances, carbon tetrachloride is not a concern for water treatment. Even though perchlorate concentrations were below

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			applicable standards in the JPL wells located in the capture zone, concentrations continued to fluctuate and at times were above applicable standards in 2002 (data obtained prior to these wells being closed). And as evidenced on Figures 3-11 and 3-12, concentrations of perchlorate have been increasing over time (refer to Figures 3-11 and 3-12)."
P.36 § 3.5.2	"However, the estimated groundwater treatment plant influent for the Ventura and Windsor Wells is not expected to contain analytes with average concentrations that exceed MCLs or ALs." Carbon tetrachloride has not been detected in either of the production wells since 2000…carbon tetrachloride is not a concern for water treatment."	Carbon tetrachloride has been detected in water samples collected from the Windsor Well at concentrations as high as 2.29 μg/L, and the average iron concentration in the Windsor Well is more than double the secondary MCL of 300 μg/L. Based on the presence of carbon tetrachloride at a concentration of 2.29 μg/L and the historical presence of VOCs in groundwater in other wells in the vicinity, VOCs are COCs and should be considered in the water treatment design. Furthermore, it may be expected that a slug of VOCs may be present when the wells are restarted after more than 2 years of non-operation.	The maximum concentration of 2.29 μg/L for carbon tetrachloride was detected in December 2000. Prior to this, carbon tetrachloride had only been detected once in June 1991 at 0.57 μg/L. Sixteen sampling events were conducted after December 2000. All of these sampling events were nondetect (<0.5 μg/L) for carbon tetrachloride. The average iron concentration in the Windsor well was incorrectly reported as 723 μg/L (this is the maximum concentration detected). The revised average is 156 μg/L, which is much less than the 300 μg/L MCL. The treatment plant design does consider VOCs a potential concern and includes VOC treatment.
Table 3-20	Identification of COPCs and Potential Range of Concentrations	There are numerous errors in this table. Nitrate as nitrogen and nitrate as nitrate appear to be used interchangeably by the authors, but they have distinctly different MCLs. In the table it is not specified, and just listed as "nitrate," with an applicable regulatory limit listed as 45 mg/L. However, as previously noted, other tables list nitrate as nitrogen. This needs to be clarified in this table, and in other tables, appendices and text. Average nitrate as nitrogen concentrations exceed	The data have been confirmed to be nitrate as nitrate. All tables have been revised accordingly. Historical perchlorate concentrations have been revised. The historical maximum concentration listed on Table 3-20 has been revised to 160 μg/L. The range provided was intended to show the lower

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		the MCL of 10 mg/L, yet are omitted from this table. Historical perchlorate concentrations for the Arroyo and Well 52 are listed in mg/L, but the stated units are μg/L. The historical maximum perchlorate concentration was identified in the Arroyo Well at a concentration of 160 μg/L, not 0.039 μg/L as noted in the table. It is also stated in Note (1) that "concentration shown is the lower of the average concentration determined for each production well." Using the lower of the average concentration determined for each production well grossly underestimates the "Potential Range of Concentrations." As previously stated, constituents present at concentrations equal to or exceeding PHGs should be considered COPCs and included in this table.	end and the upper end. The lower of the two averages serves as the "lower end", while the maximum concentration serves as the "upper end". See response for P. 23 § 3.0.
P. 38 § 3.6	"Given the conservative nature of the approach used to estimate the contaminant concentrations in the PWP production wells...a simple groundwater fate and transport model…indicate that four of the modeled constituents (perchlorate, carbon tetrachloride, TNT and RDX) have been detected in JPL wells at least once since 1996 at concentrations that would result in concentrations exceeding target levels in the Arroyo Well."	Although it is stated that the method used to calculate contaminant concentrations was "conservative," as previously stated, the resulting concentrations may not actually represent conservative assumptions because estimated concentrations which were lower than actual historical concentrations were used, and concentrations of several constituents exceeding PHGs were not considered. Furthermore, if TNT were detected in JPL wells at concentrations that "would result in concentrations exceeding target levels in the Arroyo Well," it should be indicated in Tables 3-13 and 3-20.	This sentence has been revised to: "In addition to the approach used to estimate the contaminant concentrations in the PWP production wells, a simple fate and transport groundwater model was developed to predict if chemicals in JPL monitoring wells will reach the production wells at concentrations above screening criteria." TNT and RDX have been added to Table 3-20 as a COPC for the Arroyo and Well 52 influent based on the results of the fate and transport modeling. These two constituents will not be added to Table 3-13 because they have no "applicable regulatory standard" for which to use in the screening process. For modeling purposes only, the EPA Region 9 preliminary remediation goals (PRGs) for ingestion

