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Supplemental Phase II Report

Volume VI

June 1997

Prepared by:

ABB Environmental Services, Inc.

Geomega

PTI ENVIRONMENTAL SERVICES

SMITH TECHNOLOGY CORPORATION

Olin Corporation

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Supplemental Phase II Report

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Appendix Q

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APPENDIX Q

CHEMICAL TRANSPORT MODELING

APPENDIX Q

TRANSPORT MODELING

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1.0 INTRODUCTION

Olin Corporation owns a former chemical manufacturing facility located at 51 Eames Street in Wilmington, Massachusetts. Historical waste disposal activities prior to Olin's purchase of the site in 1980 resulted in subsurface contamination beneath the site and surrounding areas. The primary contaminant in groundwater is an acidic, high specific gravity plume containing high concentrations of inorganic compounds referred to as the "dense layer". The dense layer, because of its high specific gravity (up to 1.10), resides at the bottom of the unconfined sand and gravel aquifer where it occupies topographic depressions on the underlying bedrock surface. The dense layer contains high concentrations of certain inorganic indicator parameters (i.e., ammonia, chloride, chromium, sodium, and sulfate) as well as several other inorganic compounds (e.g., aluminum, calcium, iron, and magnesium). It is characterized by pH's as low as 3, high specific conductance (up to 100,000 μmhos) and total dissolved solids content (up to 120,000 mg/L).

The dense layer is currently present beneath the center of the Olin property and a number of properties to the west on Jewel Drive, Eames Street and Main Street. A small, isolated pocket of the dense layer also is present under the Maple Meadow Brook wetland, approximately 2500 feet west of the Olin property. The Town of Wilmington operates a municipal wellfield surrounding Maple Meadow Brook consisting of 5 production wells which collectively pump over 1 Mgd.

In 1993, Olin submitted the following documents to the Massachusetts Department of Environmental Protection (MADEP):

- A Comprehensive Site Assessment (CRA, 1993) describing the subsurface conditions at the site,

- A Work Plan for Supplemental Phase II Field Investigations (BCM, 1993) proposing additional data collection activities needed for further characterization of site conditions, and,

- A Public Health Risk Assessment (ABB, 1993) evaluating the risk to human receptors associated with site contamination.

The MADEP provided comments on the risk assessment in a letter dated March 22, 1995, in which one of the comments stated (p. 2):

> "There is potential future risk due to the possibility of future contamination of the Town of Wilmington public water supply, therefore, this pathway should be addressed in the risk assessment".

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In order to include this analysis in revisions to the risk assessment, it was necessary to predict maximum future concentrations of contaminants at the municipal water supply wells. Because of the complexity of the hydrogeology, the presence of the dense layer, and the influence of geochemistry in the subsurface, the only feasible approach to estimating future impacts to the supply wells was through mathematical modeling. The use of modeling for this purpose was proposed in the "Scope of Work, Human Health Risk Assessment" (ABB, 1996), which was approved by the MADEP in their letter dated May 16, 1996.

The team of consultants on the project developed a site-specific approach to modeling that consisted of two phases:

(1) Groundwater Flow Modeling, performed by Smith Technology Corporation
(2) Geochemical Fate and Transport Modeling, performed by Geomega

The results of the groundwater flow modeling were used to provide hydrogeologic input to the transport modeling. The results of the transport modeling provided estimated contaminant concentrations at the Town of Wilmington municipal water supply wells for use in the risk assessment. This report presents the details of the geochemical fate and transport modeling only; results of the groundwater flow modeling are presented separately.

2.0 MODELING OBJECTIVES AND APPROACH

Transport modeling of selected inorganic compounds in groundwater to the Town of Wilmington pumping wells was conducted to provide exposure point concentrations to the Human Health Risk Assessment (Section 6.1 and Appendix R). Results of the groundwater flow modeling and particle tracking simulations formed the basis of the transport modeling, in addition to geochemical data from Section 2.7 (Site Geochemical Characterization). The objectives of the transport modeling were as follows:

- To evaluate the potential for transport of chromium in groundwater from the dense layer at monitoring well GW-58D to the Town of Wilmington pumping well Butters Row No.1,

- To evaluate potential chromium transport in groundwater from the dense layer at monitoring well GW-83D to the Butters Row No. 1 and Chestnut Street No. 1 pumping wells,

- To estimate the maximum concentrations of groundwater indicator compounds (i.e., ammonia, chloride, sodium, and sulfate) and other inorganic solutes at the Butters Row No. 1 and Chestnut Street No. 1 pumping wells under differing scenarios of pumping and seasonality;

As outlined in Section 5.2.1 there are significant aspects of the site that make the modeling effort very complex. The CSA (CRA 1993) and Supplemental Phase II Investigation data indicate that the primary potential source of solutes at the site (i.e., the dense layer) appears to have reached stasis from a transport perspective (Sections 2.7 and 4). This hypothesis is supported by the results of Sharp-Interface variable density modeling of the dense layer (Section 5.2.1 and Appendix P) which concludes that further downslope migration of the dense layer, both at the site and under Meadow Maple Brook wetland, has apparently ceased due to a combination of physical barriers (i.e., bedrock topography and/or reduced aquifer porosity) and dense layer solution properties (e.g., high specific gravity and viscosity).

Chemical data from multilevel piezometers (Section 2.7.4) and monitoring well clusters have established that steep chemical gradients exist across the interface between the dense layer and overlying groundwater, where inorganic solute concentrations decrease by as much as three orders of magnitude within a few feet, often reaching levels that approach that of site background (e.g., chloride and sodium) or are below the analytical detection limit (e.g., chromium and aluminum) (Section 2.7.4). The observed sharp decrease in solute concentrations in the vertical dimension is the result of a low mass transfer rate. In addition, the physical properties of the dense layer suggest that this may be the result of non-Fickian diffusional processes which greatly reduces the flux of solutes from the dense layer to overlying groundwater even further (Section 5.1.2). This

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phenomena is clearly shown by the vertical distribution of solutes at the GW-83 well cluster (Figure Q-1).

Chromium transport from the dense layer to downgradient and overlying groundwater is effectively prevented by diffusion rates as well as by the *in situ* formation of authigenic precipitates of chromium hydroxide and mixed chromium-iron hydroxide solids with very low solubility at the near-neutral pHs in the aquifer. Geochemical phenomena at the dense layer interface maintains chromium concentrations in the overlying groundwater below the analytical detection limit (0.015 mg/L) and well below the drinking water MCL of 0.1 mg/L for chromium (Section 2.7). The general absence of chromium in groundwater that otherwise contains elevated levels of more geochemically conservative solutes (e.g., ammonia, chloride and sulfate) supports the hypothesis that chromium is not subject to transport outside of the dense layer, but is instead controlled by geochemical processes at the dense layer interface.

Chemical data from shallow and intermediate depth groundwater indicates that surficial recharge to the sand and gravel aquifer has provided sufficient clean water to effectively dilute solute concentrations and buffer the groundwater pH at near-neutral conditions. Hence, hydrologic and geochemical conditions prevail favoring the precipitation of aluminum, chromium, iron and manganese hydroxides at the dense layer interface, and that reduce the concentrations of the geochemically conservative solutes such as ammonia, chloride, and sulfate.

Due to the complex nature of the system to be modeled, an integrated approach was used for the modeling effort consisting of:

- Equilibrium Geochemical Modeling - The geochemistry of chromium-bearing groundwater at monitoring wells GW-58D and GW-83D was characterized using the equilibrium geochemical code MINTEQ version 4.00 (Eary and Jenne, 1992). The objective of this modeling effort was to identify the saturation state of the groundwater with respect to various chromium-bearing mineral and amorphous solid phases that may be controlling the concentration and mobility of chromium at these locations. Electron microprobe analysis of available aquifer materials collected from monitoring well GW-83D was performed in support of geochemical modeling to determine if chromium-bearing solid phases estimated to exist by modeling were in fact present. MINTEQ modeling of all other Maple Meadow Brook wells was also conducted to determine the saturation state of these waters with respect to potential solid phases as well.

- Chemical Transport Modeling - Results from the equilibrium geochemical modeling were input to the geochemical transport code CTM (Erikson and Hostetler, 1992) to simulate the transport of chromium in groundwater from monitoring wells GW-83D and GW-58D to the pumping wells Butters Row No. 1 and Chestnut Street No. 1.

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This code was selected because it considers both hydrologic and geochemical effects on inorganic solute transport.

- Groundwater Mixing Modeling - Results of the groundwater flow and particle tracking modeling (Section 5.2.1 and Appendix P) and current water quality within the capture zones were used to estimate concentrations of inorganic solutes from source areas in groundwater under the Maple Meadow Brook wetland to the Butters Row No. 1 and Chestnut Street No. 1 pumping wells under two different pumping scenarios under both seasonally wet and dry conditions (a total of four scenarios). This modeling incorporated a spreadsheet mixing routine wherein data from the particle tracking simulations were used to calculate the relative contribution of groundwater supplied to each pumping well by each of the particle path flowlines (See Figure 5-3 in Section 5.2.1). Monitoring well data were then used to assign solute concentrations to each flowline which was then weighted according to the relative contribution of groundwater of each flowline. The weighted concentrations were summed in the spreadsheet for all flowlines to estimate potential solute concentrations at the pumping wells. The mixing routine was purposely designed to be very conservative by assigning the particle flowlines the solute concentrations from the most impacted wells that was encountered along its flowpath and ignoring the mitigating effects of dispersion and dilution.

The CTM transport and mixing modeling simulations focused on the Butters Row No. 1 and Chestnut Street No.1 pumping wells because groundwater chemical data has shown that the levels of inorganic solutes at these two wells are slightly elevated relative to the unaffected Town of Wilmington pumping wells (i.e., Chestnut 1A/2, Butters Row No. 2, and Town Park) (Section 4). However, geochemical characterization of Maple Meadow Brook groundwater using Piper trilinear diagrams (Figure Q-2) has established that the groundwater chemistry (ion ratios and total dissolved solids content) at the unaffected pumping wells and at Butters Row No. 1 and Chestnut Street No. 1 are substantially different than groundwater located in areas known to be impacted by site solutes (e.g., GW-83D), suggesting that the impact to Butters Row No. 1 and Chestnut Street No. 1 is relatively minimal. The groundwater data used to create this figure are presented in Table Q-1.

Figure Q-2 shows the chemistries of the Maple Meadow Brook wells with respect to the groundwater chemical classes established for the site in Section 2.7.2.3. These categories consist of the dense layer (green shading), intermediate TDS groundwater (blue shading), and low TDS groundwater (yellow shading). The diameter of the circles represents the TDS concentration for each well (the larger the diameter, the higher the TDS content). Note the location of GW-83D (designated on the upper diamond graph as an "X") with respect to Butters Row No. 1 ("A"), Butters Row No. 2 ("B"), Chestnut Street No. 1 ("C"), Chestnut Street No. 1A/2 ("D") and Town Park ("M") pumping wells. GW-83D is located well within the dense layer classification and is spatially isolated on this diagram with respect to all the other Maple Meadow Brook wells. In contrast, all five pumping

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wells cluster together within the low TDS water category. This is significant in that it strongly indicates that the groundwater at GW-83D is probably not directly influencing the solute chemistry of the pumping wells.

Surrounding the pumping wells in the low TDS region are the majority of the Maple Meadow Brook wells. This clustering in the low TDS region illustrates that overall, water quality in the aquifer under the wetland is very good, even in the presence of high levels of solutes that exist at the bottom of the aquifer (Section 4). Adjacent to both the low TDS and dense layer waters are six wells that lie within the intermediate TDS category. Four of the wells (GW-84D, GW-85D, GW-86D, and GW-87D) are characterized by high TDS content and are screened in the deeper portions of the aquifer. The other two wells (GW-83M and GW-64D) have much lower TDS content and are screened relatively higher in the aquifer. Because the position of GW-83M and GW-64D plots between the four high TDS wells and the pumping wells, it suggests that solutes from intermediate TDS groundwater and not the dense layer is impacting Butters Row No. 1 and Chestnut Street No. 1. Although the Butters Row No. 1 and Chestnut Street No. 1 groundwater chemistries indicate that contributions from the site are reaching these wells, the Piper diagrams indicate that substantial mixing of "clean" and impacted intermediate TDS groundwater probably occurs during pumping and groundwater flow to the wellhead, which results in solute concentrations at the pumping wells that approach clean groundwater.

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3.0 EQUILIBRIUM GEOCHEMICAL MODELING

There is concern that the chromium present in the dense layer at GW-83D could have the potential to migrate to the pumping wells. Because of the presence of dissolved chromium in the dense layer at GW-83D, and the geochemical controls that have been shown to control chromium geochemistry and fate in groundwater at the site (Section 2.7.3), the MINTEQ (version 4.00) geochemical model (Eary and Jenne, 1992) was used to characterize the geochemistry at this location. The model was used to calculate the activities of aqueous metal (e.g., aluminum, chromium, and iron) and non-metal species (e.g., carbonate, sulfate, and hydroxide) from which the saturation indices of potential solid phases were determined.

The determination of saturation indices for metal species is significant in that the saturation index describes the state of saturation of a groundwater with respect to one or more potential solid phases that may control the solubility (i.e., the maximum concentration in solution) of a metal species in groundwater.

MINTEQ4 was used to determine the saturation indices of chromium-bearing groundwater at the site because it contains updated equilibrium constants for chromium(III) and chromium(III)-iron(III) hydroxides from the work of Rai et al. (1987) and Sass and Rai (1987). The chromium(III) hydroxide (Cr[OH]3) and the chromium(III)-iron(III) hydroxides (represented by the generic formula: $Cr_xFe_{1-x}(OH)_3$) have been shown to be important controls on chromium solubility in groundwater. Geochemical modeling of groundwater at the Olin site is presented in Section 2.7.5.1 of the main report.

3.1 Model Input Parameters

Input parameters used in the MINTEQ model consist of the complete chemical analysis of the groundwater to be modeled. The parameters input to the model consist of:

- pH
- temperature
- total solute concentrations (in mg/L)
- iron speciation (if available)
- system Eh (if available)

The input parameters used to model GW-83D are presented in Table Q-2. Chemical analyses from the first two sampling rounds at GW-83D (October 1996 and January 1997) were used as input to MINTEQ. All chromium was assumed to exist as trivalent chromium (Cr[III]) (Section 2.7). Because neither Eh (oxidation-reduction potential) or iron speciation was conducted in the field at GW-83D, the percentage of ferric iron had to be estimated. High quality iron speciation data was measured in the field at the multilevel piezometers and was used to estimate the percentage of iron species present at

GW-83D. The results of iron speciation data at the multilevel piezometers indicate that the percentage of total iron that exists as ferric (Fe^{+3}) iron ranges from 0 to 87%, averaging approximately 20% (Section 2.7.4). Therefore, a conservative value of 10% total iron as ferric iron was used in the model.

In addition to running MINTEQ on groundwater at GW-83D, MINTEQ modeling of all Maple Meadow Brook wells was also conducted to determine if the chemistry at these wells was being controlled by any potential solids phases. The purpose of this exercise was to test the hypothesis that the concentrations of solutes present in shallow and intermediate depth wells were geochemically conservative and therefore controlled primarily by advection and dispersion processes. The input files used for these model runs are presented in Attachment A (MINTEQ Modeling Output Files). For all model runs, the Davies equation was used to calculate activity coefficients and ionic strength was computed by the program. All oversaturated solids were not allowed to precipitate. Charge balance differences between cations and anions were typically 15% or less and decreased following speciation calculations, indicating acceptable laboratory analysis.

3.2 Model Results

Using analytical data from the two sampling events at GW-83D (October 1996 and January 1997) as input to MINTEQ4, modeling results indicate that groundwater at GW-83D is supersaturated with respect to several chromium-bearing iron solid phases represented by the generic formula: $Cr_xFe_{1-x}(OH)_3$ (Table Q-3). The least soluble phase $Cr_{0.01}Fe_{0.99}(OH)_3$ has a saturation indices of +2.0 (October 1996) and +1.85 (January 1996); other chromium-bearing phases indicating supersaturation include $Cr_{0.05}Fe_{0.95}(OH)_3$ (SI's of +1.1 and +0.97), and $Cr_{0.1}Fe_{0.9}(OH)_3$ (SI's of +0.61 and +0.45). These data indicate that conditions are geochemically favorable for the precipitation of these phases. These results are very similar to results obtained for chromium-bearing groundwater at the Olin site (Section 2.7.3). It should be noted that even though the model predicted undersaturation with respect to pure $Cr(OH)_{3(am)}$ (SI's of -3.0 and -3.2), it is possible that this phase is incorporated in $Fe(OH)_{3(am)}$ as individual grains or as a coprecipitation product as discussed in Section 2.7.3. Additional solids phases indicating supersaturation at GW-83D include amorphous ferric hydroxide [$Fe(OH)_{3(am)}$], gibbsite [$Al(OH)_3$], $AlOHSO_4$, basaluminite [$Al_4(SO_4)(OH)_{10}:5H_2O$], goethite [FeOOH], and in some cases, gypsum [$CaSO_4:2H_20$].

These results indicate that solid phase solubility constraints on aluminum, chromium, and iron may be limiting the concentration of these elements in deep groundwater at GW-83D and preventing their migration to shallower groundwater through precipitation reactions. The predicted supersaturation of several aluminum sulfate solids and gypsum suggest that some attenuation of sulfate and calcium may also be occurring at this location

MINTEQ results for other Maple Meadow Brook wells indicate that the concentrations of solutes (including ammonia, chloride, sodium, and sulfate) in intermediate and shallow

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groundwater are substantially less than is required to exceed the saturation indices of the conjugate solid phases of these solutes, thereby preventing solid phase precipitation (Attachment A). This confirms the hypothesis that the concentration of solutes in intermediate and shallow groundwater are controlled solely by advection and dispersion processes. In addition, experimental adsorption data (Section 2.7.3.3) using aquifer solids and groundwater from Maple Meadow Brook wells indicate that adsorption of ammonia, sodium and sulfate is not a significant factor controlling the mobility or concentrations of these species in groundwater, supporting the premise that dispersion and dilution are the primary processes controlling solute behavior in the aquifer.

3.3 Electron Microprobe Analysis

To test the results of MINTEQ modeling, samples of aquifer materials obtained from GW-83D during the installation of this well were submitted for electron microprobe analysis (EMPA). All aquifer samples submitted for EMPA were analyzed at the Laboratory for Geological Studies at the University of Colorado, Boulder using a JEOL 8600 Superprobe. Briefly, the aquifer samples were mounted in an epoxy mold, allowed to cure at room temperature, and polished at low speed using kerosene to prevent dissolution of water-soluble phases. The surface of the mold was then cleaned with isopropyl alcohol and coated with a thin layer of carbon. Metal-bearing particles were identified using a combination of energy dispersive detection (EDS), wavelength dispersive detection (WDS), and backscatter electron image detection (BEI). Images of the aquifer samples were obtained using BEI and recorded as photomicrographs. The chemical composition of the aquifer material was established relative to EMPA standards and provide a relative estimation of the stoichiometry of solid-phases comprising the aquifer material.

Results of electron microprobe analyses confirm the solubility predictions of MINTEQ with regard to chromium and iron solid phases. Electron microprobe photomicrographs show the presence of chromium at 0.318 and 0.338 weight percent contained within a matrix of amorphous ferric oxy-hydroxide solids (Figure Q-3). A similar suite of Cr-bearing iron phases were observed to exist in aquifer samples collected from CPT-2 in the transition zone near multilevel piezometer MP-3. This is a strong indication that similar geochemical processes that control dense layer chromium and iron concentrations at CPT-2 and MP-3 is also operating at GW-83D. EMPA also confirmed the presence of abundant iron in the aquifer samples. Figure Q-4 shows the presence of iron in the form of pyrite (FeS_2) and as Fe(III) oxides (represented on the photomicrograph as FeOOH). The presence of iron in these samples is significant for two reasons. First, the presence of naturally-occurring iron in the aquifer provides an ample reservoir supplying dissolved iron to solution, which is able to complex with chromium and precipitate as mixed $Fe(OH)_{3(am)}$ and $Cr(OH)_{3(am)}$ phases or coprecipitate with chromium with a composition resembling the solid solution series $Cr_xFe_{1-x}(OH)_3$. Secondly, iron is known to act as a substrate upon which dissolved chromium can precipitate (Hem 1977). The presence of

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the iron minerals in the aquifer matrix also helps to explain the source of high iron found in the regional aquifer.

3.4 Uncertainty Analysis

Uncertainty in the geochemical modeling is based primarily on the accuracy and reproducibility of the groundwater chemistry data and secondarily on the data base used by the geochemical model to perform the calculations. The two sets of data used in the model were derived from successive sampling rounds (i.e., October 1996 and January 1997). The input data used in the model is shown on Table Q-2. This data indicates that for most parameters (e.g., pH, Cl, Fe, K, Mn, and NH_4^+) there was good agreement between samples. However, there were problems with the sulfate data during the October 26, 1996 and January sampling (sulfate concentrations of 4280 and 3910 mg/L compared to 17,300 mg/L in October 3, 1996) that required this well to be resampled for sulfate in April 1997. The reanalysis reported sulfate at 17,600 mg/L; this value was subsequently used in both model runs because it was judged to be representative of sulfate concentrations in wells screened in the dense layer.

Another assumption used in the modeling concerns the magnitude of iron speciation at GW-83D. Field measurements of iron species (i.e., ferrous and ferric iron) was not conducted at this well. However, as discussed in Section 3.1 (Model Input Parameters), ample field speciation data was available from the multilevel piezometer data and a conservative value of 10% of total iron was input as ferric iron. The implications of this assumption involve the model calculated activity of ferric iron and the resulting calculated saturation indices with respect to the iron(III) hydroxides and the chromium(III)-iron(III) hydroxide solid phases. A significant part of this assumption has been addressed in the EMPA analysis of aquifer material from GW-83D, wherein the existence of chromium-bearing ferric oxide and hydroxide solids strongly indicates the presence of abundant dissolved ferric ion.

As previously discussed, the MINTEQ4 model has been updated with refined equilibrium constants for chromium(III) and chromium(III)-iron(III) hydroxides after the work of Rai et al. (1987) and Sass and Rai (1987). This work was conducted to characterize the thermodynamic behavior and solubility of the chromium(III) and chromium(III)-iron(III) hydroxides under carefully controlled laboratory conditions and produced data of very high quality. The MINTEQ data base is maintained by the USEPA and is regularly updated to reflect the advances in inorganic thermodynamic chemistry. A major assumption used in the geochemical modeling of GW-83D involves the premise that the system can be characterized (modeled) using equilibrium thermodynamics. It is well established in the geochemical literature (e.g., Lindberg and Runnells, 1984; Hem, 1971) that natural systems are rarely in geochemical equilibrium. However, the utility of using equilibrium models is that the model can reveal in which direction the system should trend given the conditions input to the model. For example, if the system is oversaturated with respect to a particular solid phase, the model does not reveal whether

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that solid phase is actually precipitating, or if it is precipitating, the model does not reveal the rate of the precipitation. Therefore, the utility of performing EMPA on aquifer material is a reality-check in that it is important to confirm the existence of the predicted solid phases, and lends support to the results of the saturation indices predictions.

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4.0 CHEMICAL TRANSPORT MODELING

Transport of chromium in groundwater from monitoring wells GW-83D and GW-58D to Butters Row No. 1 was simulated using the one-dimensional transport code Chemical Transport Model (CTM) (Erikson and Hostetler, 1992). This exercise was performed in response to concerns that the dissolved chromium present in the dense layer at GW-83D and GW-58D has the potential to migrate to the town pumping wells. These concerns are in conflict with Phase II Supplemental Investigation groundwater data from monitoring wells located downgradient from the site (e.g., in Maple Meadow Brook) and in wells screened in intermediate and shallow groundwater which show that chromium is absent at these locations and is present only in wells that are screened in the dense layer. As mentioned earlier in Section 2.0 (Model Approach and Objectives) and elsewhere in the main body of the Report, the dense layer exhibits unique chemical and physical properties that have prevented the release of chromium to overlying groundwater which is consistent with the available groundwater data for the site. Given this situation, the CTM modeling was used primarily as a screening tool to assess a potential worst-case scenario, i.e., the release of chromium from the dense layer to the overlying groundwater.

CTM calculates reactive and non-reactive solute transport for inorganic aqueous solutions along a one-dimensional streamtube under steady-state flow conditions. CTM may be used as a reactive solute transport code where compounds in the aqueous solution reacts with the aquifer matrix (adsorption and precipitation), or it may be used strictly as a transport code (with no aqueous speciation, solubility, or adsorption) when the primary solutes are non-reactive or have concentrations that are below the saturation index for potential solid phases. A two-step algorithm is used to combine the transport and geochemical processes in CTM. During each time step in the simulation, the mobile constituents (i.e., solutes) are distributed along the one-dimensional streamtube according to the advection, diffusion (if applicable), and hydrodynamic dispersion properties of the porous media. The geochemical step involves reaction of the solution in the streamtube with the immobile reactive solid constituent in that bin. Thus for each time step during the calculation, the solute distribution is defined by both transport and geochemical processes.

4.1 Model Input

Model input to the CTM program consists of the following parameters:

- travel distance (ft)
- groundwater velocity (ft/day)
- longitudinal dispersivity (ft)
- bin width (ft)
- number of time steps
- time interval (days)

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- chemical composition of the solution (if applicable)
- concentration of a solute of interest
- adsorption data (if applicable)

The transport problem is first defined using particle path data derived from the groundwater flow modeling simulations (Appendix P). The particle path data establishes both the travel distance from the well to the receptor and the velocity profile along the flowpath (changes in groundwater flow velocity with distance). This data is used to assign average flow velocities to a hypothetical streamtube that represents the distance for which groundwater velocities are relatively constant. The particle path data for GW-83D and GW-58D are presented in Tables Q-4 and Q-5, respectively. The velocity profiles for these wells are shown graphically on Figure Q-5 (GW-83D to Butters Row No. 1) and Figure Q-6 (GW-58D to Butters Row No. 1).

From the travel distance, the longitudinal dispersivity (α_L) is calculated. Because field measurements of longitudinal dispersivity were not measured at the site, EPA recommends a method to calculate this parameter as a function of the "scale of the problem", whereby longitudinal dispersivity is calculated by dividing the travel distance in feet by 10 (EPA 1988). The product of the longitudinal dispersivity and the average velocity produces the dispersion coefficient (D). Additional input parameters to define the hydrologic module of CTM include the bin width, number of time steps, and the time interval. These parameters are adjusted to reduce potential spatial discretization and time-step errors which are represented by the Peclet number and the Courant number, respectively. Satisfactory results are obtained when the Peclet and Courant numbers are less than 5. The values used to define the hydrology in CTM are presented in Table Q-6.

For the geochemistry module, the CTM model was set-up so that the boundary solution (the groundwater chemistry at GW-83D and GW-58D) was allowed to come to equilibrium with any oversaturated solids prior to the initial transport step, and allowed any oversaturated solids to precipitate before the solution is transported to the next bin. The solution was then allowed to be transported and further allowed to come to equilibrium with its solution. This was repeated in the model until the full travel distance was completed, or until the concentration of chromium decreased below the analytical detection limit. For both wells, the groundwater chemistry was allowed to come to equilibrium with the chromium-iron hydroxide solid phases ($Cr_{0.01}Fe_{0.99}(OH)_3$) that was predicted by the MINTEQ model to be the most likely phase to precipitate first (i.e., the least soluble phase).

4.2 Model Results

Two screening-level model runs were performed using the groundwater chemistry at GW-83D and one model run was performed using the chemistry at GW-58D. The transport of chromium from GW-83D to Butters Row No. 1 was first run without

equilibrating the solution with potential solid phases to see if the concentration of chromium was influenced by dispersion processes alone given the relatively low concentration (0.081 mg/L) of chromium at this well. The results for this run are presented graphically on Figure Q-7 (numerical model output is contained in Attachment B). This figure shows that chromium concentrations decrease rapidly to less than the analytical detection limit (<0.015 mg/L) within 550 feet from GW-83D due to dispersion processes alone, compared to a travel distance of 1290 feet over the same time period by a conservative tracer. The second simulation from GW-83D allowed the groundwater at GW-83D to equilibrate with any oversaturated solid phases before transport took place. The results for this model run are presented on Figure Q-8. These results also indicate that the concentration of chromium decreases rapidly below the analytical detection limit after the first time step, having traveled less than 12 feet from the well over a ten year period. These results are considered more realistic than the first run because of the established solubility controls of the mixed chromium(III)-iron(III) hydroxide solids on chromium concentrations in groundwater.

The third simulation involved chromium transport from GW-58D to Butters Row No. 1. The concentration of chromium at GW-58D, measured in October 1995, is 0.023 mg/L. This concentration is just above the analytical detection limit (0.015 mg/L). The transport of chromium from GW-58D was simulated without equilibrating the groundwater with potential solid phases because the concentration of chromium is less than required to exceed the saturation indices of any chromium-bearing solid phases. The results of this simulation are presented on Figure Q-9. Numerical output is presented in Attachment B. The results of this simulation show that the concentration of chromium rapidly decreases below the analytical detection limit within one time step or approximately 20 feet of travel distance. These results suggest that if chromium is migrating from the edge of the dense layer at this location, it is rapidly being dispersed and diluted to non-detect levels. This data is also supported by the absence of chromium in monitoring wells (e.g., the GW-62 well cluster) that are located immediately downgradient of GW-58D.

Because the travel distance from GW-83D and GW-58D to the Chestnut Street No. 1 and Butters Row No. 1 pumping wells are similar, these model results also apply to potential chromium transport to Chestnut Street No. 1 as well. The validity of these results are supported by the absence of chromium at all Maple Meadow Brook wells with the obvious exception of GW-83D. If chromium was being transported in groundwater from GW-83D or GW-58D, it would surely have been detected in downgradient wells by now, given that the dense layer is estimated to have been in its present location since 1980 (Appendix P).

4.3 Uncertainty Analysis

Uncertainty in the model results are primarily a function of the input values of groundwater velocity (v) and longitudinal dispersivity (α_L); these two parameters are

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multiplied together to derive the longitudinal dispersion coefficient (D) used in the model. This parameter determines how the solute will be transported and controls the effects of dilution on solute concentrations. As mentioned earlier, groundwater flow velocities used in the model were derived from the groundwater modeling effort. These data were plotted (Figures Q-5 and Q-6) and average velocities were calculated for each segment of the profile (i.e., for the streamtubes listed on Table Q-6). These mean values have a basis in reality in that the flow velocities were calculated using site-specific field data. Longitudinal dispersivities, however, are not determined using site specific data, but instead are estimated using 1/10 the travel distance between source and receptor (USEPA 1988). Therefore, longitudinal dispersivity was determined to be the parameter that presented the most uncertainty in the model results.

A sensitivity analysis was run using data from GW-83D to determine the effect of longitudinal dispersivity on the concentration of chromium in groundwater downgradient of GW-83D. The default longitudinal dispersivity used in the model is derived from EPA Guidance (1988), and for GW-83D to Butters Row No. 1 is 129 ft^2/day (Table Q-6). Because higher values of dispersivity result in lower solute concentrations in downgradient groundwater, the sensitivity analysis was performed using 10% of the EPA recommended value, or 13 ft^2/day. The chromium concentration used in the analysis was 0.081 mg/L (Table Q-1). The groundwater solution was not allowed to come to equilibrium with any oversaturated solid phases, thereby representing a very conservative scenario. Model results (presented in Attachment B) indicate that hypothetical chromium concentrations decrease to below the analytical detection limit (0.015 mg/L) approximately 530 ft downgradient of GW-83D after 10 years travel time. These results indicate that given the low concentrations of chromium in groundwater at GW-83D (i.e., less than the MCL for chromium [0.1 mg/L]) that hypothetical chromium transport is not particularly sensitive to changes in dispersivity. It also indicates that should chromium become mobilized from GW-83D, that the network of sentinel wells installed by Olin Corporation will detect the chromium years before it could reach Butters Row No. 1. Given that Chestnut Street No. 1 is approximately the same distance from GW-83D as is Butters Row No. 1, these results apply to hypothetical chromium transport to Chestnut No. 1 as well. Because chromium concentrations are much lower at GW-58D than at GW-83D, the effect of varying dispersivities at this well will not alter the results significantly.

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5.0 GROUNDWATER MIXING MODEL

Three dimensional (3-D) groundwater flow modeling using the USGS code MODPATH (Pollack 1989; Pollack 1994), which is programmed to use MODFLOW output (Appendix P), and a conservative groundwater mixing routine were used to help determine potential solute transport in Maple Meadow Brook groundwater to the Town of Wilmington municipal supply wells under differing conditions of pumping and seasonality. The pumping wells evaluated were Butters Row No. 1 and Chestnut Street No. 1. Four scenarios were evaluated:

Scenario 1: All five municipal wells pumping at a five year average rate during the wet season;
Scenario 2: Only Butters Row No. 1 pumping at capacity (1 Mgd) during the wet season;
Scenario 3: All five municipal wells pumping at a five year average rate during the dry season;
Scenario 4: Only Butters Row No. 1 pumping at capacity (1 Mgd) during the dry season.

The seasonality scenarios are particularly relevant to the site given that the site experienced a severe drought in the summer of 1995, in which rainfall and recharge to the aquifer were at a minimum. This was followed by a very wet winter and spring season, in which abundant snowmelt and rain resulted in significant recharge to the aquifer. The resulting groundwater level and flow data from site groundwater wells were used in the MODFLOW and MODPATH models. A detailed discussion of the methodology used to calculate the flowlines in presented in Appendix P.

5.1 Model Input

To provide input data for the mixing model, a number of flow "particles" were initiated at each wellhead (Butters Row No. 1 and Chestnut Street No. 1) and then backtracked upgradient (i.e., allowed to flow in reverse) from the well to the point of origin in the aquifer. This allowed a series of 3-D flowlines, from both the horizontal and vertical dimensions in the aquifer, to each of the pumping wells (Butters Row No. 1 and Chestnut Street No. 1) to be defined. The methodology used to calculate the flowlines and the particle tracking output is presented in Appendix P, Figures P-11 through P-14. The volume of water contributed to each well from each particle flowline was then determined (Appendix P). Results of the groundwater flow and particle tracking modeling (Section 5.2.1 and Appendix P) and current water quality within the pumping well capture zones (Tables Q-1 and Q-7) were then used to estimate concentrations of inorganic solutes from source areas in groundwater under the Maple Meadow Brook wetland to the Butters Row No. 1 and Chestnut Street No. 1 pumping wells under the four separate pumping and seasonality scenarios. The particle tracking data used to calculate the relative contribution of groundwater supplied to each pumping well by each of the particle path flowlines are presented in Table Q-8.

Monitoring well data were used to assign solute concentrations to each flowline which was then weighted according to the relative contribution of groundwater of each flowline. The weighted contribution of solutes from each well are shown on Table Q-8 under the heading "Water Quality at Selected Point". The weighted concentrations assigned to each flowline were summed for all flowlines to estimate potential solute concentrations at the pumping wells. The mixing model is very conservative in that the solute concentrations assigned to a particle flowpath are from those monitoring wells that have the highest solute concentrations encountered by the particle even if the particle flowline subsequently passes through cleaner water before it reaches a pumping well. The mixing modeling is also based on current observed hydrologic and geochemical conditions that define the range of seasonality conditions (i.e., wet season and dry season) at the site, as well as the current range of solute concentrations observed in groundwater.

5.2 Model Results

The results of the four mixing modeling scenarios for the Butters Row No. 1 and Chestnut Street No. 1 pumping wells are presented in Table Q-9. The complete model spreadsheet output files are contained in Attachment C. These results indicate that under Scenario 1 (all five production wells pumping during the wet season), only ammonia and sodium exceed the historical range of concentrations observed at Butters Row No. 1 for these solutes. The majority of other analytes (with the exception of aluminum, iron, and manganese) are within the historical range of observed solute concentrations at this well. This is because a majority of the flowlines captured by Butters Row No. 1 originate in shallow groundwater or outside of the area of impacted groundwater which have significantly lower solute concentrations than groundwater from deeper portions of the aquifer. As shown on Table Q-9, the primary contributor of elevated levels of solutes to Butters Row No. 1 is well GW-83D. Because the actual potential for transport of solutes from GW-83D to Butters Row No. 1 is doubtful (refer to the Piper diagram discussion in Section 2.0), additional solute concentrations without the contribution from GW-83D is also listed on Table Q-9. When GW-83D is not considered, only iron is estimated to exceed the observed range of solutes at Butters Row No. 1.

In contrast to Butters Row No. 1, the model predicts that the maximum concentrations of all four indicator analytes (ammonia, chloride, sodium, and sulfate) exceed the historical concentration ranges observed at Chestnut Street No. 1. The primary contributor of solutes to Chestnut Street No. 1 is GW-83D, which is predicted to contribute solutes to this well only during the wet season of Scenario 1. As with Butters Row No. 1, when the contribution from GW-83D is not considered, the estimated solute concentrations decrease significantly. Ammonia concentrations decrease from an estimated 65 mg/L to just over 4 mg/L. Iron and manganese concentrations are estimated to slightly exceed the historical range of solute concentrations at Chestnut Street No. 1.

Under scenarios 2 (Butters Row No. 1 pumping during the wet season) and 4 (Butters Row pumping during the dry season), the concentrations of all four indicator solutes is

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estimated to be within the historical range of concentrations observed at Butters Row No. 1. Exceptions under Scenario 4 consist solely of slightly elevated concentrations of iron and potassium. This is due to the increased contribution of shallow and unaffected groundwater that is captured by Butters Row No. 1 when it is the only well that is pumping. The results for Scenario 3 (all five production wells pumping during the dry season) indicate that none of the four indicator solutes exceed the historical range of solute concentrations at Butters Row No. 1, but that three indicator solutes (ammonia, chloride, and sulfate) and several other inorganics exceed the historical ranges at Chestnut No. 1.

The mixing model also indicates that relatively elevated concentrations of aluminum, manganese and iron are expected at Butters Row No. 1 and Chestnut Street No. 1 under all four simulated scenarios. This is not surprising since naturally-occurring iron and manganese are already present in relatively high concentrations in regional groundwater. Because of this, the Butters Row Treatment Plant was designed to remove excess iron and manganese from groundwater. The biggest contribution of these metals to the pumping wells is from GW-83D, where the dense layer is present. It should be noted that for many years, the Town of Wilmington has been pumping water selectively from all five production wells on an "as-needed" basis. The influent to the Butters Row Treatment Plant is a composite of water from the production wells being pumped at any time. Consequently, the future composite water to be treated will have concentrations of solutes significantly lower that predicted by the mixing model. In addition, through selective pumping from the five wells, a treatable composite influent should be attainable under the worse case scenario.

As mentioned above, particle tracking simulations show that groundwater from the GW-83 well cluster (consisting of GW-83S, GW-83M, and GW-83D), can be captured by both Butters Row No. 1 and Chestnut Street No.1 pumping wells under Scenario 1 (all production wells pumping during the wet season). Monitoring well GW-83D, screened in the deepest portion of a deep bedrock topographic depression at this location, intersects the dense layer which exhibits high concentrations of solutes and total dissolved solids (up to 35,500 mg/L TDS). The mixing routine for these particle paths is very conservative in that the particle flowline passing through GW-83D is assigned solute concentrations from that well even though the flowline subsequently passes through cleaner groundwater before it reaches either pumping well. Consequently, the mixing model indicates that groundwater from GW-83D is primarily responsible for the estimated elevated concentrations of solutes at these pumping wells. However, because the groundwater flow and particle tracking modeling used in the mixing model do not consider the effects of groundwater density or viscosity, it is not thought probable that advecting groundwater (represented in the model by the particle flowline) will actually enter the dense layer along its flow path.

In addition, because Sharp-Interface modeling predicts no future movement of the dense layer beyond the bedrock depression at GW-83D, the actual transportable solute concentrations from GW-83D to Butters Row No. 1 and Chestnut Street No. 1 will

probably be less than the levels estimated by the model, given the physical and chemical condition of the dense layer at this location. Therefore, the estimated solute concentrations that could reach the pumping wells probably represent a very conservative worst case scenario. It should also be noted that if migration of high levels of solutes from GW-83D to the pumping wells actually occur, it is estimated from the particle tracking simulations that it would take approximately 10 years for the groundwater from GW-83D to reach Butters Row No. 1, and approximately 14 years to reach Chestnut Street No. 1 (Appendix P). Olin Corporation has installed a sentinel monitoring well network between GW-83D and the pumping wells to provide forewarning of any significant changes in groundwater chemistry that could indicate movement of the dense layer or migration of elevated levels of solutes in overlying groundwater.

Particle tracking simulations also indicate that groundwater from other deep monitoring wells (e.g., GW-87D, GW-86D, and GW-85D) that are located closer to both Butters Row No. 1 and Chestnut Street No. 1 than GW-83D will also be captured by these wells. However, the mixing model results indicate that the estimated solute concentrations contributed by these wells is significantly less than that contributed by GW-83D (see Table 5-3 "w/out GW-83D" headings), such that the estimated solute concentrations at Butters Row No. 1 and Chestnut Street No. 1 that are contributed from these deep flowpaths are generally within the historical range of solute concentrations observed at the pumping wells. This is due to the significantly lower solute concentrations present at these wells, which are input to the model.

5.3 Uncertainty Analysis

Several important assumptions were made as part of the mixing modeling effort. First, the simulated flowlines that were used as the basis of the mixing model assumes steady state hydrologic conditions. In other words, the hydrologic data used in the model is based on recent observed hydrologic and geochemical conditions that define the range of seasonality conditions (i.e., wet season and dry season) at the site, as well as the current range of solute concentrations observed in groundwater. This assumes that the MODPATH particle flowlines are representative of the hydrologic conditions at the site.

Second, the mixing model assumes that the dense layer is no longer migrating and that a steady state has been achieved between the rate at which the dense layer constituents diffuse out of the dense layer into the overlying groundwater and the rate at which they are then transported advectively away from the dense layer. Therefore, the model assumes that the concentrations of dense-layer constituents in each of the wells in the Maple Meadow Brook area are representative of the current and future conditions, and that the different travel times associated with each flow path can be ignored when calculating solute concentrations at the pumping wells.

In addition, the mixing model is very conservative in that the solute concentrations assigned to a particle flowpath are from those monitoring wells that have the highest

solute concentrations encountered by the particle even if the particle flowline subsequently passes through cleaner water before it reaches a pumping well. This assumption means that estimated solute concentrations at the pumping wells probably represent a worst-case scenario. This is primarily due to the fact that dispersion and dilution were not factored into the solute concentrations assigned to each particle flowpath. Many of the calculated particle flowline solute concentrations would be lower given dispersion and dilution effects which are especially significant in the vicinity of the pumping wells where groundwater velocities increase substantially. The model also assumes conservative transport of solutes, in which the potential effects of adsorption, ion-exchange or precipitation/dissolution are ignored, processes that often affect the transport of metal solutes such as iron, aluminum, and manganese.

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Tables

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TABLE Q-1. AVERAGE COMPOSITION OF GROUNDWATER SAMPLES COLLECTED WITHIN THE MAPLE MEADOWBROOK WETLAND

(All units mg/L unless otherwise noted)

Well	Aluminum, Dissolved	Bicarbonate (as HCO_3)	Calcium, Dissolved	Chloride	Chromium, Dissolved	Iron, Dissolv
GW-60-D	<0.1	--	19	31	<0.015	3.0
GW-61-D	<0.1	--	41	150	<0.015	<0.025
GW-62-D	0.12	49	31	68	<0.011	0.26
GW-63-D	0.13	71	38	92	<0.011	4.7
GW-64-D	0.12	76	53	131	<0.011	30
GW-65-D	<0.1	--	35	56	<0.02	20
GW-66-D	<0.1	--	29	52	<0.015	0.14
GW-73-D	0.15	61	31	83	<0.01	1.1
GW-82-D	<0.2	62	51	104	<0.01	5.6
GW-83-D	27.8	96	285	4,630	**0.081**	1,200
GW-84-D	<0.2	350	335	891	<0.01	3.1
GW-85-D	<0.2	215	240	515	<0.01	20
GW-86-D	<0.2	181	240	488	<0.01	52
GW-87-D	<0.2	247	278	580	<0.01	32
GW-62-M	0.13	43	25	53	<0.011	0.083
GW-83-M	<0.2	39	31	120	<0.01	2.7
GW-84-M	<0.2	32	39	157	<0.01	0.10
GW-85-M	<0.2	55	54	154	<0.01	9.3
GW-86-M	<0.2	51	25	70	<0.01	21
GW-60-S	<0.1	--	19	31	<0.015	3.8
GW-61-S	<0.1	--	14	80	<0.015	<0.025
GW-62-S	0.12	63	29	53	<0.011	8.8
GW-63-S	0.37	20	15	95	<0.011	0.20
GW-64-S	0.29	15	9.8	54	<0.01	0.29
GW-65-S	0.11	--	24	60	<0.015	12
GW-66-S	<0.1	--	19	43	<0.015	1.2
GW-73-S	0.15	20	22	13	<0.01	0.11
GW-82-S	<0.2	60	25	54	<0.01	0.10
GW-83-S	<0.2	60	27	97	<0.01	0.56
GW-84-S	<0.2	18	21	77	<0.01	0.19
GW-86-S	0.35	66	31	97	<0.01	29
BUTTERS ROW 1	<0.2	42	33	102	<0.01	6.2
BUTTERS ROW 2	<0.2	31	21	66	<0.01	5.5
CHESTNUT ST 1	<0.2	45	28	86	<0.01	1.3
CHESTNUT ST 2/1A	<0.2	20	15	57	<0.01	1.1
TOWN PARK	<0.2	24	17	94	<0.01	0.99

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TABLE Q-1. (cont.)
(All units mg/L unless otherwise noted)

Well	Magnesium, Dissolved	Manganese, Dissolved	Potassium, Dissolved	Ammonia (as N)	pH[a] (s.u.)	Sodium Dissolve
GW-60-D	3.2	0.34	3.3	0.14	6.7	28
GW-61-D	7.0	0.070	3.3	0.16	6.4	67
GW-62-D	9.1	2.2	4.0	3.3	6.1	40
GW-63-D	6.3	0.72	4.4	0.22	6.5	46
GW-64-D	14	1.6	6.7	26	6.5	93
GW-65-D	5.7	0.57	4.1	0.45	6.7	25
GW-66-D	5.8	1.8	3.1	0.38	6.9	30
GW-73-D	9.8	0.35	4.8	0.066	6.3	32
GW-82-D	16	3.4	5.0	0.24	6.2	30
GW-83-D	370	46	102	1,400	5.2	6,120
GW-84-D	152	41	45	130	6.4	496
GW-85-D	65	11	32	107	6.7	259
GW-86-D	67	4.5	25	31	6.7	251
GW-87-D	79	5.9	24	45	6.8	337
GW-62-M	5.5	0.41	4.3	1.4	6.0	31
GW-83-M	5.0	2.3	5.0	20	5.6	65
GW-84-M	6.7	0.042	5.0	0.064	6.0	52
GW-85-M	11	1.7	7.6	6.3	6.4	61
GW-86-M	5.0	0.32	5.0	0.64	6.1	30
GW-60-S	3.1	0.11	3.3	0.16	6.6	29
GW-61-S	3.1	0.044	2.5	0.36	6.2	42
GW-62-S	5.0	3.6	7.4	1.6	5.8	29
GW-63-S	4.4	0.26	4.7	0.14	5.9	47
GW-64-S	4.0	0.15	3.6	0.18	5.5	30
GW-65-S	4.0	0.88	3.0	0.62	6.5	34
GW-66-S	4.0	2.5	3.3	0.23	6.9	27
GW-73-S	4.4	<0.01	4.2	0.062	5.8	4.4
GW-82-S	5.0	0.037	5.0	0.44	6.2	24
GW-83-S	5.0	0.21	5.0	2.4	5.7	51
GW-84-S	5.0	0.089	5.0	0.34	5.8	29
GW-86-S	5.8	0.65	5.0	1.9	5.7	41
BUTTERS ROW 1	7.3	0.86 [b]	5.0	5.1	5.9	59
BUTTERS ROW 2	4.9	0.25 [b]	4.7	0.38	5.9	33
CHESTNUT ST 1	6.2	0.37 [b]	4.7	1.2	6.0	54
CHESTNUT ST 2/1A	4.8	0.020 [b]	4.5	0.63	5.6	33
TOWN PARK	4.5	0.47 [b]	3.8	0.42	5.7	39

TABLE Q-1. (cont.)