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			of tap water were used as an acceptable concentration on which to back-calculate the starting concentration. EPA Region 9 PRGs, however, are not considered applicable regulatory limits for the purposes of screening for COPCs.
P. 48 § 5.1	"As discussed in the City of Pasadena Water and Power Department's Operation and Maintenance Procedures for the Devil's Gate VOC Groundwater Treatment Plant, these wells will pump a total of up to 7,000 gallons per minute (gpm)."	A total pumping rate of 7,000 gpm is inconsistent with Table 1-1. Production rates presented in Table 1-1, which listed production rates ranging from 431 gpm in Arroyo Well to 1,334 gpm in Ventura Well, with a cumulative production rate of about 3,800 gpm, do not correlate to production rates presented in Section 5.1. The total production rate listed (7,000 gpm) is about 84% higher than listed in Table 1-1. While it may be desirable for operational flexibility to have a production rate of 7,000 gpm, it should be expressly stated and explained in the text.	Table 1-1 has been revised to reflect more accurate pumping rates and when rates from the PWP wells are summed, a total of 7,000 gpm results. 7,000 gpm is the assumed future pumping rate of the system.
P. 62 § 6.3.2	"California Office of Environmental Health Hazard Assessment (OEHHA) PHGs were used for carcinogens and noncarcinogens when a PHG existed. "	Based on the text, it is not clear how the potential risk levels were actually calculated for Arroyo Well and Well 52. If they were based on the constituents listed in Table 6-1 (1,2,3- TCP; carbon tetrachloride, and perchlorate) for Arroyo Well and Well 52, then several other constituents with historical average concentrations exceeding PHGs (including TCE, atrazine, PCE, 1,2-DCA, lead, benzene, uranium and nitrate) were excluded but should have been included. Based on the text, it is not clear how the potential risk levels were actually calculated for Windsor and Ventura Wells also. If they were based on the constituents listed in Table 6-2 (nitrate and perchlorate) for the Ventura and Windsor Wells, then several other constituents with historical average concentrations exceeding PHGs (including carbon tetrachloride, TCE, atrazine, PCE, 1,2-	Estimates of risk were evaluated for chemicals identified as COPCs (Table 3-20) based on the results of the screening evaluation using applicable regulatory limits and the fate and transport evaluation for JPL monitoring wells. The purpose of identifying COPCs was to aid in the design of the water treatment system. Rather than conduct a risk assessment for these COPCs under a treatment failure scenario, a more streamlined risk evaluation was conducted that used risk ratios to estimate carcinogenic risks and noncarcinogenic indices. The use of the PHG in this particular evaluation was intended to be conservative because the PHGs are strictly risk-based (i.e., levels that provide protection against cancer and noncancer health effects associated with exposure to that chemical), and do not consider technical feasibility or cost to implement, as do

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		DCA, nickel, benzene, uranium) were excluded but should have been included.	MCLs. Therefore, concentrations of COPCs identified in each of the water treatment system's effluent was compared with a PHG (if one existed) to obtain a risk estimate.
P. 63 § 6.3.2	If the HI value is less than 1.0, it is believed the risk of noncarcinogenic effects is low. If the HI exceeds 1.0, a potential for some noncarcinogenic effects may exist. However, because the applicable standards are derived in a conservative fashion, an HI value greater than 1.0 does not imply that an adverse effect will necessarily occur."	Based on the text, it is not clear which constituents were used to calculate the HIs (on page 63 it is indicated that the COPC concentrations were derived from Table 3-7, which is the "Summary of Constituents Analyzed in Groundwater Collected from the Rubio Canon Well #4," but no COPCs are specified on that table). As previously stated, all COPCs should be considered, not just those which exceed an MCL.	The correct table reference has been revised to: "COPC Concentration = estimated arithmetic mean of the influent (Tables 3-20)". Table 3-20 provide the estimated arithmetic means of the chemicals expected to be present in the influent to the water treatment plants.
P. 64 § 6.3.2	"Estimates of the cancer risk and noncancer hazard index are provided in Tables 6-1 through 6-4 for each of the COPCs identified in the water treatment plant influent estimates."	The three apparent COPCs listed in Table 6-1 for the Arroyo Well and Well 52 are 1,2,3- TCP; carbon tetrachloride, and perchlorate. In the footnote of Table 6-1, it is stated that "Estimates of risk were determined for chemicals of potential concern that were identified in Section 3.0, Table 3-9." A list of COPCs is not presented in Section 3.0, and Table 3-9 is titled "Summary of Constituents Analyzed in Groundwater Collected from the Las Flores Well 2," so an evaluation of the actual COPCs used to derive the HI for the Arroyo Well and Well 52 could not be performed. As previously stated, all COPCs should be considered, not just those which exceed an MCL.	Table 6-1 has been revised to include TNT and RDX in addition to 1,2,3-TCP, carbon tetrachloride, and perchlorate. The footnote has been revised to: "Estimates of risk were determined for chemicals of potential concern that were identified in Section 3.5 and list in Table 3-20."
P. 64 § 6.3.2	"As summarized in Table 6-1 for the influent to the water treatment plant for the Arroyo Well and Well 52, the	The three apparent COPCs listed in Table 6-1 for the Arroyo Well and Well 52 are 1,2,3-TCP; carbon tetrachloride, and perchlorate. In the footnote of Table 6-1, it is stated that "Estimates of risk were	See response for previous comment.

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	cumulative cancer risk (i.e., summation of risk across COPCs) is 7.1 x 10-8, which is less than the 1 x 10-6 de minimus risk level."	determined for chemicals of potential concern that were identified in Section 3.0, Table 3-9." A list of COPCs is not presented in Section 3.0, and Table 3-9 is titled "Summary of Constituents Analyzed in Groundwater Collected from the Las Flores Well 2," so an evaluation of the actual COPCs used to derive the cumulative cancer risk for the Arroyo Well and Well 52 could not be performed. As previously stated, for calculating potential risk, mean concentrations of constituents in individual wells which exceed PHGs should be identified as COPCs. Then, these COPCs should be considered in the risk model, and the cumulative risk should be calculated. If all the constituents which exceed PHGs are considered in the risk model, the total cumulative risk may exceed 1 x 10-6.	
P. 64 § 6.3.2	"For the influent to the water treatment plant for the Ventura and Windsor Wells (Table 6-2), HI is above 1.0 (HI=1.5). The HQ for perchlorate is 0.7 and for nitrates is 0.8."	The two apparent COPCs listed in Table 6-2 for the Ventura Well and Windsor Well are nitrate as nitrate, and perchlorate. In the footnote of Table 6-2, it is stated that "Estimates of risk were determined for chemicals of potential concern that were identified in Section 3.0." A list of COPCs is not presented in Section 3.0 so an evaluation of the actual COPCs used to perform the risk assessment for the Ventura Well and the Windsor Well. As previously stated, for calculating potential risk, mean concentrations of constituents in individual wells which exceed PHGs should be identified as COPCs. Then, these COPCs should be considered in the risk model, and the cumulative risk should be calculated. If all the constituents which exceed PHGs are considered in the risk model, the total cumulative risk may exceed 1 x 10-6.	Table 6-2 footnote has been revised to: “Estimates of risk were determined for chemicals of potential concern that were identified in Section 3.5 and list in Table 3-20.”
Table 7-1	Summary of Water Quality Data	It is unclear whether the values presented are for all	The water quality data presented was obtained

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	for Pasadena Groundwater	PWP production wells or just the Monk Hill wells considered in this 97-005 study. The listed perchlorate range (ND to 4 ppb) is well below actual concentrations detected in the four wells in this study.	directly from PWP and indicates that the data are from 2002. By mid-January 2002 all four production wells were removed from service. So, perchlorate data from any of these four wells would not have been included in the summary report produced by PWP.

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General	Tables	Include in the title section date references when samples were collected.	Table titles have been revised to include dates of the data presented in the table.
General	NASA Responses to PWP and Agency comments	It is difficult to confirm if and what changes are made to the document following PWP comments. NASA should provide responses to comments and include, if possible, page, paragraph, and/or table reference(s) of edited sections.	This response to comments includes details of specific changes to the report. Details may include page, paragraph, or specific text additions.
General	Omitted Figure	In the June 2003 Source Water Assessment report, Figure 3-8 "Suspected seepage pit sites" was included. The December 2003 and August 2004 reports omitted this figure. The approximate locations of the pits would serve useful to readers and to DHS during the report's evaluation.	The figure that depicts the seepage pits has been included in the revised report as Figure 2-13.
Sect. 1.1, Page 1, 1	Table 1-1 provides summary information for 8 of the 9 production wells based on well construction logs and well data sheets from the Drinking Water Source Assessment and Protection (DWSAP) Program.	Data provided to DHS in 2002 for the DWSAP is different than what is shown in Table 1.1. The corrected data is as follow: **Well Well 52 Ventura Windsor** Make…….US Titan Aurora Aurora Production.....1 ,700 gpm 1,900 gpm 1,260 gpm Depth…….4 11 feet 315 feet 420 feet Control……..Automatic Automatic Automatic Per records, Arroyo Well's pumping capacities from June 1996 to January 1997 were 1,700, 2,038, 2,323, 2,343, 2,503, and 1,852 gpm respectively. Table 1.1 shows 431 gpm, which is significantly low. Data needs to be revised.	Table 1-1 has been revised to reflect the information provided for Arroyo Well, Well 52, Ventura Well, and the Windsor well.
Sect. 1.2, Page 2, last bullet	Carbon tetrachloride, TCE and PCE, 1,2,3-TCP and perchlorate chemicals.....detected from either Arroyo, Well 52, LAWC wells, or the Las Flores well.	PCE and TCE were detected in Ventura and Windsor wells in 1999, 2000, 2001 and 2002. Why are these wells omitted from the text?	The sentence has been revised to: “Carbon tetrachloride, trichloroethene (TCE), tetrachloroethene (PCE), 1,2,3-trichloropropane, (1,2,3-TCP) and perchlorate are chemicals of potential health concern that have been detected in groundwater samples collected from the Monk Hill Subarea.”