(All units mg/L unless otherwise noted)

Well	Specific Conductance[a] (µmhos/cm)	Sulfate	Total Dissolved Solids[c]	Total Dissolved Solids[d]
GW-60-D	162	12	--	93
GW-61-D	406	23	--	235
GW-62-D	474	76	330	275
GW-63-D	502	41	530	291
GW-64-D	999	270	1,100	584
GW-65-D	245	30	--	142
GW-66-D	415	22	--	241
GW-73-D	462	24	--	268
GW-82-D.	650	147	418	378
GW-83-D	36,100	17,450	35,500	29,670
GW-84-D	7,342	3,072	6,868	4,614
GW-85-D	4,677	1,685	1,948	2,852
GW-86-D	3,725	1,295	2,960	2,247
GW-87-D	4,383	1,503	3,280	2,664
GW-62-M	371	52	--	215
GW-83-M	1,037	223	461	606
GW-84-M	686	31	1,838	399
GW-85-M	925	172	593	540
GW-86-M	416	41	269	241
GW-60-S	208	18	--	120
GW-61-S	234	16	--	135
GW-62-S	409	47	265	237
GW-63-S	395	18	--	229
GW-64-S	245	21	183	142
GW-65-S	151	19	--	87
GW-66-S	173	15	--	100
GW-73-S	175	12	--	101
GW-82-S	400	35	--	232
GW-83-S	581	70	300	337
GW-84-S	375	26	238	217
GW-86-S	649	88	571	377
BUTTERS ROW 1	719	113	--	419
BUTTERS ROW 2	544	43	--	316
CHESTNUT ST 1	585	60	--	340
CHESTNUT ST 2/1A	360	30	--	208
TOWN PARK	402	30	--	233

[a] Field measurement.

[b] Because dissolved manganese was not measured, total manganese values were used to estimate the manganese concentration in the unaffected MMB wells.

[c] Measured

[d] Estimated from specific conductance using the equation:

$$TDS = (7.93 \times 10^{-12}) \times (SC)^3 + (7.07 \times 10^{-6}) \times (SC)^2 + 0.577 \times (SC)$$

All calculations were done using the full detection limit for non-detects.

-- = No data available.

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Table Q-2
Input Parameters for GW-83D Used in MINTEQ
Olin Corporation
Wilmington, MA Facility

Analyte	Concentration (mg/l) October 1996	January 1997
pH	5.19	5.08
Temp. (C)	10.9	7.9
Ca	230	339
Cl	4690	4570
Fe(II)	1008	960.8
Fe(III)*	112	320
K	128	76.2
Mg^{+2}	295	445
Mn^{+2}	ND	ND
Na	6120	6120
NH_4^+	1650	1150
SO_4	17600	17600

*Ferric iron was assumed to be 10% of total iron.

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Table Q-3
Saturation Indices of Selected Solid Phases for GW-83D
Predicted by MINTEQ4
Olin Corporation
Wilmington, MA Facility

Chemical Name / Formula	Saturation Index* October 1996	Saturation Index* January 1997
$Al(OH)_3$ (am)	-1.128	-1.656
$AlOHSO_4$	+1.849	+1.763
Basaluminite	+8.028	+7.011
$Cr(OH)_3$ (am)	-3.055	-3.211
$Cr.01\ Fe.99\ (OH)_3$	+2.002	+1.847
$Cr.05\ Fe.95\ (OH)_3$	+1.123	+0.967
$Cr.10\ Fe.90\ (OH)_3$	+0.609	+0.454
$Fe(OH)_3$ (am)	+2.826	+2.792
Gibbsite (c)	+1.697	+1.199
Goethite	+8.91	+8.919
Gypsum	-0.086	+0.091

*A positive saturation index indicates the groundwater is oversaturated with respect to the solid phase and that conditions are favorable for the precipitation of that solid. Conversely, if the saturation index is negative, then the groundwater is undersaturated with respect to that solid.

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Table Q-4 . Particle Flowpath Data for Particle 30 From GW-83D to Butters Row No. 1.

(Data from Particle Tracking - Appendix P)

Particle Number				Global X	Global Y	Global Z	Local Z	Days	Time Step	Velocity (ft/d)	Distance (ft)	Cummulative Distance (ft)
30	20	26	2	1949.5	3949.5	30.03	0.001	0	0			
30	20	27	3	1975.592	3864.534	17.32078	0.024675	30	1	2.96	88.88	88.88
30	21	28	3	2055.897	3744.611	21.20578	0.022864	60	2	4.81	144.33	233.21
30	22	29	3	2104.654	3680.421	1.748362	0.025806	90	3	2.69	80.61	313.81
30	22	29	3	2123.198	3648.071	1.803038	0.027691	120	4	1.24	37.29	351.10
30	22	29	3	2142.352	3618.882	1.861709	0.029714	150	5	1.16	34.91	386.02
30	22	30	3	2160.694	3591.361	5.799183	0.031967	180	6	1.10	33.07	419.09
30	22	30	3	2176.108	3563.962	5.865131	0.034605	210	7	1.05	31.44	450.53
30	22	30	3	2192.013	3539.432	5.936521	0.037461	240	8	0.97	29.23	479.76
30	23	30	3	2208.109	3519.182	5.039311	0.039973	270	9	0.86	25.87	505.63
30	23	30	3	2224.457	3502.308	5.09378	0.042068	300	10	0.78	23.49	529.12
30	23	31	3	2240.165	3482.894	10.90168	0.045084	330	11	0.83	24.97	554.10
30	23	31	3	2255.946	3464.49	10.96925	0.048463	360	12	0.81	24.24	578.34
30	23	31	3	2271.984	3447.645	11.04189	0.052095	390	13	0.78	23.26	601.60
30	23	31	3	2288.285	3432.226	11.11998	0.055999	420	14	0.75	22.44	624.04
30	24	31	3	2304.618	3418.423	10.26516	0.060246	450	15	0.71	21.38	645.42
30	24	31	3	2320.589	3406.495	10.36385	0.064945	480	16	0.66	19.93	665.35
30	24	32	3	2336.159	3394.489	14.18441	0.069671	510	17	0.66	19.66	685.02
30	24	32	3	2351.063	3381.926	14.26197	0.074234	540	18	0.65	19.49	704.51
30	24	32	3	2366.094	3370.236	14.34461	0.079095	570	19	0.63	19.04	723.55
30	24	32	3	2381.254	3359.357	14.43266	0.084274	600	20	0.62	18.66	742.21
30	24	32	3	2396.545	3349.234	14.52647	0.089792	630	21	0.61	18.34	760.55
30	25	32	3	2409.671	3339.671	10.96931	0.093777	660	22	0.54	16.24	776.79
30	25	32	3	2422.192	3330.488	11.0448	0.097372	690	23	0.52	15.53	792.32
30	25	32	3	2434.764	3321.68	11.12319	0.101104	720	24	0.51	15.35	807.67
30	25	32	3	2447.388	3313.233	11.20457	0.10498	750	25	0.51	15.19	822.86
30	25	32	3	2460.063	3305.13	11.28908	0.109004	780	26	0.50	15.04	837.90
30	25	33	3	2472.294	3296.914	14.00937	0.111632	810	27	0.49	14.73	852.63
30	25	33	3	2483.863	3288.147	14.00451	0.111362	840	28	0.48	14.51	867.15
30	25	33	3	2495.838	3279.659	13.99967	0.111093	870	29	0.49	14.68	881.83

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30	26	33	3	2505.06	3272.401	4.257262	0.112319	900	30	0.39	11.74	893.56
30	26	33	3	2512.744	3265.8	4.315985	0.114344	930	31	0.34	10.13	903.69
30	26	33	3	2520.455	3259.34	4.375766	0.116406	960	32	0.34	10.06	913.75
30	26	33	3	2528.194	3253.016	4.436625	0.118504	990	33	0.33	9.99	923.75
30	26	33	3	2535.96	3246.827	4.498582	0.120641	1020	34	0.33	9.93	933.68
30	26	33	3	2543.755	3240.769	4.561656	0.122816	1050	35	0.33	9.87	943.55
30	26	33	3	2551.577	3234.839	4.625866	0.12503	1080	36	0.33	9.82	953.36
30	26	33	3	2559.427	3229.035	4.691234	0.127284	1110	37	0.33	9.76	963.13
30	26	33	3	2567.305	3223.354	4.757781	0.129579	1140	38	0.32	9.71	972.84
30	26	33	3	2575.212	3217.794	4.825528	0.131915	1170	39	0.32	9.67	982.51
30	26	33	3	2583.146	3212.352	4.894495	0.134293	1200	40	0.32	9.62	992.13
30	26	33	3	2591.11	3207.025	4.964707	0.136714	1230	41	0.32	9.58	1001.71
30	26	33	3	2599.101	3201.811	5.036184	0.139179	1260	42	0.32	9.54	1011.25
30	27	34	3	2607.283	3196.343	6.072475	0.145446	1290	43	0.33	9.84	1021.09
30	27	34	3	2615.699	3190.771	6.271006	0.152536	1320	44	0.34	10.09	1031.18
30	27	34	3	2623.929	3185.338	6.479214	0.159972	1350	45	0.33	9.86	1041.05
30	27	34	3	2631.978	3180.04	6.697573	0.16777	1380	46	0.32	9.64	1050.68
30	27	34	3	2639.85	3174.875	6.926576	0.175949	1410	47	0.31	9.41	1060.10
30	27	34	3	2647.547	3169.839	7.166743	0.184527	1440	48	0.31	9.20	1069.30
30	27	34	3	2655.075	3164.929	7.418618	0.193522	1470	49	0.30	8.99	1078.28
30	27	34	3	2662.436	3160.141	7.682772	0.202956	1500	50	0.29	8.78	1087.06
30	27	34	3	2669.635	3155.472	7.959803	0.21285	1530	51	0.29	8.58	1095.64
30	27	34	3	2676.675	3150.921	8.25034	0.223226	1560	52	0.28	8.38	1104.03
30	27	34	3	2683.56	3146.482	8.555039	0.234109	1590	53	0.27	8.19	1112.22
30	27	34	3	2690.293	3142.155	8.874593	0.245521	1620	54	0.27	8.00	1120.22
30	27	34	3	2696.877	3137.936	9.209724	0.25749	1650	55	0.26	7.82	1128.04
30	28	34	3	2711.426	3134.464	24.21547	0.276934	1680	56	0.50	14.96	1143.00
30	28	34	3	2732.149	3131.643	24.43933	0.304917	1710	57	0.70	20.91	1163.91
30	28	34	3	2751.22	3128.859	24.68582	0.335728	1740	58	0.64	19.27	1183.19
30	28	34	3	2768.771	3126.111	24.95721	0.369652	1770	59	0.59	17.76	1200.95
30	28	34	3	2784.923	3123.399	25.25603	0.407004	1800	60	0.55	16.38	1217.33
30	28	34	3	2799.787	3120.723	25.58504	0.44813	1830	61	0.50	15.10	1232.43
30	29	34	3	2816.177	3121.005	26.09657	0.442367	1860	62	0.55	16.39	1248.83
30	29	34	3	2832.908	3121.329	26.05168	0.435954	1890	63	0.56	16.73	1265.56
30	29	34	3	2849.955	3121.653	26.00744	0.429634	1920	64	0.57	17.05	1282.61

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30	29	34	3	2867.324	3121.975	25.96384	0.423405	1950	65	0.58	17.37	1299.98
30	29	34	3	2885.021	3122.295	25.92087	0.417267	1980	66	0.59	17.70	1317.68
30	30	34	3	2901.946	3122.636	23.49294	0.408449	2010	67	0.56	16.93	1334.61
30	30	34	3	2913.767	3123.084	23.25326	0.38666	2040	68	0.39	11.83	1346.44
30	30	34	3	2926.013	3123.54	23.02636	0.366033	2070	69	0.41	12.25	1358.69
30	30	34	3	2938.698	3124.006	22.81157	0.346506	2100	70	0.42	12.69	1371.39
30	30	34	3	2951.837	3124.481	22.60823	0.328021	2130	71	0.44	13.15	1384.54
30	30	34	3	2965.448	3124.966	22.41574	0.310522	2160	72	0.45	13.62	1398.15
30	30	34	3	2979.546	3125.46	22.23353	0.293957	2190	73	0.47	14.11	1412.26
30	30	34	3	2994.15	3125.964	22.06103	0.278275	2220	74	0.49	14.61	1426.87
30	31	34	3	3007.3	3124.432	19.68982	0.263558	2250	75	0.44	13.24	1440.11
30	31	34	3	3019.676	3121.557	19.49576	0.249697	2280	76	0.42	12.71	1452.82
30	31	34	3	3032.556	3118.641	19.31191	0.236565	2310	77	0.44	13.21	1466.03
30	31	34	3	3045.96	3115.684	19.13773	0.224124	2340	78	0.46	13.73	1479.75
30	31	34	3	3059.91	3112.684	18.97271	0.212336	2370	79	0.48	14.27	1494.02
30	31	34	3	3074.427	3109.642	18.81637	0.201169	2400	80	0.49	14.83	1508.85
30	31	34	3	3089.536	3106.556	18.66825	0.190589	2430	81	0.51	15.42	1524.27
30	32	34	3	3102.153	3103.559	2.218354	0.182893	2460	82	0.43	12.97	1537.24
30	32	34	3	3108.697	3100.797	2.124369	0.180129	2490	83	0.24	7.10	1544.34
30	32	35	3	3114.041	3098.461	-6.21222	0.176995	2520	84	0.19	5.83	1550.18
30	32	35	3	3118.946	3096.292	-6.35481	0.173754	2550	85	0.18	5.36	1555.54
30	32	35	3	3123.909	3094.108	-6.4948	0.170573	2580	86	0.18	5.42	1560.96
30	32	35	3	3128.933	3091.911	-6.63222	0.16745	2610	87	0.18	5.48	1566.45
30	32	35	3	3134.017	3089.699	-6.76712	0.164384	2640	88	0.18	5.54	1571.99
30	32	35	3	3139.162	3087.473	-6.89956	0.161374	2670	89	0.19	5.61	1577.60
30	32	35	3	3144.369	3085.232	-7.02957	0.158419	2700	90	0.19	5.67	1583.27
30	32	35	3	3149.639	3082.976	-7.15719	0.155518	2730	91	0.19	5.73	1589.00
30	32	35	3	3154.973	3080.706	-7.28249	0.152671	2760	92	0.19	5.80	1594.79
30	32	35	3	3160.371	3078.421	-7.40549	0.149875	2790	93	0.20	5.86	1600.66
30	32	35	3	3165.833	3076.121	-7.52623	0.147131	2820	94	0.20	5.93	1606.58
30	32	35	3	3171.362	3073.806	-7.64477	0.144437	2850	95	0.20	5.99	1612.58
30	32	35	3	3176.957	3071.476	-7.76113	0.141792	2880	96	0.20	6.06	1618.64
30	32	35	3	3182.62	3069.131	-7.87537	0.139196	2910	97	0.20	6.13	1624.77
30	32	35	3	3188.351	3066.77	-7.98751	0.136648	2940	98	0.21	6.20	1630.96
30	32	35	3	3194.15	3064.394	-8.0976	0.134146	2970	99	0.21	6.27	1637.23

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30	33	35	3	3200.017	3062.007	-16.02	0.131697	3000	100	0.21	6.33	1643.57
30	33	35	3	3204.912	3060.758	-16.0244	0.131615	3030	101	0.17	5.05	1648.62
30	33	35	3	3209.795	3059.505	-16.0287	0.131533	3060	102	0.17	5.04	1653.66
30	33	35	3	3214.664	3058.247	-16.0331	0.131451	3090	103	0.17	5.03	1658.69
30	33	35	3	3219.521	3056.986	-16.0374	0.131369	3120	104	0.17	5.02	1663.71
30	33	35	3	3224.364	3055.72	-16.0418	0.131288	3150	105	0.17	5.01	1668.71
30	33	35	3	3229.195	3054.45	-16.0461	0.131206	3180	106	0.17	4.99	1673.71
30	33	35	3	3234.012	3053.177	-16.0504	0.131124	3210	107	0.17	4.98	1678.69
30	33	35	3	3238.817	3051.898	-16.0548	0.131042	3240	108	0.17	4.97	1683.66
30	33	35	3	3243.609	3050.616	-16.0591	0.130961	3270	109	0.17	4.96	1688.62
30	33	35	3	3248.388	3049.329	-16.0634	0.130879	3300	110	0.16	4.95	1693.57
30	33	35	3	3253.154	3048.038	-16.0677	0.130797	3330	111	0.16	4.94	1698.51
30	33	35	3	3257.908	3046.743	-16.0721	0.130716	3360	112	0.16	4.93	1703.44
30	33	35	3	3262.649	3045.443	-16.0764	0.130634	3390	113	0.16	4.92	1708.35
30	33	35	3	3267.377	3044.14	-16.0807	0.130553	3420	114	0.16	4.90	1713.26
30	33	35	3	3272.093	3042.832	-16.085	0.130472	3450	115	0.16	4.89	1718.15
30	33	35	3	3276.796	3041.519	-16.0893	0.13039	3480	116	0.16	4.88	1723.03
30	33	35	3	3281.486	3040.202	-16.0936	0.130309	3510	117	0.16	4.87	1727.91
30	33	35	3	3286.164	3038.881	-16.0979	0.130228	3540	118	0.16	4.86	1732.77
30	33	35	3	3290.83	3037.556	-16.1022	0.130147	3570	119	0.16	4.85	1737.62
30	33	35	3	3295.483	3036.226	-16.1065	0.130066	3600	120	0.16	4.84	1742.46

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Table Q-5. Particle Flowpath Data for Particle 30 From GW-58D to Butters Row No. 1.
(Data from Particle Tracking - Appendix P)

Particle Number				Global X	Global Y	Global Z	Days	Time Step	Velocity (ft/d)	Distance (ft)	Cummulative Distance (ft)
30	20	26	2	1949.5	3949.5	30.03	0	0			
30	20	27	3	1975.592	3864.534	17.32078	30	1	2.96	88.88	88.88
30	21	28	3	2055.897	3744.611	21.20578	60	2	4.81	144.33	233.21
30	22	29	3	2104.654	3680.421	1.748362	90	3	2.69	80.61	313.81
30	22	29	3	2123.198	3648.071	1.803038	120	4	1.24	37.29	351.10
30	22	29	3	2142.352	3618.882	1.861709	150	5	1.16	34.91	386.02
30	22	30	3	2160.694	3591.361	5.799183	180	6	1.10	33.07	419.09
30	22	30	3	2176.108	3563.962	5.865131	210	7	1.05	31.44	450.53
30	22	30	3	2192.013	3539.432	5.936521	240	8	0.97	29.23	479.76
30	23	30	3	2208.109	3519.182	5.039311	270	9	0.86	25.87	505.63
30	23	30	3	2224.457	3502.308	5.09378	300	10	0.78	23.49	529.12
30	23	31	3	2240.165	3482.894	10.90168	330	11	0.83	24.97	554.10
30	23	31	3	2255.946	3464.49	10.96925	360	12	0.81	24.24	578.34
30	23	31	3	2271.984	3447.645	11.04189	390	13	0.78	23.26	601.60
30	23	31	3	2288.285	3432.226	11.11998	420	14	0.75	22.44	624.04
30	24	31	3	2304.618	3418.423	10.26516	450	15	0.71	21.38	645.42
30	24	31	3	2320.589	3406.495	10.36385	480	16	0.66	19.93	665.35
30	24	32	3	2336.159	3394.489	14.18441	510	17	0.66	19.66	685.02
30	24	32	3	2351.063	3381.926	14.26197	540	18	0.65	19.49	704.51
30	24	32	3	2366.094	3370.236	14.34461	570	19	0.63	19.04	723.55
30	24	32	3	2381.254	3359.357	14.43266	600	20	0.62	18.66	742.21
30	24	32	3	2396.545	3349.234	14.52647	630	21	0.61	18.34	760.55
30	25	32	3	2409.671	3339.671	10.96931	660	22	0.54	16.24	776.79
30	25	32	3	2422.192	3330.488	11.0448	690	23	0.52	15.53	792.32
30	25	32	3	2434.764	3321.68	11.12319	720	24	0.51	15.35	807.67
30	25	32	3	2447.388	3313.233	11.20457	750	25	0.51	15.19	822.86
30	25	32	3	2460.063	3305.13	11.28908	780	26	0.50	15.04	837.90
30	25	33	3	2472.294	3296.914	14.00937	810	27	0.49	14.73	852.63
30	25	33	3	2483.863	3288.147	14.00451	840	28	0.48	14.51	867.15
30	25	33	3	2495.838	3279.659	13.99967	870	29	0.49	14.68	881.83

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30	26	33	3	2505.06	3272.401	4.257262	900	30	0.39	11.74	893.56
30	26	33	3	2512.744	3265.8	4.315985	930	31	0.34	10.13	903.69
30	26	33	3	2520.455	3259.34	4.375766	960	32	0.34	10.06	913.75
30	26	33	3	2528.194	3253.016	4.436625	990	33	0.33	9.99	923.75
30	26	33	3	2535.96	3246.827	4.498582	1020	34	0.33	9.93	933.68
30	26	33	3	2543.755	3240.769	4.561656	1050	35	0.33	9.87	943.55
30	26	33	3	2551.577	3234.839	4.625866	1080	36	0.33	9.82	953.36
30	26	33	3	2559.427	3229.035	4.691234	1110	37	0.33	9.76	963.13
30	26	33	3	2567.305	3223.354	4.757781	1140	38	0.32	9.71	972.84
30	26	33	3	2575.212	3217.794	4.825528	1170	39	0.32	9.67	982.51
30	26	33	3	2583.146	3212.352	4.894495	1200	40	0.32	9.62	992.13
30	26	33	3	2591.11	3207.025	4.964707	1230	41	0.32	9.58	1001.71
30	26	33	3	2599.101	3201.811	5.036184	1260	42	0.32	9.54	1011.25
30	27	34	3	2607.283	3196.343	6.072475	1290	43	0.33	9.84	1021.09
30	27	34	3	2615.699	3190.771	6.271006	1320	44	0.34	10.09	1031.18
30	27	34	3	2623.929	3185.338	6.479214	1350	45	0.33	9.86	1041.05
30	27	34	3	2631.978	3180.04	6.697573	1380	46	0.32	9.64	1050.68
30	27	34	3	2639.85	3174.875	6.926576	1410	47	0.31	9.41	1060.10
30	27	34	3	2647.547	3169.839	7.166743	1440	48	0.31	9.20	1069.30
30	27	34	3	2655.075	3164.929	7.418618	1470	49	0.30	8.99	1078.28
30	27	34	3	2662.436	3160.141	7.682772	1500	50	0.29	8.78	1087.06
30	27	34	3	2669.635	3155.472	7.959803	1530	51	0.29	8.58	1095.64
30	27	34	3	2676.675	3150.921	8.25034	1560	52	0.28	8.38	1104.03
30	27	34	3	2683.56	3146.482	8.555039	1590	53	0.27	8.19	1112.22
30	27	34	3	2690.293	3142.155	8.874593	1620	54	0.27	8.00	1120.22
30	27	34	3	2696.877	3137.936	9.209724	1650	55	0.26	7.82	1128.04
30	28	34	3	2711.426	3134.464	24.21547	1680	56	0.50	14.96	1143.00
30	28	34	3	2732.149	3131.643	24.43933	1710	57	0.70	20.91	1163.91
30	28	34	3	2751.22	3128.859	24.68582	1740	58	0.64	19.27	1183.19
30	28	34	3	2768.771	3126.111	24.95721	1770	59	0.59	17.76	1200.95
30	28	34	3	2784.923	3123.399	25.25603	1800	60	0.55	16.38	1217.33
30	28	34	3	2799.787	3120.723	25.58504	1830	61	0.50	15.10	1232.43
30	29	34	3	2816.177	3121.005	26.09657	1860	62	0.55	16.39	1248.83
30	29	34	3	2832.908	3121.329	26.05168	1890	63	0.56	16.73	1265.56
30	29	34	3	2849.955	3121.653	26.00744	1920	64	0.57	17.05	1282.61

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30	29	34	3	2867.324	3121.975	25.96384	1950	65	0.58	17.37	1299.98
30	29	34	3	2885.021	3122.295	25.92087	1980	66	0.59	17.70	1317.68
30	30	34	3	2901.946	3122.636	23.49294	2010	67	0.56	16.93	1334.61
30	30	34	3	2913.767	3123.084	23.25326	2040	68	0.39	11.83	1346.44
30	30	34	3	2926.013	3123.54	23.02636	2070	69	0.41	12.25	1358.69
30	30	34	3	2938.698	3124.006	22.81157	2100	70	0.42	12.69	1371.39
30	30	34	3	2951.837	3124.481	22.60823	2130	71	0.44	13.15	1384.54
30	30	34	3	2965.448	3124.966	22.41574	2160	72	0.45	13.62	1398.15
30	30	34	3	2979.546	3125.46	22.23353	2190	73	0.47	14.11	1412.26
30	30	34	3	2994.15	3125.964	22.06103	2220	74	0.49	14.61	1426.87
30	31	34	3	3007.3	3124.432	19.68982	2250	75	0.44	13.24	1440.11
30	31	34	3	3019.676	3121.557	19.49576	2280	76	0.42	12.71	1452.82
30	31	34	3	3032.556	3118.641	19.31191	2310	77	0.44	13.21	1466.03
30	31	34	3	3045.96	3115.684	19.13773	2340	78	0.46	13.73	1479.75
30	31	34	3	3059.91	3112.684	18.97271	2370	79	0.48	14.27	1494.02
30	31	34	3	3074.427	3109.642	18.81637	2400	80	0.49	14.83	1508.85
30	31	34	3	3089.536	3106.556	18.66825	2430	81	0.51	15.42	1524.27
30	32	34	3	3102.153	3103.559	2.218354	2460	82	0.43	12.97	1537.24
30	32	34	3	3108.697	3100.797	2.124369	2490	83	0.24	7.10	1544.34
30	32	35	3	3114.041	3098.461	-6.21222	2520	84	0.19	5.83	1550.18
30	32	35	3	3118.946	3096.292	-6.35481	2550	85	0.18	5.36	1555.54
30	32	35	3	3123.909	3094.108	-6.4948	2580	86	0.18	5.42	1560.96
30	32	35	3	3128.933	3091.911	-6.63222	2610	87	0.18	5.48	1566.45
30	32	35	3	3134.017	3089.699	-6.76712	2640	88	0.18	5.54	1571.99
30	32	35	3	3139.162	3087.473	-6.89956	2670	89	0.19	5.61	1577.60
30	32	35	3	3144.369	3085.232	-7.02957	2700	90	0.19	5.67	1583.27
30	32	35	3	3149.639	3082.976	-7.15719	2730	91	0.19	5.73	1589.00
30	32	35	3	3154.973	3080.706	-7.28249	2760	92	0.19	5.80	1594.79
30	32	35	3	3160.371	3078.421	-7.40549	2790	93	0.20	5.86	1600.66
30	32	35	3	3165.833	3076.121	-7.52623	2820	94	0.20	5.93	1606.58
30	32	35	3	3171.362	3073.806	-7.64477	2850	95	0.20	5.99	1612.58
30	32	35	3	3176.957	3071.476	-7.76113	2880	96	0.20	6.06	1618.64
30	32	35	3	3182.62	3069.131	-7.87537	2910	97	0.20	6.13	1624.77
30	32	35	3	3188.351	3066.77	-7.98751	2940	98	0.21	6.20	1630.96
30	32	35	3	3194.15	3064.394	-8.0976	2970	99	0.21	6.27	1637.23

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30	33	35	3	3200.017	3062.007	-16.02	3000	100	0.21	6.33	1643.57
30	33	35	3	3204.912	3060.758	-16.0244	3030	101	0.17	5.05	1648.62
30	33	35	3	3209.795	3059.505	-16.0287	3060	102	0.17	5.04	1653.66
30	33	35	3	3214.664	3058.247	-16.0331	3090	103	0.17	5.03	1658.69
30	33	35	3	3219.521	3056.986	-16.0374	3120	104	0.17	5.02	1663.71
30	33	35	3	3224.364	3055.72	-16.0418	3150	105	0.17	5.01	1668.71
30	33	35	3	3229.195	3054.45	-16.0461	3180	106	0.17	4.99	1673.71
30	33	35	3	3234.012	3053.177	-16.0504	3210	107	0.17	4.98	1678.69
30	33	35	3	3238.817	3051.898	-16.0548	3240	108	0.17	4.97	1683.66
30	33	35	3	3243.609	3050.616	-16.0591	3270	109	0.17	4.96	1688.62
30	33	35	3	3248.388	3049.329	-16.0634	3300	110	0.16	4.95	1693.57
30	33	35	3	3253.154	3048.038	-16.0677	3330	111	0.16	4.94	1698.51
30	33	35	3	3257.908	3046.743	-16.0721	3360	112	0.16	4.93	1703.44
30	33	35	3	3262.649	3045.443	-16.0764	3390	113	0.16	4.92	1708.35
30	33	35	3	3267.377	3044.14	-16.0807	3420	114	0.16	4.90	1713.26
30	33	35	3	3272.093	3042.832	-16.085	3450	115	0.16	4.89	1718.15
30	33	35	3	3276.796	3041.519	-16.0893	3480	116	0.16	4.88	1723.03
30	33	35	3	3281.486	3040.202	-16.0936	3510	117	0.16	4.87	1727.91
30	33	35	3	3286.164	3038.881	-16.0979	3540	118	0.16	4.86	1732.77
30	33	35	3	3290.83	3037.556	-16.1022	3570	119	0.16	4.85	1737.62
30	33	35	3	3295.483	3036.226	-16.1065	3600	120	0.16	4.84	1742.46
30	34	35	3	3300.344	3034.918	13.47059	3630	121	0.17	5.03	1747.49
30	34	35	3	3313.15	3034.554	13.50226	3660	122	0.43	12.81	1760.30
30	34	35	3	3325.724	3034.189	13.53433	3690	123	0.42	12.58	1772.88
30	34	35	3	3338.073	3033.822	13.56682	3720	124	0.41	12.35	1785.23
30	34	35	3	3350.198	3033.453	13.59972	3750	125	0.40	12.13	1797.37
30	34	35	3	3362.105	3033.082	13.63305	3780	126	0.40	11.91	1809.28
30	34	35	3	3373.797	3032.708	13.6668	3810	127	0.39	11.70	1820.98
30	34	35	3	3385.279	3032.333	13.70099	3840	128	0.38	11.49	1832.46
30	34	35	3	3396.554	3031.956	13.73561	3870	129	0.38	11.28	1843.75
30	35	35	3	3406.922	3032.566	12.08658	3900	130	0.35	10.39	1854.13
30	35	35	3	3416.872	3033.607	12.16204	3930	131	0.33	10.00	1864.14
30	35	35	3	3426.736	3034.631	12.23936	3960	132	0.33	9.92	1874.05
30	35	35	3	3436.515	3035.639	12.31856	3990	133	0.33	9.83	1883.88
30	35	35	3	3446.211	3036.632	12.3997	4020	134	0.32	9.75	1893.63

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30	35	35	3	3455.823	3037.61	12.48282	4050	135	0.32	9.66	1903.29
30	35	35	3	3465.354	3038.572	12.56798	4080	136	0.32	9.58	1912.87
30	35	35	3	3474.802	3039.52	12.65522	4110	137	0.32	9.50	1922.37
30	35	35	3	3484.17	3040.453	12.74459	4140	138	0.31	9.41	1931.78
30	35	35	3	3493.457	3041.371	12.83615	4170	139	0.31	9.33	1941.11
30	36	35	3	3505.06	3042.797	21.09992	4200	140	0.39	11.69	1952.80
30	36	35	3	3521.983	3045.414	21.30389	4230	141	0.57	17.12	1969.93
30	36	35	3	3538.147	3047.91	21.52768	4260	142	0.55	16.36	1986.28
30	36	35	3	3553.587	3050.292	21.7732	4290	143	0.52	15.62	2001.91
30	36	35	3	3568.334	3052.566	22.04257	4320	144	0.50	14.92	2016.83
30	36	35	3	3582.419	3054.735	22.33811	4350	145	0.48	14.25	2031.08
30	36	35	3	3595.873	3056.805	22.66236	4380	146	0.45	13.61	2044.69
30	37	35	3	3612.102	3059.032	24.88811	4410	147	0.55	16.38	2061.07
30	37	35	3	3629.508	3061.254	25.11465	4440	148	0.58	17.55	2078.62
30	37	35	3	3646.573	3063.355	25.35896	4470	149	0.57	17.19	2095.81
30	37	35	3	3663.304	3065.342	25.62243	4500	150	0.56	16.85	2112.66
30	37	35	3	3679.709	3067.221	25.90657	4530	151	0.55	16.51	2129.17
30	37	35	3	3695.792	3068.999	26.21299	4560	152	0.54	16.18	2145.35
30	38	35	3	3709.264	3073.167	25.43548	4590	153	0.47	14.10	2159.46
30	38	35	3	3721.702	3078.217	25.52213	4620	154	0.45	13.42	2172.88
30	38	35	3	3733.952	3083.263	25.61016	4650	155	0.44	13.25	2186.13
30	38	35	3	3746.017	3088.307	25.6996	4680	156	0.44	13.08	2199.21
30	38	35	3	3757.9	3093.348	25.79046	4710	157	0.43	12.91	2212.11
30	38	35	3	3769.604	3098.385	25.88277	4740	158	0.42	12.74	2224.86
30	38	34	3	3778.703	3104.227	26.5087	4770	159	0.36	10.81	2235.67
30	38	34	3	3787.356	3110.276	26.20145	4800	160	0.35	10.56	2246.23
30	38	34	3	3796.96	3116.124	25.91513	4830	161	0.37	11.24	2257.47
30	39	34	3	3805.336	3119.962	24.34265	4860	162	0.31	9.21	2266.68
30	39	34	3	3812.899	3122.966	24.44456	4890	163	0.27	8.14	2274.82
30	39	34	3	3820.441	3125.921	24.54842	4920	164	0.27	8.10	2282.92
30	39	34	3	3827.963	3128.829	24.65426	4950	165	0.27	8.06	2290.99
30	39	34	3	3835.466	3131.69	24.76212	4980	166	0.27	8.03	2299.02
30	39	34	3	3842.949	3134.504	24.87203	5010	167	0.27	7.99	2307.01
30	39	34	3	3850.412	3137.274	24.98404	5040	168	0.27	7.96	2314.97
30	39	34	3	3857.856	3139.999	25.09819	5070	169	0.26	7.93	2322.90

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30	39	34	3	3865.28	3142.679	25.21452	5100	170	0.26	7.89	2330.79
30	39	34	3	3872.684	3145.317	25.33306	5130	171	0.26	7.86	2338.65
30	39	34	3	3880.069	3147.912	25.45387	5160	172	0.26	7.83	2346.48
30	39	34	3	3887.434	3150.465	25.57698	5190	173	0.26	7.80	2354.27
30	39	34	3	3894.781	3152.977	25.70244	5220	174	0.26	7.76	2362.04
30	40	34	3	3903.3	3155.151	27.39619	5250	175	0.29	8.79	2370.83

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Table Q-6. Hydrologic Input Parameters To CTM Transport Module.

Flow Path	Stream Tube	Length (ft)	Average Velocity (ft/d)	Travel Time (d)	Travel Time (yr)	Bins	Bin Width (ft)	Dispersion Coefficient (ft^2/d)	Peclet Number	Time Steps	Time Increment (days)	Courant Number
GW-83D	1	1292	0.38	3400	9.3	100	12.9	129.2	0	25	150	4.4
Butters Row 1	2	450	2.14	210	0.6	50	9.0	45.0	0	20	10	2.4
GW-58D	1	1920	0.39	4923	13.5	100	19.2	192.0	0	25	200	4.1
Butters Row 1	2	450	2.14	210	0.6	50	9.0	45.0	0	25	10	2.4

TABLE Q-7. AVERAGE COMPOSITION OF SHALLOW, MEDIUM, AND DEEP GROUNDWATER WELLS

(All units mg/L unless otherwise noted)

	Average by depth classification			
Analyte	Shallow[a]	Medium	Deep	Unaffected MMB Wells[b]
Aluminum, dissolved	0.19	0.19	2.1	0.20
Bicarbonate as HCO_3	41	44	141	25
Calcium, dissolved	22	35	122	18
Chloride	67	111	562	72
Chromium, dissolved	0.012	0.010	0.017	0.010
Iron, dissolved	4.6	6.6	98	2.5
Magnesium, dissolved	4.7	6.6	58	4.7
Manganese, dissolved	0.70	0.95	8.5	0.25 [c]
Potassium, dissolved	4.4	5.4	19	4.3
Ammonia as N	1.1	5.6	125	0.48
pH (s.u.)[d]	6.0	6.0	6.4	5.7
Sodium, dissolved	36	48	578	35
Specific conductance (µmhos/cm)[d]	378	687	4,324	435
Sulfate	40	104	1,857	34
Total dissolved solids (TDS)	311	790	5,881	--

[a] Shallow wells excluding unaffected Maple Meadowbrook wells.

[b] Average of unaffected Maple Meadowbrook wells: Chestnut St. 2/1A, Butter's Row 2, and Town Park wells.

[c] Because dissolved manganese was not measured, total manganese values were used to estimate the manganese concentration in the unaffected MMB wells.

[d] Field measurement.

-- = No data available.

All calculations were done using the full detection limit for non-detects.

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Particle Number	Well	Elevation at Well (feet msl)	Wv (%)	Travel Time (days)	Time Step Index	X Model Coordinate (feet)	Y Model Coordinate (feet)	Z Model Coordinate (feet msl)	Water Quality at Selected Point*
Scenario 1- Wet season with all municipal wells pumping at 5 yr. average rates, particles to Butters Row No. 1 and Chestnut St. No. 1									
1	BR1	60	2.50	28	e	2120	3951	75	s
2	BR1	60	2.71	35	e	2122	3854	73	s
3	BR1	60	3.68	33	e	2076	3776	79	s
4	BR1	60	0.91	54	e	2102	3997	75	s
5	BR1	60	1.39	37	e	2052	3798	79	s
6	BR1	60	2.84	28	e	2014	3781	79	s
7	BR1	60	0.99	105	e	1740	3840	79	b
8	BR1	60	1.44	121	e	1942	3599	78	s
9	BR1	60	2.87	68	e	2007	3656	77	s
10	BR1	53	4.72	38	e	2069	3724	79	s
11	BR1	53	4.68	63	e	2175	3773	72	s
12	BR1	53	4.54	42	e	2182	3912	75	s
13	BR1	53	3.47	108	e	2294	4000	64	s
14	BR1	53	3.32	189	e	2285	4087	64	s
15	BR1	53	3.57	319	e	1815	3454	78	s
16	BR1	53	3.73	145	e	1924	3532	78	s
17	BR1	53	4.60	65	e	2031	3641	77	s
18	BR1	38	4.72	133	e	2124	3608	72	s
19	BR1	38	4.68	60	2	2200	3779	37	100% GW-86M
20	BR1	38	4.54	120	4	2331	3834	37	100% GW-86M
21	BR1	38	3.47	150	5	2366	3970	31	100% GW-86M
22	BR1	38	3.32	270	9	2413	4040	22	100% GW-86M
23	BR1	38	3.57	400	e	1858	3405	78	s
24	BR1	38	3.73	228	e	1949	3461	76	s
25	BR1	38	4.60	148	e	2054	3540	75	s
26	BR1	30	1.99	240	8	2432	3803	-10	100% GW-87D
27	BR1	30	1.70	180	6	2318	3724	-1	48.1% GW-87D, 35.5% GW-86D, 16.4% GW-85D
28	BR1	30	2.58	330	11	2326	3525	20	50.6% GW-86M, 49.4% GW-85M
29	BR1	30	1.13	330	11	2495	3878	-14	100% GW-87D
30	BR1	30	0.46	3600	120	3295	3036	-16	100% GW-83D
31	BR1	30	1.99	120	4	2105	3611	18	67.4% GW-86M, 32.6% GW-85M
32	BR1	30	1.75	768	e	1961	3351	74	s
33	BR1	30	1.42	527	e	2074	3366	73	s
34	BR1	30	2.40	396	e	2085	3403	74	s

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Particle Number	Well	Elevation at Well (feet msl)	Wv (%)	Travel Time (days)	Time Step Index	X Model Coordinate (feet)	Y Model Coordinate (feet)	Z Model Coordinate (feet msl)	Water Quality at Selected Point*
Scenario 1 - continued									
35	CH1	60	3.25	37	e	2047	2913	72	s
36	CH1	60	2.55	31	e	2077	2821	74	s
37	CH1	60	2.42	56	e	2161	2710	71	s
38	CH1	60	2.43	22	e	1913	2936	72	s
39	CH1	60	1.37	29	e	2007	2876	74	s
40	CH1	60	1.11	261	e	2208	2500	65	s
41	CH1	60	2.23	20	e	1812	2940	73	s
42	CH1	60	0.96	25	e	1781	2905	74	s
43	CH1	60	0.51	38	e	1973	2568	75	b
44	CH1	52	2.61	934	e	2786	2118	80	b
45	CH1	52	5.34	198	e	2382	2741	53	s
46	CH1	52	5.43	39	e	2106	2871	70	s
47	CH1	52	3.45	65	e	2017	3030	72	s
48	CH1	52	3.40	45	e	1847	3049	72	s
49	CH1	52	2.80	42	e	1743	3010	74	s
50	CH1	52	3.04	67	e	1682	3024	75	s
51	CH1	52	2.94	82	e	2093	2412	72	s
52	CH1	36	2.61	1792	e	3216	1081	83	b
53	CH1	36	5.34	240	8	2407	2742	23	100% GW-85M
54	CH1	36	5.43	823	e	2650	2906	59	s
55	CH1	36	3.45	439	e	2312	3144	52	s
56	CH1	36	3.40	170	e	1937	3212	72	s
57	CH1	36	2.80	117	e	1754	3156	75	s
58	CH1	36	3.04	146	e	1686	3141	76	s
59	CH1	36	2.94	1330	e	3050	1344	82	b
60	CH1	28	4.37	5250	175	3190	2912	-15	100% GW-83D
61	CH1	28	1.95	1050	35	2557	2951	-3	100% GW-85D
62	CH1	28	1.99	2504	e	3136	811	85	b
63	CH1	28	4.16	4650	155	3297	2917	-5	100% GW-83M
64	CH1	28	1.42	4860	162	3197	2903	-5	100% GW-83M
65	CH1	28	1.46	2281	e	3146	801	85	b
66	CH1	28	4.67	470	e	2023	3301	73	s
67	CH1	28	2.56	295	e	1922	3269	72	s
68	CH1	28	2.59	419	e	1989	3299	72	s

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Particle Number	Well	Elevation at Well (feet msl)	Wv (%)	Travel Time (days)	Time Step Index	X Model Coordinate (feet)	Y Model Coordinate (feet)	Z Model Coordinate (feet msl)	Water Quality at Selected Point*
Scenario 2 - Wet season with Butters Row No. 1 pumping at 1 MGD (all other municipal wells off), particles to Butters Row No. 1									
1	BR1	60	3.22	62	e	2204	4085	64	s
2	BR1	60	2.59	10	e	2119	3919	75	b
3	BR1	60	3.63	13	e	2083	3781	79	s
4	BR1	60	1.97	229	e	2187	4713	78	b
5	BR1	60	0.46	11	e	2035	3871	77	b
6	BR1	60	2.58	13	e	2009	3754	79	s
7	BR1	60	2.70	206	e	1656	4528	79	b
8	BR1	60	1.91	120	e	1521	3642	79	b
9	BR1	60	3.18	62	e	1904	3523	78	s
10	BR1	53	3.88	16	e	2065	3717	79	s
11	BR1	53	3.92	30	e	2192	3788	72	s
12	BR1	53	3.87	20	e	2192	3968	75	s
13	BR1	53	3.67	130	e	2401	4350	62	s
14	BR1	53	3.63	254	e	2129	4773	78	b
15	BR1	53	3.57	457	e	1093	4213	79	b
16	BR1	53	3.60	254	e	1716	3216	77	b
17	BR1	53	3.82	37	e	1969	3555	78	s
18	BR1	38	3.88	170	e	2141	3373	72	s
19	BR1	38	3.92	60	2	2315	3748	32	77.5% GW-86M, 22.5% GW-85M
20	BR1	38	3.87	90	3	2436	3968	29	100% GW-86M
21	BR1	38	3.67	305	e	2595	4391	76	b
22	BR1	38	3.63	377	e	2253	4900	63	b
23	BR1	38	3.57	610	e	1022	4333	79	b
24	BR1	38	3.60	454	e	1722	3040	74	b
25	BR1	38	3.82	96	e	1983	3415	76	s
26	BR1	30	2.71	90	3	2350	4181	-1	54.2% GW-65D, 45.8% GW-86M
27	BR1	30	1.40	120	4	2463	3884	-17	100% GW-87D
28	BR1	30	1.90	90	3	2274	3623	8	64.5% GW-86M, 35.5% GW-85M
29	BR1	30	2.40	1629	e	3333	5657	82	b
30	BR1	30	0.59	5489	e	4999	6133	85	b
31	BR1	30	1.42	60	2	2037	3536	15	61.9% GW-86M, 38.1% GW-85M
32	BR1	30	3.07	4109	e	4894	6138	85	b
33	BR1	30	2.00	1681	e	316	2776	81	b
34	BR1	30	2.38	714	e	1910	2909	72	b