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Sect. 2.2.1, Page 7, 1	Some of these seepage pits may have received halogenated solvents…	A figure should be included locating the seepage pits (i.e., see General comment "Omitted figure").	The figure that depicts the seepage pits has been included as Figure 2-13.
Sect. 2.2.4, Page 10, 2 and 4	....MW-16....(Figure 2-24) ....MW-4..... (Figure 2-26)	Should refer to Figure 2-26 Should refer to Figure 2-24	The figure references have been modified as appropriate.
Sect. 2.3.2, Page 13, 3 & Sect. 4.3.2, Page 45, 1	Concentrations in the Las Vegas Wash area have been measured at levels up to 3,700,000 ppb.	Include source and verify levels.	The revised sentence now reads: "As reported by Dickerson (2003), initial concentrations in the Las Vegas Wash area were as high as 3,700,000 µg/L, and concentrations in Lake Mead were as high as 10 µg/L." These concentration was reported in the January 24, 2003 Memorandum from Dennis Dickerson of the LA-RWQCB. Supporting material or a specific citation for this concentration was not provided in the memorandum. This same value (3,700,000 ppb) was also provided in a publication called, "Critical Thinking Regarding Perchlorate Public Health Issues – 2004" by Robert W. Hall. Again, no reference was provided for this concentration in Hall's paper.
Sect. 2.4.1.4, Page 18, 2nd and 4th Bullets	Documented Spills/Leaks/Discharges	Identify names of facilities.	Names were not provided for these few facilities because the names for the facilities were not provided in the EDR report. Battelle contacted EDR regarding this question and determined that facility names are not available.
Sect. 3.2.2, Page 27, 2	Perchlorate concentration in groundwater from Well 52 ranged from approximately 15 to 35 ppb during 1999 to 2002.	Perchlorate level in July 2000 was 38.8 ppb. Revise text.	The perchlorate data set for Well 52 has been revised. The range of perchlorate concentrations is now reported as 10.5 to 38.8 ppb.
Sect. 3.2.2, Page 27, 3	Although perchlorate concentration data from the Arroyo Well....they decreased significantly in the fourth quarter (Figure 3-10)	Figure 3-10 does not show a decrease in the perchlorate concentration	The perchlorate data set for the Arroyo Well has been improved with additional data from PWP. Figure 3-10 has been revised to reflect the additional data. This revised figure indicates an overall increasing trend.

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Sect. 3.3.1, Page 30, 3	The estimated perchlorate concentration (18.3 ppb) for well 52 is significantly higher than previously measured values (0.023 μg/L).	The 0.023 μg/L is a typographical error. It should read 0.023 mg/L (or 23 ppb) therefore the sentence should state "The estimated perchlorate concentration (18.3 ppb) for Well 52 is significantly lower…" See Figure 3-9.	The units of measure should have been mg/L, not μg/L. Also, the estimated perchlorate concentration listed in Table 3-12 is 16.3 μg/L, not 18.3 as was reported in the text. Therefore, the sentence has been revised to: "The estimated average concentration (16.3 μg/L) for Well 52 is slightly lower than the average value (22 μg/L) based on previously measured concentrations." Note also that the average value is reported here as 22 μg/L, and not 23 μg/L as originally reported as a result of the PWP additions to the perchlorate data set. The text in Appendix F (Section 2.6.3, paragraph 3) has been revised to: "The historical data for the Arroyo Well and Well 52 (Tables 3-1 and 3-2 in Section 3.0 of the report) show detections of perchlorate concentrations that range from 42 to 160 μg/L in the Arroyo Well and 6 to 38.8 μg/L in Well 52. Average perchlorate concentrations for the Arroyo Well and Well 52 were 96 μg/L and 22 μg/L, respectively. The average perchlorate concentrations estimated for the Arroyo Well and Well 52 exceed the AL."
Sect. 3.5.1, Page 35, 2	The estimated influent average concentration (for perchlorate) is 20.3 ppb.	20.3 ppb seems low. The estimate may be incorrect based on the data shown in Figure 3-2. Beyond February 1998, Pasadena has no records of collecting and sampling for perchlorate from Arroyo Well. • Provide source of data for Figure 3-2; • Revise estimated influent levels. It is conceivable that the influent to the perchlorate treatment plant, at times, is provided only from Arroyo Well and/or Well 52, which are the two wells producing the highest levels of perchlorate.	The text has been modified as follows: "A comparison of perchlorate data shows that the measured average concentration and the estimated average influent concentration both exceed the AL of 6 μg/L." Figure 3-2 has been revised with data provided by PWP.

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Sect. 3.5.1, Page 36, 3	Historical data do not indicate 1,2,3-TCP was detected in the production wells, and in fact 1,2,3-TCP was only detected once in JPL wells from 1985 to 2002.	This sentence is misleading because prior to 2003, the detection limit for 1,2,3-TCP was 500 ppt. Since then, the detection limit has been lowered to 5 ppt, but the production wells have not been resampled. Due to technological improvements, 1,2,3-TCP may now be detected. This section should be revised to reflect the lowered detection limit, and the conclusion of 1,2,3-TCP requires further sampling.	The revised text now reads: "Historical data do not indicate 1,2,3-TCP was detected in the production wells, and 1,2,3-TCP was only detected once in JPL wells from 1985 to 2002. However, the analytical method used during this timeframe was only able to detect concentrations above 0.500 µg/L. During the comprehensive monitoring event, samples were analyzed for 1,2,3-TCP using a more sensitive analytical method that could detect concentrations as low as 0.005 µg/L. During this event, 1,2,3-TCP was detected in samples collected from JPL monitoring wells located within the capture zone of Arroyo Well and Well 52 (see Table 3-11). Therefore, 1,2,3-TCP is expected to be a COPC for water treatment plant design.
Sect. 3.5.1, Page 36, 3	…..1,2-DCA, nitrate, and bis(2 ethylhexyl)phthalate are not considered to be a concern. Historical data for the production wells indicated that maximum concentrations present exceeded the applicable standard for these constituents; however 1,2-dichloroethane and bis(2 ethylhexyl)phthalate were not detected recently in JPL wells located in the capture zone for the Arroyo and Well 52 (Table 3-11).....Therefore, it is unlikely that concentrations of these three chemicals will be a concern for treatment plant design.	This conclusion seems contradictory to the goal of the Policy Memo 97-005. Although the JPL monitoring wells in the capture zones for Arroyo and Well 52 have not recently detected 1,2-DCA, nitrate, and bis(2ethylhexyl)phthalate, the production wells have historically exceeded the applicable standard. It would be argumentative that these COPC should not be a concern because the monitoring wells have no detectable traces when in fact the production wells that are the focus of the 97-005 have produced these chemicals and at times above the applicable standard.	A more detailed assessment of the historical data has been provided in the text. The text now reads as: "Three other constituents, 1,2-DCA, nitrate, and bis(2-ethylhexyl)phthalate, were detected in samples collected from production wells at maximum concentrations that exceeded the applicable standards (Tables 3-1 and 3-2). However, these compounds are not considered COPCs, based on the following: • 1,2-DCA: This compound was detected only once in Well 52 in 1992 at 1 µg/L, but not detected above 0.5 µg/L thereafter (through January 2002). In the Arroyo Well, this compound was detected in the late 1980s and early 1990's, but not detected above 0.5 µg/L thereafter (through February 1998). In addition, this compound was not detected in JPL wells located in the capture zone for the Arroyo (Table 3-11) and Well 52 (Table 3-12).

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			• Bis(2-ethylhexyl)phthalate: This compound was detected only once in the Arroyo Well and Well 52 in 1985 at 5 µg/L. Samples collected from each well in 1993 indicated that this compound was below the detection limit of 3 µg/L. In addition, this compound was not recently detected in JPL wells located in the capture zone for the Arroyo (Table 3-11) and Well 52 (Table 3-12). • Nitrate: For Well 52, nitrate was only detected once above the MCL at 55 mg/L in July 2001. Based on sampling results thereafter through June 2002, nitrate concentrations remained below the MCL of 45 mg/L. Similarly, the Arroyo Well had one exceedance of the MCL in April 1999 at 59 mg/L. Sampling data for nitrate after April 1999 do not exist, however, concentrations of nitrates in the JPL wells (Tables 3-11 and 3-12) were detected at concentrations much less that the applicable standard of 45 mg/L.
Section. 3.5.2, Page 36, 1	However, perchlorate, nitrate, and *pH. are of concern* for the water treatment plant.. .. Review of the pH concentrations from all of the other wells.. ...is approximately 7 and fairly neutral; thus *pH is not* a *concern* for water treatment.	The statements regarding pH are contradicting.	Review of the pH concentrations from all of the other wells (production and JPL monitoring wells) indicates that pH for groundwater in the Monk Hill Subarea is approximately 7 and fairly neutral; thus pH is not a concern for water treatment. The text has been revised accordingly.