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Particle Number	Well	Elevation at Well (feet msl)	Wv (%)	Travel Time (days)	Time Step Index	X Model Coordinate (feet)	Y Model Coordinate (feet)	Z Model Coordinate (feet msl)	Water Quality at Selected Point*
Scenario 3 - Dry season with all municipal wells pumping at 5 yr. average rates, particles to Butters Row No. 1 and Chestnut St. No. 1									
1	BR1	60	3.82	33	e	2164	3878	73	s
2	BR1	60	4.05	19	e	2120	3872	73	s
3	BR1	60	5.13	22	e	2122	3822	73	s
4	BR1	60	1.69	44	e	2170	3896	73	s
5	BR1	60	2.15	26	e	2104	3837	73	s
6	BR1	60	3.82	34	e	2118	3764	72	s
7	BR1	60	0.82	111	e	1796	3776	72	b
8	BR1	60	1.57	91	e	2102	3627	72	s
9	BR1	60	3.52	61	e	2116	3673	72	s
10	BR1	53	4.74	44	e	2168	3734	72	s
11	BR1	53	4.97	31	e	2175	3813	73	s
12	BR1	53	4.80	64	e	2327	3841	52	s
13	BR1	53	3.23	85	e	2366	3925	53	s
14	BR1	53	2.92	86	e	2294	4024	64	s
15	BR1	53	2.94	324	e	2308	3374	69	s
16	BR1	53	3.16	245	e	2419	3452	69	s
17	BR1	53	4.49	79	e	2173	3642	72	s
18	BR1	38	4.74	189	e	2547	3608	71	s
19	BR1	38	4.97	30	1	2192	3819	37	s
20	BR1	38	4.80	60	2	2314	3851	29	100% GW-86M
21	BR1	38	3.23	90	3	2383	3917	31	100% GW-86M
22	BR1	38	2.92	120	4	2381	3949	21	100% GW-86M
23	BR1	38	2.94	508	e	2783	3290	59	s
24	BR1	38	3.16	333	e	2627	3383	63	s
25	BR1	38	4.49	120	4	2294	3586	37	59.2% GW-86M, 40.8% GW-85M
26	BR1	30	1.57	120	4	2446	3788	0	100% GW-86D
27	BR1	30	1.56	90	3	2339	3770	2	66.0% GW-86M, 19.2% GW-85M, 14.9% GW-84M
28	BR1	30	2.06	90	3	2316	3718	5	61.6% GW-86M, 22.1% GW-85M, 16.3% GW-84M
29	BR1	30	0.72	150	5	2456	3825	-16	100% GW-87D
30	BR1	30	0.72	120	4	2362	3703	-10	49.5% GW-87D, 34.4% GW-86D, 16.1% GW-85D
31	BR1	30	1.53	120	4	2336	3645	6	62.5% GW-86M, 37.5% GW-85M
32	BR1	30	0.64	210	7	2495	3856	-19	100% GW-87D
33	BR1	30	0.63	210	7	2338	3518	4	50.6% GW-85M, 49.4% GW-86M
34	BR1	30	1.49	150	5	2317	3574	11	56.6% GW-86M, 43.4% GW-85M

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Particle Number	Well	Elevation at Well (feet msl)	Wv (%)	Travel Time (days)	Time Step Index	X Model Coordinate (feet)	Y Model Coordinate (feet)	Z Model Coordinate (feet msl)	Water Quality at Selected Point*
Scenario 3 - continued									
35	CH1	60	3.16	21	e	2050	2870	73	s
36	CH1	60	2.63	25	e	2094	2817	73	s
37	CH1	60	2.48	37	e	2157	2739	71	s
38	CH1	60	2.30	21	e	1981	2922	72	s
39	CH1	60	1.50	17	e	2012	2838	73	s
40	CH1	60	1.23	29	e	2114	2714	71	s
41	CH1	60	1.96	30	1	1917	2986	72	s
42	CH1	60	0.88	34	e	1902	2987	72	s
43	CH1	60	0.20	57	e	2152	2629	71	b
44	CH1	52	2.62	238	e	2682	2684	68	s
45	CH1	52	5.83	175	e	2580	2787	58	s
46	CH1	52	5.92	24	e	2105	2842	70	s
47	CH1	52	3.44	40	e	2070	2948	72	s
48	CH1	52	3.33	52	e	1987	3041	72	s
49	CH1	52	2.63	97	e	1893	3117	71	s
50	CH1	52	2.89	276	e	1933	3206	72	b
51	CH1	52	2.89	189	e	2522	2570	68	s
52	CH1	36	2.62	349	e	2944	2731	65	b
53	CH1	36	5.83	400	e	3061	2823	60	b
54	CH1	36	5.92	307	e	2863	2890	63	b
55	CH1	36	3.44	180	6	2512	2973	32	100% GW-85M
56	CH1	36	3.33	154	e	2334	3065	51	s
57	CH1	36	2.63	190	e	2112	3175	69	s
58	CH1	36	2.89	434	e	2261	3236	67	s
59	CH1	36	2.89	520	e	3249	2598	72	b
60	CH1	28	4.43	450	15	2506	3075	14	100% GW-83M
61	CH1	28	2.19	330	11	2563	2930	-3	100% GW-85D
62	CH1	28	2.03	360	12	2595	2801	2	100% GW-85M
63	CH1	28	4.12	540	18	2590	3053	-2	100% GW-85D
64	CH1	28	1.46	510	17	2580	3057	-1	100% GW-85D
65	CH1	28	1.21	1385	e	3495	2526	62	b
66	CH1	28	4.52	570	19	2589	3060	-3	100% GW-85D
67	CH1	28	2.37	360	12	2552	3096	19	100% GW-85M
68	CH1	28	2.22	360	12	2544	3097	17	100% GW-85M

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Particle Number	Well	Elevation at Well (feet msl)	Wv (%)	Travel Time (days)	Time Step Index	X Model Coordinate (feet)	Y Model Coordinate (feet)	Z Model Coordinate (feet msl)	Water Quality at Selected Point*
Scenario 4 - Dry season with Butters Row No. 1 pumping at 1 MGD (all other muncipal wells off), particles to Butters Row No. 1									
1	BR1	60	3.35	30	e	2216	4053	64	s
2	BR1	60	2.97	9	e	2133	3892	72	s
3	BR1	60	3.35	9	e	2114	3826	72	s
4	BR1	60	2.56	69	e	2213	4264	64	s
5	BR1	60	0.88	9	e	2100	3866	72	s
6	BR1	60	2.83	18	e	2108	3718	72	s
7	BR1	60	2.94	322	e	2217	4534	58	b
8	BR1	60	2.34	267	e	1657	3152	73	b
9	BR1	60	3.11	95	e	2047	3389	73	s
10	BR1	53	4.14	22	e	2158	3709	72	s
11	BR1	53	4.28	12	e	2170	3836	72	s
12	BR1	53	4.22	26	e	2305	3962	53	s
13	BR1	53	3.85	54	e	2338	4172	53	s
14	BR1	53	3.75	134	e	2338	4391	53	s
15	BR1	53	3.62	1254	e	695	2726	74	b
16	BR1	53	3.66	540	18	2472	2924	40	s
17	BR1	53	4.01	120	e	2279	3357	71	s
18	BR1	38	4.14	174	e	2623	3454	68	s
19	BR1	38	4.28	111	e	2554	3672	71	s
20	BR1	38	4.22	60	2	2430	3913	24	100% GW-86M
21	BR1	38	3.85	30	1	2211	4166	25	51.7% GW-86M, 48.3% GW-65D
22	BR1	38	3.75	234	e	2569	4266	71	b
23	BR1	38	3.62	2771	e	763	1544	75	b
24	BR1	38	3.66	600	20	2477	2883	27	100% GW-85M
25	BR1	38	4.01	300	10	2760	3192	59	s
26	BR1	30	2.00	90	3	2491	4013	-2	63.0% GW-87D, 37.0% GW-86D
27	BR1	30	1.15	90	3	2498	3809	-15	100% GW-87D
28	BR1	30	1.51	60	2	2345	3699	4	69.0% GW-86M, 31.0% GW-85M
29	BR1	30	1.67	297	e	2923	3952	76	b
30	BR1	30	0.33	603	e	3120	3477	74	b
31	BR1	30	1.03	240	8	2638	3320	14	100% GW-85M
32	BR1	30	2.08	528	e	2935	3975	76	b
33	BR1	30	1.28	1088	e	1286	2529	70	b
34	BR1	30	1.61	360	12	2544	3085	13	100% GW-85M

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TABLE Q-8

Particle Tracking Results
Olin Corporation: Wilmington, MA Facility

Notes:

BR1 = Butters Row No. 1
CH1 = Chestnut Street No. 1
Wv = Percent contribution to well (volumetric weighting factor)
e = endpoint of flow line
s = shallow water from wetlands
b = water quality not affected by Disposal Site or wetlands
* = mixtures are distance-weighted averages

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TABLE Q-9. ESTIMATED SOLUTE CONCENTRATIONS AT BUTTERS ROW NO. 1 AND CHESTNUT STREET NO. 1 WELLS UNDER VARIOUS PUMPING AND SEASONALITY SCENARIOS
(all concentrations in mg/L, unless otherwise noted)

Analyte	Scenario 1				Scenario 2	Scenario 3		Scenario 4	Range of Historical Concentrations	
	Butters Row No. 1[a]		Chestnut Street No. 1[a]		Butters Row No. 1[b]	Butters Row No. 1[c]	Chestnut Street No. 1[c]	Butters Row No. 1[d]	Butters Row No. 1	Chestnut Street No. 1
	w/ GW-83D	w/ out GW-83D	w/ GW-83D	w/ out GW-83D						
Aluminum	0.32	0.19	1.4	0.19	0.19	0.19	0.20	0.20	0.20 - 0.20	0.20 - 0.20
Ammonia (mg/L as N)	9.7	3.3	65	4.3	2.5	2.6	15	1.5	1.4 - 9.4	0.12 - 4.2
Bicarbonate (as HCO_3)	53	52	45	41	49.0	49	60	47	26 - 71	27 - 80
Calcium	37	35	40	27	32	33	52	25	21 - 44	20 - 38
Chloride	110	93	280	81	90	89	130	79	70 - 140	44 - 126
Iron	15	9.1	57	5	7.0	9.1	6.4	6.1	4.8 - 7.3	1.1 - 1.9
Magnesium	10	8.3	22	6	7.4	7.5	13	5.9	5.0 - 9.8	5.0 - 8.1
Manganese	1.1	0.90	3.0	1.0	0.79	0.84	2.1	0.55	0.57 - 1.3	0.06 - 0.76
Potassium	6.0	5.5	9.4	4.9	4.7	5.4	8.2	5.2	4.0 - 6.0	3.3 - 5.0
Sodium	77	49	310	41	46	45	67	40	41 - 74	41 - 72
Sulfate	190	110	850	87	92	95	260	61	43 - 198	20 - 150
Total Dissolved Solids (estimated from Specific Conductance)	460	330	1600	290	310	300	590	270	311 - 517	279 - 410
Sum negative charge (meq/L)	-7.9	-5.8	-26	-4.8	-5.3	-5.3	-10	-4.3	--	--
Sum positive charge (meq/L)	7.4	5.3	25	4.3	4.8	4.9	8.2	4.0	--	--
Total charge (meq/L)	15	11	51	9.1	10.0	10	18	8.2	--	--
Charge imbalance	-3%	-4%	-4%	-5%	-5%	-4%	-10%	-4%	--	--

[a] Scenario 1 - All production wells pumping at the five year average rate during the wet season.
[b] Scenario 2 - Only Butters Row No. 1 pumping at capacity (1 Mgd) during the wet season.
[c] Scenario 3 - All production wells pumping at the five year average rate during the dry season.
[d] Scenario 4 - Only Butters Row No. 1 pumping at capacity (1 Mgd) during the dry season.

-- Not Applicable

Predicts

Figures

SMITH

FIGURES

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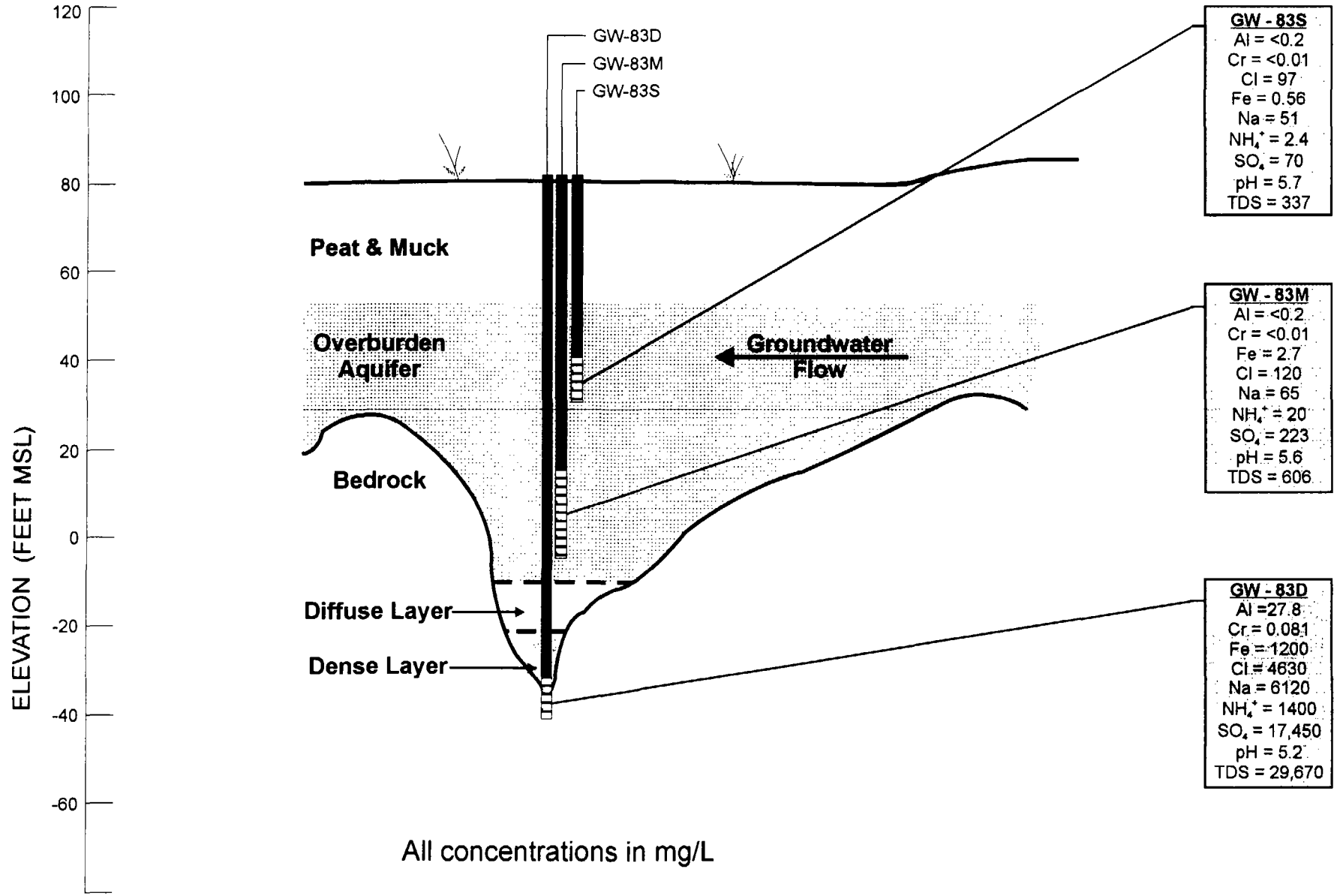

Figure Q-1. Schematic of Chemical Stratification at GW-83 Well Cluster Showing Dense Layer, Diffuse Layer and Overlying Shallow Groundwater. (Values are Average Concentrations for All Sampling Events)

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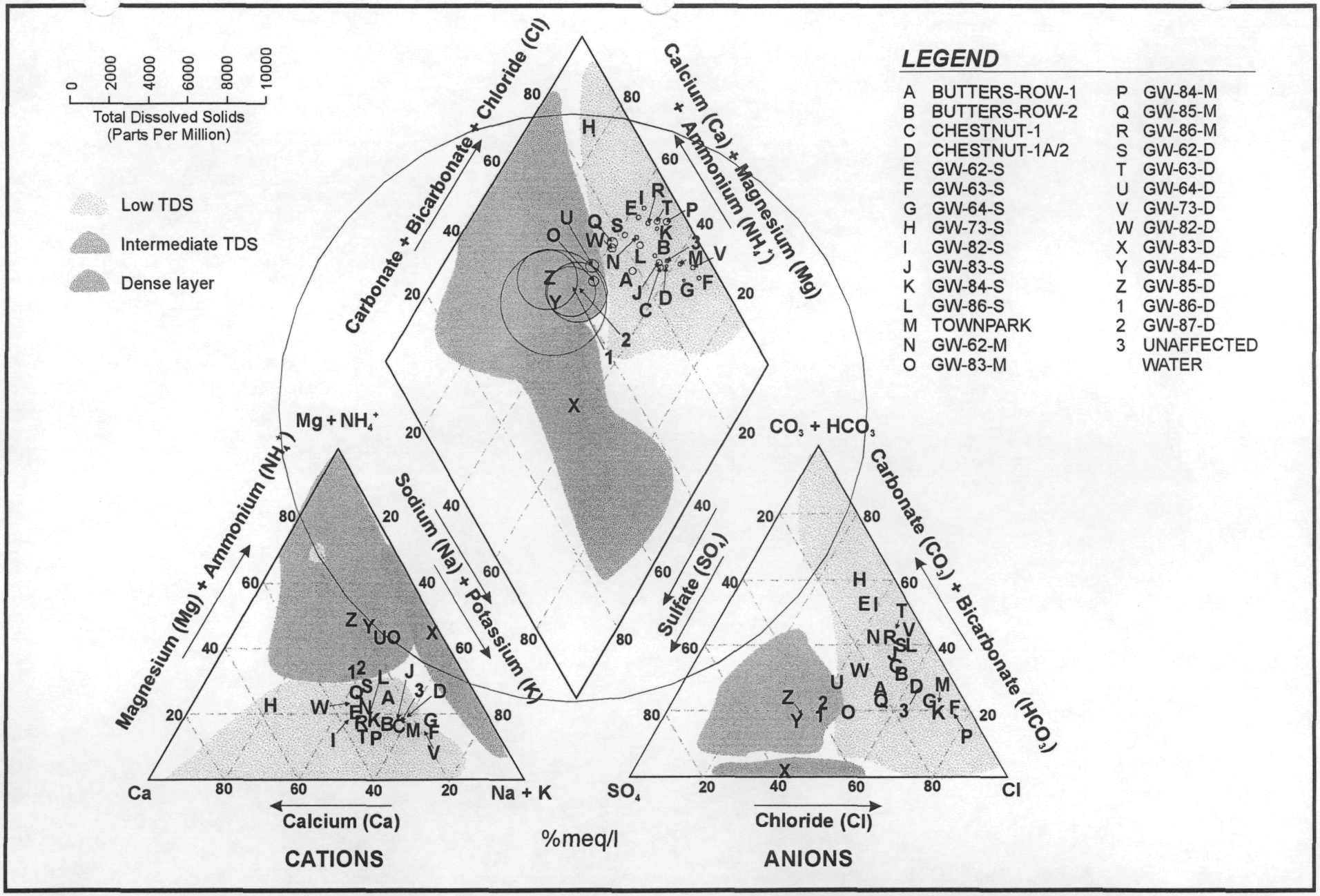

Figure Q-2. Piper Diagram Showing the Average Chemical Composition of Maple Meadow Brook Monitoring Wells and Town Pumping Wells.

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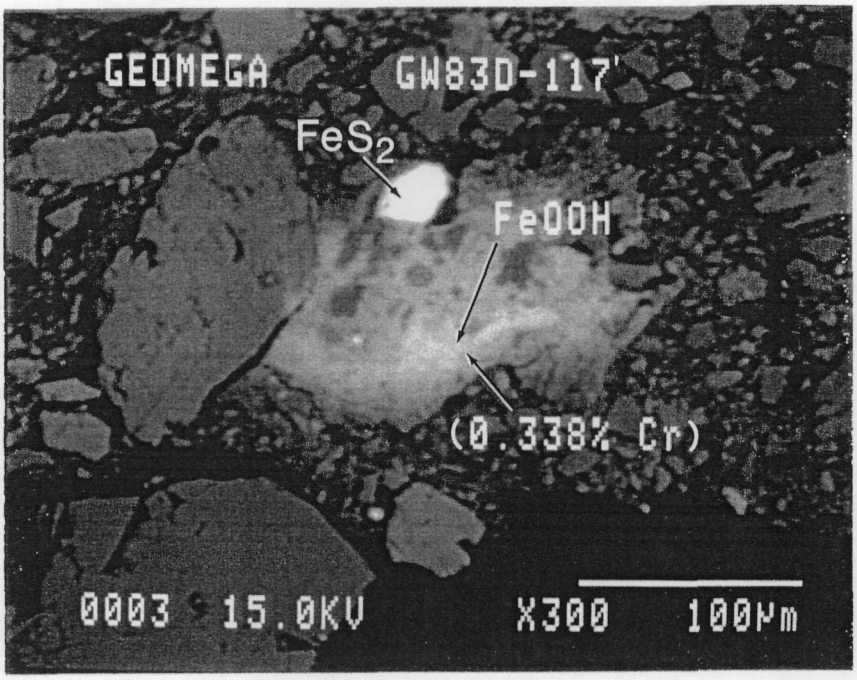
A



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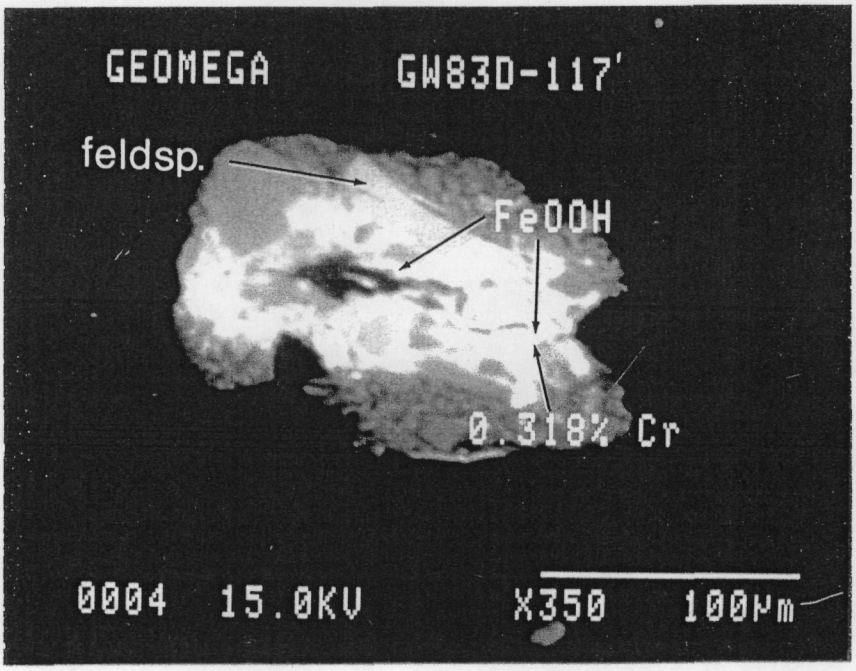

Figure Q-3: Electron Microprobe Images of Aquifer Material from GW-83D (117ft) showing (a) Fe(III) oxyhydroxide solid phase containing up to 0.338 weight percent Cr(III) and presence of a pyrite grain (FeS_2) representing a potential nucleation site for FE(III) precipitation, and (b) Fe(III) oxyhydroxide solid phase containing up to 0.318 weight percent Cr(III).

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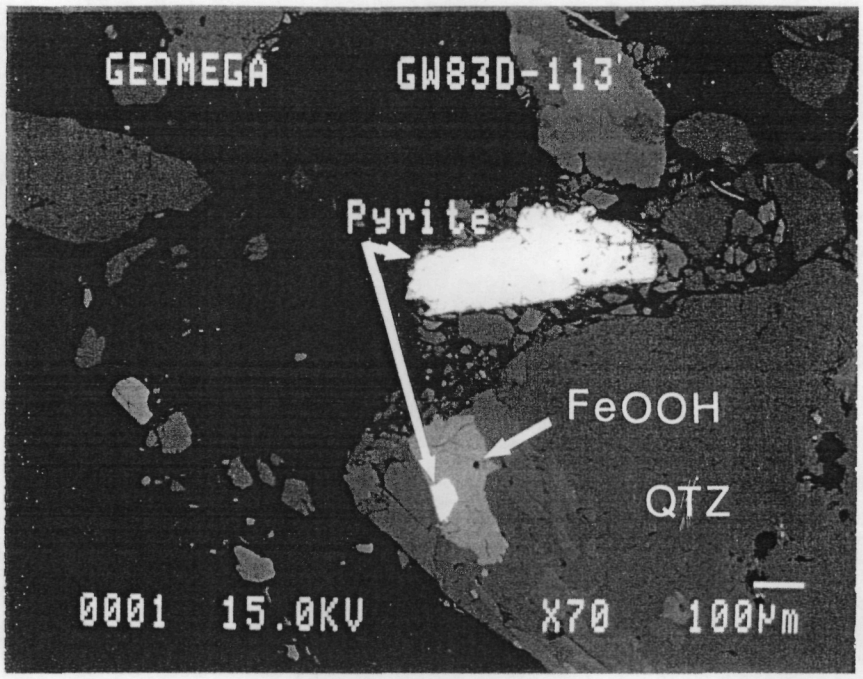
C



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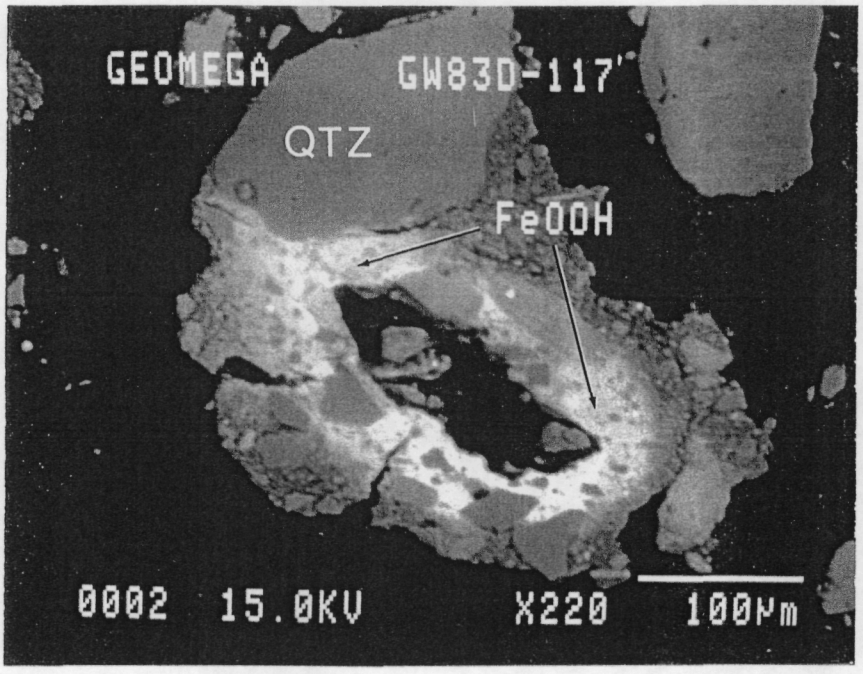

Figure Q-4: Electron Microprobe Images of Aquifer Material from GW-83D showing (c) pyrite grain and pyrite grain encapsulated in iron oxide (FeOOH) grain (113 ft.), and (d) FeOOH precipitates cementing quartz fragments (117 ft.).

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Figure Q-5. Groundwater Velocity Profile From GW-83D to Butters Row No. 1

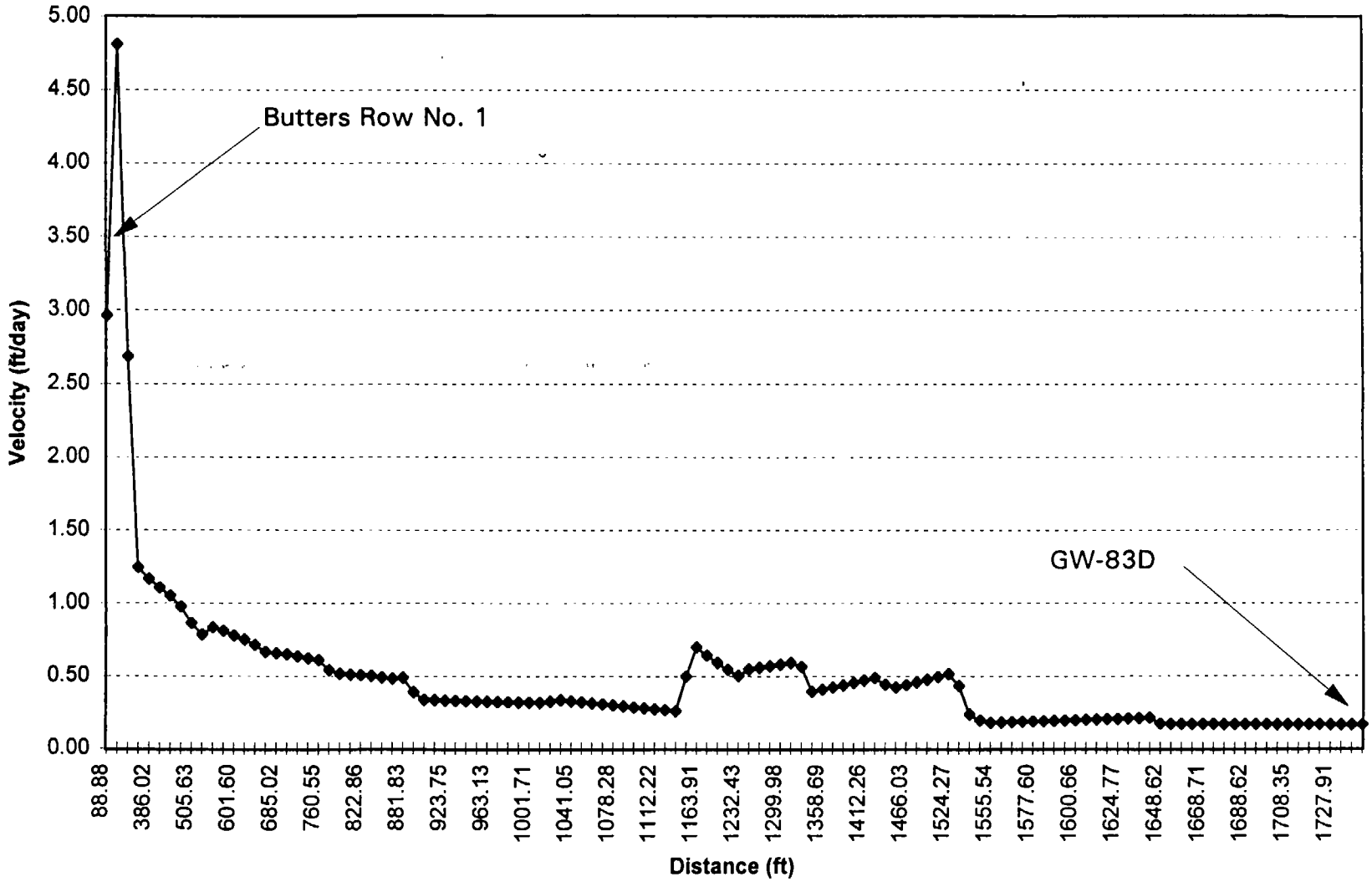

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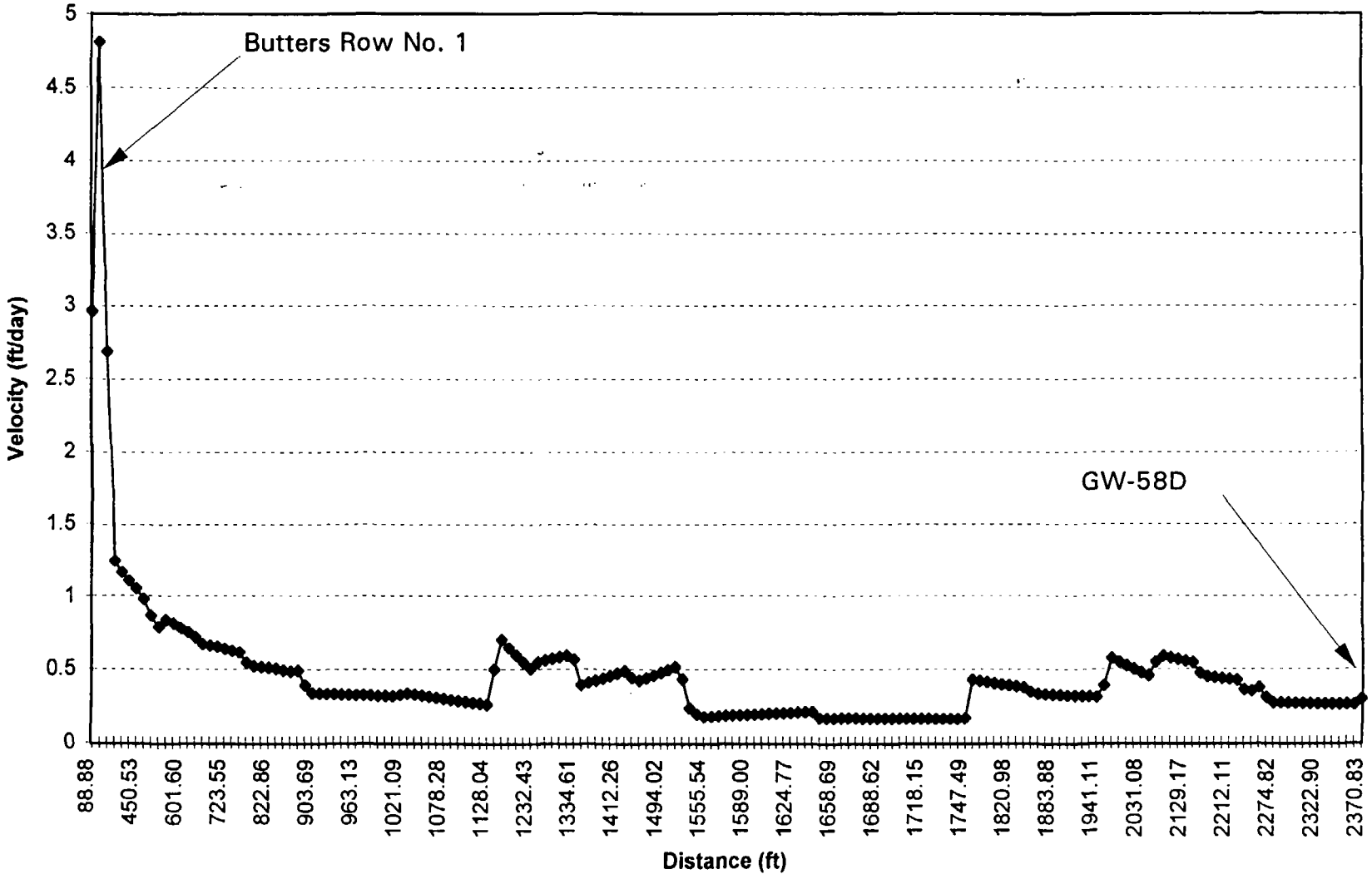
Figure Q-6. Groundwater Velocity Profile From GW-58D to Butters Row No. 1



Ctm1

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Figure Q-7. Simulated Chromium Transport From GW-83D to Butters Row No. 1 (assumes no geochemical precipitation of solids - worse case scenario)

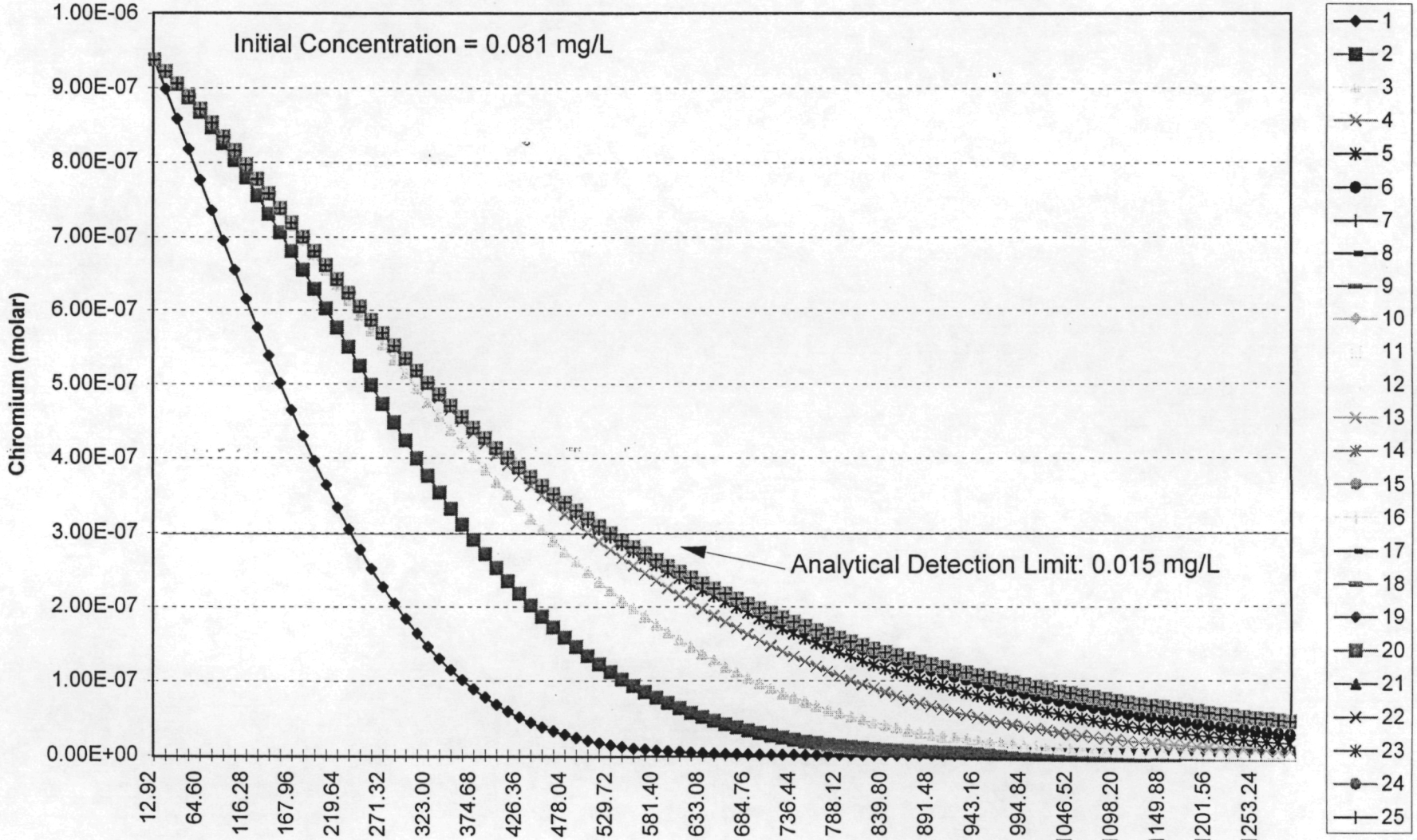

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Figure Q-8. Simulated Chromium Transport From GW-83D to Butters Row No.1 (assumes equilibrium with $Cr_{0.01}Fe_{0.99}(OH)_3$

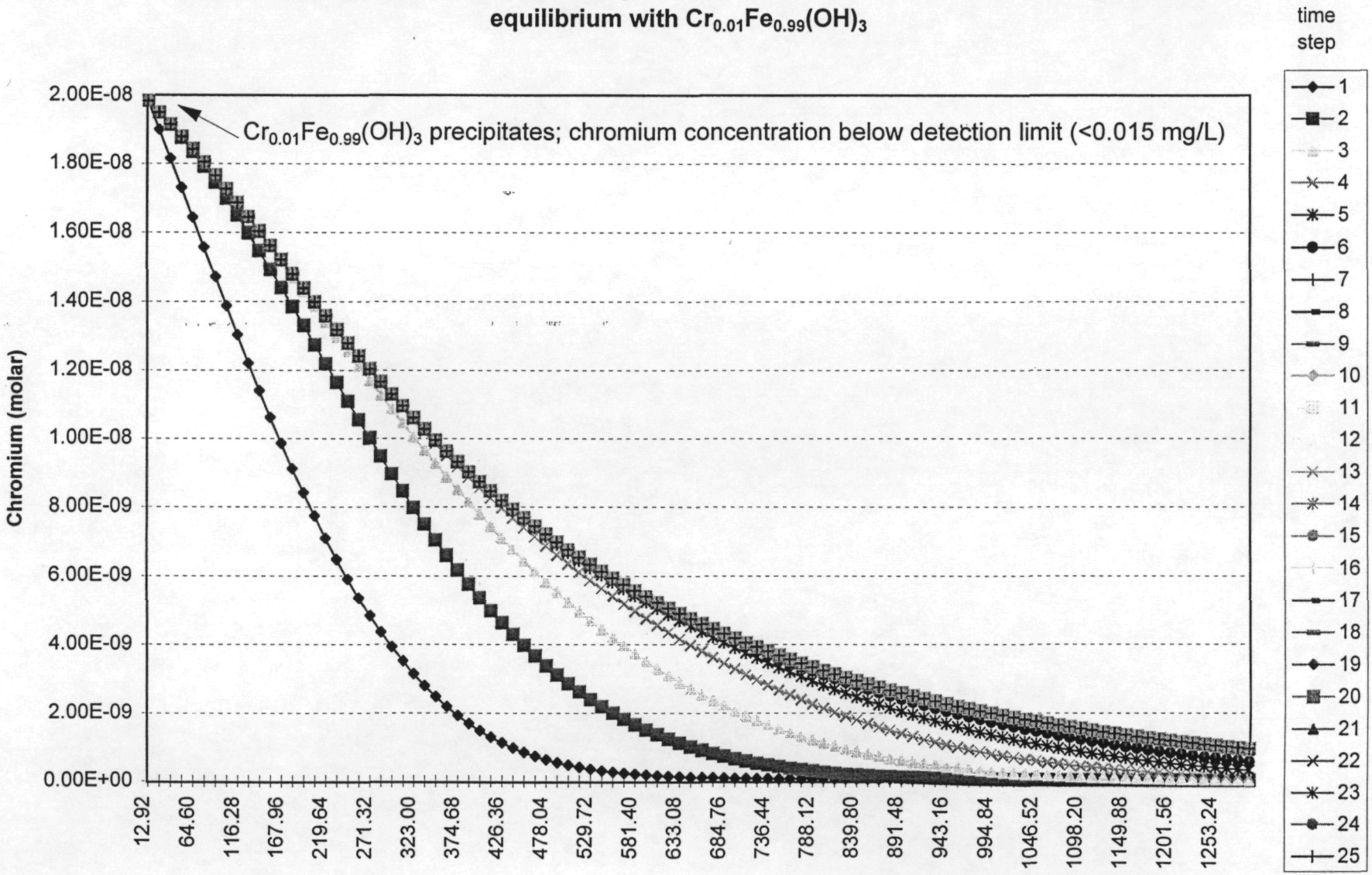

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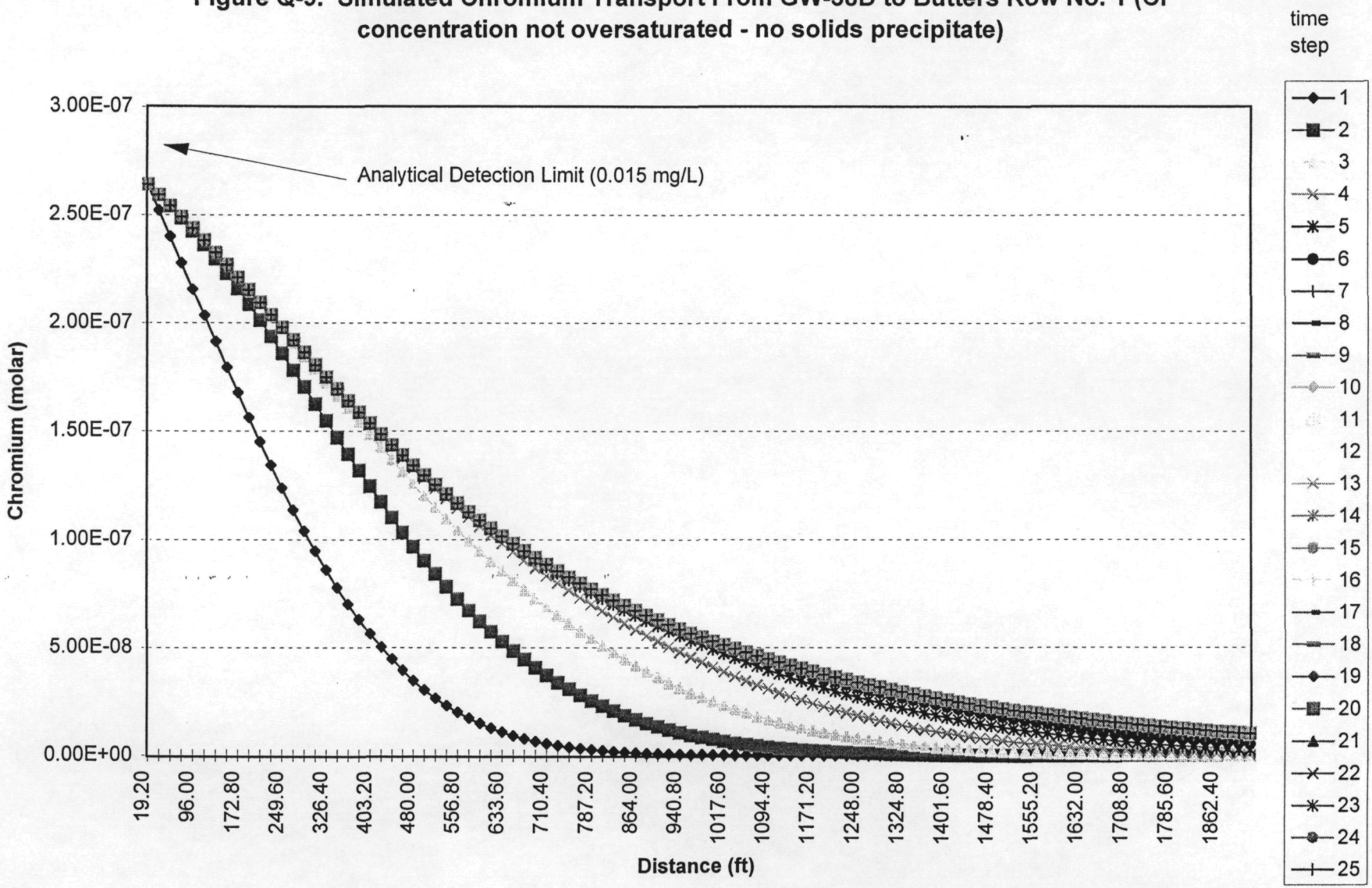
Figure Q-9. Simulated Chromium Transport From GW-58D to Butters Row No. 1 (Cr concentration not oversaturated - no solids precipitate)