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Sect. 5.1, Page 49, 5	....the treated water then will be pumped through three parallel pairs of lead/lag ion exchange units for perchlorate removal. Ion exchange treatment will consist of a US Filter Model HP 1220DS Hi-Flow System....	One of the components to the Policy Memo 97-005 is to identify treatment alternatives and to select a given technology. The difficulty at this stage is that PWP has not contracted with a treatment vendor. The concern of PWP is that reference is made to U.S. Filter as the selected vendor. When the City eventually begins its vendor procurement process, it could be construed that the City has pre-selected the vendor and made its determination prior to reviewing vendor proposals. Staff concedes that without naming a treatment vendor and product, DHS approval of the 97-005 is unlikely. However, the document sections pertaining to perchlorate treatment is relatively small and omittinq the sections that references U.S. Filter may not impact other sections of the report. It could be worded such that an ion-exchange treatment system will be selected emphasizing the technology rather the vendor, and that this section will be amended when a vendor and product are chosen.	The following text has been included in the description of the US Filter system and the Rohm and Haas resin: "…treatment will consist of a US Filter Model HP 1220DS Hi-Flow System (or equivalent; the vendor selection and procurement process will determine the actual ion exchange system)." "Each ion exchange unit will contain 300 cubic feet of Rohm and Haas, Amberlite™ PWA2 Strongly Basic Anion Exchange Resin (or equivalent; the vendor selection and procurement process will determine the specific resin)…"
Sect. 5.1, Page 50, 1 2, 1st Sentence	All treated water, which will be supplied for potable use, will be chlorinated at the inlet to Windsor Reservoir.	PWP is also investigating the use of chloramines for disinfection.	The sentence has been revised to: "All treated water, which will be supplied for potable use, will be disinfected at the inlet to Windsor Reservoir."
Sect. 5.1, Page 50, 2, 2nd Sentence	The treated water will also be blended with water supplied by the MWD at the Windsor Reservoir.	Groundwater extracted from the Monk Hill Wells is pumped into Windsor Reservoir, which is not blended with MWD water. Windsor Reservoir is served with 100% groundwater from the Monk Hill Subarea. Water from Windsor Reservoir is boosted to the, Calaveras Reservoir, which is then blended with groundwater from the Pasadena Subarea and MWD water. However, water from Windsor Reservoir can also be dropped to a lower pressure	The reference to blending at Windsor Reservoir has been removed. Note: DHS has approved blending for constituents not treatable by the treatment system at the Glendale facility (also covered under 97-005). The specific permit condition for Glendale system reads as follows: "In the event that any non-treatable constituent is present at the GWTP influent at a concentration exceeding 10 time its

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		zone and served directly to customers. If this occurred, blending with MWD water may not occur. DHS has stated in the past that blending would not be an acceptable method of treatment.	MCL or AL based on chronic health effects or exceeding 3 time its MCL or AL based on acute health effects, the constituent cannot be treated by blending alone. Additional treatment to include removal shall be provided.”
Sect. 5.2, Page 52, 1	State MCLs and ALs are the controlling standards for the finished water, and these standards must be attained for the effluent from the PWP...	DHS has indicated that perchlorate will be treated to N.D. In Lincoln Avenue's Water Permit Amendment 1910063PA-001, dated 07/26/2004, page 4, Water Quality Section, #13 - "All water leaving in the ion exchange perchlorate removal equipment shall have perchlorate concentrations below the detection limit."	An additional sentence has been included in the text as follows: “However, DHS has required that the LAWC treatment system remove perchlorate in the finished water to less than detection using EPA Method 314.”
Sect. 5.3, Page 52, 1	In addition, the treated water is blended with water from other sources (i.e., MWD and FMWD) prior to entry into the distribution system to provide an additional safety factor.	See comment for Sect. 5.1, Page 50, &2, 2nd Sentence	The sentence has been removed.
Sect. 5.3.1, Page 52, 3	The VOC treatment plant is equipped with a control panel to control the mechanical equipment and shut down the treatment system in the event of a power failure, a blower shutdown, a high sump level, or a low sump level.	The existing control system for the VOC plant may require physical improvements. For example, if the fan belt for the blower breaks, the motor may continue to operate without triggering the control system to shut the plant off. The water will continue to flow through the air strippers without removing VOCs.	The text has been revised as follows: “The VOC treatment plant is equipped with a control panel to control the mechanical equipment and shut down the treatment system in the event of a power failure, a blower shutdown, a high sump level, or a low sump level (Note that the existing control system for the VOC plant may require physical improvements. For example, if the fan belt for the blower breaks, the motor may continue to operate without triggering the control system to shut the plant off; thus water will continue to flow through the air strippers without removing VOCs).

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Sect. 5.3.1, Page 53, 4	Similarly, if LGAC vessels are necessary, weekly VOC samples from the 4th port on each LGAG vessel would be collected to determine when activated carbon replacement is necessary.	Are there non-VOC contaminants such as certain metals and explosives that may be removed by the LGAC system? If so, testing for VOC levels may not be the sole indicator when carbon replacement is required.	Based on the Glendale permit approved by DHS, additional parameters may be required for the production well sampling, including 1,2,3-TCP, SVOCs, NDMA, 1,4-Dioxane, and explosives (TNT, RDX, and HMX). The text has been revised to indicate that if any of these constituents are identified in the influent water, they will also be analyzed for in the post-LGAC samples.
Sect. 5.3.1, Page 53, 5	In addition, monthly microbiological testing (coliform and HPC) of the combined effluent from the treatment plant will be conducted. If the combined effluent sample tests positive....each LGAG and ion exchange vessel will be tested. When the effluent from an individual vessel tests positive….that vessel will be re-tested within 24 hours.	The time needed to perform the original coliform and/or HPG testing, and any additional follow-up sampling and testing could take up to four to six working days. For example, 24 hours could elapse prior to discovering a positive result. It could take an additional 24 to 48 hours to gather, prepare, and obtain the results from Therefore, it is recommend that coliform and/or HPC testing be performed from the final effluent of each lag vessel in-lieu of the combined effluent water.	This change has been incorporated into the document. Coliform and/or HPC testing will be performed from each lag vessel rather than from the combined effluent. The revised text is as follows: “In addition, coliform and/or HPC testing will be performed from the final effluent of each lag vessel”.
Sect. 5.3.3, Page 56, 1	As discussed above, the PWP VOC treatment plant is equipped with a control panel to control the mechanical equipment and shut down the treatment system...	See comment for Sect. 5.3.1, Page 52, &3	See response for comment Sect. 5.3.1, Page 52, 3.

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Sect.. 5.3.3, Page 56, 3	Treatment plant effluent for potable use will be transferred to the respective reservoirs for blending with MWD/FMWD water to reduce the concentration of nitrates and other compounds not removed by the treatment system before the water is introduced into the domestic water distribution system.	See comment for Sect. 5.1, Page 50, &2, 2nd Sentence	Text referring to blending has been revised as follows: "Where DHS approval exists, treatment plant effluent for potable use will be transferred to the respective reservoirs for blending with MWD/FMWD water to reduce the concentration of nitrates and other compounds not removed by the treatment system before the water is introduced into the domestic water distribution system. Should the blending operation fail or be unable to reduce the concentrations below the required levels, the blending operations will cease, and the water purveyor will immediately notify DHS, and customers will be notified of the failure."
Sect. 5.4.2, Page 58, 1	If the concentration of a non-target compound is sufficient enough to produce a signal greater than or equal to the set peak threshold, a library search will be performed…….	The paragraph reads that Pasadena will be responsible to conduct the library search and perform other related tasks. Verify responsibilities and roles of NASA when non-target compounds are detected.	The text was clarified to indicate that the laboratory will identify any TICs, and reporting of these compounds should be conducted by the water purveyor per DHS guidance. Verifying the responsibilities and roles of NASA if non-target compounds are detected is not relevant to the 97-005 document.
Sect. 5.6, Page 59, 1st Bullet and Sect. 7.2.2, Page 66, 2	• PWP has a total of 27 interconnections with seven other local water systems that can supply water during emergencies, shortages, or periods of high demand. • ....the city has a total of 27 interconnections with seven other local water systems....	PWP has 27 interconnections, however, it is not all dedicated to serving water to other agencies. The sentences imply that all 27 interconnections are supplied with water from PWP. Approximately 22 of the interconnections is supplied by other water agencies to provide water to the City for emergency and general services. It should be noted that majority of interconnections permit flow only in one direction either due to differences in static pressure, or back flow devices.	Text has been clarified.
Sect. 6.2.1, Page 61, 1st Bullet	The treatment system controls will automatically shut down the system…..	See comment for Sect. 5.3.1, Page 52, 3.	See response for comment Sect. 5.3.1, Page 52, 3.