A

ATTACHMENT A

MINTEQ OUTPUT FILES

MINTEQ Code Version: 4.00

Location: GW-83D in equilibrium with Cr0.01Fe0.99(OH)3 solid.
Sample Date: 10/26/96
LONG.
T = 10.90 MG/L .00 .00
1 0 0 0 3 0 0 0 2 1 0
0 .00 .00 .00 .00
330 0.000E+00 -5.19
490 1.650E+03 .00
150 2.300E+02 .00
180 4.690E+03 .00
30 2.750E+01 .00
211 9.800E-02 .00
280 1.008E+03 .00
281 1.120E+02 .00
410 1.280E+02 .00
460 2.950E+02 .00
500 6.120E+03 .00
732 1.760E+04 .00
1 0.000E+00 .00
H2O HAS BEEN INSERTED AS A COMPONENT
3 2
330 5.190E+00 .00
2802810 0.000E+00 .00

START OF MINTEQ OUTPUT

-----MINTEQ FORTRAN Code Version: 4.00-----
-----COMP.DAT (basis components) Version: 4.01-----
-----AQUEOUS.DAT (aqueous species thermodynamic data) Version: 2.00-----
-----SOLIDS.DAT (solids thermodynamic data) Version: 4.01-----
-----GAS_RDX.DAT (gas and redox species thermodynamic data) Version: 4.01-----
-----PRCOEF.DAT (pressure coefficients) Version: 4.00-----
-----ALK.DAT (Alkalinity factors) Version: 4.01-----

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	Name	Activity Guess	Log Guess	Anal Total
330	H+	6.457E-06	-5.190	0.000E+00
490	NH4+	1.000E+00	.000	1.650E+03
150	Ca+2	1.000E+00	.000	2.300E+02
180	Cl-	1.000E+00	.000	4.690E+03
30	Al+3	1.000E+00	.000	2.750E+01
211	CrOH+2	1.000E+00	.000	9.800E-02
280	Fe+2	1.000E+00	.000	1.008E+03
281	Fe+3	1.000E+00	.000	1.120E+02
410	K+	1.000E+00	.000	1.280E+02
460	Mg+2	1.000E+00	.000	2.950E+02
500	Na+	1.000E+00	.000	6.120E+03
732	SO4-2	1.000E+00	.000	1.760E+04
1	e-	1.000E+00	.000	0.000E+00
2	H2O	1.000E+00	.000	0.000E+00

OUTPUT DATA: ITERATIONS = 0

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4150000	Halite		-3.378	-1.528	.076	-1.850	-.951
2028105	Hematite		15.659	-1.223	.061	16.883	31.135
3028001	Hercynite	##	-.992	-30.080	1.504	29.088	78.375
6046001	Hexahydrite		-2.748	1.666	.083	-4.414	.000
6028101	Jarosite-H		11.351	10.096	.505	1.255	55.147
6041002	Jarosite-K		11.953	8.232	.412	3.721	31.282
6050000	Jarosite-Na		15.551	9.883	.494	5.668	36.182
6003002	Jurbanite		2.392	3.800	.190	-1.408	.000
6041010	K3H(SO4)2		-13.507	3.167	.158	-16.674	.000
6041004	Kainite		-8.106	.088	.004	-8.194	.000
6046002	Kieserite		-4.244	.142	.007	-4.386	.000
6050006	Labile-Salt		-5.384	5.716	.286	-11.100	.000
6041005	Leonite		-7.760	3.749	.187	-11.509	.000
2028103	Lepidocrocite		7.075	-1.363	.068	8.439	.000
2015000	Lime		-26.910	-34.268	1.713	7.358	46.264
2028104	Maghemite		10.510	-6.373	.319	16.883	.000
3028000	Magnetite		12.344	-12.339	.617	24.682	51.075
6028000	Melanterite		-1.865	2.397	.120	-4.262	-4.910
6041006	Mercallite		-8.285	1.282	.064	-9.567	.000
3021101	Mg-Chromite		-8.590	-21.645	1.082	13.055	.000
3046001	Mg-Ferrite		5.339	-19.186	.959	24.525	66.619
4146001	Mg2Cl(OH)3:7H2O		-17.050	-26.049	1.302	8.999	.000
6050001	Mirabilite		-1.365	1.902	.095	-3.267	-18.987
6041007	Misenite		-54.676	9.834	.492	-64.510	.000
6050007	Na3H(SO4)2		-9.987	.846	.042	-10.833	.000
2046001	Periclase		-15.004	-22.646	1.132	7.642	36.085
6041008	Picromerite		-7.418	4.102	.205	-11.520	.000
6041009	Polyhalite		-7.298	13.529	.676	-20.827	.000
2015001	Portlandite		-16.332	-23.685	1.184	7.352	31.000
3046000	Spinel		-10.705	-39.635	1.982	28.931	89.109
4141001	Sylvite		-4.826	-1.029	.051	-3.797	.000
6041011	Syngenite		-4.572	7.205	.360	-11.777	.000
4146002	Tachyhydrite		-32.269	-17.317	.866	-14.952	.000
6050002	Thenardite		-2.939	.273	.014	-3.212	.411

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```
MINTEQ Code Version  4.00

Location: GW-83D
Date: 01/97
LONG.
 T =    7.90 MG/L        .00     .00
 1 0 0 0 3 0 0 0 2 1 0
 0     .00     .00     .00     .00
      330  0.000E+00   -5.08
      490  1.150E+03     .00
      150  3.390E+02     .00
      180  4.570E+03     .00
       30  2.750E+01     .00
      211  1.150E-01     .00
      280  9.608E+02     .00
      281  3.200E+02     .00
      410  7.620E+01     .00
      460  4.450E+02     .00
      500  6.120E+03     .00
      732  1.760E+04     .00
        1  0.000E+00     .00
  H2O HAS BEEN INSERTED AS A COMPONENT
    3   2
      330  5.080E+00     .00
 2802810  0.000E+00     .00

--------------------------------------------------------------------------------

                          START OF MINTEQ OUTPUT

-----MINTEQ FORTRAN Code Version:  4.00-----------------------------------------
-----COMP.DAT (basis components) Version:  4.01---------------------------------
-----AQUEOUS.DAT (aqueous species thermodynamic data) Version:  2.00------------
-----SOLIDS.DAT (solids thermodynamic data) Version:  4.01----------------------
-----GAS_RDX.DAT (gas and redox species thermodynamic data) Version:  4.01------
-----PRCOEF.DAT (pressure coefficients) Version:  4.00--------------------------
-----ALK.DAT (Alkalinity factors) Version:  4.01--------------------------------
--------------------------------------------------------------------------------

 INPUT DATA BEFORE TYPE MODIFICATIONS
--------------------------------------------------------------------------------
    ID        Name              Activity Guess    Log Guess  Anal Total
--------------------------------------------------------------------------------
     330  H+                       8.318E-06        -5.080   0.000E+00
     490  NH4+                     1.000E+00          .000   1.150E+03
     150  Ca+2                     1.000E+00          .000   3.390E+02
     180  Cl-                      1.000E+00          .000   4.570E+03
      30  Al+3                     1.000E+00          .000   2.750E+01
     211  CrOH+2                   1.000E+00          .000   1.150E-01
     280  Fe+2                     1.000E+00          .000   9.608E+02
     281  Fe+3                     1.000E+00          .000   3.200E+02
     410  K+                       1.000E+00          .000   7.620E+01
     460  Mg+2                     1.000E+00          .000   4.450E+02
     500  Na+                      1.000E+00          .000   6.120E+03
     732  SO4-2                    1.000E+00          .000   1.760E+04
       1  e-                       1.000E+00          .000   0.000E+00
       2  H2O                      1.000E+00          .000   0.000E+00
--------------------------------------------------------------------------------

   OUTPUT DATA:  ITERATIONS =   0
```

US EPA ARCHIVE DOCUMENT

ID	Name	Anal Mol	Calc Mol	Activity	Log Activity	Gamma	New LogK
330	H+	0.000E+00	0.000E+00	8.318E-06	-5.08000	1.000	5.08
490	NH4+	1.150E+03	0.000E+00	1.000E+00	.00000	1.000	.00
150	Ca+2	3.390E+02	0.000E+00	1.000E+00	.00000	1.000	.00
180	Cl-	4.570E+03	0.000E+00	1.000E+00	.00000	1.000	.00
30	Al+3	2.750E+01	0.000E+00	1.000E+00	.00000	1.000	.00
211	CrOH+2	1.150E-01	0.000E+00	1.000E+00	.00000	1.000	.00
280	Fe+2	9.608E+02	0.000E+00	1.000E+00	.00000	1.000	.00
281	Fe+3	3.200E+02	0.000E+00	1.000E+00	.00000	1.000	.00
410	K+	7.620E+01	0.000E+00	1.000E+00	.00000	1.000	.00
460	Mg+2	4.450E+02	0.000E+00	1.000E+00	.00000	1.000	.00
500	Na+	6.120E+03	0.000E+00	1.000E+00	.00000	1.000	.00
732	SO4-2	1.760E+04	0.000E+00	1.000E+00	.00000	1.000	.00
1	e-	0.000E+00	0.000E+00	1.000E+00	.00000	1.000	.00
2	H2O	0.000E+00	0.000E+00	1.000E+00	.00000	1.000	.00

Unspeciated Charge Balance
Sum of Cations= 4.545E-01 Sum of Anions = 5.115E-01
Percent Difference = 5.906E+00 (anions - cations)/(anions + cations)*100

ITERATIONS DURING SOLVE

Iter	Name	Total Mol	Diff Fxn	Log Activity
alk = 0.0000E+00				
1	SO4-2	1.892E-01	-1.863E-01	-2.72309
2	SO4-2	1.892E-01	8.196E-01	-.94824
3	SO4-2	1.892E-01	5.851E-01	-1.15663
4	SO4-2	1.892E-01	7.097E-02	-1.56742
5	SO4-2	1.892E-01	2.583E-03	-1.68170
6	Fe+3	5.917E-03	3.026E+01	-5.13076
7	Fe+3	5.917E-03	3.013E+01	-5.30762
8	Fe+3	5.917E-03	2.203E+01	-5.48409
9	Fe+3	5.917E-03	6.529E+00	-5.66045
10	Fe+3	5.917E-03	1.934E+00	-5.83698
11	SO4-2	1.892E-01	5.865E-02	-1.67797
12	SO4-2	1.892E-01	-4.385E-02	-1.80133
13	NH4+	6.583E-02	1.116E-04	-1.48951
14	SO4-2	1.892E-01	-9.623E-03	-1.68015
15	SO4-2	1.892E-01	-4.838E-03	-1.65741
16	SO4-2	1.892E-01	-1.030E-03	-1.64622

17	Fe+3	5.917E-03	-1.480E-05	-6.66285		

OUTPUT DATA: ITERATIONS = 17

ID	Name	Anal Mol	Calc Mol	Activity	Log Activity	Gamma	New LogK
732	SO4-2	1.892E-01	1.225E-01	2.272E-02	-1.64362	.185	.73
490	NH4+	6.583E-02	5.156E-02	3.276E-02	-1.48465	.635	.20
150	Ca+2	8.734E-03	5.424E-03	1.413E-03	-2.84996	.260	.58
180	Cl-	1.331E-01	1.308E-01	8.308E-02	-1.08049	.635	.20
30	Al+3	1.052E-03	1.344E-04	1.265E-05	-4.89804	.094	1.03
211	CrOH+2	1.721E-06	1.208E-07	2.476E-08	-7.60621	.205	.69
280	Fe+2	1.777E-02	9.678E-03	2.521E-03	-2.59848	.260	.58
281	Fe+3	5.917E-03	2.313E-06	2.176E-07	-6.66238	.094	1.03
410	K+	2.012E-03	1.737E-03	1.103E-03	-2.95725	.635	.20
460	Mg+2	1.890E-02	8.825E-03	2.886E-03	-2.53967	.327	.49
500	Na+	2.749E-01	2.434E-01	1.642E-01	-.78454	.675	.17
2	H2O	0.000E+00	-8.833E-03	9.878E-01	-.00533	1.000	.01
330	H+	0.000E+00	8.814E-03	8.318E-06	-5.08000	.795	5.08
1	e-	0.000E+00	1.196E-09	5.328E-10	-9.27341	.446	.35

SPECIES: TYPE I - COMPONENTS

ID	Name	Calc Mol	Activity	Log Activity	Gamma	New LogK	Del H
1	e-	1.196E-09	.0000000	-9.27341	.4455	.351	.00
490	NH4+	5.156E-02	.0327601	-1.48465	.6354	.197	.00
150	Ca+2	5.424E-03	.0014127	-2.84996	.2605	.584	.00
180	Cl-	1.308E-01	.0830827	-1.08049	.6354	.197	.00
30	Al+3	1.344E-04	.0000126	-4.89804	.0941	1.026	.00
211	CrOH+2	1.208E-07	.0000000	-7.60621	.2049	.688	.00
280	Fe+2	9.678E-03	.0025207	-2.59848	.2605	.584	.00
281	Fe+3	2.313E-06	.0000002	-6.66238	.0941	1.026	.00
410	K+	1.737E-03	.0011034	-2.95725	.6354	.197	.00
460	Mg+2	8.825E-03	.0028862	-2.53967	.3270	.485	.00
500	Na+	2.434E-01	.1642336	-.78454	.6748	.171	.00
732	SO4-2	1.225E-01	.0227187	-1.64362	.1855	.732	.00

SPECIES: TYPE II - COMPLEXES

ID	Name	Calc Mol	Activity	Log Activity	Gamma	New LogK	Del H
5003300	NaOH(aq)	2.849E-11	.0000000	-10.49051	1.1345	-14.835	.00
5001800	NaCl(aq)	1.804E-03	.0020469	-2.68889	1.1345	-.879	.00
3300020	OH-1	4.531E-10	.0000000	-9.54076	.6354	-14.418	13.36
3304900	NH3(aq)	5.398E-07	.0000006	-6.21295	1.1345	-9.863	12.48
4907320	NH4SO4-1	1.427E-02	.0096301	-2.01637	.6748	1.283	.00
3301800	HCl(aq)	1.276E-07	.0000001	-6.83932	1.1345	-.734	.00
3307320	HSO4-1	1.929E-05	.0000130	-4.88557	.6748	2.009	3.85
303300	AlOH+2	2.296E-05	.0000047	-5.32741	.2049	-4.816	11.49
303301	Al(OH)2+1	1.240E-06	.0000008	-6.07751	.6748	-11.158	26.90
303303	Al(OH)3(aq)	3.133E-09	.0000000	-8.44923	1.1345	-18.830	39.89
303302	Al(OH)4-1	1.022E-09	.0000000	-9.16125	.6748	-24.391	42.30
303304	Al2(OH)2+4	3.351E-06	.0000000	-8.12286	.0022	-5.828	17.65
303305	Al3(OH)4+5	2.274E-06	.0000000	-9.78979	.0001	-11.248	34.39
307320	AlSO4+1	3.494E-04	.0002358	-3.62748	.6748	3.085	2.15

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307321	Al(SO4)2-1	5.309E-04	.0003583	-3.44580	.6748	4.910	2.84
307322	AlHSO4+2	3.631E-09	.0000000	-9.17166	.1855	3.182	.00
1503300	CaOH+1	2.097E-11	.0000000	-10.84928	.6748	-12.903	14.74
1507320	CaSO4(aq)	3.273E-03	.0037127	-2.43031	1.1345	2.008	1.65
1501800	CaCl+	3.506E-05	.0000237	-4.62602	.6748	-.525	.00
1501801	CaCl2(aq)	2.522E-06	.0000029	-5.54346	1.1345	-.587	.00
2113300	Cr+3	2.331E-08	.0000000	-9.11488	.0329	5.048	.00
2113301	Cr(OH)2+1	2.609E-09	.0000000	-8.74354	.6918	-6.052	.00
2110020	Cr(OH)3(aq)	8.272E-11	.0000000	-10.02757	1.1345	-12.625	.00
2110021	Cr(OH)4-1	5.351E-17	.0000000	-16.44240	.6748	-23.889	.00
2111800	CrCl+2	3.598E-10	.0000000	-10.13237	.2049	4.317	.00
2111801	CrCl2+1	1.601E-11	.0000000	-10.96656	.6748	4.046	.00
2111802	CrOHCl2(aq)	2.339E-12	.0000000	-11.57619	1.1345	-1.864	.00
2114900	Cr(NH3)6+3	1.419E-27	.0000000	-28.33051	.0329	-35.739	.00
2114901	Cr(NH3)5(OH)	1.311E-24	.0000000	-24.57088	.2049	-34.253	.00
2114902	cisCrNH3)4OH	3.042E-23	.0000000	-22.68765	.6748	-34.367	.00
2114903	transCrNH3)4	6.122E-24	.0000000	-23.38395	.6748	-35.063	.00
2114904	Cr(NH3)6Cl+2	6.297E-28	.0000000	-27.88930	.2049	-35.012	.00
2117320	CrSO4+1	1.057E-08	.0000000	-8.14690	.6748	6.348	.00
2117321	CrOHSO4(aq)	1.563E-06	.0000018	-5.75132	1.1345	3.444	.00
2117322	(CrOH)2(SO4)	2.628E-14	.0000000	-13.52565	1.1345	4.919	.00
2117323	(CrOH)2(SO4)	2.611E-10	.0000000	-10.27163	.2049	7.273	.00
2803300	FeOH+1	1.029E-08	.0000000	-8.14756	.6918	-10.464	13.20
2803302	Fe(OH)2(aq)	7.346E-09	.0000000	-8.07915	1.1345	-15.685	54.28
2803301	Fe(OH)3-1	5.222E-24	.0000000	-23.45297	.6748	-35.908	67.66
2801800	FeCl+	2.102E-04	.0001419	-3.84816	.6748	.002	.00
2801801	FeCl2(aq)	4.096E-08	.0000000	-7.33281	1.1345	-2.628	.00
2801802	FeCl4-2	6.517E-09	.0000000	-8.91763	.1855	-1.266	.00
2807320	FeSO4(aq)	7.876E-03	.0089357	-2.04887	1.1345	2.138	3.23
2807321	FeHSO4+	8.293E-07	.0000006	-6.25210	.6748	3.241	.00
2817320	FeSO4+1	5.173E-05	.0000349	-4.45708	.6748	4.020	3.91
2817321	Fe(SO4)2-1	1.743E-05	.0000118	-4.92948	.6748	5.191	4.60
2817322	FeHSO4+2	5.921E-09	.0000000	-8.91600	.2049	5.158	.00
2811800	FeCl+2	1.185E-06	.0000002	-6.61452	.2049	1.817	5.60
2811801	FeCl2+1	1.326E-07	.0000001	-7.04841	.6748	1.946	.00
2811802	FeCl3(aq)	5.329E-10	.0000000	-9.21855	1.1345	.631	.00
2811803	FeCl4-	5.898E-13	.0000000	-12.40013	.6748	-1.245	.00
2813300	FeOH+2	2.155E-04	.0000442	-4.35500	.2049	-2.079	10.40
2813301	Fe(OH)2+1	1.619E-03	.0010927	-2.96149	.6748	-6.278	17.10
2813302	Fe(OH)3(aq)	2.078E-05	.0000236	-4.62758	1.1345	-13.244	24.80
2813303	Fe(OH)4-1	5.137E-10	.0000000	-9.46010	.6748	-22.926	31.90
2813304	Fe2(OH)2+4	6.060E-05	.0000002	-6.72747	.0031	-1.042	13.50
2813305	Fe3(OH)4+5	1.289E-03	.0000002	-6.62619	.0002	-3.201	14.30
4107320	KSO4-1	2.752E-04	.0001857	-3.73119	.6748	1.040	2.25
4107321	KHSO4(aq)	1.649E-10	.0000000	-9.72788	1.1345	-.102	.00
4103300	KOH(aq)	7.390E-14	.0000000	-13.07658	1.1345	-15.249	.00
4101800	KCl(aq)	4.384E-07	.0000005	-6.30331	1.1345	-2.320	.00
4603300	MgOH+1	1.635E-10	.0000000	-9.95736	.6748	-12.322	15.94
4601800	MgCl+	2.886E-04	.0001947	-3.71058	.6748	.080	.00
4607320	MgSO4(aq)	9.787E-03	.0111035	-1.95454	1.1345	2.174	4.55
5007320	NaSO4-1	2.971E-02	.0200495	-1.69790	.6748	.901	1.12

SPECIES: TYPE III - FIXED SOLIDS

ID	Name	Calc Mol	Log Mol	New LogK	Del H
2	H2O	-8.833E-03	-2.054	.005	.000
330	H+	8.814E-03	-2.055	5.080	.000
2802810	Fe+2=>Fe+3	1.196E-09	-8.922	-13.337	9.680

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SPECIES: TYPE VI - SPECIES NOT CONSIDERED

ID	Name	Calc Mol	Log Mol	New LogK	Del H
20030	H2O=>O2(g)	3.285E-16	-15.483	-44.185	68.315

PERCENTAGE DISTRIBUTION OF COMPONENTS

SO4-2

64.7	Percent Bound in Species #	732	SO4-2
7.5	Percent Bound in Species #	4907320	NH4SO4-1
1.7	Percent Bound in Species #	1507320	CaSO4(aq)
4.2	Percent Bound in Species #	2807320	FeSO4(aq)
5.2	Percent Bound in Species #	4607320	MgSO4(aq)
15.7	Percent Bound in Species #	5007320	NaSO4-1

NH4+

78.3	Percent Bound in Species #	490	NH4+
21.7	Percent Bound in Species #	4907320	NH4SO4-1

Ca+2

62.1	Percent Bound in Species #	150	Ca+2
37.5	Percent Bound in Species #	1507320	CaSO4(aq)

Cl-

98.2	Percent Bound in Species #	180	Cl-
1.4	Percent Bound in Species #	5001800	NaCl(aq)

Al+3

12.8	Percent Bound in Species #	30	Al+3
2.2	Percent Bound in Species #	303300	AlOH+2
33.2	Percent Bound in Species #	307320	AlSO4+1
50.4	Percent Bound in Species #	307321	Al(SO4)2-1

CrOH+2

7.0	Percent Bound in Species #	211	CrOH+2
1.4	Percent Bound in Species #	2113300	Cr+3
90.8	Percent Bound in Species #	2117321	CrOHSO4(aq)

Fe+2

54.5	Percent Bound in Species #	280	Fe+2
1.2	Percent Bound in Species #	2801800	FeCl+
44.3	Percent Bound in Species #	2807320	FeSO4(aq)

Fe+3

3.6	Percent Bound in Species #	2813300	FeOH+2
27.4	Percent Bound in Species #	2813301	Fe(OH)2+1
2.0	Percent Bound in Species #	2813304	Fe2(OH)2+4

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   65.4  Percent Bound in Species #2813305   Fe3(OH)4+5

 K+
------------------
   86.3  Percent Bound in Species #    410   K+
   13.7  Percent Bound in Species #4107320   KSO4-1

 Mg+2
------------------
   46.7  Percent Bound in Species #    460   Mg+2
    1.5  Percent Bound in Species #4601800   MgCl+
   51.8  Percent Bound in Species #4607320   MgSO4(aq)

 Na+
------------------
   88.5  Percent Bound in Species #    500   Na+
   10.8  Percent Bound in Species #5007320   NaSO4-1

 H2O
------------------
    2.4  Percent Bound in Species #2813300   FeOH+2
   36.7  Percent Bound in Species #2813301   Fe(OH)2+1
    1.4  Percent Bound in Species #2813304   Fe2(OH)2+4
   58.4  Percent Bound in Species #2813305   Fe3(OH)4+5

 H+
------------------
    2.4  Percent Bound in Species #2813300   FeOH+2
   36.7  Percent Bound in Species #2813301   Fe(OH)2+1
    1.4  Percent Bound in Species #2813304   Fe2(OH)2+4
   58.5  Percent Bound in Species #2813305   Fe3(OH)4+5

 e-
------------------
  100.0  Percent Bound in Species #      1   e-

--------------------------------------------------------------------------------
    IDX        Name              Aqueous Mass    Sorbed Mass
                                  --------mol/kg--------
--------------------------------------------------------------------------------
     732  SO4-2                   1.892E-01     0.000E+00
     490  NH4+                    6.583E-02     0.000E+00
     150  Ca+2                    8.734E-03     0.000E+00
     180  Cl-                     1.331E-01     0.000E+00
      30  Al+3                    1.052E-03     0.000E+00
     211  CrOH+2                  1.721E-06     0.000E+00
     280  Fe+2                    1.777E-02     0.000E+00
     281  Fe+3                    5.916E-03     0.000E+00
     410  K+                      2.012E-03     0.000E+00
     460  Mg+2                    1.890E-02     0.000E+00
     500  Na+                     2.749E-01     0.000E+00
       2  H2O                     8.833E-03     0.000E+00
     330  H+                     -8.814E-03     0.000E+00
       1  e-                      1.196E-09     0.000E+00
--------------------------------------------------------------------------------

 Speciated Charge Balance
     Sum of Cations =  3.547E-01 Sum of Anions =   4.205E-01
     Percent Difference =   8.493E+00  (anions - cations)/(anions + cations)*100
```

Noncarbonate Alkalinity = -8.316E-06
Ionic Strength = 5.480E-01
Total Dissolved Solids = 32639.050 mg/liter
Total H+ mass = -.88033E-02 (sum of H+ as free H+ plus as aqueous species)
Temperature = 7.90 C or 281.06 K
Pressure = .000 feet of water or .000 bars

SATURATION INDICES FOR ALL MINERALS AND SOLIDS
(Solids with ID = 0000009 do not have Log K values)

ID	Name	EQ-BD	Sat Index	Log K	5%*Log K	Log IAP	Del H
2003000	Al(OH)3(am)		-1.656	-11.982	.599	10.326	26.500
6003002	Al2(SO4)3		-35.567	-20.840	1.042	-14.727	.000
6003003	Al2(SO4)3:6H2O		-16.615	-1.856	.093	-14.759	.000
6003000	AlOHSO4		1.763	3.230	.162	-1.467	.000
6041000	Alum-K		-5.174	6.033	.302	-11.206	-7.220
6003001	Alunite		8.668	-.841	.042	9.509	50.250
6015000	Anhydrite	##	-.155	4.339	.217	-4.494	1.710
4115000	Antarcticite		-9.165	-4.122	.206	-5.043	.000
6050003	Aphthitalite		-9.518	3.426	.171	-12.944	.000
6041003	Arcanite		-5.468	2.090	.105	-7.558	.000
6003001	Basaluminite		7.011	-22.500	1.125	29.511	.000
4146000	Bischofite		-9.159	-4.426	.221	-4.733	.000
6050004	Bloedite		-5.029	2.388	.119	-7.417	.000
2003001	Boehmite		.679	-9.652	.483	10.331	26.194
2046000	Brucite		-9.882	-17.492	.875	7.610	27.240
4115003	Ca2Cl2(OH)2:3H2O		-24.239	-26.522	1.326	2.283	.000
4115002	Ca4Cl2(OH)6:19H2O		-51.883	-68.701	3.435	16.818	.000
4115001	CaCl2:4H2O		-10.732	-5.700	.285	-5.032	.000
4141000	Carnallite		-13.201	-4.430	.222	-8.770	.000
3021100	Chromite	##	-.119	-12.777	.639	12.658	.000
2021102	Cr(OH)3(am)		-3.211	-5.754	.288	2.543	.000
2021101	Cr(OH)3(c)		-3.929	-6.472	.324	2.543	.000
2021103	Cr.01Fe.99(OH)3		1.847	-.696	.035	2.543	.000
2021104	Cr.05Fe.95(OH)3		.967	-1.576	.079	2.543	.000
2021105	Cr.10Fe.90(OH)3		.454	-2.089	.104	2.543	.000
2021106	Cr.20Fe.80(OH)3		-.206	-2.749	.137	2.543	.000
2021107	Cr.30Fe.70(OH)3		-.645	-3.188	.159	2.543	.000
2021108	Cr.40Fe.60(OH)3		-1.378	-3.921	.196	2.543	.000
4121100	CrCl3		-34.201	-18.278	.914	-15.922	.000
2003002	Diaspore		1.612	-8.719	.436	10.331	24.394
6046000	Epsomite		-1.956	2.265	.113	-4.221	-2.824
3021102	Eskolaite		-4.462	-9.564	.478	5.102	.000
6015002	Ettringite		-33.707	-62.638	3.132	28.931	88.287
2028001	Fe(OH)2(ppt)		-5.102	-12.653	.633	7.551	21.935
4128100	Fe(OH)2:7Cl		9.756	3.041	.152	6.715	.000
2028100	Fe(OH)3(am)		2.792	-5.770	.288	8.562	19.835
2028107	Fe(OH)3(ppt)		4.250	-4.311	.216	8.562	19.835
2028106	Fe(OH)3(soil)		5.875	-2.686	.134	8.562	.000
6028100	Fe2(SO4)3		-24.012	-5.756	.288	-18.256	58.150
2028101	Fe3(OH)8		4.453	-20.222	1.011	24.674	.000
6028001	FeSO4(s)		-7.642	-3.400	.170	-4.242	.000
2003003	Gibbsite(c)		1.199	-9.127	.456	10.326	22.800
2003005	Gibbsite(uc)	##	-.117	-10.443	.522	10.326	24.500
6050005	Glauberite		-2.437	5.269	.263	-7.706	.000
2028102	Goethite		8.919	.352	.018	8.567	14.540
6015001	Gypsum	##	.091	4.595	.230	-4.504	.109
4150000	Halite		-3.385	-1.520	.076	-1.865	-.951

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2028105	Hematite	15.669	-1.471	.074	17.139	31.135
3028001	Hercynite	-2.499	-30.723	1.536	28.224	78.375
6046001	Hexahydrite	-2.549	1.666	.083	-4.215	.000
6028101	Jarosite-H	11.731	9.643	.482	2.088	55.147
6041002	Jarosite-K	12.191	7.975	.399	4.216	31.282
6050000	Jarosite-Na	15.975	9.586	.479	6.389	36.182
6003002	Jurbanite	2.306	3.800	.190	-1.494	.000
6041010	K3H(SO4)2	-14.072	3.167	.158	-17.239	.000
6041004	Kainite	-8.149	.088	.004	-8.237	.000
6046002	Kieserite	-4.046	.142	.007	-4.189	.000
6050006	Labile-Salt	-5.213	5.716	.286	-10.930	.000
6041005	Leonite	-8.014	3.749	.187	-11.763	.000
2028103	Lepidocrocite	7.204	-1.363	.068	8.567	.000
2015000	Lime	-27.341	-34.646	1.732	7.305	46.264
2028104	Maghemite	10.766	-6.373	.319	17.139	.000
3028000	Magnetite	11.940	-12.755	.638	24.695	51.075
6028000	Melanterite	-1.838	2.441	.122	-4.279	-4.910
6041006	Mercallite	-8.399	1.282	.064	-9.681	.000
3021101	Mg-Chromite	-8.928	-21.645	1.082	12.717	.000
3046001	Mg-Ferrite	5.021	-19.733	.987	24.754	66.619
4146001	Mg2Cl(OH)3:7H2O	-17.006	-26.049	1.302	9.043	.000
6050001	Mirabilite	-1.208	2.058	.103	-3.266	-18.987
6041007	Misenite	-55.810	9.834	.492	-65.643	.000
6050007	Na3H(SO4)2	-9.875	.846	.042	-10.721	.000
2046001	Periclase	-15.325	-22.940	1.147	7.615	36.085
6041008	Picromerite	-7.671	4.102	.205	-11.773	.000
6041009	Polyhalite	-7.210	13.529	.676	-20.739	.000
2015001	Portlandite	-16.638	-23.937	1.197	7.299	31.000
3046000	Spinel	-12.084	-40.367	2.018	28.283	89.109
4141001	Sylvite	-5.067	-1.029	.051	-4.038	.000
6041011	Syngenite	-4.853	7.205	.360	-12.057	.000
4146002	Tachyhydrite	-31.794	-17.317	.866	-14.476	.000
6050002	Thenardite	-2.943	.270	.013	-3.213	.411

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MINTEQ Code Version  4.00

Location: GW-83D
Date: 10/26/96
LONG.
 T =  10.90 MG/L        .00     .00
 1 0 0 0 3 0 0 0 2 1 0
 0     .00     .00     .00     .00
     330  0.000E+00  -5.19
     490  1.650E+03    .00
     150  2.300E+02    .00
     180  4.690E+03    .00
      30  2.750E+01    .00
     211  9.800E-02    .00
     280  1.008E+03    .00
     281  1.120E+02    .00
     410  1.280E+02    .00
     460  2.950E+02    .00
     500  6.120E+03    .00
     732  1.760E+04    .00
       1  0.000E+00    .00
  H2O HAS BEEN INSERTED AS A COMPONENT
   3   2
     330  5.190E+00    .00
 2802810  0.000E+00    .00

--------------------------------------------------------------------------------

                          START OF MINTEQ OUTPUT

-----MINTEQ FORTRAN Code Version:  4.00-----------------------------------------
-----COMP.DAT (basis components) Version:  4.01---------------------------------
-----AQUEOUS.DAT (aqueous species thermodynamic data) Version:  2.00------------
-----SOLIDS.DAT (solids thermodynamic data) Version:  4.01----------------------
-----GAS_RDX.DAT (gas and redox species thermodynamic data) Version:  4.01------
-----PRCOEF.DAT (pressure coefficients) Version:  4.00--------------------------
-----ALK.DAT (Alkalinity factors) Version:  4.01---------------------------------
--------------------------------------------------------------------------------

 INPUT DATA BEFORE TYPE MODIFICATIONS
--------------------------------------------------------------------------------
    ID        Name                Activity Guess    Log Guess  Anal Total
--------------------------------------------------------------------------------
     330  H+                          6.457E-06        -5.190   0.000E+00
     490  NH4+                        1.000E+00          .000   1.650E+03
     150  Ca+2                        1.000E+00          .000   2.300E+02
     180  Cl-                         1.000E+00          .000   4.690E+03
      30  Al+3                        1.000E+00          .000   2.750E+01
     211  CrOH+2                      1.000E+00          .000   9.800E-02
     280  Fe+2                        1.000E+00          .000   1.008E+03
     281  Fe+3                        1.000E+00          .000   1.120E+02
     410  K+                          1.000E+00          .000   1.280E+02
     460  Mg+2                        1.000E+00          .000   2.950E+02
     500  Na+                         1.000E+00          .000   6.120E+03
     732  SO4-2                       1.000E+00          .000   1.760E+04
       1  e-                          1.000E+00          .000   0.000E+00
       2  H2O                         1.000E+00          .000   0.000E+00
--------------------------------------------------------------------------------

   OUTPUT DATA:  ITERATIONS =    0
```

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ID	Name	Anal Mol	Calc Mol	Activity	Log Activity	Gamma	New LogK
732	SO4-2	1.892E-01	1.207E-01	2.249E-02	-1.64798	.186	.73
490	NH4+	9.448E-02	7.415E-02	4.728E-02	-1.32529	.638	.20
150	Ca+2	5.927E-03	3.683E-03	9.624E-04	-3.01664	.261	.58
180	Cl-	1.366E-01	1.343E-01	8.564E-02	-1.06732	.638	.20
30	Al+3	1.053E-03	1.284E-04	1.210E-05	-4.91723	.094	1.03
211	CrOH+2	1.467E-06	1.038E-07	2.135E-08	-7.67054	.206	.69
280	Fe+2	1.864E-02	1.017E-02	2.658E-03	-2.57537	.261	.58
281	Fe+3	2.071E-03	8.042E-07	7.581E-08	-7.12028	.094	1.03
410	K+	3.381E-03	2.925E-03	1.865E-03	-2.72928	.638	.20
460	Mg+2	1.253E-02	5.643E-03	1.850E-03	-2.73275	.328	.48
500	Na+	2.750E-01	2.439E-01	1.651E-01	-.78220	.677	.17
2	H2O	0.000E+00	-3.672E-03	9.874E-01	-.00549	1.000	.01
330	H+	0.000E+00	3.656E-03	6.457E-06	-5.19000	.797	5.19
1	e-	0.000E+00	3.833E-09	1.720E-09	-8.76457	.449	.35

SPECIES: TYPE I - COMPONENTS

ID	Name	Calc Mol	Activity	Log Activity	Gamma	New LogK	Del H
1	e-	3.833E-09	.0000000	-8.76457	.4486	.348	.00
490	NH4+	7.415E-02	.0472832	-1.32529	.6377	.195	.00
150	Ca+2	3.683E-03	.0009624	-3.01664	.2613	.583	.00
180	Cl-	1.343E-01	.0856406	-1.06732	.6377	.195	.00
30	Al+3	1.284E-04	.0000121	-4.91723	.0943	1.026	.00
211	CrOH+2	1.038E-07	.0000000	-7.67054	.2058	.687	.00
280	Fe+2	1.017E-02	.0026584	-2.57537	.2613	.583	.00
281	Fe+3	8.042E-07	.0000001	-7.12028	.0943	1.026	.00
410	K+	2.925E-03	.0018652	-2.72928	.6377	.195	.00
460	Mg+2	5.643E-03	.0018503	-2.73275	.3279	.484	.00
500	Na+	2.439E-01	.1651220	-.78220	.6771	.169	.00
732	SO4-2	1.207E-01	.0224917	-1.64798	.1864	.730	.00

SPECIES: TYPE II - COMPLEXES

ID	Name	Calc Mol	Activity	Log Activity	Gamma	New LogK	Del H
5003300	NaOH(aq)	4.789E-11	.0000000	-10.26597	1.1319	-14.722	.00
5001800	NaCl(aq)	1.892E-03	.0021418	-2.66923	1.1319	-.874	.00
3300020	OH-1	7.603E-10	.0000000	-9.31438	.6377	-14.304	13.36
3304900	NH3(aq)	1.274E-06	.0000014	-5.84110	1.1319	-9.760	12.48
4907320	NH4SO4-1	2.032E-02	.0137604	-1.86137	.6771	1.281	.00
3301800	HCl(aq)	1.006E-07	.0000001	-6.94348	1.1319	-.740	.00
3307320	HSO4-1	1.563E-05	.0000106	-4.97554	.6771	2.032	3.85
303300	AlOH+2	3.471E-05	.0000071	-5.14604	.2058	-4.727	11.49
303301	Al(OH)2+1	3.313E-06	.0000022	-5.64918	.6771	-10.932	26.90
303303	Al(OH)3(aq)	1.424E-08	.0000000	-7.79258	1.1319	-18.483	39.89
303302	Al(OH)4-1	6.018E-09	.0000000	-8.38994	.6771	-24.041	42.30
303304	Al2(OH)2+4	7.052E-06	.0000000	-7.79662	.0023	-5.686	17.65
303305	Al3(OH)4+5	1.040E-05	.0000000	-9.12559	.0001	-10.969	34.39
307320	AlSO4+1	3.287E-04	.0002226	-3.65251	.6771	3.082	2.15
307321	Al(SO4)2-1	5.121E-04	.0003467	-3.46002	.6771	4.923	2.84
307322	AlHSO4+2	2.657E-09	.0000000	-9.30521	.1864	3.180	.00
1503300	CaOH+1	2.295E-11	.0000000	-10.80852	.6771	-12.807	14.74
1507320	CaSO4(aq)	2.218E-03	.0025105	-2.60025	1.1319	2.011	1.65

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1501800	CaCl+	2.419E-05	.0000164	-4.78575	.6771	-.532	.00
1501801	CaCl2(aq)	1.710E-06	.0000019	-5.71326	1.1319	-.616	.00
2113300	Cr+3	1.553E-08	.0000000	-9.28905	.0331	5.046	.00
2113301	Cr(OH)2+1	2.888E-09	.0000000	-8.69803	.6940	-6.053	.00
2110020	Cr(OH)3(aq)	1.186E-10	.0000000	-9.87222	1.1319	-12.625	.00
2110021	Cr(OH)4-1	9.821E-17	.0000000	-16.17721	.6771	-23.891	.00
2111800	CrCl+2	2.473E-10	.0000000	-10.29337	.2058	4.316	.00
2111801	CrCl2+1	1.135E-11	.0000000	-11.11439	.6771	4.045	.00
2111802	CrOHCl2(aq)	2.148E-12	.0000000	-11.61418	1.1319	-1.863	.00
2114900	Cr(NH3)6+3	3.906E-26	.0000000	-26.88851	.0331	-35.742	.00
2114901	Cr(NH3)5(OH)	2.501E-23	.0000000	-23.28840	.2058	-34.255	.00
2114902	cisCrNH3)4OH	4.024E-22	.0000000	-21.56470	.6771	-34.368	.00
2114903	transCrNH3)4	8.098E-23	.0000000	-22.26100	.6771	-35.064	.00
2114904	Cr(NH3)6Cl+2	1.788E-26	.0000000	-26.43413	.2058	-35.013	.00
2117320	CrSO4+1	6.981E-09	.0000000	-8.32543	.6771	6.347	.00
2117321	CrOHSO4(aq)	1.337E-06	.0000015	-5.82002	1.1319	3.445	.00
2117322	(CrOH)2(SO4)	1.919E-14	.0000000	-13.66303	1.1319	4.920	.00
2117323	(CrOH)2(SO4)	1.914E-10	.0000000	-10.40465	.2058	7.271	.00
2803300	FeOH+1	1.684E-08	.0000000	-7.93236	.6940	-10.383	13.20
2803302	Fe(OH)2(aq)	1.596E-08	.0000000	-7.74311	1.1319	-15.591	54.28
2803301	Fe(OH)3-1	2.590E-23	.0000000	-22.75600	.6771	-35.565	67.66
2801800	FeCl+	2.256E-04	.0001528	-3.81597	.6771	-.004	.00
2801801	FeCl2(aq)	4.546E-08	.0000001	-7.28860	1.1319	-2.632	.00
2801802	FeCl4-2	7.770E-09	.0000000	-8.83916	.1864	-1.265	.00
2807320	FeSO4(aq)	8.242E-03	.0093293	-2.03015	1.1319	2.139	3.23
2807321	FeHSO4+	6.699E-07	.0000005	-6.34335	.6771	3.239	.00
2817320	FeSO4+1	1.910E-05	.0000129	-4.88838	.6771	4.049	3.91
2817321	Fe(SO4)2-1	6.622E-06	.0000045	-5.34839	.6771	5.237	4.60
2817322	FeHSO4+2	1.579E-09	.0000000	-9.48826	.2058	5.157	.00
2811800	FeCl+2	4.820E-07	.0000001	-7.00355	.2058	1.871	5.60
2811801	FeCl2+1	5.474E-08	.0000000	-7.43111	.6771	1.993	.00
2811802	FeCl3(aq)	2.448E-10	.0000000	-9.55746	1.1319	.711	.00
2811803	FeCl4-	2.857E-13	.0000000	-12.71347	.6771	-1.155	.00
2813300	FeOH+2	1.167E-04	.0000240	-4.61934	.2058	-1.997	10.40
2813301	Fe(OH)2+1	1.285E-03	.0008698	-3.06058	.6771	-6.140	17.10
2813302	Fe(OH)3(aq)	2.523E-05	.0000286	-4.54421	1.1319	-13.031	24.80
2813303	Fe(OH)4-1	9.163E-10	.0000000	-9.20736	.6771	-22.656	31.90
2813304	Fe2(OH)2+4	1.566E-05	.0000000	-7.31272	.0031	-.934	13.50
2813305	Fe3(OH)4+5	1.953E-04	.0000000	-7.44309	.0002	-3.086	14.30
4107320	KSO4-1	4.552E-04	.0003082	-3.51116	.6771	1.035	2.25
4107321	KHSO4(aq)	2.396E-10	.0000000	-9.56675	1.1319	-.053	.00
4103300	KOH(aq)	2.171E-13	.0000000	-12.60948	1.1319	-15.119	.00
4101800	KCl(aq)	8.237E-07	.0000009	-6.03043	1.1319	-2.288	.00
4603300	MgOH+1	1.670E-10	.0000000	-9.94655	.6771	-12.229	15.94
4601800	MgCl+	1.841E-04	.0001247	-3.90425	.6771	.065	.00
4607320	MgSO4(aq)	6.706E-03	.0075903	-2.11974	1.1319	2.207	4.55
5007320	NaSO4-1	2.917E-02	.0197519	-1.70439	.6771	.895	1.12

SPECIES: TYPE III - FIXED SOLIDS

ID	Name	Calc Mol	Log Mol	New LogK	Del H
2	H2O	-3.672E-03	-2.435	.005	.000
330	H+	3.656E-03	-2.437	5.190	.000
2802810	Fe+2=>Fe+3	3.833E-09	-8.416	-13.309	9.680

SPECIES: TYPE VI - SPECIES NOT CONSIDERED

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ID	Name	Calc Mol	Log Mol	New LogK	Del H
20030	H2O=>O2(g)	1.603E-16	-15.795	-43.699	68.315

PERCENTAGE DISTRIBUTION OF COMPONENTS

SO4-2

63.8	Percent Bound in Species #	732	SO4-2
10.7	Percent Bound in Species #4907320		NH4SO4-1
1.2	Percent Bound in Species #1507320		CaSO4(aq)
4.4	Percent Bound in Species #2807320		FeSO4(aq)
3.5	Percent Bound in Species #4607320		MgSO4(aq)
15.4	Percent Bound in Species #5007320		NaSO4-1

NH4+

78.5	Percent Bound in Species #	490	NH4+
21.5	Percent Bound in Species #4907320		NH4SO4-1

Ca+2

62.1	Percent Bound in Species #	150	Ca+2
37.4	Percent Bound in Species #1507320		CaSO4(aq)

Cl-

98.3	Percent Bound in Species #	180	Cl-
1.4	Percent Bound in Species #5001800		NaCl(aq)

Al+3

12.2	Percent Bound in Species #	30	Al+3
3.3	Percent Bound in Species # 303300		AlOH+2
1.3	Percent Bound in Species # 303304		Al2(OH)2+4
3.0	Percent Bound in Species # 303305		Al3(OH)4+5
31.2	Percent Bound in Species # 307320		AlSO4+1
48.7	Percent Bound in Species # 307321		Al(SO4)2-1

CrOH+2

7.1	Percent Bound in Species #	211	CrOH+2
1.1	Percent Bound in Species #2113300		Cr+3
91.1	Percent Bound in Species #2117321		CrOHSO4(aq)

Fe+2

54.6	Percent Bound in Species #	280	Fe+2
1.2	Percent Bound in Species #2801800		FeCl+
44.2	Percent Bound in Species #2807320		FeSO4(aq)

Fe+3

5.6	Percent Bound in Species #2813300		FeOH+2
62.0	Percent Bound in Species #2813301		Fe(OH)2+1
1.2	Percent Bound in Species #2813302		Fe(OH)3(aq)
1.5	Percent Bound in Species #2813304		Fe2(OH)2+4
28.3	Percent Bound in Species #2813305		Fe3(OH)4+5

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K+

86.5	Percent Bound in Species #	410	K+
13.5	Percent Bound in Species #	4107320	KSO4-1

Mg+2

45.0	Percent Bound in Species #	460	Mg+2
1.5	Percent Bound in Species #	4601800	MgCl+
53.5	Percent Bound in Species #	4607320	MgSO4(aq)

Na+

88.7	Percent Bound in Species #	500	Na+
10.6	Percent Bound in Species #	5007320	NaSO4-1

H2O

1.1	Percent Bound in Species #	303305	Al3(OH)4+5
3.2	Percent Bound in Species #	2813300	FeOH+2
70.0	Percent Bound in Species #	2813301	Fe(OH)2+1
2.1	Percent Bound in Species #	2813302	Fe(OH)3(aq)
21.3	Percent Bound in Species #	2813305	Fe3(OH)4+5

H+

1.1	Percent Bound in Species #	303305	Al3(OH)4+5
3.2	Percent Bound in Species #	2813300	FeOH+2
70.3	Percent Bound in Species #	2813301	Fe(OH)2+1
2.1	Percent Bound in Species #	2813302	Fe(OH)3(aq)
21.4	Percent Bound in Species #	2813305	Fe3(OH)4+5

e-

100.0	Percent Bound in Species #	1	e-

IDX	Name	Aqueous Mass	Sorbed Mass
		--------mol/kg--------	
732	SO4-2	1.892E-01	0.000E+00
490	NH4+	9.447E-02	0.000E+00
150	Ca+2	5.927E-03	0.000E+00
180	Cl-	1.366E-01	0.000E+00
30	Al+3	1.053E-03	0.000E+00
211	CrOH+2	1.467E-06	0.000E+00
280	Fe+2	1.864E-02	0.000E+00
281	Fe+3	2.071E-03	0.000E+00
410	K+	3.381E-03	0.000E+00
460	Mg+2	1.253E-02	0.000E+00
500	Na+	2.749E-01	0.000E+00
2	H2O	3.672E-03	0.000E+00
330	H+	-3.656E-03	0.000E+00
1	e-	3.833E-09	0.000E+00

Speciated Charge Balance
Sum of Cations = 3.638E-01 Sum of Anions = 4.261E-01
Percent Difference = 7.885E+00 (anions - cations)/(anions + cations)*100

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Noncarbonate Alkalinity = -6.450E-06
Ionic Strength = 5.380E-01
Total Dissolved Solids = 32902.950 mg/liter
Total H+ mass = -.36483E-02 (sum of H+ as free H+ plus as aqueous species)
Temperature = 10.90 C or 284.06 K
Pressure = .000 feet of water or .000 bars

SATURATION INDICES FOR ALL MINERALS AND SOLIDS
(Solids with ID = 0000009 do not have Log K values)

ID	Name	EQ-BD	Sat Index	Log K	5%*Log K	Log IAP	Del H
2003000	Al(OH)3(am)		-1.128	-11.764	.588	10.636	26.500
6003002	Al2(SO4)3		-34.997	-20.219	1.011	-14.778	.000
6003003	Al2(SO4)3:6H2O		-16.348	-1.537	.077	-14.811	.000
6003000	AlOHSO4		1.849	3.230	.162	-1.381	.000
6041000	Alum-K		-5.044	5.964	.298	-11.008	-7.220
6003001	Alunite		9.902	-.428	.021	10.330	50.250
6015000	Anhydrite		-.330	4.335	.217	-4.665	1.710
4115000	Antarcticite		-9.306	-4.122	.206	-5.184	.000
6050003	Aphthitalite		-8.840	3.426	.171	-12.266	.000
6041003	Arcanite		-5.079	2.028	.101	-7.107	.000
6003001	Basaluminite		8.028	-22.500	1.125	30.528	.000
4146000	Bischofite		-9.327	-4.426	.221	-4.900	.000
6050004	Bloedite		-5.227	2.388	.119	-7.615	.000
2003001	Boehmite		1.213	-9.429	.471	10.642	26.194
2046000	Brucite		-9.636	-17.273	.864	7.636	27.240
4115003	Ca2Cl2(OH)2:3H2O		-24.327	-26.522	1.326	2.196	.000
4115002	Ca4Cl2(OH)6:19H2O		-51.867	-68.701	3.435	16.834	.000
4115001	CaCl2:4H2O		-10.873	-5.700	.285	-5.173	.000
4141000	Carnallite		-13.127	-4.430	.222	-8.697	.000
3021100	Chromite	##	.435	-12.777	.639	13.213	.000
2021102	Cr(OH)3(am)		-3.055	-5.754	.288	2.698	.000
2021101	Cr(OH)3(c)		-3.774	-6.472	.324	2.698	.000
2021103	Cr.01Fe.99(OH)3		2.002	-.696	.035	2.698	.000
2021104	Cr.05Fe.95(OH)3		1.123	-1.576	.079	2.698	.000
2021105	Cr.10Fe.90(OH)3		.609	-2.089	.104	2.698	.000
2021106	Cr.20Fe.80(OH)3	##	-.050	-2.749	.137	2.698	.000
2021107	Cr.30Fe.70(OH)3		-.490	-3.188	.159	2.698	.000
2021108	Cr.40Fe.60(OH)3		-1.223	-3.921	.196	2.698	.000
4121100	CrCl3		-34.335	-18.278	.914	-16.057	.000
2003002	Diaspore		2.128	-8.513	.426	10.642	24.394
6046000	Epsomite		-2.178	2.242	.112	-4.419	-2.824
3021102	Eskolaite		-3.798	-9.211	.461	5.413	.000
6015002	Ettringite		-32.720	-61.913	3.096	29.193	88.287
2028001	Fe(OH)2(ppt)		-4.679	-12.473	.624	7.794	21.935
4128100	Fe(OH)2:7Cl		9.598	3.041	.152	6.558	.000
2028100	Fe(OH)3(am)		2.826	-5.607	.280	8.433	19.835
2028107	Fe(OH)3(ppt)		4.285	-4.148	.207	8.433	19.835
2028106	Fe(OH)3(soil)		5.747	-2.686	.134	8.433	.000
6028100	Fe2(SO4)3		-24.506	-5.322	.266	-19.184	58.150
2028101	Fe3(OH)8		4.439	-20.222	1.011	24.660	.000
6028001	FeSO4(s)		-7.496	-3.273	.164	-4.223	.000
2003003	Gibbsite(c)		1.697	-8.940	.447	10.636	22.800
2003005	Gibbsite(uc)	##	.395	-10.241	.512	10.636	24.500
6050005	Glauberite		-2.608	5.269	.263	-7.877	.000
2028102	Goethite		8.910	.471	.024	8.439	14.540
6015001	Gypsum	##	-.086	4.590	.229	-4.676	.109

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ID	Name	Anal Mol	Calc Mol	Activity	Log Activity	Gamma	New LogK
330	H+	0.000E+00	0.000E+00	6.457E-06	-5.19000	1.000	5.19
490	NH4+	1.650E+03	0.000E+00	1.000E+00	.00000	1.000	.00
150	Ca+2	2.300E+02	0.000E+00	1.000E+00	.00000	1.000	.00
180	Cl-	4.690E+03	0.000E+00	1.000E+00	.00000	1.000	.00
30	Al+3	2.750E+01	0.000E+00	1.000E+00	.00000	1.000	.00
211	CrOH+2	9.800E-02	0.000E+00	1.000E+00	.00000	1.000	.00
280	Fe+2	1.008E+03	0.000E+00	1.000E+00	.00000	1.000	.00
281	Fe+3	1.120E+02	0.000E+00	1.000E+00	.00000	1.000	.00
410	K+	1.280E+02	0.000E+00	1.000E+00	.00000	1.000	.00
460	Mg+2	2.950E+02	0.000E+00	1.000E+00	.00000	1.000	.00
500	Na+	6.120E+03	0.000E+00	1.000E+00	.00000	1.000	.00
732	SO4-2	1.760E+04	0.000E+00	1.000E+00	.00000	1.000	.00
1	e-	0.000E+00	0.000E+00	1.000E+00	.00000	1.000	.00
2	H2O	0.000E+00	0.000E+00	1.000E+00	.00000	1.000	.00

Unspeciated Charge Balance
Sum of Cations= 4.564E-01 Sum of Anions = 5.151E-01
Percent Difference = 6.044E+00 (anions - cations)/(anions + cations)*100

ITERATIONS DURING SOLVE

Iter	Name	Total Mol	Diff Fxn	Log Activity
alk = 0.0000E+00				
1	SO4-2	1.892E-01	-1.869E-01	-2.72298
2	SO4-2	1.892E-01	8.850E-01	-.85459
3	SO4-2	1.892E-01	7.034E-01	-1.11233
4	SO4-2	1.892E-01	4.042E-02	-1.61889
5	SO4-2	1.892E-01	1.229E-03	-1.68177
6	Fe+3	2.071E-03	3.009E+01	-5.62277
7	Fe+3	2.071E-03	8.918E+00	-5.79917
8	Fe+3	2.071E-03	2.644E+00	-5.97588
9	SO4-2	1.892E-01	5.998E-02	-1.68110
10	SO4-2	1.892E-01	-4.404E-02	-1.81132
11	SO4-2	1.892E-01	4.628E-03	-1.68397
12	SO4-2	1.892E-01	-1.081E-02	-1.69508
13	SO4-2	1.892E-01	-7.173E-03	-1.66967
14	SO4-2	1.892E-01	-1.889E-03	-1.65311
15	SO4-2	1.892E-01	-3.756E-04	-1.64882

OUTPUT DATA: ITERATIONS = 15

ID	Name	Anal Mol	Calc Mol	Activity	Log Activity	Gamma	New LogK
330	H+	0.000E+00	0.000E+00	6.457E-06	-5.19000	1.000	5.19
490	NH4+	1.650E+03	0.000E+00	1.000E+00	.00000	1.000	.00
150	Ca+2	2.300E+02	0.000E+00	1.000E+00	.00000	1.000	.00
180	Cl-	4.690E+03	0.000E+00	1.000E+00	.00000	1.000	.00
30	Al+3	2.750E+01	0.000E+00	1.000E+00	.00000	1.000	.00
211	CrOH+2	9.800E-02	0.000E+00	1.000E+00	.00000	1.000	.00
280	Fe+2	1.008E+03	0.000E+00	1.000E+00	.00000	1.000	.00
281	Fe+3	1.120E+02	0.000E+00	1.000E+00	.00000	1.000	.00
410	K+	1.280E+02	0.000E+00	1.000E+00	.00000	1.000	.00
460	Mg+2	2.950E+02	0.000E+00	1.000E+00	.00000	1.000	.00
500	Na+	6.120E+03	0.000E+00	1.000E+00	.00000	1.000	.00
732	SO4-2	1.760E+04	0.000E+00	1.000E+00	.00000	1.000	.00
1	e-	0.000E+00	0.000E+00	1.000E+00	.00000	1.000	.00
2	H2O	0.000E+00	0.000E+00	1.000E+00	.00000	1.000	.00

Unspeciated Charge Balance
Sum of Cations= 4.564E-01 Sum of Anions = 5.151E-01
Percent Difference = 6.044E+00 (anions - cations)/(anions + cations)*100

ITERATIONS DURING SOLVE

Iter	Name	Total Mol	Diff Fxn	Log Activity
alk = 0.0000E+00				
1	SO4-2	1.892E-01	-1.869E-01	-2.72298
2	SO4-2	1.892E-01	8.850E-01	-.85459
3	SO4-2	1.892E-01	7.034E-01	-1.11233
4	SO4-2	1.892E-01	4.042E-02	-1.61889
5	SO4-2	1.892E-01	1.229E-03	-1.68177
6	Fe+3	2.071E-03	3.009E+01	-5.62277
7	Fe+3	2.071E-03	8.918E+00	-5.79917
8	Fe+3	2.071E-03	2.644E+00	-5.97588
9	SO4-2	1.892E-01	5.998E-02	-1.68110
10	SO4-2	1.892E-01	-4.404E-02	-1.81132
11	SO4-2	1.892E-01	4.628E-03	-1.68397
12	SO4-2	1.892E-01	-1.081E-02	-1.69508
13	SO4-2	1.892E-01	-7.173E-03	-1.66967
14	SO4-2	1.892E-01	-1.889E-03	-1.65311
15	SO4-2	1.892E-01	-3.756E-04	-1.64882

OUTPUT DATA: ITERATIONS = 15

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1501800	CaCl+	2.419E-05	.0000164	-4.78575	.6771	-.532	.00
1501801	CaCl2(aq)	1.710E-06	.0000019	-5.71326	1.1319	-.616	.00
2113300	Cr+3	1.553E-08	.0000000	-9.28905	.0331	5.046	.00
2113301	Cr(OH)2+1	2.888E-09	.0000000	-8.69803	.6940	-6.053	.00
2110020	Cr(OH)3(aq)	1.186E-10	.0000000	-9.87222	1.1319	-12.625	.00
2110021	Cr(OH)4-1	9.821E-17	.0000000	-16.17721	.6771	-23.891	.00
2111800	CrCl+2	2.473E-10	.0000000	-10.29337	.2058	4.316	.00
2111801	CrCl2+1	1.135E-11	.0000000	-11.11439	.6771	4.045	.00
2111802	CrOHCl2(aq)	2.148E-12	.0000000	-11.61418	1.1319	-1.863	.00
2114900	Cr(NH3)6+3	3.906E-26	.0000000	-26.88851	.0331	-35.742	.00
2114901	Cr(NH3)5(OH)	2.501E-23	.0000000	-23.28840	.2058	-34.255	.00
2114902	cisCrNH3)4OH	4.024E-22	.0000000	-21.56470	.6771	-34.368	.00
2114903	transCrNH3)4	8.098E-23	.0000000	-22.26100	.6771	-35.064	.00
2114904	Cr(NH3)6Cl+2	1.788E-26	.0000000	-26.43413	.2058	-35.013	.00
2117320	CrSO4+1	6.981E-09	.0000000	-8.32543	.6771	6.347	.00
2117321	CrOHSO4(aq)	1.337E-06	.0000015	-5.82002	1.1319	3.445	.00
2117322	(CrOH)2(SO4)	1.919E-14	.0000000	-13.66303	1.1319	4.920	.00
2117323	(CrOH)2(SO4)	1.914E-10	.0000000	-10.40465	.2058	7.271	.00
2803300	FeOH+1	1.684E-08	.0000000	-7.93236	.6940	-10.383	13.20
2803302	Fe(OH)2(aq)	1.596E-08	.0000000	-7.74311	1.1319	-15.591	54.28
2803301	Fe(OH)3-1	2.590E-23	.0000000	-22.75600	.6771	-35.565	67.66
2801800	FeCl+	2.256E-04	.0001528	-3.81597	.6771	-.004	.00
2801801	FeCl2(aq)	4.546E-08	.0000001	-7.28860	1.1319	-2.632	.00
2801802	FeCl4-2	7.770E-09	.0000000	-8.83916	.1864	-1.265	.00
2807320	FeSO4(aq)	8.242E-03	.0093293	-2.03015	1.1319	2.139	3.23
2807321	FeHSO4+	6.699E-07	.0000005	-6.34335	.6771	3.239	.00
2817320	FeSO4+1	1.910E-05	.0000129	-4.88838	.6771	4.049	3.91
2817321	Fe(SO4)2-1	6.622E-06	.0000045	-5.34839	.6771	5.237	4.60
2817322	FeHSO4+2	1.579E-09	.0000000	-9.48826	.2058	5.157	.00
2811800	FeCl+2	4.820E-07	.0000001	-7.00355	.2058	1.871	5.60
2811801	FeCl2+1	5.474E-08	.0000000	-7.43111	.6771	1.993	.00
2811802	FeCl3(aq)	2.448E-10	.0000000	-9.55746	1.1319	.711	.00
2811803	FeCl4-	2.857E-13	.0000000	-12.71347	.6771	-1.155	.00
2813300	FeOH+2	1.167E-04	.0000240	-4.61934	.2058	-1.997	10.40
2813301	Fe(OH)2+1	1.285E-03	.0008698	-3.06058	.6771	-6.140	17.10
2813302	Fe(OH)3(aq)	2.523E-05	.0000286	-4.54421	1.1319	-13.031	24.80
2813303	Fe(OH)4-1	9.163E-10	.0000000	-9.20736	.6771	-22.656	31.90
2813304	Fe2(OH)2+4	1.566E-05	.0000000	-7.31272	.0031	-.934	13.50
2813305	Fe3(OH)4+5	1.953E-04	.0000000	-7.44309	.0002	-3.086	14.30
4107320	KSO4-1	4.552E-04	.0003082	-3.51116	.6771	1.035	2.25
4107321	KHSO4(aq)	2.396E-10	.0000000	-9.56675	1.1319	-.053	.00
4103300	KOH(aq)	2.171E-13	.0000000	-12.60948	1.1319	-15.119	.00
4101800	KCl(aq)	8.237E-07	.0000009	-6.03043	1.1319	-2.288	.00
4603300	MgOH+1	1.670E-10	.0000000	-9.94655	.6771	-12.229	15.94
4601800	MgCl+	1.841E-04	.0001247	-3.90425	.6771	.065	.00
4607320	MgSO4(aq)	6.706E-03	.0075903	-2.11974	1.1319	2.207	4.55
5007320	NaSO4-1	2.917E-02	.0197519	-1.70439	.6771	.895	1.12

SPECIES: TYPE III - FIXED SOLIDS

ID	Name	Calc Mol	Log Mol	New LogK	Del H
2	H2O	-3.672E-03	-2.435	.005	.000
330	H+	3.656E-03	-2.437	5.190	.000
2802810	Fe+2=>Fe+3	3.833E-09	-8.416	-13.309	9.680

SPECIES: TYPE VI - SPECIES NOT CONSIDERED

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ID	Name	Anal Mol	Calc Mol	Activity	Log Activity	Gamma	New LogK
732	SO4-2	1.892E-01	1.207E-01	2.249E-02	-1.64798	.186	.73
490	NH4+	9.448E-02	7.415E-02	4.728E-02	-1.32529	.638	.20
150	Ca+2	5.927E-03	3.683E-03	9.624E-04	-3.01664	.261	.58
180	Cl-	1.366E-01	1.343E-01	8.564E-02	-1.06732	.638	.20
30	Al+3	1.053E-03	1.284E-04	1.210E-05	-4.91723	.094	1.03
211	CrOH+2	1.467E-06	1.038E-07	2.135E-08	-7.67054	.206	.69
280	Fe+2	1.864E-02	1.017E-02	2.658E-03	-2.57537	.261	.58
281	Fe+3	2.071E-03	8.042E-07	7.581E-08	-7.12028	.094	1.03
410	K+	3.381E-03	2.925E-03	1.865E-03	-2.72928	.638	.20
460	Mg+2	1.253E-02	5.643E-03	1.850E-03	-2.73275	.328	.48
500	Na+	2.750E-01	2.439E-01	1.651E-01	-.78220	.677	.17
2	H2O	0.000E+00	-3.672E-03	9.874E-01	-.00549	1.000	.01
330	H+	0.000E+00	3.656E-03	6.457E-06	-5.19000	.797	5.19
1	e-	0.000E+00	3.833E-09	1.720E-09	-8.76457	.449	.35

SPECIES: TYPE I - COMPONENTS

ID	Name	Calc Mol	Activity	Log Activity	Gamma	New LogK	Del H
1	e-	3.833E-09	.0000000	-8.76457	.4486	.348	.00
490	NH4+	7.415E-02	.0472832	-1.32529	.6377	.195	.00
150	Ca+2	3.683E-03	.0009624	-3.01664	.2613	.583	.00
180	Cl-	1.343E-01	.0856406	-1.06732	.6377	.195	.00
30	Al+3	1.284E-04	.0000121	-4.91723	.0943	1.026	.00
211	CrOH+2	1.038E-07	.0000000	-7.67054	.2058	.687	.00
280	Fe+2	1.017E-02	.0026584	-2.57537	.2613	.583	.00
281	Fe+3	8.042E-07	.0000001	-7.12028	.0943	1.026	.00
410	K+	2.925E-03	.0018652	-2.72928	.6377	.195	.00
460	Mg+2	5.643E-03	.0018503	-2.73275	.3279	.484	.00
500	Na+	2.439E-01	.1651220	-.78220	.6771	.169	.00
732	SO4-2	1.207E-01	.0224917	-1.64798	.1864	.730	.00

SPECIES: TYPE II - COMPLEXES

ID	Name	Calc Mol	Activity	Log Activity	Gamma	New LogK	Del H
5003300	NaOH(aq)	4.789E-11	.0000000	-10.26597	1.1319	-14.722	.00
5001800	NaCl(aq)	1.892E-03	.0021418	-2.66923	1.1319	-.874	.00
3300020	OH-1	7.603E-10	.0000000	-9.31438	.6377	-14.304	13.36
3304900	NH3(aq)	1.274E-06	.0000014	-5.84110	1.1319	-9.760	12.48
4907320	NH4SO4-1	2.032E-02	.0137604	-1.86137	.6771	1.281	.00
3301800	HCl(aq)	1.006E-07	.0000001	-6.94348	1.1319	-.740	.00
3307320	HSO4-1	1.563E-05	.0000106	-4.97554	.6771	2.032	3.85
303300	AlOH+2	3.471E-05	.0000071	-5.14604	.2058	-4.727	11.49
303301	Al(OH)2+1	3.313E-06	.0000022	-5.64918	.6771	-10.932	26.90
303303	Al(OH)3(aq)	1.424E-08	.0000000	-7.79258	1.1319	-18.483	39.89
303302	Al(OH)4-1	6.018E-09	.0000000	-8.38994	.6771	-24.041	42.30
303304	Al2(OH)2+4	7.052E-06	.0000000	-7.79662	.0023	-5.686	17.65
303305	Al3(OH)4+5	1.040E-05	.0000000	-9.12559	.0001	-10.969	34.39
307320	AlSO4+1	3.287E-04	.0002226	-3.65251	.6771	3.082	2.15
307321	Al(SO4)2-1	5.121E-04	.0003467	-3.46002	.6771	4.923	2.84
307322	AlHSO4+2	2.657E-09	.0000000	-9.30521	.1864	3.180	.00
1503300	CaOH+1	2.295E-11	.0000000	-10.80852	.6771	-12.807	14.74
1507320	CaSO4(aq)	2.218E-03	.0025105	-2.60025	1.1319	2.011	1.65

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ID	Name	Calc Mol	Log Mol	New LogK	Del H
20030	H2O=>O2(g)	1.603E-16	-15.795	-43.699	68.315

PERCENTAGE DISTRIBUTION OF COMPONENTS

SO4-2

63.8	Percent Bound in Species #	732	SO4-2
10.7	Percent Bound in Species #	4907320	NH4SO4-1
1.2	Percent Bound in Species #	1507320	CaSO4(aq)
4.4	Percent Bound in Species #	2807320	FeSO4(aq)
3.5	Percent Bound in Species #	4607320	MgSO4(aq)
15.4	Percent Bound in Species #	5007320	NaSO4-1

NH4+

78.5	Percent Bound in Species #	490	NH4+
21.5	Percent Bound in Species #	4907320	NH4SO4-1

Ca+2

62.1	Percent Bound in Species #	150	Ca+2
37.4	Percent Bound in Species #	1507320	CaSO4(aq)

Cl-

98.3	Percent Bound in Species #	180	Cl-
1.4	Percent Bound in Species #	5001800	NaCl(aq)

Al+3

12.2	Percent Bound in Species #	30	Al+3
3.3	Percent Bound in Species #	303300	AlOH+2
1.3	Percent Bound in Species #	303304	Al2(OH)2+4
3.0	Percent Bound in Species #	303305	Al3(OH)4+5
31.2	Percent Bound in Species #	307320	AlSO4+1
48.7	Percent Bound in Species #	307321	Al(SO4)2-1

CrOH+2

7.1	Percent Bound in Species #	211	CrOH+2
1.1	Percent Bound in Species #	2113300	Cr+3
91.1	Percent Bound in Species #	2117321	CrOHSO4(aq)

Fe+2

54.6	Percent Bound in Species #	280	Fe+2
1.2	Percent Bound in Species #	2801800	FeCl+
44.2	Percent Bound in Species #	2807320	FeSO4(aq)

Fe+3

5.6	Percent Bound in Species #	2813300	FeOH+2
62.0	Percent Bound in Species #	2813301	Fe(OH)2+1
1.2	Percent Bound in Species #	2813302	Fe(OH)3(aq)
1.5	Percent Bound in Species #	2813304	Fe2(OH)2+4
28.3	Percent Bound in Species #	2813305	Fe3(OH)4+5

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K+

86.5	Percent Bound in Species #	410	K+
13.5	Percent Bound in Species #	4107320	KSO4-1

Mg+2

45.0	Percent Bound in Species #	460	Mg+2
1.5	Percent Bound in Species #	4601800	MgCl+
53.5	Percent Bound in Species #	4607320	MgSO4(aq)

Na+

88.7	Percent Bound in Species #	500	Na+
10.6	Percent Bound in Species #	5007320	NaSO4-1

H2O

1.1	Percent Bound in Species #	303305	Al3(OH)4+5
3.2	Percent Bound in Species #	2813300	FeOH+2
70.0	Percent Bound in Species #	2813301	Fe(OH)2+1
2.1	Percent Bound in Species #	2813302	Fe(OH)3(aq)
21.3	Percent Bound in Species #	2813305	Fe3(OH)4+5

H+

1.1	Percent Bound in Species #	303305	Al3(OH)4+5
3.2	Percent Bound in Species #	2813300	FeOH+2
70.3	Percent Bound in Species #	2813301	Fe(OH)2+1
2.1	Percent Bound in Species #	2813302	Fe(OH)3(aq)
21.4	Percent Bound in Species #	2813305	Fe3(OH)4+5

e-

100.0	Percent Bound in Species #	1	e-

IDX	Name	Aqueous Mass (mol/kg)	Sorbed Mass (mol/kg)
732	SO4-2	1.892E-01	0.000E+00
490	NH4+	9.447E-02	0.000E+00
150	Ca+2	5.927E-03	0.000E+00
180	Cl-	1.366E-01	0.000E+00
30	Al+3	1.053E-03	0.000E+00
211	CrOH+2	1.467E-06	0.000E+00
280	Fe+2	1.864E-02	0.000E+00
281	Fe+3	2.071E-03	0.000E+00
410	K+	3.381E-03	0.000E+00
460	Mg+2	1.253E-02	0.000E+00
500	Na+	2.749E-01	0.000E+00
2	H2O	3.672E-03	0.000E+00
330	H+	-3.656E-03	0.000E+00
1	e-	3.833E-09	0.000E+00

Speciated Charge Balance
Sum of Cations = 3.638E-01 Sum of Anions = 4.261E-01
Percent Difference = 7.885E+00 (anions - cations)/(anions + cations)*100

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Noncarbonate Alkalinity = -6.450E-06
Ionic Strength = 5.380E-01
Total Dissolved Solids = 32902.950 mg/liter
Total H+ mass = -.36483E-02 (sum of H+ as free H+ plus as aqueous species)
Temperature = 10.90 C or 284.06 K
Pressure = .000 feet of water or .000 bars

SATURATION INDICES FOR ALL MINERALS AND SOLIDS
(Solids with ID = 0000009 do not have Log K values)

ID	Name	EQ-BD	Sat Index	Log K	5%*Log K	Log IAP	Del H
2003000	Al(OH)3(am)		-1.128	-11.764	.588	10.636	26.500
6003002	Al2(SO4)3		-34.997	-20.219	1.011	-14.778	.000
6003003	Al2(SO4)3:6H2O		-16.348	-1.537	.077	-14.811	.000
6003000	AlOHSO4		1.849	3.230	.162	-1.381	.000
6041000	Alum-K		-5.044	5.964	.298	-11.008	-7.220
6003001	Alunite		9.902	-.428	.021	10.330	50.250
6015000	Anhydrite		-.330	4.335	.217	-4.665	1.710
4115000	Antarcticite		-9.306	-4.122	.206	-5.184	.000
6050003	Aphthitalite		-8.840	3.426	.171	-12.266	.000
6041003	Arcanite		-5.079	2.028	.101	-7.107	.000
6003001	Basaluminite		8.028	-22.500	1.125	30.528	.000
4146000	Bischofite		-9.327	-4.426	.221	-4.900	.000
6050004	Bloedite		-5.227	2.388	.119	-7.615	.000
2003001	Boehmite		1.213	-9.429	.471	10.642	26.194
2046000	Brucite		-9.636	-17.273	.864	7.636	27.240
4115003	Ca2Cl2(OH)2:3H2O		-24.327	-26.522	1.326	2.196	.000
4115002	Ca4Cl2(OH)6:19H2O		-51.867	-68.701	3.435	16.834	.000
4115001	CaCl2:4H2O		-10.873	-5.700	.285	-5.173	.000
4141000	Carnallite		-13.127	-4.430	.222	-8.697	.000
3021100	Chromite	##	.435	-12.777	.639	13.213	.000
2021102	Cr(OH)3(am)		-3.055	-5.754	.288	2.698	.000
2021101	Cr(OH)3(c)		-3.774	-6.472	.324	2.698	.000
2021103	Cr.01Fe.99(OH)3		2.002	-.696	.035	2.698	.000
2021104	Cr.05Fe.95(OH)3		1.123	-1.576	.079	2.698	.000
2021105	Cr.10Fe.90(OH)3		.609	-2.089	.104	2.698	.000
2021106	Cr.20Fe.80(OH)3	##	-.050	-2.749	.137	2.698	.000
2021107	Cr.30Fe.70(OH)3		-.490	-3.188	.159	2.698	.000
2021108	Cr.40Fe.60(OH)3		-1.223	-3.921	.196	2.698	.000
4121100	CrCl3		-34.335	-18.278	.914	-16.057	.000
2003002	Diaspore		2.128	-8.513	.426	10.642	24.394
6046000	Epsomite		-2.178	2.242	.112	-4.419	-2.824
3021102	Eskolaite		-3.798	-9.211	.461	5.413	.000
6015002	Ettringite		-32.720	-61.913	3.096	29.193	88.287
2028001	Fe(OH)2(ppt)		-4.679	-12.473	.624	7.794	21.935
4128100	Fe(OH)2:7Cl		9.598	3.041	.152	6.558	.000
2028100	Fe(OH)3(am)		2.826	-5.607	.280	8.433	19.835
2028107	Fe(OH)3(ppt)		4.285	-4.148	.207	8.433	19.835
2028106	Fe(OH)3(soil)		5.747	-2.686	.134	8.433	.000
6028100	Fe2(SO4)3		-24.506	-5.322	.266	-19.184	58.150
2028101	Fe3(OH)8		4.439	-20.222	1.011	24.660	.000
6028001	FeSO4(s)		-7.496	-3.273	.164	-4.223	.000
2003003	Gibbsite(c)		1.697	-8.940	.447	10.636	22.800
2003005	Gibbsite(uc)	##	.395	-10.241	.512	10.636	24.500
6050005	Glauberite		-2.608	5.269	.263	-7.877	.000
2028102	Goethite		8.910	.471	.024	8.439	14.540
6015001	Gypsum	##	-.086	4.590	.229	-4.676	.109

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4150000	Halite		-3.378	-1.528	.076	-1.850	-.951
2028105	Hematite		15.659	-1.223	.061	16.883	31.135
3028001	Hercynite	##	-.992	-30.080	1.504	29.088	78.375
6046001	Hexahydrite		-2.748	1.666	.083	-4.414	.000
6028101	Jarosite-H		11.351	10.096	.505	1.255	55.147
6041002	Jarosite-K		11.953	8.232	.412	3.721	31.282
6050000	Jarosite-Na		15.551	9.883	.494	5.668	36.182
6003002	Jurbanite		2.392	3.800	.190	-1.408	.000
6041010	K3H(SO4)2		-13.507	3.167	.158	-16.674	.000
6041004	Kainite		-8.106	.088	.004	-8.194	.000
6046002	Kieserite		-4.244	.142	.007	-4.386	.000
6050006	Labile-Salt		-5.384	5.716	.286	-11.100	.000
6041005	Leonite		-7.760	3.749	.187	-11.509	.000
2028103	Lepidocrocite		7.075	-1.363	.068	8.439	.000
2015000	Lime		-26.910	-34.268	1.713	7.358	46.264
2028104	Maghemite		10.510	-6.373	.319	16.883	.000
3028000	Magnetite		12.344	-12.339	.617	24.682	51.075
6028000	Melanterite		-1.865	2.397	.120	-4.262	-4.910
6041006	Mercallite		-8.285	1.282	.064	-9.567	.000
3021101	Mg-Chromite		-8.590	-21.645	1.082	13.055	.000
3046001	Mg-Ferrite		5.339	-19.186	.959	24.525	66.619
4146001	Mg2Cl(OH)3:7H2O		-17.050	-26.049	1.302	8.999	.000
6050001	Mirabilite		-1.365	1.902	.095	-3.267	-18.987
6041007	Misenite		-54.676	9.834	.492	-64.510	.000
6050007	Na3H(SO4)2		-9.987	.846	.042	-10.833	.000
2046001	Periclase		-15.004	-22.646	1.132	7.642	36.085
6041008	Picromerite		-7.418	4.102	.205	-11.520	.000
6041009	Polyhalite		-7.298	13.529	.676	-20.827	.000
2015001	Portlandite		-16.332	-23.685	1.184	7.352	31.000
3046000	Spinel		-10.705	-39.635	1.982	28.931	89.109
4141001	Sylvite		-4.826	-1.029	.051	-3.797	.000
6041011	Syngenite		-4.572	7.205	.360	-11.777	.000
4146002	Tachyhydrite		-32.269	-17.317	.866	-14.952	.000
6050002	Thenardite		-2.939	.273	.014	-3.212	.411

US EPA ARCHIVE DOCUMENT

GW-62S
DATE: 1/23/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-5.61 y
150	2.480E+01	-3.21 y
180	5.300E+01	-2.83 y
280	4.023E+00	-4.14 y
490	1.550E+00	-4.07 y
410	5.620E+00	-3.84 y
500	2.540E+01	-2.96 y
732	4.770E+01	-3.30 y
140	7.732E+01	-2.89 y

H2O has been inserted as a COMPONENT
3 1
330 5.6100 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	2.455E-06	-5.610	0.000E-01
150	Ca+2	6.166E-04	-3.210	2.480E+01
180	Cl-1	1.479E-03	-2.830	5.300E+01
280	Fe+2	7.244E-05	-4.140	4.023E+00
490	NH4+1	8.511E-05	-4.070	1.550E+00
410	K+1	1.445E-04	-3.840	5.620E+00
500	Na+1	1.096E-03	-2.960	2.540E+01
732	SO4-2	5.012E-04	-3.300	4.770E+01
140	CO3-2	1.288E-03	-2.890	7.732E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 2.717E-03 Sum of ANIONS = 5.066E-03

PERCENT DIFFERENCE = 3.019E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]							
6015000	ANHYDRITE	-2.282	[1.000]	150	[1.000]	732				
5015000	ARAGONITE	-3.631	[1.000]	150	[1.000]	140				
5015001	CALCITE	-3.445	[1.000]	150	[1.000]	140				
6015001	GYPSUM	-1.937	[1.000]	150	[1.000]	732	[2.000]		2	
4150000	HALITE	-7.391	[1.000]	500	[1.000]	180				
6028000	MELANTERITE	-5.156	[1.000]	280	[1.000]	732	[7.000]		2	
6050001	MIRABILITE	-7.673	[2.000]	500	[1.000]	732	[10.000]		2	
3050000	NATRON	-12.648	[2.000]	500	[1.000]	140	[10.000]		2	
5028000	SIDERITE	-2.414	[1.000]	280	[1.000]	140				
6050002	THENARDITE	-9.261	[2.000]	500	[1.000]	732				
5050001	THERMONATR	-14.703	[2.000]	500	[1.000]	140	[1.000]		2	
2015000	LIME	-26.467	[-2.000]	330	[1.000]	150	[1.000]		2	
2015001	PORTLANDITE	-15.825	[-2.000]	330	[1.000]	150	[2.000]		2	
2028000	WUSTITE	-5.343	[-2.000]	330	[0.947]	280	[1.000]		2	

US EPA ARCHIVE DOCUMENT

GW-62M
Date: 1/23/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-5.63	y
140	5.406E+01	-3.05	y
180	5.860E+01	-2.78	y
150	3.000E+01	-3.13	y
460	6.420E+00	-3.58	y
490	1.730E+00	-4.02	y
500	3.420E+01	-2.83	y
732	7.820E+01	-3.09	y

H2O has been inserted as a COMPONENT
3 1
330 5.6300 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	2.344E-06	-5.630	0.000E-01
140	CO3-2	8.913E-04	-3.050	5.406E+01
180	Cl-1	1.660E-03	-2.780	5.860E+01
150	Ca+2	7.413E-04	-3.130	3.000E+01
460	Mg+2	2.630E-04	-3.580	6.420E+00
490	NH4+1	9.550E-05	-4.020	1.730E+00
500	Na+1	1.479E-03	-2.830	3.420E+01
732	SO4-2	8.128E-04	-3.090	7.820E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 3.610E-03 Sum of ANIONS = 5.084E-03

PERCENT DIFFERENCE = 1.696E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.037	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-3.695	[1.000] 150 [1.000] 140
5046000	ARTINITE	-15.407	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-10.132	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-3.508	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-7.567	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-4.763	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-1.691	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-7.227	[1.000] 500 [1.000] 180
5015003	HUNTITE	-19.923	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-34.935	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-4.547	[1.000] 460 [1.000] 140
6050001	MIRABILITE	-7.235	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-12.519	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-6.942	[1.000] 460 [1.000] 140 [3.000] 2
6050002	THENARDITE	-8.823	[2.000] 500 [1.000] 732
5050001	THERMONATR	-14.574	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-26.371	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-15.728	[-2.000] 330 [1.000] 150 [2.000] 2
2046001	PERICLASE	-15.194	[-2.000] 330 [1.000] 460 [1.000] 2

GW-62D
DATE: 1/23/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-5.74	y
140	6.895E+01	-2.94	y
150	2.960E+01	-3.13	y
180	6.180E+01	-2.76	y
460	7.860E+00	-3.49	y
490	2.660E+00	-3.83	y
500	3.620E+01	-2.80	y
732	1.440E+01	-3.82	y

H2O has been inserted as a COMPONENT
3 1
330 5.7400 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	1.820E-06	-5.740	0.000E-01
140	CO3-2	1.148E-03	-2.940	6.895E+01
150	Ca+2	7.413E-04	-3.130	2.960E+01
180	Cl-1	1.738E-03	-2.760	6.180E+01
460	Mg+2	3.236E-04	-3.490	7.860E+00
490	NH4+1	1.479E-04	-3.830	2.660E+00
500	Na+1	1.585E-03	-2.800	3.620E+01
732	SO4-2	1.514E-04	-3.820	1.440E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 3.847E-03 Sum of ANIONS = 4.342E-03

PERCENT DIFFERENCE = 6.049E+00 (ANIONS - CATIONS)/(ANIONS + CATIONS)

IMPROVED ACTIVITY GUESSES PRIOR TO FIRST ITERATION:
CO3-2 Log activity guess: -8.32
SO4-2 Log activity guess: -3.82

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]							
6015000	ANHYDRITE	-2.738	[1.000]	150	[1.000]	732				
5015000	ARAGONITE	-3.363	[1.000]	150	[1.000]	140				
5046000	ARTINITE	-14.644	[-2.000]	330	[2.000]	460	[1.000]	140		
			[5.000]	2						
2046000	BRUCITE	-9.792	[1.000]	460	[2.000]	2	[-2.000]	330		
5015001	CALCITE	-3.176	[1.000]	150	[1.000]	140				
5015002	DOLOMITE	-6.813	[1.000]	150	[1.000]	460	[2.000]	140		
6046000	EPSOMITE	-5.373	[1.000]	460	[1.000]	732	[7.000]	2		
6015001	GYPSUM	-2.392	[1.000]	150	[1.000]	732	[2.000]	2		
4150000	HALITE	-7.173	[1.000]	500	[1.000]	180				
5015003	HUNTITE	-18.322	[3.000]	460	[1.000]	150	[4.000]	140		
5046001	HYDRMAGNESIT	-32.904	[5.000]	460	[4.000]	140	[-2.000]	330		
			[6.000]	2						
5046002	MAGNESITE	-4.124	[1.000]	460	[1.000]	140				
6050001	MIRABILITE	-7.909	[2.000]	500	[1.000]	732	[10.000]	2		
3050000	NATRON	-12.160	[2.000]	500	[1.000]	140	[10.000]	2		
5046003	NESQUEHONITE	-6.520	[1.000]	460	[1.000]	140	[3.000]	2		
6050002	THENARDITE	-9.497	[2.000]	500	[1.000]	732				
5050001	THERMONATR	-14.215	[2.000]	500	[1.000]	140	[1.000]	2		
2015000	LIME	-26.121	[-2.000]	330	[1.000]	150	[1.000]	2		
2015001	PORTLANDITE	-15.479	[-2.000]	330	[1.000]	150	[2.000]	2		
2046001	PERICLASE	-14.854	[-2.000]	330	[1.000]	460	[1.000]	2		

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 11:19:17

GW-62BR

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-7.44	y
140	4.243E+02	-2.15	y
150	4.700E+02	-1.93	y
180	1.700E+03	-1.32	y
280	6.200E+00	-3.95	y
281	1.050E+00	-4.73	y
460	3.500E+02	-1.84	y
470	4.500E+01	-3.09	y
490	1.000E+02	-2.26	y
410	3.800E+01	-3.01	y
500	2.100E+03	-1.04	y
732	4.400E+03	-1.34	y

H2O has been inserted as a COMPONENT
3 1
330 7.4400 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	3.631E-08	-7.440	0.000E-01
140	CO3-2	7.079E-03	-2.150	4.243E+02
150	Ca+2	1.175E-02	-1.930	4.700E+02
180	Cl-1	4.786E-02	-1.320	1.700E+03
280	Fe+2	1.122E-04	-3.950	6.200E+00
281	Fe+3	1.862E-05	-4.730	1.050E+00
460	Mg+2	1.445E-02	-1.840	3.500E+02
470	Mn+2	8.128E-04	-3.090	4.500E+01
490	NH4+1	5.495E-03	-2.260	1.000E+02
410	K+1	9.772E-04	-3.010	3.800E+01
500	Na+1	9.120E-02	-1.040	2.100E+03
732	SO4-2	4.571E-02	-1.340	4.400E+03
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-0.114	[1.000] 150 [1.000] 732
5015000	ARAGONITE	0.248	[1.000] 150 [1.000] 140
5046000	ARTINITE	-6.083	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-5.301	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	0.435	[1.000] 150 [1.000] 140
5015002	DOLOMITE	0.874	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-2.297	[1.000] 460 [1.000] 732 [7.000] 2
2028100	FERRIHYDRITE	3.248	[-3.000] 330 [1.000] 281 [3.000] 2
2028101	FE3(OH)8	6.323	[-8.000] 330 [2.000] 281 [1.000] 280 [8.000] 2
4128100	FEOH)2.7CL.3	8.515	[-2.700] 330 [1.000] 281 [2.700] 2 [0.300] 180
6028100	FE2(SO4)3	-39.898	[2.000] 281 [3.000] 732
2028102	GOETHITE	7.157	[-3.000] 330 [1.000] 281 [2.000] 2
6015001	GYPSUM	0.228	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-4.176	[1.000] 500 [1.000] 180
3028100	HEMATITE	19.261	[-6.000] 330 [2.000] 281 [3.000] 2
5015003	HUNTITE	-2.486	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-12.118	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
6050000	JAROSITE NA	6.917	[-6.000] 330 [1.000] 500 [3.000] 281 [2.000] 732 [6.000] 2
6041002	JAROSITE K	8.705	[-6.000] 330 [1.000] 410 [3.000] 281 [2.000] 732 [6.000] 2
6028101	JAROSITE H	0.924	[-5.000] 330 [3.000] 281 [2.000] 732 [7.000] 2
3028101	MAGHEMITE	9.898	[-6.000] 330 [2.000] 281 [3.000] 2
5046002	MAGNESITE	-0.049	[1.000] 460 [1.000] 140
3028000	MAGNETITE	21.129	[-8.000] 330 [2.000] 281 [1.000] 280 [4.000] 2
6028000	MELANTERITE	-4.053	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-2.630	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-5.894	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-2.449	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	0.412	[1.000] 280 [1.000] 140
6050002	THENARDITE	-4.202	[2.000] 500 [1.000] 732
5050001	THERMONATR	-7.935	[2.000] 500 [1.000] 140 [1.000] 2
2047003	PYROCROITE	-4.747	[-2.000] 330 [1.000] 470 [2.000] 2
5047000	RHODOCHROSIT	1.210	[1.000] 470 [1.000] 140
4147000	MNCL2, 4H2O	-8.801	[1.000] 470 [2.000] 180 [4.000] 2
6047000	MNSO4	-8.964	[1.000] 470 [1.000] 732
2015000	LIME	-22.093	[-2.000] 330 [1.000] 150 [1.000] 2

US EPA ARCHIVE DOCUMENT

ID #	NAME	Sat. Index	Stoichiometry in [brackets]							
2015001	PORTLANDITE	-11.452	[-2.000]	330	[1.000]	150	[2.000]	2		
2028000	WUSTITE	-2.005	[-2.000]	330	[0.947]	280	[1.000]	2		
2046001	PERICLASE	-10.361	[-2.000]	330	[1.000]	460	[1.000]	2		
3046001	MAG-FERRITE	9.648	[-8.000]	330	[1.000]	460	[2.000]	281		
			[4.000]	2						
3028102	LEPIDOCROCIT	6.770	[-3.000]	330	[1.000]	281	[2.000]	2		

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 11:12:16

GW-62BRD
DATE: 01/07/93

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-7.40	y
150	3.700E+02	-2.03	y
180	1.100E+03	-1.51	y
280	5.580E+01	-3.00	y
460	1.600E+02	-2.18	y
470	3.900E+00	-4.15	y
490	8.200E+01	-2.34	y
410	1.700E+01	-3.36	y
500	5.100E+02	-1.65	y
732	2.600E+03	-1.57	y

H2O has been inserted as a COMPONENT

3 1

330 7.4000 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	3.981E-08	-7.400	0.000E-01
150	Ca+2	9.333E-03	-2.030	3.700E+02
180	Cl-1	3.090E-02	-1.510	1.100E+03
280	Fe+2	1.000E-03	-3.000	5.580E+01
460	Mg+2	6.607E-03	-2.180	1.600E+02
470	Mn+2	7.079E-05	-4.150	3.900E+00
490	NH4+1	4.571E-03	-2.340	8.200E+01
410	K+1	4.365E-04	-3.360	1.700E+01
500	Na+1	2.239E-02	-1.650	5.100E+02
732	SO4-2	2.692E-02	-1.570	2.600E+03
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 6.123E-02 Sum of ANIONS = 8.558E-02

PERCENT DIFFERENCE = 1.659E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]							
6015000	ANHYDRITE	-0.238	[1.000]	150	[1.000]	732				
2046000	BRUCITE	-5.623	[1.000]	460	[2.000]	2	[-2.000]	330		
6046000	EPSOMITE	-2.649	[1.000]	460	[1.000]	732	[7.000]	2		
6015001	GYPSUM	0.106	[1.000]	150	[1.000]	732	[2.000]	2		
4150000	HALITE	-4.936	[1.000]	500	[1.000]	180				
6028000	MELANTERITE	-3.118	[1.000]	280	[1.000]	732	[7.000]	2		
6050001	MIRABILITE	-3.917	[2.000]	500	[1.000]	732	[10.000]	2		
6050002	THENARDITE	-5.498	[2.000]	500	[1.000]	732				
2047003	PYROCROITE	-5.787	[-2.000]	330	[1.000]	470	[2.000]	2		
4147000	MNCL2, 4H2O	-10.098	[1.000]	470	[2.000]	180	[4.000]	2		
6047000	MNSO4	-10.041	[1.000]	470	[1.000]	732				
2015000	LIME	-22.181	[-2.000]	330	[1.000]	150	[1.000]	2		
2015001	PORTLANDITE	-11.539	[-2.000]	330	[1.000]	150	[2.000]	2		
2028000	WUSTITE	-1.096	[-2.000]	330	[0.947]	280	[1.000]	2		
2046001	PERICLASE	-10.684	[-2.000]	330	[1.000]	460	[1.000]	2		

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 11:41:26

GW-64S
DATE: 01/23/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-5.25 y
140	1.448E+01	-3.62 y
150	5.000E+00	-3.90 y
180	2.400E+01	-3.17 y
500	1.460E+01	-3.20 y
732	6.500E+01	-3.17 y

H2O has been inserted as a COMPONENT
3 1
330 5.2500 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	5.623E-06	-5.250	0.000E-01
140	CO3-2	2.399E-04	-3.620	1.448E+01
150	Ca+2	1.259E-04	-3.900	5.000E+00
180	Cl-1	6.761E-04	-3.170	2.400E+01
500	Na+1	6.310E-04	-3.200	1.460E+01
732	SO4-2	6.761E-04	-3.170	6.500E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 8.847E-04 Sum of ANIONS = 2.513E-03

PERCENT DIFFERENCE = 4.793E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

IMPROVED ACTIVITY GUESSES PRIOR TO FIRST ITERATION:
CO3-2 Log activity guess: -9.91
SO4-2 Log activity guess: -3.17

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.782	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-5.714	[1.000] 150 [1.000] 140
5015001	CALCITE	-5.527	[1.000] 150 [1.000] 140
6015001	GYPSUM	-2.436	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-7.964	[1.000] 500 [1.000] 180
6050001	MIRABILITE	-7.959	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-14.517	[2.000] 500 [1.000] 140 [10.000] 2
6050002	THENARDITE	-9.547	[2.000] 500 [1.000] 732
5050001	THERMONATR	-16.573	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-27.870	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-17.227	[-2.000] 330 [1.000] 150 [2.000] 2

US EPA ARCHIVE DOCUMENT

GW-64D
DATE: 01/23/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.33	y
140	7.793E+01	-2.89	y
150	3.580E+01	-3.05	y
180	1.110E+02	-2.50	y
280	1.854E+01	-3.48	y
460	9.330E+00	-3.42	y
490	6.770E+00	-3.43	y
500	6.870E+01	-2.52	y
732	1.550E+02	-2.79	y

H2O has been inserted as a COMPONENT
3 1
330 6.3300 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	4.677E-07	-6.330	0.000E-01
140	CO3-2	1.288E-03	-2.890	7.793E+01
150	Ca+2	8.913E-04	-3.050	3.580E+01
180	Cl-1	3.162E-03	-2.500	1.110E+02
280	Fe+2	3.311E-04	-3.480	1.854E+01
460	Mg+2	3.802E-04	-3.420	9.330E+00
490	NH4+1	3.715E-04	-3.430	6.770E+00
500	Na+1	3.020E-03	-2.520	6.870E+01
732	SO4-2	1.622E-03	-2.790	1.550E+02
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 6.585E-03 Sum of ANIONS = 8.960E-03

PERCENT DIFFERENCE = 1.528E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-1.774	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-2.372	[1.000] 150 [1.000] 140
5046000	ARTINITE	-12.494	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-8.628	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-2.186	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-4.835	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-4.413	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-1.428	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-6.668	[1.000] 500 [1.000] 180
5015003	HUNTITE	-14.371	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-27.792	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-3.137	[1.000] 460 [1.000] 140
6028000	MELANTERITE	-4.138	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-6.405	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-10.630	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-5.533	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-0.644	[1.000] 280 [1.000] 140
6050002	THENARDITE	-7.993	[2.000] 500 [1.000] 732
5050001	THERMONATR	-12.685	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-24.954	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-14.312	[-2.000] 330 [1.000] 150 [2.000] 2
2028000	WUSTITE	-3.350	[-2.000] 330 [0.947] 280 [1.000] 2
2046001	PERICLASE	-13.690	[-2.000] 330 [1.000] 460 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 7-MAY-97 TIME: 10:51: 1

SIMULATION OF GW-83S
SAMPLE DATE: 10/26/96

Temperature (Celsius): 20.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 100
The method used to compute activity coefficients is: Davies equation
Intermediate output file