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Sect. 7.3.1, Page 69, 1st Bullet	Based on the City's data, the infiltration capacity is from 1/3 ft/day to about 1 ft/day.	The spreading basins have greater capacity than 1 feet/day. Based on a wetted area of 13.5 acres at 1 feet per day, the percolation rate equates to 6.8 cfs, which is significantly lower than historical record data. 6.8 cfs seems to be more of an average spreading rate, which for the Arroyo Seco Basins is a function of stream water availability. In the past, PWP has spread more than 20 cfs over an extended period of time.	The text has been modified to indicate that PWP has used the Arroyo Seco Basins to spread more than 20 cfs over an extended period of time.
Figure 2-7, Pages 2 and 5, & Table 3-10	MW-17, multiport screen number 3	The figures show screen 3 in Layer 3, but Table 3-10 is labeled Layer 2.	Table 3-10 has been revised to indicate layer 3.
Figure 3-1 & Figure 3-9	Perchlorate Concentrations Over Time in Well 52 and Variation of Perchlorate in Well, respectively	The following data points should be included: • December 1997 - 22 μg/L; • January 1998 - 31.3 μg/L; • March 1998 - 24.5 μg/L; and • July 2000 - 38.8 μg/L.	The data have been included in the database for Well 52.
Figure 3-2	Perchlorate Concentrations Over time in Arroyo Well	Provide source for perchlorate data. PWP did not operate this well or perform water sampling for this well after September 1997 with the exception of three occurrences in February 1998.	The perchlorate dataset for the Arroyo Well has been revised with data received from PWP. The database contains 12 sampling results, beginning June 1997 and ending February 1998.
Figure 3-10	Variation of Perchlorate in Arroyo Well.	In September 1997, perchlorate concentration of 160 μg/L was detected. This data point should be included in the figure.	The perchlorate dataset for the Arroyo Well has been revised with data received from PWP. A maximum concentration of 160 μg/L is now included.
Table 1-1	Summary of Production Well Information	See comment for Sect. 1.1, Page 1, 1	Table 1-1 has been updated accordingly.
Table 2-15	Summary of Chemicals Detected in the Source Water	Fluoride is missing.	Fluoride has been added to Table 2-15.

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Table 3-1	Analyte perchlorate • Number of Samples – 91 • Arithmetic mean - 0.028 mg/L • Min detected value - 0.003 mg/I	• Verify amount of samples. PWP has 12 samples on record. • Appears low even for an arithmetic mean. Between June 1996 and September 1997, perchlorate levels ranged from 0.046 to 0.160 mg/L. Verify arithmetic mean. • Verify - PWP min. value is 0.42 mg/L (Feb. 1998)	The perchlorate dataset for the Arroyo Well has been revised with data received from PWP. The database contains 12 sampling results, beginning June 1997 and ending February 1998. The arithmetic mean based on the revised dataset is 0.096 mg/L. The minimum value is 0.042 mg/L. Table 3-1 has been updated.
Table 3-1 and 3-2	1. Analyte: Nitrate – N	The analyte is noted as Nitrate as nitrogen, but the MCL is noted as N03 as N03. The analyte, references, and MCL should be consistent. Revise document accordingly.	The analyte is nitrate as nitrate (NO3 as NO3). Both tables have been updated.
Table 3-13	• Analyte: Nitrate - N • Analyte: Perchlorate • Analytes Detected that do not Exceed MCLs or ALs...	• See comment for Table 3-1 and Table 3-2. • See comment for Sect. 3.5.1, Page 35, 2. • Missing Nitrate, 1,2 Dichloroethane and bis-(2- Ethylhexyl)phthalate - See Tables 3-1 and 3-2 for comparisons.	Tables have been revised to indicate nitrate as NO3. For perchlorate, see response for comment Sect. 3.5.1, Page 35, 2. Nitrate as NO3 is included on Table 3-13. 1,2-DCA and bis(2-ethylhexyl)phthalate not included on Table 3-13 because these constituents were not measured in the JPL wells used to estimate the influent. A discussion of why these constituents are not COPCs has been given (see response to Sect. 3.5.1, Page 36, 3)
Table 3-14	Analytes Detected that Exceed MCLs or ALs	Missing Nitrate, perchlorate, iron and benzene – See Tables 3-3 and 3-4 for comparisons.	Table 3-14 is based on averaging the results of the historical data for the Ventura and Windsor wells. Tables 3-3 and 3-4 do provide the summary for the historical data obtained for each of these production wells; however, these data were combined and then averaged, assuming flow rates of 105 acre ft/month and 88 acre ft/month for the Ventura and Windsor, respectively, to derive estimated influent concentration presented in Table 3-14.

PASADENA WATER AND POWER (PWP) COMMENTS
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Relevant Sect. & Page	General Summary	PWP Comments/Questions	Response
Table 3-20	Historical Average Concentrations: • Perchlorate for Arroyo and Well 52 - 0.023 μg/L Historical Maximum Concentrations: • Perchlorate for Arroyo and Well 52 - 0.039 μg/L	• Appears low - See comment for Sect. 3.5.1, Page 35, &2 • PWP has sampling data as high as 160 μg/L for Arrovo Well	Table 3-10 has been updated with addition data from PWP. The historical average concentration in the Arroyo Well was determined to be 96 μg/L and for Well 52 the historical average was determined to be 22 μg/L. Table 3-20 has been revised to show that the range of concentrations for these two wells is 22 μg/L for the lower end of the range and the historical maximum concentration has been revised to 160 μg/L, which is the maximum concentration detected out of the two wells (Arroyo Well).
Appendices, Pages 204-253	Devils' Gate VOC Groundwater Treatment Plant – O&M Manual	• There are two copies of the same manual in the appendices – delete one. • Page 225 has the personal phone numbers of staff – remove or blackout for public records.	The second copy of the manual has been deleted. Personal phone numbers have been removed.