```
    330  0.000E-01   -5.98 y
      1  0.000E-01   -0.01 y
    150  2.700E+01   -3.17 y
    180  9.870E+01   -2.56 y
    490  3.061E+00   -3.77 y
    500  4.650E+01   -2.69 y
    732  7.000E+01   -3.14 y
    280  7.070E-01   -4.90 y
    281  3.030E-01   -5.27 y
    470  2.140E-01   -5.41 y
    410  5.000E+00   -3.89 y
    460  5.000E+00   -3.69 y
    950  2.200E-02   -6.47 y
    140  2.400E+01   -3.40 y

 H2O has been inserted as a COMPONENT
  3   2
2802810    13.0320   -10.0000
    330     5.9800     0.0000
  6   1
      1     0.0000     0.0000
```

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	1.047E-06	-5.980	0.000E-01
1	E-1	9.772E-01	-0.010	0.000E-01
150	Ca+2	6.761E-04	-3.170	2.700E+01
180	Cl-1	2.754E-03	-2.560	9.870E+01
490	NH4+1	1.698E-04	-3.770	3.061E+00
500	Na+1	2.042E-03	-2.690	4.650E+01
732	SO4-2	7.244E-04	-3.140	7.000E+01
280	Fe+2	1.259E-05	-4.900	7.070E-01
281	Fe+3	5.370E-06	-5.270	3.030E-01
470	Mn+2	3.890E-06	-5.410	2.140E-01
410	K+1	1.288E-04	-3.890	5.000E+00

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460	Mg+2	2.042E-04	-3.690	5.000E+00
950	Zn+2	3.388E-07	-6.470	2.200E-02
140	CO3-2	3.981E-04	-3.400	2.400E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 4.130E-03 Sum of ANIONS = 5.043E-03

PERCENT DIFFERENCE = 9.949E+00 (ANIONS - CATIONS)/(ANIONS + CATIONS)

IMPROVED ACTIVITY GUESSES PRIOR TO FIRST ITERATION:

SO4-2	Log activity guess:	-3.14
Fe+2	Log activity guess:	-4.74
Fe+3	Log activity guess:	-17.90
Mn+2	Log activity guess:	-5.41
CO3-2	Log activity guess:	-8.31

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.064	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-3.366	[1.000] 150 [1.000] 140
5046000	ARTINITE	-14.020	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-9.006	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-3.211	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-6.931	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-4.991	[1.000] 460 [1.000] 732 [7.000] 2
2028100	FERRIHYDRITE	1.453	[-3.000] 330 [1.000] 281 [3.000] 2
2028101	FE3(OH)8	-0.634	[-8.000] 330 [2.000] 281 [1.000] 280 [8.000] 2
4128100	FEOH)2.7CL.3	6.813	[-2.700] 330 [1.000] 281 [2.700] 2 [0.300] 180
6028100	FE2(SO4)3	-37.455	[2.000] 281 [3.000] 732
2028102	GOETHITE	5.663	[-3.000] 330 [1.000] 281 [2.000] 2
6015001	GYPSUM	-1.803	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-6.890	[1.000] 500 [1.000] 180
3028100	HEMATITE	16.311	[-6.000] 330 [2.000] 281 [3.000] 2
5015003	HUNTITE	-18.520	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-32.456	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
6050000	JAROSITE NA	2.481	[-6.000] 330 [1.000] 500 [3.000] 281 [2.000] 732 [6.000] 2
6041002	JAROSITE K	4.943	[-6.000] 330 [1.000] 410 [3.000] 281 [2.000] 732 [6.000] 2
6028101	JAROSITE H	-0.107	[-5.000] 330 [3.000] 281 [2.000] 732 [7.000] 2
3028101	MAGHEMITE	6.302	[-6.000] 330 [2.000] 281 [3.000] 2
5046002	MAGNESITE	-4.217	[1.000] 460 [1.000] 140
3028000	MAGNETITE	15.220	[-8.000] 330 [2.000] 281 [1.000] 280 [4.000] 2
6028000	MELANTERITE	-5.870	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-7.423	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-12.270	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-6.621	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-2.895	[1.000] 280 [1.000] 140
6050002	THENARDITE	-8.602	[2.000] 500 [1.000] 732
5050001	THERMONATR	-13.938	[2.000] 500 [1.000] 140 [1.000] 2
3047000	HAUSMANNITE	-18.191	[-8.000] 330 [-2.000] 1 [3.000] 470 [4.000] 2
2047003	PYROCROITE	-8.988	[-2.000] 330 [1.000] 470 [2.000] 2
5047000	RHODOCHROSIT	-3.512	[1.000] 470 [1.000] 140
4147000	MNCL2, 4H2O	-13.250	[1.000] 470 [2.000] 180 [4.000] 2

US EPA ARCHIVE DOCUMENT

ID #	NAME	Sat. Index	Stoichiometry in [brackets]								
6047000	MNSO4	-11.755	[1.000]	470	[1.000]	732					
95000	ZN METAL	-46.111	[1.000]	950	[2.000]	1					
4195000	ZNCL2	-19.079	[1.000]	950	[2.000]	180					
5095000	SMITHSONITE	-5.024	[1.000]	950	[1.000]	140					
5095001	ZNCO3, 1H2O	-4.709	[1.000]	950	[1.000]	140	[1.000]	2			
2095000	ZN(OH)2 (A)	-7.141	[-2.000]	330	[1.000]	950	[2.000]	2			
2095001	ZN(OH)2 (C)	-6.891	[-2.000]	330	[1.000]	950	[2.000]	2			
2095002	ZN(OH)2 (B)	-6.441	[-2.000]	330	[1.000]	950	[2.000]	2			
2095003	ZN(OH)2 (G)	-6.401	[-2.000]	330	[1.000]	950	[2.000]	2			
2095004	ZN(OH)2 (E)	-6.191	[-2.000]	330	[1.000]	950	[2.000]	2			
4195001	ZN2(OH)3CL	-13.152	[-3.000]	330	[2.000]	950	[3.000]	2			
			[1.000]	180							
4195002	ZN5(OH)8CL2	-29.096	[-8.000]	330	[5.000]	950	[8.000]	2			
			[2.000]	180							
6095000	ZN2(OH)2SO4	-12.157	[-2.000]	330	[2.000]	950	[2.000]	2			
			[1.000]	732							
6095001	ZN4(OH)6SO4	-22.440	[-6.000]	330	[4.000]	950	[6.000]	2			
			[1.000]	732							
2095005	ZNO(ACTIVE)	-6.001	[-2.000]	330	[1.000]	950	[1.000]	2			
2095006	ZINCITE	-6.104	[-2.000]	330	[1.000]	950	[1.000]	2			
6095002	ZN3O(SO4)2	-34.418	[-2.000]	330	[3.000]	950	[2.000]	732			
			[1.000]	2							
6095003	ZINCOSITE	-13.216	[1.000]	950	[1.000]	732					
6095004	ZNSO4, 1H2O	-9.529	[1.000]	950	[1.000]	732	[1.000]	2			
6095005	BIANCHITE	-8.203	[1.000]	950	[1.000]	732	[6.000]	2			
6095006	GOSLARITE	-7.965	[1.000]	950	[1.000]	732	[7.000]	2			
2015000	LIME	-24.755	[-2.000]	330	[1.000]	150	[1.000]	2			
2015001	PORTLANDITE	-14.438	[-2.000]	330	[1.000]	150	[2.000]	2			
2028000	WUSTITE	-4.830	[-2.000]	330	[0.947]	280	[1.000]	2			
2046001	PERICLASE	-13.853	[-2.000]	330	[1.000]	460	[1.000]	2			
3046001	MAG-FERRITE	3.199	[-8.000]	330	[1.000]	460	[2.000]	281			
			[4.000]	2							
3028102	LEPIDOCROCIT	4.973	[-3.000]	330	[1.000]	281	[2.000]	2			

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 7-MAY-97 TIME: 10:17: 3

SIMULATION OF GW-83M
SAMPLE DATE: 10/26/96

Temperature (Celsius): 25.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 100
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.01	y
1	0.000E-01	0.00	y
150	3.260E+01	-3.09	y
180	1.120E+02	-2.50	y
490	1.066E+01	-3.23	y
500	7.500E+01	-2.49	y
732	2.250E+02	-2.63	y
280	2.710E+00	-4.31	y
281	6.800E-01	-4.91	y
470	2.290E+00	-4.38	y
410	5.000E+00	-3.89	y
460	5.000E+00	-3.69	y
950	2.200E-02	-6.47	y
140	2.200E+01	-3.44	y

H2O has been inserted as a COMPONENT

```
  3   2
2802810    13.0320   -10.0000
    330     6.0100     0.0000
  6   1
      1     0.0000     0.0000
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INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	9.772E-07	-6.010	0.000E-01
1	E-1	1.000E+00	0.000	0.000E-01
150	Ca+2	8.128E-04	-3.090	3.260E+01
180	Cl-1	3.162E-03	-2.500	1.120E+02
490	NH4+1	5.888E-04	-3.230	1.066E+01
500	Na+1	3.236E-03	-2.490	7.500E+01
732	SO4-2	2.344E-03	-2.630	2.250E+02
280	Fe+2	4.898E-05	-4.310	2.710E+00
281	Fe+3	1.230E-05	-4.910	6.800E-01
470	Mn+2	4.169E-05	-4.380	2.290E+00
410	K+1	1.288E-04	-3.890	5.000E+00

US EPA ARCHIVE DOCUMENT

460	Mg+2	2.042E-04	-3.690	5.000E+00
950	Zn+2	3.388E-07	-6.470	2.200E-02
140	CO3-2	3.631E-04	-3.440	2.200E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 6.240E-03 Sum of ANIONS = 8.581E-03

PERCENT DIFFERENCE = 1.580E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

IMPROVED ACTIVITY GUESSES PRIOR TO FIRST ITERATION:

SO4-2	Log activity guess:	-2.63
Fe+2	Log activity guess:	-4.22
Fe+3	Log activity guess:	-17.25
Mn+2	Log activity guess:	-4.38
CO3-2	Log activity guess:	-8.26

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-1.557	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-3.283	[1.000] 150 [1.000] 140
5046000	ARTINITE	-13.721	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-8.705	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-3.144	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-6.827	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-4.643	[1.000] 460 [1.000] 732 [7.000] 2
2028100	FERRIHYDRITE	1.823	[-3.000] 330 [1.000] 281 [3.000] 2
2028101	FE3(OH)8	0.667	[-8.000] 330 [2.000] 281 [1.000] 280 [8.000] 2
4128100	FEOH)2.7CL.3	7.188	[-2.700] 330 [1.000] 281 [2.700] 2 [0.300] 180
6028100	FE2(SO4)3	-34.759	[2.000] 281 [3.000] 732
2028102	GOETHITE	6.214	[-3.000] 330 [1.000] 281 [2.000] 2
6015001	GYPSUM	-1.346	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-6.661	[1.000] 500 [1.000] 180
3028100	HEMATITE	17.437	[-6.000] 330 [2.000] 281 [3.000] 2
5015003	HUNTITE	-18.274	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-31.978	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
6050000	JAROSITE NA	5.080	[-6.000] 330 [1.000] 500 [3.000] 281 [2.000] 732 [6.000] 2
6041002	JAROSITE K	7.272	[-6.000] 330 [1.000] 410 [3.000] 281 [2.000] 732 [6.000] 2
6028101	JAROSITE H	2.504	[-5.000] 330 [3.000] 281 [2.000] 732 [7.000] 2
3028101	MAGHEMITE	7.043	[-6.000] 330 [2.000] 281 [3.000] 2
5046002	MAGNESITE	-4.179	[1.000] 460 [1.000] 140
3028000	MAGNETITE	17.152	[-8.000] 330 [2.000] 281 [1.000] 280 [4.000] 2
6028000	MELANTERITE	-4.940	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-6.805	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-12.033	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-6.587	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-2.284	[1.000] 280 [1.000] 140
6050002	THENARDITE	-7.739	[2.000] 500 [1.000] 732
5050001	THERMONATR	-13.468	[2.000] 500 [1.000] 140 [1.000] 2
3047000	HAUSMANNITE	-14.800	[-8.000] 330 [-2.000] 1 [3.000] 470 [4.000] 2
2047003	PYROCROITE	-7.699	[-2.000] 330 [1.000] 470 [2.000] 2
5047000	RHODOCHROSIT	-2.496	[1.000] 470 [1.000] 140
4147000	MNCL2, 4H2O	-12.431	[1.000] 470 [2.000] 180 [4.000] 2

US EPA ARCHIVE DOCUMENT

ID #	NAME	Sat. Index	Stoichiometry in [brackets]								
6047000	MNSO4	-10.149	[1.000]	470	[1.000]	732					
95000	ZN METAL	-45.055	[1.000]	950	[2.000]	1					
4195000	ZNCL2	-18.865	[1.000]	950	[2.000]	180					
5095000	SMITHSONITE	-5.020	[1.000]	950	[1.000]	140					
5095001	ZNCO3, 1H2O	-4.760	[1.000]	950	[1.000]	140	[1.000]	2			
2095000	ZN(OH)2 (A)	-7.175	[-2.000]	330	[1.000]	950	[2.000]	2			
2095001	ZN(OH)2 (C)	-6.925	[-2.000]	330	[1.000]	950	[2.000]	2			
2095002	ZN(OH)2 (B)	-6.475	[-2.000]	330	[1.000]	950	[2.000]	2			
2095003	ZN(OH)2 (G)	-6.435	[-2.000]	330	[1.000]	950	[2.000]	2			
2095004	ZN(OH)2 (E)	-6.225	[-2.000]	330	[1.000]	950	[2.000]	2			
4195001	ZN2(OH)3CL	-13.206	[-3.000]	330	[2.000]	950	[3.000]	2			
			[1.000]	180							
4195002	ZN5(OH)8CL2	-29.237	[-8.000]	330	[5.000]	950	[8.000]	2			
			[2.000]	180							
6095000	ZN2(OH)2SO4	-11.820	[-2.000]	330	[2.000]	950	[2.000]	2			
			[1.000]	732							
6095001	ZN4(OH)6SO4	-22.171	[-6.000]	330	[4.000]	950	[6.000]	2			
			[1.000]	732							
2095005	ZNO(ACTIVE)	-6.035	[-2.000]	330	[1.000]	950	[1.000]	2			
2095006	ZINCITE	-5.865	[-2.000]	330	[1.000]	950	[1.000]	2			
6095002	ZN3O(SO4)2	-32.935	[-2.000]	330	[3.000]	950	[2.000]	732			
			[1.000]	2							
6095003	ZINCOSITE	-12.605	[1.000]	950	[1.000]	732					
6095004	ZNSO4, 1H2O	-9.025	[1.000]	950	[1.000]	732	[1.000]	2			
6095005	BIANCHITE	-7.830	[1.000]	950	[1.000]	732	[6.000]	2			
6095006	GOSLARITE	-7.635	[1.000]	950	[1.000]	732	[7.000]	2			
2015000	LIME	-24.122	[-2.000]	330	[1.000]	150	[1.000]	2			
2015001	PORTLANDITE	-14.000	[-2.000]	330	[1.000]	150	[2.000]	2			
2028000	WUSTITE	-3.985	[-2.000]	330	[0.947]	280	[1.000]	2			
2046001	PERICLASE	-13.423	[-2.000]	330	[1.000]	460	[1.000]	2			
3046001	MAG-FERRITE	4.751	[-8.000]	330	[1.000]	460	[2.000]	281			
			[4.000]	2							
3028102	LEPIDOCROCIT	5.343	[-3.000]	330	[1.000]	281	[2.000]	2			

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 7-MAY-97 TIME: 14:54:18

GW-84s
SAMPLE DATE: 12/20/96

Temperature (Celsius): 8.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 100
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-5.90	y
150	2.110E+01	-2.10	y
180	7.410E+01	-1.62	y
140	2.220E+01	-2.25	y
410	5.000E+00	-2.88	y
460	5.000E+00	-2.20	y
470	8.900E-02	-3.15	y
500	2.660E+01	-1.26	y
490	1.800E-01	-2.18	y
732	3.380E+01	-1.45	y
280	1.510E-01	-5.57	
281	3.800E-02	-6.17	y
1	0.000E-01	-16.00	y

H2O has been inserted as a COMPONENT

```
  3   2
2802810    13.0320   -10.0000
    330     5.9000     0.0000
  6   1
      1     0.0000     0.0000
```

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	1.259E-06	-5.900	0.000E-01
150	Ca+2	7.943E-03	-2.100	2.110E+01
180	Cl-1	2.399E-02	-1.620	7.410E+01
140	CO3-2	5.623E-03	-2.250	2.220E+01
410	K+1	1.318E-03	-2.880	5.000E+00
460	Mg+2	6.310E-03	-2.200	5.000E+00
470	Mn+2	7.079E-04	-3.150	8.900E-02
500	Na+1	5.495E-02	-1.260	2.660E+01
490	NH4+1	6.607E-03	-2.180	1.800E-01
732	SO4-2	3.548E-02	-1.450	3.380E+01
280	Fe+2	2.692E-06	-5.570	1.510E-01
281	Fe+3	6.761E-07	-6.170	3.800E-02

US EPA ARCHIVE DOCUMENT

1	E-1	1.000E-16	-16.000	0.000E-01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: *UNSPECIATED*

Sum of CATIONS= 2.770E-03 Sum of ANIONS = 3.534E-03

PERCENT DIFFERENCE = 1.212E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

IMPROVED ACTIVITY GUESSES PRIOR TO FIRST ITERATION:

CO3-2	Log activity guess:	-8.57
Mn+2	Log activity guess:	-5.79
SO4-2	Log activity guess:	-3.45
Fe+2	Log activity guess:	-5.47
Fe+3	Log activity guess:	-18.95

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.537	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-3.788	[1.000] 150 [1.000] 140
5046000	ARTINITE	-15.279	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-9.951	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-3.583	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-7.742	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-5.149	[1.000] 460 [1.000] 732 [7.000] 2
2028100	FERRIHYDRITE	0.479	[-3.000] 330 [1.000] 281 [3.000] 2
2028101	FE3(OH)8	-3.375	[-8.000] 330 [2.000] 281 [1.000] 280 [8.000] 2
4128100	FEOH)2.7CL.3	5.827	[-2.700] 330 [1.000] 281 [2.700] 2 [0.300] 180
6028100	FE2(SO4)3	-41.659	[2.000] 281 [3.000] 732
2028102	GOETHITE	4.228	[-3.000] 330 [1.000] 281 [2.000] 2
6015001	GYPSUM	-2.147	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-7.215	[1.000] 500 [1.000] 180
3028100	HEMATITE	13.381	[-6.000] 330 [2.000] 281 [3.000] 2
5015003	HUNTITE	-20.330	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-35.125	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
6050000	JAROSITE NA	-2.158	[-6.000] 330 [1.000] 500 [3.000] 281 [2.000] 732 [6.000] 2
6041002	JAROSITE K	0.702	[-6.000] 330 [1.000] 410 [3.000] 281 [2.000] 732 [6.000] 2
6028101	JAROSITE H	-5.034	[-5.000] 330 [3.000] 281 [2.000] 732 [7.000] 2
3028101	MAGHEMITE	4.354	[-6.000] 330 [2.000] 281 [3.000] 2
5046002	MAGNESITE	-4.635	[1.000] 460 [1.000] 140
3028000	MAGNETITE	10.874	[-8.000] 330 [2.000] 281 [1.000] 280 [4.000] 2
6028000	MELANTERITE	-6.696	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-7.576	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-12.499	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-7.026	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-3.956	[1.000] 280 [1.000] 140
6050002	THENARDITE	-9.377	[2.000] 500 [1.000] 732
5050001	THERMONATR	-14.757	[2.000] 500 [1.000] 140 [1.000] 2
3047000	HAUSMANNITE	-21.976	[-8.000] 330 [-2.000] 1 [3.000] 470 [4.000] 2
2047003	PYROCROITE	-10.209	[-2.000] 330 [1.000] 470 [2.000] 2
5047000	RHODOCHROSIT	-4.179	[1.000] 470 [1.000] 140
4147000	MNCL2, 4H2O	-13.276	[1.000] 470 [2.000] 180 [4.000] 2

US EPA ARCHIVE DOCUMENT

ID #	NAME	Sat. Index	Stoichiometry in [brackets]								
6047000	MNSO4	-12.874	[1.000]	470	[1.000]	732					
2015000	LIME	-26.455	[-2.000]	330	[1.000]	150	[1.000]	2			
2015001	PORTLANDITE	-15.643	[-2.000]	330	[1.000]	150	[2.000]	2			
2028000	WUSTITE	-6.379	[-2.000]	330	[0.947]	280	[1.000]	2			
2046001	PERICLASE	-15.126	[-2.000]	330	[1.000]	460	[1.000]	2			
3046001	MAG-FERRITE	-0.993	[-8.000]	330	[1.000]	460	[2.000]	281			
			[4.000]	2							
3028102	LEPIDOCROCIT	3.999	[-3.000]	330	[1.000]	281	[2.000]	2			

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 7-MAY-97 TIME: 13:58:16

GW-84M
SAMPLE DATE: 12/20/96

Temperature (Celsius): 9.60
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 100
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.05	y
150	4.010E+01	-2.10	y
180	1.550E+02	-1.62	y
140	3.120E+01	-2.25	y
410	5.000E+00	-2.88	y
460	7.040E+00	-2.20	y
470	6.500E-02	-3.15	y
500	5.120E+01	-1.26	y
490	4.100E-02	-2.18	y
732	3.130E+01	-1.45	y

H2O has been inserted as a COMPONENT
3 1
330 6.0500 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	8.913E-07	-6.050	0.000E-01
150	Ca+2	7.943E-03	-2.100	4.010E+01
180	Cl-1	2.399E-02	-1.620	1.550E+02
140	CO3-2	5.623E-03	-2.250	3.120E+01
410	K+1	1.318E-03	-2.880	5.000E+00
460	Mg+2	6.310E-03	-2.200	7.040E+00
470	Mn+2	7.079E-04	-3.150	6.500E-02
500	Na+1	5.495E-02	-1.260	5.120E+01
490	NH4+1	6.607E-03	-2.180	4.100E-02
732	SO4-2	3.548E-02	-1.450	3.130E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 4.941E-03 Sum of ANIONS = 6.065E-03

PERCENT DIFFERENCE = 1.021E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.353	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-3.122	[1.000] 150 [1.000] 140
5046000	ARTINITE	-14.209	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-9.419	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-2.924	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-6.527	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-5.125	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-1.981	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-6.630	[1.000] 500 [1.000] 180
5015003	HUNTITE	-17.989	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-32.380	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-4.084	[1.000] 460 [1.000] 140
6050001	MIRABILITE	-7.189	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-11.611	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-6.477	[1.000] 460 [1.000] 140 [3.000] 2
6050002	THENARDITE	-8.904	[2.000] 500 [1.000] 732
5050001	THERMONATR	-13.787	[2.000] 500 [1.000] 140 [1.000] 2
2047003	PYROCROITE	-9.979	[-2.000] 330 [1.000] 470 [2.000] 2
5047000	RHODOCHROSIT	-3.933	[1.000] 470 [1.000] 140
4147000	MNCL2, 4H2O	-12.897	[1.000] 470 [2.000] 180 [4.000] 2
6047000	MNSO4	-13.058	[1.000] 470 [1.000] 732
2015000	LIME	-25.702	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-14.958	[-2.000] 330 [1.000] 150 [2.000] 2
2046001	PERICLASE	-14.548	[-2.000] 330 [1.000] 460 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 7-MAY-97 TIME: 13:39:54

GW-84d
SAMPLE DATE: 12/20/96

Temperature (Celsius): 9.50
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 100
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.36	y
1	0.000E-01	-0.01	y
150	3.170E+02	-2.10	y
180	8.480E+02	-1.62	y
140	3.340E+02	-2.25	y
280	3.640E+00	-4.19	y
281	4.000E-01	-5.14	y
410	5.120E+01	-2.88	y
460	1.520E+02	-2.20	y
470	3.920E+01	-3.15	y
500	1.270E+03	-1.26	y
490	1.200E+02	-2.18	y
732	3.430E+03	-1.45	y
950	1.060E-01	-5.79	y

H2O has been inserted as a COMPONENT

3	2		
2802810		13.0320	-10.0000
330		6.3600	0.0000
6	1		
1		0.0000	0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	4.365E-07	-6.360	0.000E-01
1	E-1	9.772E-01	-0.010	0.000E-01
150	Ca+2	7.943E-03	-2.100	3.170E+02
180	Cl-1	2.399E-02	-1.620	8.480E+02
140	CO3-2	5.623E-03	-2.250	3.340E+02
280	Fe+2	6.457E-05	-4.190	3.640E+00
281	Fe+3	7.244E-06	-5.140	4.000E-01
410	K+1	1.318E-03	-2.880	5.120E+01
460	Mg+2	6.310E-03	-2.200	1.520E+02
470	Mn+2	7.079E-04	-3.150	3.920E+01
500	Na+1	5.495E-02	-1.260	1.270E+03

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490	NH4+1	6.607E-03	-2.180	1.200E+02
732	SO4-2	3.548E-02	-1.450	3.430E+03
950	Zn+2	1.622E-06	-5.790	1.060E-01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 9.372E-02 Sum of ANIONS = 1.072E-01

PERCENT DIFFERENCE = 6.692E+00 (ANIONS - CATIONS)/(ANIONS + CATIONS)

IMPROVED ACTIVITY GUESSES PRIOR TO FIRST ITERATION:

CO3-2	Log activity guess:	-6.65
Fe+2	Log activity guess:	-4.14
Fe+3	Log activity guess:	-17.57
Mn+2	Log activity guess:	-3.14
SO4-2	Log activity guess:	-1.44

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-0.287	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-1.269	[1.000] 150 [1.000] 140
5046000	ARTINITE	-10.441	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-7.953	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-1.071	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-2.370	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-2.610	[1.000] 460 [1.000] 732 [7.000] 2
2028100	FERRIHYDRITE	1.873	[-3.000] 330 [1.000] 281 [3.000] 2
2028101	FE3(OH)8	1.228	[-8.000] 330 [2.000] 281 [1.000] 280 [8.000] 2
4128100	FEOH)2.7CL.3	7.376	[-2.700] 330 [1.000] 281 [2.700] 2 [0.300] 180
6028100	FE2(SO4)3	-36.630	[2.000] 281 [3.000] 732
2028102	GOETHITE	5.683	[-3.000] 330 [1.000] 281 [2.000] 2
6015001	GYPSUM	0.084	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-4.665	[1.000] 500 [1.000] 180
3028100	HEMATITE	16.299	[-6.000] 330 [2.000] 281 [3.000] 2
5015003	HUNTITE	-9.224	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-21.700	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
6050000	JAROSITE NA	5.541	[-6.000] 330 [1.000] 500 [3.000] 281 [2.000] 732 [6.000] 2
6041002	JAROSITE K	7.710	[-6.000] 330 [1.000] 410 [3.000] 281 [2.000] 732 [6.000] 2
6028101	JAROSITE H	0.705	[-5.000] 330 [3.000] 281 [2.000] 732 [7.000] 2
3028101	MAGHEMITE	7.144	[-6.000] 330 [2.000] 281 [3.000] 2
5046002	MAGNESITE	-1.779	[1.000] 460 [1.000] 140
3028000	MAGNETITE	15.689	[-8.000] 330 [2.000] 281 [1.000] 280 [4.000] 2
6028000	MELANTERITE	-4.233	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-2.924	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-7.562	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-4.175	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-1.179	[1.000] 280 [1.000] 140
6050002	THENARDITE	-4.635	[2.000] 500 [1.000] 732
5050001	THERMONATR	-9.734	[2.000] 500 [1.000] 140 [1.000] 2
3047000	HAUSMANNITE	-13.413	[-8.000] 330 [-2.000] 1 [3.000] 470 [4.000] 2
2047003	PYROCROITE	-7.064	[-2.000] 330 [1.000] 470 [2.000] 2
5047000	RHODOCHROSIT	-0.180	[1.000] 470 [1.000] 140
4147000	MNCL2, 4H2O	-9.267	[1.000] 470 [2.000] 180 [4.000] 2

US EPA ARCHIVE DOCUMENT

ID #	NAME	Sat. Index	Stoichiometry in [brackets]								
6047000	MNSO4	-9.093	[1.000]	470	[1.000]	732					
95000	ZN METAL	-45.605	[1.000]	950	[2.000]	1					
4195000	ZNCL2	-17.736	[1.000]	950	[2.000]	180					
5095000	SMITHSONITE	-3.434	[1.000]	950	[1.000]	140					
5095001	ZNCO3, 1H2O	-3.000	[1.000]	950	[1.000]	140	[1.000]	2			
2095000	ZN(OH)2 (A)	-6.271	[-2.000]	330	[1.000]	950	[2.000]	2			
2095001	ZN(OH)2 (C)	-6.021	[-2.000]	330	[1.000]	950	[2.000]	2			
2095002	ZN(OH)2 (B)	-5.571	[-2.000]	330	[1.000]	950	[2.000]	2			
2095003	ZN(OH)2 (G)	-5.531	[-2.000]	330	[1.000]	950	[2.000]	2			
2095004	ZN(OH)2 (E)	-5.321	[-2.000]	330	[1.000]	950	[2.000]	2			
4195001	ZN2(OH)3CL	-10.933	[-3.000]	330	[2.000]	950	[3.000]	2			
			[1.000]	180							
4195002	ZN5(OH)8CL2	-23.787	[-8.000]	330	[5.000]	950	[8.000]	2			
			[2.000]	180							
6095000	ZN2(OH)2SO4	-9.875	[-2.000]	330	[2.000]	950	[2.000]	2			
			[1.000]	732							
6095001	ZN4(OH)6SO4	-18.417	[-6.000]	330	[4.000]	950	[6.000]	2			
			[1.000]	732							
2095005	ZNO(ACTIVE)	-5.130	[-2.000]	330	[1.000]	950	[1.000]	2			
2095006	ZINCITE	-5.838	[-2.000]	330	[1.000]	950	[1.000]	2			
6095002	ZN3O(SO4)2	-32.441	[-2.000]	330	[3.000]	950	[2.000]	732			
			[1.000]	2							
6095003	ZINCOSITE	-12.336	[1.000]	950	[1.000]	732					
6095004	ZNSO4, 1H2O	-8.413	[1.000]	950	[1.000]	732	[1.000]	2			
6095005	BIANCHITE	-6.802	[1.000]	950	[1.000]	732	[6.000]	2			
6095006	GOSLARITE	-6.469	[1.000]	950	[1.000]	732	[7.000]	2			
2015000	LIME	-24.694	[-2.000]	330	[1.000]	150	[1.000]	2			
2015001	PORTLANDITE	-13.947	[-2.000]	330	[1.000]	150	[2.000]	2			
2028000	WUSTITE	-4.508	[-2.000]	330	[0.947]	280	[1.000]	2			
2046001	PERICLASE	-13.084	[-2.000]	330	[1.000]	460	[1.000]	2			
3046001	MAG-FERRITE	3.966	[-8.000]	330	[1.000]	460	[2.000]	281			
			[4.000]	2							
3028102	LEPIDOCROCIT	5.394	[-3.000]	330	[1.000]	281	[2.000]	2			

US EPA ARCHIVE DOCUMENT

ID #	NAME	Sat. Index	Stoichiometry in [brackets]								
6047000	MNSO4	-9.093	[1.000]	470	[1.000]	732					
95000	ZN METAL	-45.605	[1.000]	950	[2.000]	1					
4195000	ZNCL2	-17.736	[1.000]	950	[2.000]	180					
5095000	SMITHSONITE	-3.434	[1.000]	950	[1.000]	140					
5095001	ZNCO3, 1H2O	-3.000	[1.000]	950	[1.000]	140	[1.000]	2			
2095000	ZN(OH)2 (A)	-6.271	[-2.000]	330	[1.000]	950	[2.000]	2			
2095001	ZN(OH)2 (C)	-6.021	[-2.000]	330	[1.000]	950	[2.000]	2			
2095002	ZN(OH)2 (B)	-5.571	[-2.000]	330	[1.000]	950	[2.000]	2			
2095003	ZN(OH)2 (G)	-5.531	[-2.000]	330	[1.000]	950	[2.000]	2			
2095004	ZN(OH)2 (E)	-5.321	[-2.000]	330	[1.000]	950	[2.000]	2			
4195001	ZN2(OH)3CL	-10.933	[-3.000]	330	[2.000]	950	[3.000]	2			
			[1.000]	180							
4195002	ZN5(OH)8CL2	-23.787	[-8.000]	330	[5.000]	950	[8.000]	2			
			[2.000]	180							
6095000	ZN2(OH)2SO4	-9.875	[-2.000]	330	[2.000]	950	[2.000]	2			
			[1.000]	732							
6095001	ZN4(OH)6SO4	-18.417	[-6.000]	330	[4.000]	950	[6.000]	2			
			[1.000]	732							
2095005	ZNO(ACTIVE)	-5.130	[-2.000]	330	[1.000]	950	[1.000]	2			
2095006	ZINCITE	-5.838	[-2.000]	330	[1.000]	950	[1.000]	2			
6095002	ZN3O(SO4)2	-32.441	[-2.000]	330	[3.000]	950	[2.000]	732			
			[1.000]	2							
6095003	ZINCOSITE	-12.336	[1.000]	950	[1.000]	732					
6095004	ZNSO4, 1H2O	-8.413	[1.000]	950	[1.000]	732	[1.000]	2			
6095005	BIANCHITE	-6.802	[1.000]	950	[1.000]	732	[6.000]	2			
6095006	GOSLARITE	-6.469	[1.000]	950	[1.000]	732	[7.000]	2			
2015000	LIME	-24.694	[-2.000]	330	[1.000]	150	[1.000]	2			
2015001	PORTLANDITE	-13.947	[-2.000]	330	[1.000]	150	[2.000]	2			
2028000	WUSTITE	-4.508	[-2.000]	330	[0.947]	280	[1.000]	2			
2046001	PERICLASE	-13.084	[-2.000]	330	[1.000]	460	[1.000]	2			
3046001	MAG-FERRITE	3.966	[-8.000]	330	[1.000]	460	[2.000]	281			
			[4.000]	2							
3028102	LEPIDOCROCIT	5.394	[-3.000]	330	[1.000]	281	[2.000]	2			

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 12:49:43

GW-85M
DATE: 01/21/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.26 y
140	5.875E+01	-3.01 y
150	4.990E+01	-2.90 y
180	1.540E+02	-2.36 y
280	7.866E+00	-3.85 y
460	1.030E+01	-3.37 y
490	6.340E+00	-3.45 y
410	6.280E+00	-3.79 y
500	6.890E+01	-2.52 y
732	1.860E+02	-2.71 y

H2O has been inserted as a COMPONENT
3 1
330 6.2600 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	5.495E-07	-6.260	0.000E-01
140	CO3-2	9.772E-04	-3.010	5.875E+01
150	Ca+2	1.259E-03	-2.900	4.990E+01
180	Cl-1	4.365E-03	-2.360	1.540E+02
280	Fe+2	1.413E-04	-3.850	7.866E+00
460	Mg+2	4.266E-04	-3.370	1.030E+01
490	NH4+1	3.548E-04	-3.450	6.340E+00
410	K+1	1.622E-04	-3.790	6.280E+00
500	Na+1	3.020E-03	-2.520	6.890E+01
732	SO4-2	1.950E-03	-2.710	1.860E+02
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 7.132E-03 Sum of ANIONS = 1.018E-02

PERCENT DIFFERENCE = 1.761E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-1.582	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-2.472	[1.000] 150 [1.000] 140
5046000	ARTINITE	-12.806	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-8.741	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-2.285	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-5.135	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-4.322	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-1.236	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-6.530	[1.000] 500 [1.000] 180
5015003	HUNTITE	-15.070	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-28.705	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-3.337	[1.000] 460 [1.000] 140
6028000	MELANTERITE	-4.461	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-6.345	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-10.861	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-5.733	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-1.259	[1.000] 280 [1.000] 140
6050002	THENARDITE	-7.932	[2.000] 500 [1.000] 732
5050001	THERMONATR	-12.916	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-24.966	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-14.324	[-2.000] 330 [1.000] 150 [2.000] 2
2028000	WUSTITE	-3.858	[-2.000] 330 [0.947] 280 [1.000] 2
2046001	PERICLASE	-13.803	[-2.000] 330 [1.000] 460 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 12:54:49

GW-85D
DATE: 01/21/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.68 y
140	2.305E+02	-2.42 y
150	2.360E+02	-2.23 y
180	5.050E+02	-1.85 y
280	2.592E+01	-3.33 y
460	6.850E+01	-2.55 y
490	1.060E+02	-2.23 y
410	2.250E+01	-3.24 y
500	4.450E+02	-1.71 y
732	1.770E+03	-1.73 y

H2O has been inserted as a COMPONENT
3 1
330 6.6800 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	2.089E-07	-6.680	0.000E-01
140	CO3-2	3.802E-03	-2.420	2.305E+02
150	Ca+2	5.888E-03	-2.230	2.360E+02
180	Cl-1	1.413E-02	-1.850	5.050E+02
280	Fe+2	4.677E-04	-3.330	2.592E+01
460	Mg+2	2.818E-03	-2.550	6.850E+01
490	NH4+1	5.888E-03	-2.230	1.060E+02
410	K+1	5.754E-04	-3.240	2.250E+01
500	Na+1	1.950E-02	-1.710	4.450E+02
732	SO4-2	1.862E-02	-1.730	1.770E+03
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 4.430E-02 Sum of ANIONS = 5.898E-02

PERCENT DIFFERENCE = 1.421E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-0.467	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-0.968	[1.000] 150 [1.000] 140
5046000	ARTINITE	-9.777	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-7.372	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-0.782	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-1.969	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-3.051	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-0.122	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-5.307	[1.000] 500 [1.000] 180
5015003	HUNTITE	-8.581	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-20.690	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-1.675	[1.000] 460 [1.000] 140
6028000	MELANTERITE	-3.482	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-4.098	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-8.225	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-4.072	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	0.112	[1.000] 280 [1.000] 140
6050002	THENARDITE	-5.681	[2.000] 500 [1.000] 732
5050001	THERMONATR	-10.276	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-23.755	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-13.113	[-2.000] 330 [1.000] 150 [2.000] 2
2028000	WUSTITE	-2.792	[-2.000] 330 [0.947] 280 [1.000] 2
2046001	PERICLASE	-12.434	[-2.000] 330 [1.000] 460 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 13:11: 3

GW-86S
DATE: 01/22/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-5.52	y
140	6.752E+01	-2.95	y
150	3.000E+01	-3.13	y
180	9.620E+01	-2.57	y
280	2.448E+01	-3.36	y
460	5.640E+00	-3.63	y
490	1.910E+00	-3.98	y
500	4.410E+01	-2.72	y
732	7.780E+01	-3.09	y

H2O has been inserted as a COMPONENT
3 1
330 5.5200 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	3.020E-06	-5.520	0.000E-01
140	CO3-2	1.122E-03	-2.950	6.752E+01
150	Ca+2	7.413E-04	-3.130	3.000E+01
180	Cl-1	2.692E-03	-2.570	9.620E+01
280	Fe+2	4.365E-04	-3.360	2.448E+01
460	Mg+2	2.344E-04	-3.630	5.640E+00
490	NH4+1	1.047E-04	-3.980	1.910E+00
500	Na+1	1.905E-03	-2.720	4.410E+01
732	SO4-2	8.128E-04	-3.090	7.780E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 4.863E-03 Sum of ANIONS = 6.586E-03

PERCENT DIFFERENCE = 1.504E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.077	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-3.813	[1.000] 150 [1.000] 140
5046000	ARTINITE	-15.872	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-10.422	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-3.627	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-7.861	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-4.860	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-1.732	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-6.909	[1.000] 500 [1.000] 180
5015003	HUNTITE	-20.566	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-35.924	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-4.722	[1.000] 460 [1.000] 140
6028000	MELANTERITE	-4.249	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-7.049	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-12.411	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-7.117	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	-1.893	[1.000] 280 [1.000] 140
6050002	THENARDITE	-8.637	[2.000] 500 [1.000] 732
5050001	THERMONATR	-14.466	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-26.604	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-15.962	[-2.000] 330 [1.000] 150 [2.000] 2
2028000	WUSTITE	-4.817	[-2.000] 330 [0.947] 280 [1.000] 2
2046001	PERICLASE	-15.484	[-2.000] 330 [1.000] 460 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 13: 5:48

GW-86M
DATE: 01/22/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.18 y
140	5.692E+01	-3.02 y
150	2.240E+01	-3.25 y
180	7.180E+01	-2.69 y
280	1.800E+01	-3.49 y
490	6.000E-01	-4.48 y
500	3.100E+01	-2.87 y
732	4.440E+01	-3.34 y

H2O has been inserted as a COMPONENT
3 1
330 6.1800 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	6.607E-07	-6.180	0.000E-01
140	CO3-2	9.550E-04	-3.020	5.692E+01
150	Ca+2	5.623E-04	-3.250	2.240E+01
180	Cl-1	2.042E-03	-2.690	7.180E+01
280	Fe+2	3.236E-04	-3.490	1.800E+01
490	NH4+1	3.311E-05	-4.480	6.000E-01
500	Na+1	1.349E-03	-2.870	3.100E+01
732	SO4-2	4.571E-04	-3.340	4.440E+01
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 3.145E-03 Sum of ANIONS = 4.848E-03

PERCENT DIFFERENCE = 2.131E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-2.378	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-2.851	[1.000] 150 [1.000] 140
5015001	CALCITE	-2.665	[1.000] 150 [1.000] 140
6015001	GYPSUM	-2.032	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-7.177	[1.000] 500 [1.000] 180
6028000	MELANTERITE	-4.557	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-7.549	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-11.648	[2.000] 500 [1.000] 140 [10.000] 2
5028000	SIDERITE	-0.939	[1.000] 280 [1.000] 140
6050002	THENARDITE	-9.137	[2.000] 500 [1.000] 732
5050001	THERMONATR	-13.703	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-25.378	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-14.736	[-2.000] 330 [1.000] 150 [2.000] 2
2028000	WUSTITE	-3.594	[-2.000] 330 [0.947] 280 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 13: 0:33

GW-86D
DATE: 01/22/97

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.59 y
140	2.060E+02	-2.46 y
150	2.310E+02	-2.24 y
180	4.970E+02	-1.85 y
280	4.356E+01	-3.11 y
460	6.480E+01	-2.57 y
490	4.900E+01	-2.57 y
410	1.710E+01	-3.36 y
500	3.690E+02	-1.79 y
732	1.390E+03	-1.84 y

H2O has been inserted as a COMPONENT
3 1
330 6.5900 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	2.570E-07	-6.590	0.000E-01
140	CO3-2	3.467E-03	-2.460	2.060E+02
150	Ca+2	5.754E-03	-2.240	2.310E+02
180	Cl-1	1.413E-02	-1.850	4.970E+02
280	Fe+2	7.762E-04	-3.110	4.356E+01
460	Mg+2	2.692E-03	-2.570	6.480E+01
490	NH4+1	2.692E-03	-2.570	4.900E+01
410	K+1	4.365E-04	-3.360	1.710E+01
500	Na+1	1.622E-02	-1.790	3.690E+02
732	SO4-2	1.445E-02	-1.840	1.390E+03
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 3.773E-02 Sum of ANIONS = 4.997E-02

PERCENT DIFFERENCE = 1.395E+01 (ANIONS - CATIONS)/(ANIONS + CATIONS)

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]
6015000	ANHYDRITE	-0.523	[1.000] 150 [1.000] 732
5015000	ARAGONITE	-1.095	[1.000] 150 [1.000] 140
5046000	ARTINITE	-10.086	[-2.000] 330 [2.000] 460 [1.000] 140 [5.000] 2
2046000	BRUCITE	-7.537	[1.000] 460 [2.000] 2 [-2.000] 330
5015001	CALCITE	-0.909	[1.000] 150 [1.000] 140
5015002	DOLOMITE	-2.240	[1.000] 150 [1.000] 460 [2.000] 140
6046000	EPSOMITE	-3.123	[1.000] 460 [1.000] 732 [7.000] 2
6015001	GYPSUM	-0.178	[1.000] 150 [1.000] 732 [2.000] 2
4150000	HALITE	-5.383	[1.000] 500 [1.000] 180
5015003	HUNTITE	-9.140	[3.000] 460 [1.000] 150 [4.000] 140
5046001	HYDRMAGNESIT	-21.430	[5.000] 460 [4.000] 140 [-2.000] 330 [6.000] 2
5046002	MAGNESITE	-1.819	[1.000] 460 [1.000] 140
6028000	MELANTERITE	-3.307	[1.000] 280 [1.000] 732 [7.000] 2
6050001	MIRABILITE	-4.333	[2.000] 500 [1.000] 732 [10.000] 2
3050000	NATRON	-8.532	[2.000] 500 [1.000] 140 [10.000] 2
5046003	NESQUEHONITE	-4.216	[1.000] 460 [1.000] 140 [3.000] 2
5028000	SIDERITE	0.215	[1.000] 280 [1.000] 140
6050002	THENARDITE	-5.917	[2.000] 500 [1.000] 732
5050001	THERMONATR	-10.583	[2.000] 500 [1.000] 140 [1.000] 2
2015000	LIME	-23.903	[-2.000] 330 [1.000] 150 [1.000] 2
2015001	PORTLANDITE	-13.261	[-2.000] 330 [1.000] 150 [2.000] 2
2028000	WUSTITE	-2.724	[-2.000] 330 [0.947] 280 [1.000] 2
2046001	PERICLASE	-12.599	[-2.000] 330 [1.000] 460 [1.000] 2

US EPA ARCHIVE DOCUMENT

PART 1 of OUTPUT FILE

PC MINTEQA2 v3.10 DATE OF CALCULATIONS: 22-MAY-97 TIME: 13:17:14

GW-87D
DATE: 12/19/96

Temperature (Celsius): 12.00
Units of concentration: MG/L
Ionic strength to be computed.
If specified, carbonate concentration represents total inorganic carbon.
Do not automatically terminate if charge imbalance exceeds 30%
Precipitation is allowed only for those solids specified as ALLOWED
in the input file (if any).
The maximum number of iterations is: 40
The method used to compute activity coefficients is: Davies equation
Intermediate output file

330	0.000E-01	-6.88 y
140	2.509E+02	-2.38 y
150	2.840E+02	-2.15 y
180	5.330E+02	-1.82 y
280	3.096E+01	-3.26 y
460	8.080E+01	-2.48 y
470	5.930E+00	-3.97 y
490	4.730E+01	-2.58 y
410	2.980E+01	-3.12 y
500	2.380E+02	-1.98 y
732	1.630E+03	-1.77 y

H2O has been inserted as a COMPONENT
3 1
330 6.8800 0.0000

INPUT DATA BEFORE TYPE MODIFICATIONS

ID	NAME	ACTIVITY GUESS	LOG GUESS	ANAL TOTAL
330	H+1	1.318E-07	-6.880	0.000E-01
140	CO3-2	4.169E-03	-2.380	2.509E+02
150	Ca+2	7.079E-03	-2.150	2.840E+02
180	Cl-1	1.514E-02	-1.820	5.330E+02
280	Fe+2	5.495E-04	-3.260	3.096E+01
460	Mg+2	3.311E-03	-2.480	8.080E+01
470	Mn+2	1.072E-04	-3.970	5.930E+00
490	NH4+1	2.630E-03	-2.580	4.730E+01
410	K+1	7.586E-04	-3.120	2.980E+01
500	Na+1	1.047E-02	-1.980	2.380E+02
732	SO4-2	1.698E-02	-1.770	1.630E+03
2	H2O	1.000E+00	0.000	0.000E-01

Charge Balance: UNSPECIATED

Sum of CATIONS= 3.599E-02 Sum of ANIONS = 5.751E-02

US EPA ARCHIVE DOCUMENT

Saturation indices and stoichiometry of all minerals

ID #	NAME	Sat. Index	Stoichiometry in [brackets]							
6015000	ANHYDRITE	-0.402	[1.000]	150	[1.000]	732				
5015000	ARAGONITE	-0.592	[1.000]	150	[1.000]	140				
5046000	ARTINITE	-8.922	[-2.000]	330	[2.000]	460	[1.000]	140		
			[5.000]	2						
2046000	BRUCITE	-6.884	[1.000]	460	[2.000]	2	[-2.000]	330		
5015001	CALCITE	-0.406	[1.000]	150	[1.000]	140				
5015002	DOLOMITE	-1.227	[1.000]	150	[1.000]	460	[2.000]	140		
6046000	EPSOMITE	-2.995	[1.000]	460	[1.000]	732	[7.000]	2		
6015001	GYPSUM	-0.057	[1.000]	150	[1.000]	732	[2.000]	2		
4150000	HALITE	-5.549	[1.000]	500	[1.000]	180				
5015003	HUNTITE	-7.107	[3.000]	460	[1.000]	150	[4.000]	140		
5046001	HYDRMAGNESIT	-18.737	[5.000]	460	[4.000]	140	[-2.000]	330		
			[6.000]	2						
5046002	MAGNESITE	-1.309	[1.000]	460	[1.000]	140				
6028000	MELANTERITE	-3.420	[1.000]	280	[1.000]	732	[7.000]	2		
6050001	MIRABILITE	-4.666	[2.000]	500	[1.000]	732	[10.000]	2		
3050000	NATRON	-8.483	[2.000]	500	[1.000]	140	[10.000]	2		
5046003	NESQUEHONITE	-3.706	[1.000]	460	[1.000]	140	[3.000]	2		
5028000	SIDERITE	0.484	[1.000]	280	[1.000]	140				
6050002	THENARDITE	-6.250	[2.000]	500	[1.000]	732				
5050001	THERMONATR	-10.534	[2.000]	500	[1.000]	140	[1.000]	2		
2047003	PYROCROITE	-6.565	[-2.000]	330	[1.000]	470	[2.000]	2		
5047000	RHODOCHROSIT	-0.285	[1.000]	470	[1.000]	140				
4147000	MNCL2, 4H2O	-10.436	[1.000]	470	[2.000]	180	[4.000]	2		
6047000	MNSO4	-9.906	[1.000]	470	[1.000]	732				
2015000	LIME	-23.257	[-2.000]	330	[1.000]	150	[1.000]	2		
2015001	PORTLANDITE	-12.615	[-2.000]	330	[1.000]	150	[2.000]	2		
2028000	WUSTITE	-2.303	[-2.000]	330	[0.947]	280	[1.000]	2		
2046001	PERICLASE	-11.946	[-2.000]	330	[1.000]	460	[1.000]	2		

US EPA ARCHIVE DOCUMENT

B

ATTACHMENT B

CTM OUTPUT FILES

US EPA ARCHIVE DOCUMENT

GW-83D to Butters Row No. 1
Streamtube 1; L=1292 ft; v=0.38; D=129

Distance (ft)	1	2	3	4	5	6	7	8	9	10	11	12
12.92	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07
25.84	8.98E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07
38.76	8.58E-07	9.05E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07
51.68	8.17E-07	8.87E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07
64.60	7.76E-07	8.68E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07
77.52	7.36E-07	8.47E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07
90.44	6.95E-07	8.26E-07	8.34E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07
103.36	6.55E-07	8.03E-07	8.15E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07
116.28	6.15E-07	7.80E-07	7.96E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07
129.20	5.76E-07	7.56E-07	7.76E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07
142.12	5.38E-07	7.31E-07	7.57E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07
155.04	5.00E-07	7.06E-07	7.36E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07
167.96	4.64E-07	6.81E-07	7.16E-07	7.19E-07	7.19E-07	7.19E-07	7.19E-07	7.19E-07	7.19E-07	7.19E-07	7.19E-07	7.19E-07
180.88	4.30E-07	6.55E-07	6.96E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07
193.80	3.96E-07	6.29E-07	6.75E-07	6.80E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07
206.72	3.64E-07	6.03E-07	6.55E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07
219.64	3.33E-07	5.76E-07	6.34E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07
232.56	3.04E-07	5.50E-07	6.14E-07	6.23E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07
245.48	2.77E-07	5.24E-07	5.93E-07	6.04E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07
258.40	2.51E-07	4.98E-07	5.73E-07	5.85E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07
271.32	2.27E-07	4.73E-07	5.53E-07	5.67E-07	5.69E-07	5.69E-07	5.69E-07	5.69E-07	5.69E-07	5.69E-07	5.69E-07	5.69E-07
284.24	2.04E-07	4.48E-07	5.33E-07	5.49E-07	5.51E-07	5.52E-07	5.52E-07	5.52E-07	5.52E-07	5.52E-07	5.52E-07	5.52E-07
297.16	1.83E-07	4.24E-07	5.14E-07	5.32E-07	5.34E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07
310.08	1.64E-07	4.00E-07	4.94E-07	5.15E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07
323.00	1.46E-07	3.77E-07	4.75E-07	4.98E-07	5.01E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07
335.92	1.30E-07	3.54E-07	4.56E-07	4.81E-07	4.85E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07
348.84	1.15E-07	3.32E-07	4.38E-07	4.65E-07	4.70E-07	4.70E-07	4.71E-07	4.71E-07	4.71E-07	4.71E-07	4.71E-07	4.71E-07
361.76	1.01E-07	3.11E-07	4.20E-07	4.50E-07	4.55E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07
374.68	8.87E-08	2.91E-07	4.02E-07	4.34E-07	4.40E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07
387.60	7.76E-08	2.71E-07	3.85E-07	4.19E-07	4.26E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07
400.52	6.76E-08	2.53E-07	3.68E-07	4.05E-07	4.12E-07	4.13E-07	4.13E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

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413.44	5.87E-08	2.35E-07	3.52E-07	3.90E-07	3.99E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07
426.36	5.08E-08	2.18E-07	3.35E-07	3.77E-07	3.86E-07	3.87E-07	3.88E-07	3.88E-07	3.88E-07	3.88E-07	3.88E-07	3.88E-07
439.28	4.38E-08	2.02E-07	3.20E-07	3.63E-07	3.73E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07
452.20	3.76E-08	1.87E-07	3.04E-07	3.50E-07	3.61E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07
465.12	3.22E-08	1.72E-07	2.90E-07	3.37E-07	3.49E-07	3.51E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07
478.04	2.74E-08	1.59E-07	2.75E-07	3.24E-07	3.38E-07	3.40E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07
490.96	2.33E-08	1.46E-07	2.61E-07	3.12E-07	3.27E-07	3.29E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07
503.88	1.97E-08	1.34E-07	2.48E-07	3.00E-07	3.16E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07
516.80	1.66E-08	1.23E-07	2.34E-07	2.89E-07	3.05E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07
529.72	1.39E-08	1.12E-07	2.22E-07	2.77E-07	2.95E-07	2.99E-07	2.99E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07
542.64	1.17E-08	1.03E-07	2.10E-07	2.66E-07	2.85E-07	2.89E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07
555.56	9.70E-09	9.35E-08	1.98E-07	2.56E-07	2.75E-07	2.80E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07
568.48	8.06E-09	8.51E-08	1.86E-07	2.45E-07	2.66E-07	2.71E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07
581.40	6.66E-09	7.73E-08	1.76E-07	2.35E-07	2.57E-07	2.62E-07	2.63E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07
594.32	5.49E-09	7.00E-08	1.65E-07	2.25E-07	2.48E-07	2.54E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07
607.24	4.51E-09	6.34E-08	1.55E-07	2.15E-07	2.39E-07	2.46E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07
620.16	3.70E-09	5.72E-08	1.45E-07	2.06E-07	2.31E-07	2.38E-07	2.39E-07	2.39E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07
633.08	3.01E-09	5.16E-08	1.36E-07	1.97E-07	2.22E-07	2.30E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07
646.00	2.45E-09	4.64E-08	1.28E-07	1.88E-07	2.14E-07	2.22E-07	2.24E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07
658.92	1.99E-09	4.17E-08	1.19E-07	1.79E-07	2.07E-07	2.15E-07	2.17E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07
671.84	1.60E-09	3.74E-08	1.11E-07	1.71E-07	1.99E-07	2.08E-07	2.10E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07
684.76	1.29E-09	3.35E-08	1.04E-07	1.63E-07	1.92E-07	2.01E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07
697.68	1.04E-09	2.99E-08	9.65E-08	1.55E-07	1.84E-07	1.94E-07	1.97E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07
710.60	8.40E-10	2.66E-08	8.97E-08	1.47E-07	1.77E-07	1.88E-07	1.91E-07	1.91E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07
723.52	6.84E-10	2.37E-08	8.33E-08	1.40E-07	1.70E-07	1.82E-07	1.85E-07	1.85E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07
736.44	5.44E-10	2.11E-08	7.72E-08	1.33E-07	1.64E-07	1.76E-07	1.79E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07
749.36	4.35E-10	1.87E-08	7.15E-08	1.26E-07	1.57E-07	1.70E-07	1.73E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07
762.28	3.57E-10	1.65E-08	6.61E-08	1.19E-07	1.51E-07	1.64E-07	1.68E-07	1.68E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07
775.20	2.94E-10	1.46E-08	6.10E-08	1.13E-07	1.45E-07	1.58E-07	1.62E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07
788.12	2.32E-10	1.29E-08	5.63E-08	1.07E-07	1.39E-07	1.53E-07	1.57E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
801.04	2.01E-10	1.13E-08	5.18E-08	1.01E-07	1.33E-07	1.47E-07	1.52E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07
813.96	1.69E-10	9.95E-09	4.77E-08	9.52E-08	1.27E-07	1.42E-07	1.47E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07
826.88	1.38E-10	8.72E-09	4.38E-08	8.97E-08	1.22E-07	1.37E-07	1.42E-07	1.43E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07
839.80	1.23E-10	7.64E-09	4.02E-08	8.45E-08	1.17E-07	1.32E-07	1.37E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07
852.72	1.07E-10	6.67E-09	3.68E-08	7.95E-08	1.12E-07	1.27E-07	1.33E-07	1.34E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07

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865.64	9.13E-11	5.81E-09	3.37E-08	7.48E-08	1.07E-07	1.23E-07	1.28E-07	1.30E-07	1.30E-07	1.31E-07	1.31E-07	1.31E-07
878.56	9.13E-11	5.07E-09	3.08E-08	7.02E-08	1.02E-07	1.18E-07	1.24E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07
891.48	7.57E-11	4.39E-09	2.81E-08	6.59E-08	9.70E-08	1.14E-07	1.20E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07
904.40	7.57E-11	3.81E-09	2.56E-08	6.18E-08	9.25E-08	1.09E-07	1.16E-07	1.18E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
917.32	7.57E-11	3.30E-09	2.33E-08	5.78E-08	8.81E-08	1.05E-07	1.12E-07	1.14E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07
930.24	7.57E-11	2.86E-09	2.12E-08	5.41E-08	8.39E-08	1.01E-07	1.08E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07
943.16	6.01E-11	2.45E-09	1.92E-08	5.05E-08	7.98E-08	9.71E-08	1.05E-07	1.07E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07
956.08	6.01E-11	2.11E-09	1.74E-08	4.72E-08	7.58E-08	9.33E-08	1.01E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07
969.00	6.01E-11	1.81E-09	1.57E-08	4.40E-08	7.20E-08	8.96E-08	9.74E-08	1.00E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07
981.92	6.01E-11	1.56E-09	1.42E-08	4.10E-08	6.84E-08	8.60E-08	9.40E-08	9.68E-08	9.77E-08	9.78E-08	9.79E-08	9.79E-08
994.84	6.01E-11	1.33E-09	1.28E-08	3.81E-08	6.48E-08	8.25E-08	9.07E-08	9.37E-08	9.46E-08	9.48E-08	9.48E-08	9.48E-08
1007.76	6.01E-11	1.14E-09	1.16E-08	3.54E-08	6.15E-08	7.91E-08	8.75E-08	9.06E-08	9.15E-08	9.18E-08	9.18E-08	9.18E-08
1020.68	6.01E-11	9.75E-10	1.04E-08	3.29E-08	5.82E-08	7.58E-08	8.44E-08	8.76E-08	8.86E-08	8.89E-08	8.89E-08	8.89E-08
1033.60	6.01E-11	8.32E-10	9.37E-09	3.05E-08	5.51E-08	7.26E-08	8.14E-08	8.48E-08	8.58E-08	8.61E-08	8.61E-08	8.61E-08
1046.52	6.01E-11	7.10E-10	8.41E-09	2.83E-08	5.21E-08	6.95E-08	7.84E-08	8.20E-08	8.31E-08	8.34E-08	8.34E-08	8.34E-08
1059.44	6.01E-11	6.05E-10	7.54E-09	2.62E-08	4.92E-08	6.65E-08	7.56E-08	7.92E-08	8.04E-08	8.07E-08	8.08E-08	8.08E-08
1072.36	6.01E-11	5.16E-10	6.75E-09	2.42E-08	4.64E-08	6.36E-08	7.28E-08	7.66E-08	7.78E-08	7.82E-08	7.82E-08	7.83E-08
1085.28	6.01E-11	4.39E-10	6.04E-09	2.24E-08	4.38E-08	6.08E-08	7.01E-08	7.40E-08	7.53E-08	7.57E-08	7.58E-08	7.58E-08
1098.20	6.01E-11	3.74E-10	5.40E-09	2.06E-08	4.13E-08	5.80E-08	6.75E-08	7.15E-08	7.29E-08	7.33E-08	7.34E-08	7.34E-08
1111.12	6.01E-11	3.19E-10	4.81E-09	1.90E-08	3.89E-08	5.54E-08	6.50E-08	6.91E-08	7.06E-08	7.10E-08	7.11E-08	7.11E-08
1124.04	6.01E-11	2.73E-10	4.29E-09	1.75E-08	3.66E-08	5.29E-08	6.25E-08	6.68E-08	6.83E-08	6.87E-08	6.88E-08	6.89E-08
1136.96	6.01E-11	2.33E-10	3.81E-09	1.61E-08	3.44E-08	5.04E-08	6.01E-08	6.45E-08	6.61E-08	6.66E-08	6.67E-08	6.67E-08
1149.88	6.01E-11	2.00E-10	3.39E-09	1.48E-08	3.23E-08	4.80E-08	5.78E-08	6.23E-08	6.39E-08	6.44E-08	6.46E-08	6.46E-08
1162.80	6.01E-11	1.72E-10	3.01E-09	1.36E-08	3.03E-08	4.58E-08	5.55E-08	6.01E-08	6.19E-08	6.24E-08	6.25E-08	6.26E-08
1175.72	6.01E-11	1.49E-10	2.67E-09	1.25E-08	2.84E-08	4.35E-08	5.33E-08	5.80E-08	5.98E-08	6.04E-08	6.06E-08	6.06E-08
1188.64	6.01E-11	1.29E-10	2.36E-09	1.14E-08	2.66E-08	4.14E-08	5.12E-08	5.60E-08	5.79E-08	5.85E-08	5.87E-08	5.87E-08
1201.56	6.01E-11	1.13E-10	2.09E-09	1.05E-08	2.49E-08	3.94E-08	4.91E-08	5.40E-08	5.60E-08	5.66E-08	5.68E-08	5.68E-08
1214.48	6.01E-11	9.91E-11	1.84E-09	9.55E-09	2.33E-08	3.74E-08	4.71E-08	5.21E-08	5.42E-08	5.48E-08	5.50E-08	5.51E-08
1227.40	6.01E-11	8.77E-11	1.63E-09	8.72E-09	2.18E-08	3.55E-08	4.52E-08	5.03E-08	5.24E-08	5.31E-08	5.33E-08	5.33E-08
1240.32	6.01E-11	7.83E-11	1.43E-09	7.96E-09	2.04E-08	3.37E-08	4.33E-08	4.85E-08	5.06E-08	5.14E-08	5.16E-08	5.16E-08
1253.24	6.01E-11	7.06E-11	1.26E-09	7.25E-09	1.90E-08	3.19E-08	4.15E-08	4.67E-08	4.89E-08	4.97E-08	5.00E-08	5.00E-08
1266.16	6.01E-11	6.42E-11	1.11E-09	6.60E-09	1.77E-08	3.03E-08	3.98E-08	4.50E-08	4.73E-08	4.81E-08	4.84E-08	4.84E-08
1279.08	6.01E-11	5.89E-11	9.73E-10	6.00E-09	1.65E-08	2.87E-08	3.80E-08	4.34E-08	4.57E-08	4.66E-08	4.68E-08	4.69E-08
1292.00	6.01E-11	5.46E-11	8.54E-10	5.45E-09	1.53E-08	2.71E-08	3.64E-08	4.18E-08	4.42E-08	4.51E-08	4.54E-08	4.54E-08

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13	14	15	16	17	18	19	20	21	22	23	24	25
9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07	9.38E-07
9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07	9.22E-07
9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07	9.06E-07
8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07	8.89E-07
8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07
8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07	8.53E-07
8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07	8.35E-07
8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07
7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07	7.97E-07
7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07	7.78E-07
7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07	7.58E-07
7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07	7.39E-07
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6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07	6.81E-07
6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07	6.61E-07
6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07	6.42E-07
6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07	6.24E-07
6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07	6.05E-07
5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07	5.87E-07
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5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07	5.35E-07
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5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07	5.02E-07
4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07	4.86E-07
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4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07	4.56E-07
4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07	4.41E-07
4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07	4.27E-07
4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07	4.14E-07

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4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07	4.00E-07
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3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07	3.75E-07
3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07
3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07	3.52E-07
3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07	3.41E-07
3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07	3.30E-07
3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07	3.19E-07
3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07	3.09E-07
3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07	3.00E-07
2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07	2.90E-07
2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07	2.81E-07
2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07
2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07
2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07
2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07	2.47E-07
2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07
2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07	2.32E-07
2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07	2.25E-07
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2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07
1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07
1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07
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1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07	1.80E-07
1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07
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1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07
1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07	1.53E-07
1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07
1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07
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1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07	1.35E-07

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1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07	1.31E-07
1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07	1.26E-07
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1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07	1.19E-07
1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07	1.15E-07
1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07	1.11E-07
1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07	1.08E-07
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1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07
9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08	9.79E-08
9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08	9.48E-08
9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08	9.18E-08
8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08
8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08	8.61E-08
8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08	8.34E-08
8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08	8.08E-08
7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08	7.83E-08
7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08	7.58E-08
7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08	7.34E-08
7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08	7.11E-08
6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08	6.89E-08
6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08	6.67E-08
6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08	6.46E-08
6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08	6.26E-08
6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08	6.06E-08
5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08
5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08	5.69E-08
5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08	5.51E-08
5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08	5.33E-08
5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08	5.17E-08
5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08	5.00E-08
4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08	4.85E-08
4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08	4.69E-08
4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08	4.55E-08

US EPA ARCHIVE DOCUMENT

GW-83D to Butters Row No. 1; allow all oversaturated solids to precipitate.
Streamtube 1; L = 1292; v = 0.38; D= 129

Distance (ft)	1	2	3	4	5	6	7	8	9	10	11	12
12.92	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
25.84	1.90E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08
38.76	1.82E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08
51.68	1.73E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08
64.60	1.64E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08
77.52	1.56E-08	1.79E-08	1.80E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08
90.44	1.47E-08	1.75E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08
103.36	1.39E-08	1.70E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08
116.28	1.30E-08	1.65E-08	1.68E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08
129.20	1.22E-08	1.60E-08	1.64E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08
142.12	1.14E-08	1.55E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08
155.04	1.06E-08	1.49E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08
167.96	9.85E-09	1.44E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08
180.88	9.12E-09	1.39E-08	1.47E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08
193.80	8.41E-09	1.33E-08	1.43E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08
206.72	7.73E-09	1.28E-08	1.39E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08
219.64	7.09E-09	1.22E-08	1.34E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
232.56	6.48E-09	1.17E-08	1.30E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08
245.48	5.90E-09	1.11E-08	1.26E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
258.40	5.35E-09	1.06E-08	1.21E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08
271.32	4.84E-09	1.00E-08	1.17E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08
284.24	4.37E-09	9.49E-09	1.13E-08	1.16E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08
297.16	3.92E-09	8.98E-09	1.09E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08
310.08	3.51E-09	8.47E-09	1.05E-08	1.09E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08
323.00	3.14E-09	7.98E-09	1.01E-08	1.05E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08
335.92	2.79E-09	7.51E-09	9.66E-09	1.02E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08
348.84	2.48E-09	7.05E-09	9.27E-09	9.84E-09	9.94E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09
361.76	2.19E-09	6.60E-09	8.89E-09	9.51E-09	9.62E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09
374.68	1.93E-09	6.17E-09	8.51E-09	9.19E-09	9.31E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09
387.60	1.70E-09	5.76E-09	8.15E-09	8.87E-09	9.01E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09
400.52	1.49E-09	5.37E-09	7.79E-09	8.56E-09	8.72E-09	8.74E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09

US EPA ARCHIVE DOCUMENT

413.44	1.30E-09	4.99E-09	7.44E-09	8.26E-09	8.44E-09	8.46E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09
426.36	1.13E-09	4.64E-09	7.10E-09	7.97E-09	8.16E-09	8.19E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09
439.28	9.83E-10	4.30E-09	6.77E-09	7.68E-09	7.90E-09	7.93E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09
452.20	8.52E-10	3.98E-09	6.45E-09	7.40E-09	7.64E-09	7.68E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09
465.12	7.38E-10	3.67E-09	6.13E-09	7.13E-09	7.39E-09	7.43E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09
478.04	6.37E-10	3.39E-09	5.83E-09	6.86E-09	7.14E-09	7.20E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09
490.96	5.50E-10	3.12E-09	5.53E-09	6.61E-09	6.91E-09	6.97E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09
503.88	4.74E-10	2.86E-09	5.25E-09	6.35E-09	6.68E-09	6.74E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09
516.80	4.09E-10	2.63E-09	4.97E-09	6.11E-09	6.45E-09	6.53E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09
529.72	3.53E-10	2.41E-09	4.70E-09	5.87E-09	6.24E-09	6.32E-09	6.33E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09
542.64	3.05E-10	2.20E-09	4.44E-09	5.64E-09	6.03E-09	6.12E-09	6.13E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09
555.56	2.64E-10	2.01E-09	4.20E-09	5.41E-09	5.82E-09	5.92E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09
568.48	2.29E-10	1.83E-09	3.96E-09	5.19E-09	5.62E-09	5.73E-09	5.75E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09
581.40	1.99E-10	1.67E-09	3.73E-09	4.97E-09	5.43E-09	5.55E-09	5.57E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09
594.32	1.75E-10	1.51E-09	3.50E-09	4.76E-09	5.24E-09	5.37E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
607.24	1.54E-10	1.37E-09	3.29E-09	4.56E-09	5.06E-09	5.20E-09	5.22E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09
620.16	1.37E-10	1.24E-09	3.09E-09	4.36E-09	4.88E-09	5.03E-09	5.06E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09
633.08	1.22E-10	1.12E-09	2.90E-09	4.17E-09	4.70E-09	4.86E-09	4.90E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09
646.00	1.11E-10	1.01E-09	2.71E-09	3.98E-09	4.53E-09	4.70E-09	4.74E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09
658.92	1.01E-10	9.15E-10	2.54E-09	3.80E-09	4.37E-09	4.55E-09	4.59E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
671.84	9.27E-11	8.24E-10	2.37E-09	3.62E-09	4.21E-09	4.40E-09	4.45E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09
684.76	8.61E-11	7.41E-10	2.21E-09	3.45E-09	4.05E-09	4.26E-09	4.31E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09
697.68	8.09E-11	6.66E-10	2.06E-09	3.28E-09	3.90E-09	4.11E-09	4.17E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09
710.60	7.66E-11	5.97E-10	1.91E-09	3.12E-09	3.75E-09	3.98E-09	4.04E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09
723.52	7.33E-11	5.36E-10	1.78E-09	2.97E-09	3.61E-09	3.84E-09	3.91E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09
736.44	7.03E-11	4.80E-10	1.65E-09	2.81E-09	3.47E-09	3.71E-09	3.78E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09
749.36	6.80E-11	4.29E-10	1.53E-09	2.67E-09	3.33E-09	3.59E-09	3.66E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09
762.28	6.64E-11	3.84E-10	1.42E-09	2.53E-09	3.20E-09	3.46E-09	3.54E-09	3.56E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09
775.20	6.51E-11	3.43E-10	1.31E-09	2.40E-09	3.07E-09	3.34E-09	3.43E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09
788.12	6.38E-11	3.07E-10	1.21E-09	2.27E-09	2.94E-09	3.23E-09	3.32E-09	3.34E-09	3.34E-09	3.34E-09	3.35E-09	3.35E-09
801.04	6.31E-11	2.74E-10	1.12E-09	2.14E-09	2.82E-09	3.11E-09	3.21E-09	3.23E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09
813.96	6.24E-11	2.45E-10	1.03E-09	2.02E-09	2.70E-09	3.00E-09	3.11E-09	3.13E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09
826.88	6.18E-11	2.19E-10	9.45E-10	1.91E-09	2.58E-09	2.90E-09	3.00E-09	3.03E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09
839.80	6.15E-11	1.96E-10	8.69E-10	1.80E-09	2.47E-09	2.79E-09	2.90E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09
852.72	6.11E-11	1.76E-10	7.98E-10	1.69E-09	2.36E-09	2.69E-09	2.81E-09	2.84E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09

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865.64	6.08E-11	1.58E-10	7.32E-10	1.59E-09	2.26E-09	2.59E-09	2.72E-09	2.75E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09
878.56	6.08E-11	1.42E-10	6.71E-10	1.50E-09	2.16E-09	2.50E-09	2.63E-09	2.66E-09	2.67E-09	2.67E-09	2.68E-09	2.68E-09
891.48	6.05E-11	1.28E-10	6.13E-10	1.40E-09	2.06E-09	2.40E-09	2.54E-09	2.58E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09
904.40	6.05E-11	1.16E-10	5.61E-10	1.32E-09	1.96E-09	2.31E-09	2.45E-09	2.50E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09
917.32	6.05E-11	1.05E-10	5.12E-10	1.23E-09	1.87E-09	2.22E-09	2.37E-09	2.42E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
930.24	6.05E-11	9.56E-11	4.68E-10	1.15E-09	1.78E-09	2.14E-09	2.29E-09	2.34E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09
943.16	6.01E-11	8.71E-11	4.26E-10	1.08E-09	1.69E-09	2.06E-09	2.21E-09	2.26E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09
956.08	6.01E-11	7.99E-11	3.88E-10	1.01E-09	1.61E-09	1.98E-09	2.14E-09	2.19E-09	2.20E-09	2.21E-09	2.21E-09	2.21E-09
969.00	6.01E-11	7.36E-11	3.53E-10	9.41E-10	1.53E-09	1.90E-09	2.06E-09	2.12E-09	2.13E-09	2.14E-09	2.14E-09	2.14E-09
981.92	6.01E-11	6.82E-11	3.21E-10	8.77E-10	1.45E-09	1.82E-09	1.99E-09	2.05E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09
994.84	6.01E-11	6.35E-11	2.92E-10	8.17E-10	1.38E-09	1.75E-09	1.92E-09	1.98E-09	2.00E-09	2.00E-09	2.01E-09	2.01E-09
1007.76	6.01E-11	5.95E-11	2.65E-10	7.61E-10	1.31E-09	1.67E-09	1.85E-09	1.92E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09
1020.68	6.01E-11	5.60E-11	2.41E-10	7.07E-10	1.24E-09	1.61E-09	1.79E-09	1.85E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09
1033.60	6.01E-11	5.30E-11	2.19E-10	6.57E-10	1.17E-09	1.54E-09	1.72E-09	1.79E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09
1046.52	6.01E-11	5.04E-11	1.99E-10	6.10E-10	1.11E-09	1.47E-09	1.66E-09	1.73E-09	1.76E-09	1.76E-09	1.77E-09	1.77E-09
1059.44	6.01E-11	4.82E-11	1.80E-10	5.65E-10	1.05E-09	1.41E-09	1.60E-09	1.68E-09	1.70E-09	1.71E-09	1.71E-09	1.71E-09
1072.36	6.01E-11	4.63E-11	1.64E-10	5.24E-10	9.88E-10	1.35E-09	1.54E-09	1.62E-09	1.65E-09	1.65E-09	1.66E-09	1.66E-09
1085.28	6.01E-11	4.47E-11	1.49E-10	4.85E-10	9.32E-10	1.29E-09	1.48E-09	1.57E-09	1.59E-09	1.60E-09	1.60E-09	1.60E-09
1098.20	6.01E-11	4.33E-11	1.35E-10	4.48E-10	8.79E-10	1.23E-09	1.43E-09	1.51E-09	1.54E-09	1.55E-09	1.55E-09	1.55E-09
1111.12	6.01E-11	4.21E-11	1.23E-10	4.14E-10	8.28E-10	1.17E-09	1.38E-09	1.46E-09	1.49E-09	1.50E-09	1.50E-09	1.50E-09
1124.04	6.01E-11	4.12E-11	1.12E-10	3.83E-10	7.80E-10	1.12E-09	1.32E-09	1.41E-09	1.45E-09	1.45E-09	1.46E-09	1.46E-09
1136.96	6.01E-11	4.03E-11	1.02E-10	3.53E-10	7.33E-10	1.07E-09	1.27E-09	1.36E-09	1.40E-09	1.41E-09	1.41E-09	1.41E-09
1149.88	6.01E-11	3.96E-11	9.28E-11	3.25E-10	6.89E-10	1.02E-09	1.22E-09	1.32E-09	1.35E-09	1.36E-09	1.37E-09	1.37E-09
1162.80	6.01E-11	3.90E-11	8.47E-11	3.00E-10	6.47E-10	9.71E-10	1.18E-09	1.27E-09	1.31E-09	1.32E-09	1.32E-09	1.32E-09
1175.72	6.01E-11	3.85E-11	7.75E-11	2.76E-10	6.08E-10	9.24E-10	1.13E-09	1.23E-09	1.27E-09	1.28E-09	1.28E-09	1.28E-09
1188.64	6.01E-11	3.81E-11	7.11E-11	2.54E-10	5.70E-10	8.79E-10	1.08E-09	1.19E-09	1.23E-09	1.24E-09	1.24E-09	1.24E-09
1201.56	6.01E-11	3.78E-11	6.53E-11	2.33E-10	5.34E-10	8.36E-10	1.04E-09	1.14E-09	1.18E-09	1.20E-09	1.20E-09	1.20E-09
1214.48	6.01E-11	3.75E-11	6.02E-11	2.14E-10	5.00E-10	7.94E-10	9.98E-10	1.10E-09	1.15E-09	1.16E-09	1.16E-09	1.17E-09
1227.40	6.01E-11	3.73E-11	5.56E-11	1.97E-10	4.68E-10	7.54E-10	9.57E-10	1.06E-09	1.11E-09	1.12E-09	1.13E-09	1.13E-09
1240.32	6.01E-11	3.71E-11	5.15E-11	1.81E-10	4.37E-10	7.16E-10	9.18E-10	1.03E-09	1.07E-09	1.09E-09	1.09E-09	1.09E-09
1253.24	6.01E-11	3.69E-11	4.79E-11	1.66E-10	4.08E-10	6.79E-10	8.79E-10	9.89E-10	1.04E-09	1.05E-09	1.06E-09	1.06E-09
1266.16	6.01E-11	3.68E-11	4.47E-11	1.52E-10	3.81E-10	6.44E-10	8.42E-10	9.53E-10	1.00E-09	1.02E-09	1.02E-09	1.03E-09
1279.08	6.01E-11	3.66E-11	4.18E-11	1.39E-10	3.56E-10	6.10E-10	8.06E-10	9.18E-10	9.68E-10	9.85E-10	9.91E-10	9.92E-10
1292.00	6.01E-11	3.66E-11	3.93E-11	1.28E-10	3.32E-10	5.77E-10	7.71E-10	8.84E-10	9.35E-10	9.54E-10	9.60E-10	9.61E-10

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13	14	15	16	17	18	19	20	21	22	23	24	25
1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08	1.99E-08
1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08	1.95E-08
1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08	1.92E-08
1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08
1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08
1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08	1.81E-08
1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08
1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08	1.73E-08
1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08	1.69E-08
1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08	1.65E-08
1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08	1.60E-08
1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08	1.56E-08
1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08	1.52E-08
1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08	1.48E-08
1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08	1.44E-08
1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08
1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08	1.36E-08
1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08	1.32E-08
1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08	1.28E-08
1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08	1.24E-08
1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.20E-08
1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08	1.17E-08
1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08
1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08
1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08
1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08
9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09	9.95E-09
9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09	9.64E-09
9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09	9.33E-09
9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09	9.03E-09
8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09	8.75E-09

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8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09	8.47E-09
8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09	8.20E-09
7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09	7.94E-09
7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09	7.69E-09
7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09	7.44E-09
7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09	7.21E-09
6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09	6.98E-09
6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09	6.76E-09
6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09	6.54E-09
6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09	6.34E-09
6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09	6.14E-09
5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09	5.94E-09
5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09	5.76E-09
5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09	5.58E-09
5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09	5.40E-09
5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09	5.23E-09
5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09	5.07E-09
4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09	4.91E-09
4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09	4.75E-09
4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09	4.60E-09
4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09	4.46E-09
4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09	4.32E-09
4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09	4.18E-09
4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09	4.05E-09
3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09	3.92E-09
3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09	3.80E-09
3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.68E-09
3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09
3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09	3.45E-09
3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09	3.35E-09
3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09	3.24E-09
3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09	3.14E-09
3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.04E-09
2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09	2.94E-09
2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09	2.85E-09

US EPA ARCHIVE DOCUMENT

2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09	2.76E-09
2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09	2.59E-09
2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09	2.51E-09
2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09	2.43E-09
2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09	2.35E-09
2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09	2.28E-09
2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09	2.21E-09
2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09
2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09	2.07E-09
2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09
1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09	1.88E-09
1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09	1.82E-09
1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09	1.77E-09
1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09	1.71E-09
1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09
1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09
1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09
1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09	1.46E-09
1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09	1.41E-09
1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09	1.37E-09
1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09	1.32E-09
1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09	1.28E-09
1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09	1.24E-09
1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09
1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09	1.09E-09
1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09	1.06E-09
1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09
9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10	9.93E-10
9.61E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10	9.62E-10

US EPA ARCHIVE DOCUMENT

GW-58D to Butters Row No. 1
Streamtube 1; L=1920 ft; v = 0.39; D = 192

Distance (ft)	1	2	3	4	5	6	7	8	9	10	11	12
19.20	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07
38.40	2.52E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07
57.60	2.40E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07
76.80	2.28E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07
96.00	2.16E-07	2.43E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07
115.20	2.04E-07	2.36E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07
134.40	1.91E-07	2.30E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07
153.60	1.79E-07	2.23E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07
172.80	1.68E-07	2.16E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07
192.00	1.56E-07	2.09E-07	2.15E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07
211.20	1.45E-07	2.01E-07	2.09E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07
230.40	1.34E-07	1.94E-07	2.03E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07
249.60	1.24E-07	1.86E-07	1.97E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07
268.80	1.14E-07	1.78E-07	1.91E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07
288.00	1.04E-07	1.70E-07	1.85E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07
307.20	9.47E-08	1.63E-07	1.78E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07
326.40	8.60E-08	1.55E-07	1.72E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07
345.60	7.78E-08	1.47E-07	1.66E-07	1.69E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07
364.80	7.01E-08	1.39E-07	1.60E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07
384.00	6.30E-08	1.32E-07	1.54E-07	1.58E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07
403.20	5.64E-08	1.24E-07	1.48E-07	1.53E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07
422.40	5.02E-08	1.17E-07	1.43E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07
441.60	4.46E-08	1.10E-07	1.37E-07	1.43E-07	1.43E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07
460.80	3.94E-08	1.03E-07	1.31E-07	1.38E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07
480.00	3.47E-08	9.67E-08	1.26E-07	1.33E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07
499.20	3.04E-08	9.03E-08	1.20E-07	1.28E-07	1.29E-07	1.29E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07
518.40	2.66E-08	8.41E-08	1.15E-07	1.23E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07
537.60	2.31E-08	7.83E-08	1.10E-07	1.19E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07
556.80	2.00E-08	7.26E-08	1.05E-07	1.14E-07	1.16E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07
576.00	1.73E-08	6.73E-08	9.96E-08	1.10E-07	1.12E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07
595.20	1.49E-08	6.22E-08	9.47E-08	1.06E-07	1.08E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07

US EPA ARCHIVE DOCUMENT

614.40	1.27E-08	5.74E-08	9.01E-08	1.02E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07
633.60	1.09E-08	5.28E-08	8.55E-08	9.80E-08	1.01E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07
652.80	9.21E-09	4.85E-08	8.11E-08	9.41E-08	9.75E-08	9.81E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08
672.00	7.78E-09	4.45E-08	7.68E-08	9.04E-08	9.40E-08	9.47E-08	9.48E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08
691.20	6.56E-09	4.07E-08	7.27E-08	8.68E-08	9.07E-08	9.15E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08
710.40	5.50E-09	3.72E-08	6.87E-08	8.33E-08	8.75E-08	8.84E-08	8.85E-08	8.85E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08
729.60	4.59E-09	3.39E-08	6.48E-08	7.98E-08	8.44E-08	8.54E-08	8.55E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08
748.80	3.83E-09	3.08E-08	6.11E-08	7.65E-08	8.14E-08	8.25E-08	8.26E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08
768.00	3.17E-09	2.80E-08	5.75E-08	7.32E-08	7.84E-08	7.96E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08
787.20	2.62E-09	2.54E-08	5.41E-08	7.01E-08	7.56E-08	7.69E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08
806.40	2.16E-09	2.29E-08	5.08E-08	6.70E-08	7.28E-08	7.43E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08
825.60	1.77E-09	2.07E-08	4.76E-08	6.40E-08	7.01E-08	7.17E-08	7.20E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08
844.80	1.45E-09	1.86E-08	4.46E-08	6.11E-08	6.75E-08	6.92E-08	6.96E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08
864.00	1.18E-09	1.68E-08	4.17E-08	5.83E-08	6.50E-08	6.69E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08
883.20	9.66E-10	1.50E-08	3.89E-08	5.56E-08	6.25E-08	6.45E-08	6.50E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08
902.40	7.85E-10	1.35E-08	3.63E-08	5.29E-08	6.01E-08	6.23E-08	6.28E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08
921.60	6.39E-10	1.20E-08	3.38E-08	5.04E-08	5.78E-08	6.01E-08	6.07E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08
940.80	5.19E-10	1.07E-08	3.14E-08	4.79E-08	5.55E-08	5.80E-08	5.86E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08
960.00	4.22E-10	9.54E-09	2.92E-08	4.55E-08	5.33E-08	5.60E-08	5.66E-08	5.67E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08
979.20	3.47E-10	8.47E-09	2.70E-08	4.32E-08	5.12E-08	5.40E-08	5.47E-08	5.48E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08
998.40	2.85E-10	7.51E-09	2.50E-08	4.09E-08	4.91E-08	5.21E-08	5.28E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08
1017.60	2.37E-10	6.64E-09	2.31E-08	3.87E-08	4.71E-08	5.02E-08	5.10E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08
1036.80	1.97E-10	5.86E-09	2.14E-08	3.67E-08	4.52E-08	4.84E-08	4.93E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08
1056.00	1.66E-10	5.16E-09	1.97E-08	3.46E-08	4.33E-08	4.66E-08	4.76E-08	4.78E-08	4.78E-08	4.79E-08	4.79E-08	4.79E-08
1075.20	1.39E-10	4.54E-09	1.81E-08	3.27E-08	4.14E-08	4.49E-08	4.59E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08
1094.40	1.22E-10	3.98E-09	1.66E-08	3.08E-08	3.96E-08	4.32E-08	4.44E-08	4.46E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08
1113.60	1.08E-10	3.49E-09	1.53E-08	2.91E-08	3.79E-08	4.16E-08	4.28E-08	4.31E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08
1132.80	9.51E-11	3.05E-09	1.40E-08	2.74E-08	3.62E-08	4.01E-08	4.13E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08
1152.00	8.63E-11	2.66E-09	1.28E-08	2.57E-08	3.46E-08	3.86E-08	3.99E-08	4.02E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08
1171.20	8.18E-11	2.32E-09	1.17E-08	2.42E-08	3.30E-08	3.71E-08	3.85E-08	3.89E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08
1190.40	7.30E-11	2.01E-09	1.07E-08	2.27E-08	3.14E-08	3.57E-08	3.71E-08	3.76E-08	3.76E-08	3.77E-08	3.77E-08	3.77E-08
1209.60	7.30E-11	1.75E-09	9.72E-09	2.12E-08	3.00E-08	3.43E-08	3.58E-08	3.63E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08
1228.80	6.86E-11	1.52E-09	8.84E-09	1.99E-08	2.85E-08	3.29E-08	3.46E-08	3.50E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08
1248.00	6.42E-11	1.31E-09	8.03E-09	1.86E-08	2.71E-08	3.16E-08	3.33E-08	3.38E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08
1267.20	6.42E-11	1.13E-09	7.28E-09	1.74E-08	2.58E-08	3.04E-08	3.21E-08	3.27E-08	3.28E-08	3.29E-08	3.29E-08	3.29E-08

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1286.40	6.42E-11	9.76E-10	6.59E-09	1.62E-08	2.45E-08	2.91E-08	3.10E-08	3.16E-08	3.17E-08	3.17E-08	3.18E-08	3.18E-08
1305.60	6.42E-11	8.41E-10	5.96E-09	1.51E-08	2.33E-08	2.79E-08	2.99E-08	3.05E-08	3.06E-08	3.07E-08	3.07E-08	3.07E-08
1324.80	5.98E-11	7.20E-10	5.38E-09	1.40E-08	2.21E-08	2.68E-08	2.88E-08	2.94E-08	2.96E-08	2.96E-08	2.97E-08	2.97E-08
1344.00	5.98E-11	6.18E-10	4.85E-09	1.31E-08	2.09E-08	2.57E-08	2.77E-08	2.84E-08	2.86E-08	2.86E-08	2.87E-08	2.87E-08
1363.20	5.98E-11	5.31E-10	4.37E-09	1.21E-08	1.98E-08	2.46E-08	2.67E-08	2.74E-08	2.76E-08	2.77E-08	2.77E-08	2.77E-08
1382.40	5.98E-11	4.56E-10	3.92E-09	1.12E-08	1.87E-08	2.35E-08	2.57E-08	2.65E-08	2.67E-08	2.67E-08	2.68E-08	2.68E-08
1401.60	5.98E-11	3.91E-10	3.52E-09	1.04E-08	1.77E-08	2.25E-08	2.48E-08	2.56E-08	2.58E-08	2.58E-08	2.59E-08	2.59E-08
1420.80	5.98E-11	3.36E-10	3.16E-09	9.64E-09	1.67E-08	2.15E-08	2.38E-08	2.47E-08	2.49E-08	2.50E-08	2.50E-08	2.50E-08
1440.00	5.98E-11	2.88E-10	2.83E-09	8.91E-09	1.58E-08	2.06E-08	2.29E-08	2.38E-08	2.41E-08	2.41E-08	2.41E-08	2.42E-08
1459.20	5.98E-11	2.48E-10	2.53E-09	8.23E-09	1.49E-08	1.96E-08	2.20E-08	2.30E-08	2.32E-08	2.33E-08	2.33E-08	2.33E-08
1478.40	5.98E-11	2.14E-10	2.26E-09	7.59E-09	1.40E-08	1.87E-08	2.12E-08	2.22E-08	2.25E-08	2.25E-08	2.26E-08	2.26E-08
1497.60	5.98E-11	1.84E-10	2.01E-09	6.99E-09	1.32E-08	1.79E-08	2.04E-08	2.14E-08	2.17E-08	2.18E-08	2.18E-08	2.18E-08
1516.80	5.98E-11	1.60E-10	1.79E-09	6.43E-09	1.24E-08	1.71E-08	1.96E-08	2.06E-08	2.09E-08	2.10E-08	2.11E-08	2.11E-08
1536.00	5.98E-11	1.39E-10	1.59E-09	5.91E-09	1.17E-08	1.62E-08	1.88E-08	1.99E-08	2.02E-08	2.03E-08	2.04E-08	2.04E-08
1555.20	5.98E-11	1.21E-10	1.41E-09	5.43E-09	1.09E-08	1.55E-08	1.80E-08	1.92E-08	1.95E-08	1.96E-08	1.97E-08	1.97E-08
1574.40	5.98E-11	1.07E-10	1.25E-09	4.98E-09	1.03E-08	1.47E-08	1.73E-08	1.85E-08	1.89E-08	1.90E-08	1.90E-08	1.90E-08
1593.60	5.98E-11	9.43E-11	1.11E-09	4.56E-09	9.61E-09	1.40E-08	1.66E-08	1.78E-08	1.82E-08	1.83E-08	1.84E-08	1.84E-08
1612.80	5.98E-11	8.40E-11	9.81E-10	4.17E-09	9.00E-09	1.33E-08	1.59E-08	1.71E-08	1.76E-08	1.77E-08	1.77E-08	1.78E-08
1632.00	5.98E-11	7.54E-11	8.67E-10	3.81E-09	8.41E-09	1.26E-08	1.53E-08	1.65E-08	1.70E-08	1.71E-08	1.71E-08	1.72E-08
1651.20	5.98E-11	6.83E-11	7.65E-10	3.48E-09	7.86E-09	1.20E-08	1.46E-08	1.59E-08	1.64E-08	1.65E-08	1.66E-08	1.66E-08
1670.40	5.98E-11	6.23E-11	6.75E-10	3.17E-09	7.34E-09	1.14E-08	1.40E-08	1.53E-08	1.58E-08	1.60E-08	1.60E-08	1.60E-08
1689.60	5.98E-11	5.74E-11	5.94E-10	2.89E-09	6.84E-09	1.08E-08	1.34E-08	1.47E-08	1.53E-08	1.54E-08	1.55E-08	1.55E-08
1708.80	5.98E-11	5.34E-11	5.23E-10	2.63E-09	6.38E-09	1.02E-08	1.28E-08	1.42E-08	1.47E-08	1.49E-08	1.50E-08	1.50E-08
1728.00	5.98E-11	5.01E-11	4.60E-10	2.39E-09	5.94E-09	9.65E-09	1.23E-08	1.36E-08	1.42E-08	1.44E-08	1.44E-08	1.45E-08
1747.20	5.98E-11	4.73E-11	4.04E-10	2.17E-09	5.52E-09	9.13E-09	1.17E-08	1.31E-08	1.37E-08	1.39E-08	1.40E-08	1.40E-08
1766.40	5.98E-11	4.51E-11	3.55E-10	1.96E-09	5.13E-09	8.62E-09	1.12E-08	1.26E-08	1.32E-08	1.34E-08	1.35E-08	1.35E-08
1785.60	5.98E-11	4.32E-11	3.12E-10	1.78E-09	4.76E-09	8.14E-09	1.07E-08	1.21E-08	1.27E-08	1.30E-08	1.30E-08	1.30E-08
1804.80	5.98E-11	4.18E-11	2.74E-10	1.61E-09	4.41E-09	7.68E-09	1.02E-08	1.17E-08	1.23E-08	1.25E-08	1.26E-08	1.26E-08
1824.00	5.98E-11	4.05E-11	2.40E-10	1.45E-09	4.09E-09	7.24E-09	9.74E-09	1.12E-08	1.18E-08	1.21E-08	1.22E-08	1.22E-08
1843.20	5.98E-11	3.96E-11	2.11E-10	1.31E-09	3.79E-09	6.83E-09	9.29E-09	1.08E-08	1.14E-08	1.17E-08	1.18E-08	1.18E-08
1862.40	5.98E-11	3.88E-11	1.86E-10	1.18E-09	3.50E-09	6.43E-09	8.85E-09	1.03E-08	1.10E-08	1.13E-08	1.14E-08	1.14E-08
1881.60	5.98E-11	3.81E-11	1.63E-10	1.07E-09	3.23E-09	6.04E-09	8.43E-09	9.90E-09	1.06E-08	1.09E-08	1.10E-08	1.10E-08
1900.80	5.98E-11	3.76E-11	1.44E-10	9.58E-10	2.98E-09	5.68E-09	8.02E-09	9.50E-09	1.02E-08	1.05E-08	1.06E-08	1.06E-08
1920.00	5.98E-11	3.72E-11	1.27E-10	8.61E-10	2.75E-09	5.34E-09	7.63E-09	9.10E-09	9.84E-09	1.01E-08	1.02E-08	1.03E-08

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13	14	15	16	17	18	19	20	21	22	23	24	25
2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07
2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07	2.59E-07
2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07
2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07	2.49E-07
2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07	2.44E-07
2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07	2.38E-07
2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07	2.33E-07
2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07
2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07	2.21E-07
2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07	2.16E-07
2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07	2.10E-07
2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07
1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07	1.98E-07
1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07	1.92E-07
1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07	1.86E-07
1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07	1.81E-07
1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07	1.75E-07
1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07
1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07
1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07
1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07	1.54E-07
1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07	1.48E-07
1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07
1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07	1.39E-07
1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07	1.34E-07
1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07
1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07	1.25E-07
1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07	1.21E-07
1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07	1.17E-07
1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07	1.13E-07
1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07	1.09E-07

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1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07
1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07
9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08
9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08	9.49E-08
9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08	9.16E-08
8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08	8.86E-08
8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08	8.56E-08
8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08	8.27E-08
7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08	7.99E-08
7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08	7.72E-08
7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08	7.46E-08
7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08	7.21E-08
6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08	6.97E-08
6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08	6.73E-08
6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08	6.51E-08
6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08	6.29E-08
6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08	6.08E-08
5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08	5.87E-08
5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08
5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08	5.49E-08
5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08
5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08	5.12E-08
4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08	4.95E-08
4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08	4.79E-08
4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08	4.62E-08
4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08	4.47E-08
4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08	4.32E-08
4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08	4.17E-08
4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08	4.03E-08
3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08	3.90E-08
3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08	3.77E-08
3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08
3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08	3.52E-08
3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08	3.40E-08
3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08	3.29E-08

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3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08	3.18E-08
3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08
2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08	2.97E-08
2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08	2.87E-08
2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08	2.68E-08
2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08	2.59E-08
2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08	2.50E-08
2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08	2.42E-08
2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08	2.33E-08
2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08	2.26E-08
2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08	2.18E-08
2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08	2.11E-08
2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08	2.04E-08
1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08	1.97E-08
1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08	1.90E-08
1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08	1.84E-08
1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08
1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08	1.72E-08
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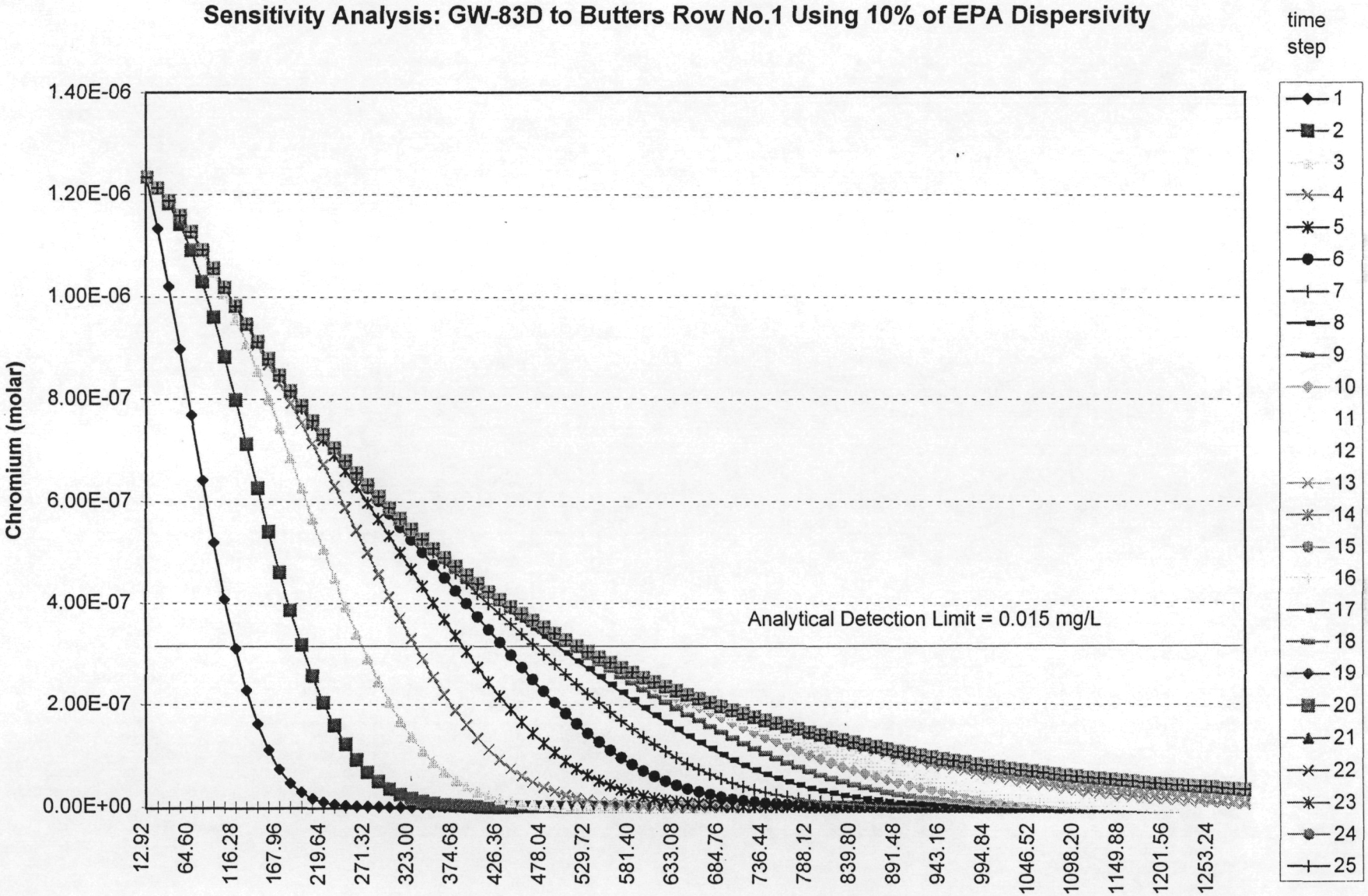
1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08
1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08	1.50E-08
1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08	1.45E-08
1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08	1.40E-08
1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08	1.35E-08
1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08	1.31E-08
1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08	1.26E-08
1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08	1.22E-08
1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08	1.18E-08
1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08	1.14E-08
1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08
1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08
1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08	1.03E-08

US EPA ARCHIVE DOCUMENT



US EPA ARCHIVE DOCUMENT

GW-83D to Butters Row No. 1 using 10% of EPA dispersivity
L=1292; v=0.38; D=13

Distance (ft)	1	2	3	4	5	6	7	8	9	10	11	12
12.92	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
25.84	1.13E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
38.76	1.02E-06	1.18E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06
51.68	8.97E-07	1.14E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06
64.60	7.69E-07	1.09E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06
77.52	6.41E-07	1.03E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06
90.44	5.19E-07	9.60E-07	1.05E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06
103.36	4.08E-07	8.82E-07	1.00E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06
116.28	3.10E-07	7.99E-07	9.57E-07	9.81E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07
129.20	2.28E-07	7.13E-07	9.08E-07	9.43E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07
142.12	1.62E-07	6.26E-07	8.56E-07	9.05E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07
155.04	1.11E-07	5.42E-07	8.01E-07	8.68E-07	8.78E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07
167.96	7.36E-08	4.61E-07	7.44E-07	8.30E-07	8.45E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07
180.88	4.69E-08	3.86E-07	6.86E-07	7.92E-07	8.13E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07
193.80	2.88E-08	3.18E-07	6.26E-07	7.53E-07	7.82E-07	7.86E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07
206.72	1.71E-08	2.57E-07	5.66E-07	7.13E-07	7.51E-07	7.58E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07
219.64	9.74E-09	2.05E-07	5.07E-07	6.72E-07	7.21E-07	7.30E-07	7.31E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07
232.56	5.37E-09	1.60E-07	4.49E-07	6.30E-07	6.91E-07	7.03E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07
245.48	2.86E-09	1.23E-07	3.93E-07	5.87E-07	6.60E-07	6.77E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07
258.40	1.48E-09	9.27E-08	3.40E-07	5.44E-07	6.29E-07	6.51E-07	6.55E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07
271.32	7.65E-10	6.86E-08	2.91E-07	5.00E-07	5.97E-07	6.26E-07	6.31E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07
284.24	3.91E-10	4.99E-08	2.46E-07	4.56E-07	5.65E-07	6.01E-07	6.08E-07	6.09E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07
297.16	2.20E-10	3.56E-08	2.05E-07	4.12E-07	5.33E-07	5.75E-07	5.86E-07	5.87E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07
310.08	1.42E-10	2.50E-08	1.69E-07	3.70E-07	5.00E-07	5.51E-07	5.64E-07	5.66E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07
323.00	1.10E-10	1.72E-08	1.37E-07	3.29E-07	4.67E-07	5.26E-07	5.42E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07
335.92	9.47E-11	1.16E-08	1.11E-07	2.91E-07	4.34E-07	5.00E-07	5.21E-07	5.26E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07
348.84	7.91E-11	7.67E-09	8.77E-08	2.54E-07	4.01E-07	4.75E-07	5.00E-07	5.07E-07	5.08E-07	5.08E-07	5.08E-07	5.08E-07
361.76	7.91E-11	4.99E-09	6.87E-08	2.20E-07	3.68E-07	4.50E-07	4.80E-07	4.88E-07	4.89E-07	4.90E-07	4.90E-07	4.90E-07
374.68	7.91E-11	3.19E-09	5.32E-08	1.89E-07	3.36E-07	4.24E-07	4.60E-07	4.70E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07
387.60	7.91E-11	2.01E-09	4.06E-08	1.60E-07	3.04E-07	3.99E-07	4.39E-07	4.52E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07
400.52	7.91E-11	1.25E-09	3.07E-08	1.35E-07	2.74E-07	3.73E-07	4.19E-07	4.34E-07	4.38E-07	4.39E-07	4.39E-07	4.39E-07

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413.44	7.91E-11	7.72E-10	2.28E-08	1.13E-07	2.45E-07	3.48E-07	3.99E-07	4.17E-07	4.22E-07	4.23E-07	4.23E-07	4.23E-07
426.36	7.91E-11	4.77E-10	1.68E-08	9.29E-08	2.17E-07	3.22E-07	3.79E-07	4.00E-07	4.06E-07	4.08E-07	4.08E-07	4.08E-07
439.28	7.91E-11	3.00E-10	1.22E-08	7.59E-08	1.91E-07	2.97E-07	3.59E-07	3.84E-07	3.91E-07	3.93E-07	3.93E-07	3.93E-07
452.20	7.91E-11	1.96E-10	8.74E-09	6.14E-08	1.67E-07	2.73E-07	3.39E-07	3.67E-07	3.76E-07	3.79E-07	3.79E-07	3.79E-07
465.12	7.91E-11	1.35E-10	6.19E-09	4.92E-08	1.45E-07	2.49E-07	3.19E-07	3.51E-07	3.62E-07	3.65E-07	3.65E-07	3.66E-07
478.04	7.91E-11	1.02E-10	4.33E-09	3.91E-08	1.25E-07	2.26E-07	2.99E-07	3.35E-07	3.48E-07	3.52E-07	3.52E-07	3.52E-07
490.96	7.91E-11	8.30E-11	2.99E-09	3.07E-08	1.06E-07	2.04E-07	2.79E-07	3.19E-07	3.34E-07	3.39E-07	3.40E-07	3.40E-07
503.88	7.91E-11	7.30E-11	2.05E-09	2.39E-08	9.00E-08	1.83E-07	2.60E-07	3.03E-07	3.20E-07	3.26E-07	3.27E-07	3.28E-07
516.80	7.91E-11	6.77E-11	1.39E-09	1.84E-08	7.56E-08	1.63E-07	2.41E-07	2.87E-07	3.07E-07	3.14E-07	3.15E-07	3.16E-07
529.72	7.91E-11	6.51E-11	9.33E-10	1.40E-08	6.30E-08	1.44E-07	2.22E-07	2.71E-07	2.94E-07	3.02E-07	3.04E-07	3.04E-07
542.64	7.91E-11	6.37E-11	6.25E-10	1.06E-08	5.21E-08	1.27E-07	2.04E-07	2.56E-07	2.81E-07	2.90E-07	2.93E-07	2.94E-07
555.56	7.91E-11	6.31E-11	4.20E-10	7.93E-09	4.27E-08	1.11E-07	1.86E-07	2.40E-07	2.68E-07	2.79E-07	2.82E-07	2.83E-07
568.48	7.91E-11	6.28E-11	2.84E-10	5.88E-09	3.48E-08	9.64E-08	1.69E-07	2.25E-07	2.55E-07	2.68E-07	2.72E-07	2.73E-07
581.40	7.91E-11	6.26E-11	1.96E-10	4.31E-09	2.81E-08	8.31E-08	1.53E-07	2.10E-07	2.42E-07	2.57E-07	2.61E-07	2.63E-07
594.32	7.91E-11	6.26E-11	1.40E-10	3.14E-09	2.24E-08	7.12E-08	1.37E-07	1.95E-07	2.30E-07	2.46E-07	2.52E-07	2.53E-07
607.24	7.91E-11	6.26E-11	1.04E-10	2.26E-09	1.78E-08	6.06E-08	1.23E-07	1.80E-07	2.17E-07	2.35E-07	2.42E-07	2.44E-07
620.16	7.91E-11	6.25E-11	8.23E-11	1.62E-09	1.40E-08	5.12E-08	1.09E-07	1.66E-07	2.05E-07	2.25E-07	2.33E-07	2.35E-07
633.08	7.91E-11	6.25E-11	6.88E-11	1.15E-09	1.10E-08	4.30E-08	9.67E-08	1.53E-07	1.93E-07	2.14E-07	2.23E-07	2.26E-07
646.00	7.91E-11	6.25E-11	6.07E-11	8.11E-10	8.49E-09	3.58E-08	8.51E-08	1.40E-07	1.81E-07	2.04E-07	2.14E-07	2.18E-07
658.92	7.91E-11	6.25E-11	5.59E-11	5.71E-10	6.53E-09	2.97E-08	7.44E-08	1.27E-07	1.69E-07	1.94E-07	2.06E-07	2.10E-07
671.84	7.91E-11	6.25E-11	5.31E-11	4.01E-10	4.98E-09	2.44E-08	6.47E-08	1.15E-07	1.58E-07	1.84E-07	1.97E-07	2.02E-07
684.76	7.91E-11	6.25E-11	5.15E-11	2.83E-10	3.77E-09	1.99E-08	5.59E-08	1.04E-07	1.46E-07	1.74E-07	1.88E-07	1.94E-07
697.68	7.91E-11	6.25E-11	5.06E-11	2.02E-10	2.83E-09	1.61E-08	4.80E-08	9.30E-08	1.36E-07	1.65E-07	1.80E-07	1.86E-07
710.60	7.91E-11	6.25E-11	5.00E-11	1.47E-10	2.11E-09	1.30E-08	4.10E-08	8.30E-08	1.25E-07	1.55E-07	1.72E-07	1.79E-07
723.52	7.91E-11	6.25E-11	4.98E-11	1.10E-10	1.56E-09	1.04E-08	3.48E-08	7.38E-08	1.15E-07	1.46E-07	1.64E-07	1.72E-07
736.44	7.91E-11	6.25E-11	4.96E-11	8.46E-11	1.15E-09	8.25E-09	2.94E-08	6.52E-08	1.05E-07	1.37E-07	1.56E-07	1.65E-07
749.36	7.91E-11	6.25E-11	4.95E-11	6.83E-11	8.42E-10	6.51E-09	2.47E-08	5.73E-08	9.56E-08	1.28E-07	1.48E-07	1.58E-07
762.28	7.91E-11	6.25E-11	4.95E-11	5.76E-11	6.13E-10	5.10E-09	2.06E-08	5.02E-08	8.68E-08	1.19E-07	1.40E-07	1.51E-07
775.20	7.91E-11	6.25E-11	4.95E-11	5.07E-11	4.46E-10	3.97E-09	1.70E-08	4.37E-08	7.84E-08	1.10E-07	1.32E-07	1.44E-07
788.12	7.91E-11	6.25E-11	4.95E-11	4.63E-11	3.24E-10	3.07E-09	1.40E-08	3.78E-08	7.05E-08	1.02E-07	1.25E-07	1.38E-07
801.04	7.91E-11	6.25E-11	4.95E-11	4.35E-11	2.37E-10	2.36E-09	1.15E-08	3.26E-08	6.32E-08	9.41E-08	1.17E-07	1.31E-07
813.96	7.91E-11	6.25E-11	4.95E-11	4.18E-11	1.74E-10	1.80E-09	9.35E-09	2.79E-08	5.63E-08	8.65E-08	1.10E-07	1.25E-07
826.88	7.91E-11	6.25E-11	4.95E-11	4.07E-11	1.29E-10	1.37E-09	7.57E-09	2.38E-08	5.00E-08	7.92E-08	1.03E-07	1.19E-07
839.80	7.91E-11	6.25E-11	4.95E-11	4.01E-11	9.82E-11	1.03E-09	6.09E-09	2.01E-08	4.42E-08	7.22E-08	9.64E-08	1.12E-07
852.72	7.91E-11	6.25E-11	4.95E-11	3.97E-11	7.65E-11	7.75E-10	4.87E-09	1.70E-08	3.88E-08	6.56E-08	8.97E-08	1.06E-07

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865.64	7.91E-11	6.25E-11	4.95E-11	3.94E-11	6.16E-11	5.80E-10	3.87E-09	1.42E-08	3.40E-08	5.94E-08	8.33E-08	1.01E-07
878.56	7.91E-11	6.25E-11	4.95E-11	3.93E-11	5.14E-11	4.33E-10	3.06E-09	1.19E-08	2.96E-08	5.36E-08	7.71E-08	9.47E-08
891.48	7.91E-11	6.25E-11	4.95E-11	3.92E-11	4.44E-11	3.22E-10	2.40E-09	9.86E-09	2.57E-08	4.81E-08	7.11E-08	8.90E-08
904.40	7.91E-11	6.25E-11	4.95E-11	3.92E-11	3.98E-11	2.40E-10	1.88E-09	8.13E-09	2.22E-08	4.30E-08	6.53E-08	8.35E-08
917.32	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.67E-11	1.80E-10	1.46E-09	6.68E-09	1.90E-08	3.83E-08	5.99E-08	7.81E-08
930.24	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.46E-11	1.35E-10	1.13E-09	5.45E-09	1.63E-08	3.40E-08	5.47E-08	7.29E-08
943.16	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.33E-11	1.03E-10	8.67E-10	4.43E-09	1.38E-08	3.00E-08	4.97E-08	6.78E-08
956.08	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.24E-11	7.99E-11	6.64E-10	3.58E-09	1.17E-08	2.64E-08	4.51E-08	6.30E-08
969.00	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.19E-11	6.32E-11	5.07E-10	2.88E-09	9.87E-09	2.31E-08	4.07E-08	5.83E-08
981.92	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.15E-11	5.14E-11	3.86E-10	2.30E-09	8.28E-09	2.02E-08	3.67E-08	5.38E-08
994.84	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.13E-11	4.30E-11	2.93E-10	1.83E-09	6.91E-09	1.75E-08	3.29E-08	4.94E-08
1007.76	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.12E-11	3.72E-11	2.23E-10	1.45E-09	5.74E-09	1.51E-08	2.94E-08	4.53E-08
1020.68	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.11E-11	3.31E-11	1.69E-10	1.14E-09	4.74E-09	1.30E-08	2.62E-08	4.14E-08
1033.60	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.10E-11	3.03E-11	1.29E-10	8.95E-10	3.90E-09	1.12E-08	2.32E-08	3.78E-08
1046.52	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.10E-11	2.84E-11	9.96E-11	6.99E-10	3.19E-09	9.53E-09	2.05E-08	3.43E-08
1059.44	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.10E-11	2.71E-11	7.75E-11	5.44E-10	2.60E-09	8.09E-09	1.80E-08	3.10E-08
1072.36	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.62E-11	6.12E-11	4.22E-10	2.11E-09	6.85E-09	1.58E-08	2.80E-08
1085.28	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.56E-11	4.93E-11	3.26E-10	1.70E-09	5.76E-09	1.38E-08	2.52E-08
1098.20	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.52E-11	4.07E-11	2.52E-10	1.37E-09	4.83E-09	1.20E-08	2.25E-08
1111.12	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.49E-11	3.44E-11	1.94E-10	1.10E-09	4.03E-09	1.04E-08	2.01E-08
1124.04	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.48E-11	2.99E-11	1.50E-10	8.72E-10	3.35E-09	8.94E-09	1.79E-08
1136.96	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.47E-11	2.67E-11	1.16E-10	6.92E-10	2.78E-09	7.68E-09	1.59E-08
1149.88	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.46E-11	2.45E-11	9.03E-11	5.47E-10	2.29E-09	6.57E-09	1.40E-08
1162.80	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	2.29E-11	7.08E-11	4.31E-10	1.88E-09	5.60E-09	1.23E-08
1175.72	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	2.18E-11	5.62E-11	3.39E-10	1.53E-09	4.75E-09	1.08E-08
1188.64	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	2.10E-11	4.52E-11	2.65E-10	1.25E-09	4.01E-09	9.43E-09
1201.56	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	2.05E-11	3.71E-11	2.07E-10	1.01E-09	3.38E-09	8.21E-09
1214.48	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	2.01E-11	3.11E-11	1.62E-10	8.16E-10	2.83E-09	7.11E-09
1227.40	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	1.99E-11	2.67E-11	1.27E-10	6.56E-10	2.37E-09	6.15E-09
1240.32	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	1.97E-11	2.35E-11	9.93E-11	5.26E-10	1.97E-09	5.29E-09
1253.24	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	1.96E-11	2.11E-11	7.81E-11	4.20E-10	1.63E-09	4.53E-09
1266.16	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	1.95E-11	1.94E-11	6.18E-11	3.34E-10	1.35E-09	3.87E-09
1279.08	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	1.94E-11	1.82E-11	4.94E-11	2.65E-10	1.11E-09	3.30E-09
1292.00	7.91E-11	6.25E-11	4.95E-11	3.91E-11	3.09E-11	2.45E-11	1.94E-11	1.73E-11	3.99E-11	2.10E-10	9.07E-10	2.80E-09

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13	14	15	16	17	18	19	20	21	22	23	24	25
1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06	1.19E-06
1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06	1.16E-06
1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06	1.13E-06
1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06
1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06	1.06E-06
1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06	1.02E-06
9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07
9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07	9.47E-07
9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07	9.12E-07
8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07	8.79E-07
8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07	8.47E-07
8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07	8.16E-07
7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07	7.87E-07
7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07	7.59E-07
7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07	7.32E-07
7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07	7.05E-07
6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07	6.80E-07
6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07	6.56E-07
6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07	6.32E-07
6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07	6.10E-07
5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07	5.88E-07
5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07	5.67E-07
5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07	5.46E-07
5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07	5.27E-07
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4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07
4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07	4.72E-07
4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07	4.55E-07
4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07	4.39E-07

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4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07	4.23E-07
4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07
3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07	3.93E-07
3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07	3.79E-07
3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07	3.66E-07
3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07
3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07	3.40E-07
3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07
3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07	3.16E-07
3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07	3.05E-07
2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07	2.94E-07
2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07	2.83E-07
2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07	2.73E-07
2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07	2.63E-07
2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07	2.54E-07
2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07
2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07	2.36E-07
2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07	2.27E-07
2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07	2.19E-07
2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07	2.11E-07
2.03E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07	2.04E-07
1.96E-07	1.96E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07	1.97E-07
1.89E-07	1.89E-07	1.89E-07	1.89E-07	1.90E-07	1.90E-07	1.90E-07	1.90E-07	1.90E-07	1.90E-07	1.90E-07	1.90E-07	1.90E-07
1.82E-07	1.82E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07	1.83E-07
1.75E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07	1.76E-07
1.68E-07	1.69E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07	1.70E-07
1.62E-07	1.63E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07
1.56E-07	1.57E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
1.50E-07	1.51E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07
1.44E-07	1.46E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07	1.47E-07
1.38E-07	1.40E-07	1.41E-07	1.41E-07	1.41E-07	1.42E-07	1.42E-07	1.42E-07	1.42E-07	1.42E-07	1.42E-07	1.42E-07	1.42E-07
1.32E-07	1.35E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07	1.36E-07
1.26E-07	1.30E-07	1.31E-07	1.31E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07	1.32E-07
1.21E-07	1.25E-07	1.26E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07	1.27E-07
1.16E-07	1.20E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07	1.22E-07

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1.10E-07	1.15E-07	1.17E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07	1.18E-07
1.05E-07	1.10E-07	1.13E-07	1.13E-07	1.14E-07	1.14E-07	1.14E-07	1.14E-07	1.14E-07	1.14E-07	1.14E-07	1.14E-07	1.14E-07
1.00E-07	1.06E-07	1.08E-07	1.09E-07	1.09E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07
9.52E-08	1.01E-07	1.04E-07	1.05E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07
9.04E-08	9.70E-08	1.00E-07	1.01E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07	1.02E-07
8.56E-08	9.28E-08	9.62E-08	9.75E-08	9.80E-08	9.81E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08	9.82E-08
8.09E-08	8.86E-08	9.23E-08	9.39E-08	9.44E-08	9.46E-08	9.47E-08	9.47E-08	9.47E-08	9.47E-08	9.47E-08	9.47E-08	9.47E-08
7.63E-08	8.45E-08	8.86E-08	9.03E-08	9.10E-08	9.12E-08	9.13E-08	9.13E-08	9.13E-08	9.13E-08	9.13E-08	9.13E-08	9.13E-08
7.19E-08	8.04E-08	8.49E-08	8.69E-08	8.76E-08	8.79E-08	8.80E-08	8.80E-08	8.80E-08	8.80E-08	8.80E-08	8.80E-08	8.80E-08
6.75E-08	7.65E-08	8.13E-08	8.36E-08	8.44E-08	8.47E-08	8.48E-08	8.48E-08	8.48E-08	8.48E-08	8.48E-08	8.48E-08	8.48E-08
6.33E-08	7.26E-08	7.79E-08	8.03E-08	8.13E-08	8.17E-08	8.18E-08	8.18E-08	8.18E-08	8.18E-08	8.18E-08	8.18E-08	8.18E-08
5.92E-08	6.89E-08	7.44E-08	7.71E-08	7.83E-08	7.87E-08	7.88E-08	7.89E-08	7.89E-08	7.89E-08	7.89E-08	7.89E-08	7.89E-08
5.52E-08	6.52E-08	7.11E-08	7.41E-08	7.53E-08	7.58E-08	7.60E-08	7.60E-08	7.60E-08	7.60E-08	7.60E-08	7.60E-08	7.60E-08
5.14E-08	6.16E-08	6.78E-08	7.11E-08	7.25E-08	7.30E-08	7.32E-08	7.33E-08	7.33E-08	7.33E-08	7.33E-08	7.33E-08	7.33E-08
4.77E-08	5.80E-08	6.46E-08	6.81E-08	6.97E-08	7.04E-08	7.06E-08	7.07E-08	7.07E-08	7.07E-08	7.07E-08	7.07E-08	7.07E-08
4.41E-08	5.46E-08	6.15E-08	6.53E-08	6.71E-08	6.78E-08	6.80E-08	6.81E-08	6.81E-08	6.81E-08	6.81E-08	6.81E-08	6.81E-08
4.07E-08	5.13E-08	5.84E-08	6.25E-08	6.44E-08	6.53E-08	6.56E-08	6.57E-08	6.57E-08	6.57E-08	6.57E-08	6.57E-08	6.57E-08
3.75E-08	4.80E-08	5.54E-08	5.97E-08	6.19E-08	6.28E-08	6.32E-08	6.33E-08	6.33E-08	6.33E-08	6.33E-08	6.33E-08	6.33E-08
3.44E-08	4.49E-08	5.25E-08	5.71E-08	5.94E-08	6.05E-08	6.09E-08	6.10E-08	6.11E-08	6.11E-08	6.11E-08	6.11E-08	6.11E-08
3.15E-08	4.19E-08	4.96E-08	5.45E-08	5.70E-08	5.82E-08	5.87E-08	5.88E-08	5.89E-08	5.89E-08	5.89E-08	5.89E-08	5.89E-08
2.87E-08	3.90E-08	4.69E-08	5.19E-08	5.47E-08	5.60E-08	5.65E-08	5.67E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08	5.68E-08
2.61E-08	3.61E-08	4.41E-08	4.94E-08	5.24E-08	5.38E-08	5.44E-08	5.46E-08	5.47E-08	5.47E-08	5.47E-08	5.47E-08	5.47E-08
2.37E-08	3.35E-08	4.15E-08	4.70E-08	5.02E-08	5.17E-08	5.24E-08	5.27E-08	5.27E-08	5.28E-08	5.28E-08	5.28E-08	5.28E-08
2.14E-08	3.09E-08	3.90E-08	4.46E-08	4.80E-08	4.97E-08	5.04E-08	5.07E-08	5.08E-08	5.09E-08	5.09E-08	5.09E-08	5.09E-08
1.93E-08	2.84E-08	3.65E-08	4.23E-08	4.58E-08	4.77E-08	4.85E-08	4.89E-08	4.90E-08	4.90E-08	4.91E-08	4.91E-08	4.91E-08
1.73E-08	2.61E-08	3.41E-08	4.00E-08	4.38E-08	4.58E-08	4.67E-08	4.71E-08	4.72E-08	4.73E-08	4.73E-08	4.73E-08	4.73E-08
1.55E-08	2.39E-08	3.18E-08	3.78E-08	4.17E-08	4.39E-08	4.49E-08	4.54E-08	4.55E-08	4.56E-08	4.56E-08	4.56E-08	4.56E-08
1.38E-08	2.18E-08	2.96E-08	3.57E-08	3.97E-08	4.21E-08	4.32E-08	4.37E-08	4.39E-08	4.39E-08	4.40E-08	4.40E-08	4.40E-08
1.23E-08	1.99E-08	2.74E-08	3.36E-08	3.78E-08	4.03E-08	4.15E-08	4.21E-08	4.23E-08	4.24E-08	4.24E-08	4.24E-08	4.24E-08
1.09E-08	1.80E-08	2.54E-08	3.16E-08	3.59E-08	3.85E-08	3.99E-08	4.05E-08	4.07E-08	4.08E-08	4.09E-08	4.09E-08	4.09E-08
9.59E-09	1.63E-08	2.35E-08	2.96E-08	3.41E-08	3.68E-08	3.83E-08	3.90E-08	3.93E-08	3.94E-08	3.94E-08	3.94E-08	3.94E-08
8.44E-09	1.47E-08	2.16E-08	2.77E-08	3.23E-08	3.52E-08	3.67E-08	3.75E-08	3.78E-08	3.79E-08	3.80E-08	3.80E-08	3.80E-08
7.40E-09	1.33E-08	1.99E-08	2.59E-08	3.05E-08	3.35E-08	3.52E-08	3.61E-08	3.64E-08	3.66E-08	3.66E-08	3.66E-08	3.66E-08
6.47E-09	1.19E-08	1.82E-08	2.41E-08	2.88E-08	3.20E-08	3.38E-08	3.47E-08	3.51E-08	3.52E-08	3.53E-08	3.53E-08	3.53E-08

C

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ALUMINUM CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Dissolved Aluminum Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.2	0.191714	0.186667	2.123095	0.2	0.2

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Dissolved Aluminum Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.2	0.1	27.8	0.2	0.2	0.2		0.007323						
0.2	0.1	27.8	0.2	0.2	0.2		0.007764						
0.2	0.1	27.8	0.2	0.2	0.2		0.009835						
0.2	0.1	27.8	0.2	0.2	0.2		0.00324						
0.2	0.1	27.8	0.2	0.2	0.2		0.004122						
0.2	0.1	27.8	0.2	0.2	0.2		0.007323						
0.2	0.1	27.8	0.2	0.2	0.2	0.00164							
0.2	0.1	27.8	0.2	0.2	0.2		0.00301						
0.2	0.1	27.8	0.2	0.2	0.2		0.006748						
0.2	0.1	27.8	0.2	0.2	0.2		0.009087						
0.2	0.1	27.8	0.2	0.2	0.2		0.009528						
0.2	0.1	27.8	0.2	0.2	0.2		0.009202						
0.2	0.1	27.8	0.2	0.2	0.2		0.006192						
0.2	0.1	27.8	0.2	0.2	0.2		0.005598						
0.2	0.1	27.8	0.2	0.2	0.2		0.005636						
0.2	0.1	27.8	0.2	0.2	0.2		0.006058						
0.2	0.1	27.8	0.2	0.2	0.2		0.008608						
0.2	0.1	27.8	0.2	0.2	0.2		0.009087						
0.2	0.1	27.8	0.2	0.2	0.2		0.009528						
0.2	0.1	27.8	0.2	0.2	0.2							0.0096	
0.2	0.1	27.8	0.2	0.2	0.2							0.00646	
0.2	0.1	27.8	0.2	0.2	0.2							0.00584	
0.2	0.1	27.8	0.2	0.2	0.2		0.005636						
0.2	0.1	27.8	0.2	0.2	0.2		0.006058						
0.2	0.1	27.8	0.2	0.2	0.2						0.003664	0.005316	
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2					0.000465	0.000599	0.002059	
0.2	0.1	27.8	0.2	0.2	0.2					0.000672	0.000911	0.002538	
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.001148	0.001913	
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.000638	0.000622	
0.2	0.1	27.8	0.2	0.2	0.2						0.001293	0.001687	

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.19395 Without GW-83-D
				0.007323	0.19395 All Wells
				0.007764	
				0.009835	
				0.00324	
				0.004122	
				0.007323	
				0.00164	
				0.00301	
				0.006748	
				0.009087	
				0.009528	
				0.009202	
				0.006192	
				0.005598	
				0.005636	
				0.006058	
				0.008608	
				0.009087	
				0.009528	
				0.0096	
				0.00646	
				0.00584	
				0.005636	
				0.006058	
				0.00898	
		0.00314		0.00314	
				0.003123	
				0.00412	
			0.00144	0.00144	
	0.000232	0.000495	0.000713	0.00144	
				0.00306	
			0.00128	0.00128	
				0.00126	
				0.00298	

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CHLORIDE CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Chloride Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667
72.463534	67.23467	110.5862	562.2795	156.5	153.6667

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Chloride Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
69.73333	56	4630	515.3333	488.3333	580		2.568364						
69.73333	56	4630	515.3333	488.3333	580		2.723004						
69.73333	56	4630	515.3333	488.3333	580		3.449139						
69.73333	56	4630	515.3333	488.3333	580		1.136266						
69.73333	56	4630	515.3333	488.3333	580		1.445545						
69.73333	56	4630	515.3333	488.3333	580		2.568364						
69.73333	56	4630	515.3333	488.3333	580	0.594201							
69.73333	56	4630	515.3333	488.3333	580		1.055584						
69.73333	56	4630	515.3333	488.3333	580		2.36666						
69.73333	56	4630	515.3333	488.3333	580		3.186923						
69.73333	56	4630	515.3333	488.3333	580		3.341563						
69.73333	56	4630	515.3333	488.3333	580		3.227264						
69.73333	56	4630	515.3333	488.3333	580		2.17168						
69.73333	56	4630	515.3333	488.3333	580		1.963252						
69.73333	56	4630	515.3333	488.3333	580		1.976699						
69.73333	56	4630	515.3333	488.3333	580		2.124616						
69.73333	56	4630	515.3333	488.3333	580		3.018837						
69.73333	56	4630	515.3333	488.3333	580		3.186923						
69.73333	56	4630	515.3333	488.3333	580		3.341563						
69.73333	56	4630	515.3333	488.3333	580							3.3472	
69.73333	56	4630	515.3333	488.3333	580							2.252387	
69.73333	56	4630	515.3333	488.3333	580							2.036213	
69.73333	56	4630	515.3333	488.3333	580		1.976699						
69.73333	56	4630	515.3333	488.3333	580		2.124616						
69.73333	56	4630	515.3333	488.3333	580						2.81505	1.853568	
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580					0.363769	0.460262	0.717974	
69.73333	56	4630	515.3333	488.3333	580					0.525496	0.699583	0.884888	
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580						0.881663	0.666825	
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580						0.489859	0.217024	
69.73333	56	4630	515.3333	488.3333	580						0.993701	0.588089	

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		88.77015 Without GW-83-D
					88.77015 All Wells
				2.568364	
				2.723004	
				3.449139	
				1.136266	
				1.445545	
				2.568364	
				0.594201	
				1.055584	
				2.36666	
				3.186923	
				3.341563	
				3.227264	
				2.17168	
				1.963252	
				1.976699	
				2.124616	
				3.018837	
				3.186923	
				3.341563	
				3.3472	
				2.252387	
				2.036213	
				1.976699	
				2.124616	
				4.668618	
		7.666833		7.666833	
				1.542005	
				2.109967	
			4.176	4.176	
	0.597374	1.209504	2.06712	3.873998	
				1.548488	
			3.712	3.712	
				0.706883	
				1.58179	

US EPA ARCHIVE DOCUMENT

SULFATE CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D	Sulfate Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
		4.80%						34.308749	39.80822	103.7029	1857.398	30.7	172
		3.23%						34.308749	39.80822	103.7029	1857.398	30.7	172
		2.92%						34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
								34.308749	39.80822	103.7029	1857.398	30.7	172
	1.83%	2.66%						34.308749	39.80822	103.7029	1857.398	30.7	172
						1.57%		34.308749	39.80822	103.7029	1857.398	30.7	172
0.23%	0.30%	1.03%						34.308749	39.80822	103.7029	1857.398	30.7	172
0.34%	0.46%	1.27%						34.308749	39.80822	103.7029	1857.398	30.7	172
							0.72%	34.308749	39.80822	103.7029	1857.398	30.7	172
					0.12%	0.25%	0.36%	34.308749	39.80822	103.7029	1857.398	30.7	172
	0.57%	0.96%						34.308749	39.80822	103.7029	1857.398	30.7	172
							0.64%	34.308749	39.80822	103.7029	1857.398	30.7	172
	0.32%	0.31%						34.308749	39.80822	103.7029	1857.398	30.7	172
	0.65%	0.84%						34.308749	39.80822	103.7029	1857.398	30.7	172

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Sulfate Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
41.325	30	17450	1685	1295	1503.333		1.520674						
41.325	30	17450	1685	1295	1503.333		1.612233						
41.325	30	17450	1685	1295	1503.333		2.042162						
41.325	30	17450	1685	1295	1503.333		0.672759						
41.325	30	17450	1685	1295	1503.333		0.855877						
41.325	30	17450	1685	1295	1503.333		1.520674						
41.325	30	17450	1685	1295	1503.333	0.2813317							
41.325	30	17450	1685	1295	1503.333		0.624989						
41.325	30	17450	1685	1295	1503.333		1.401249						
41.325	30	17450	1685	1295	1503.333		1.88691						
41.325	30	17450	1685	1295	1503.333		1.978468						
41.325	30	17450	1685	1295	1503.333		1.910794						
41.325	30	17450	1685	1295	1503.333		1.285805						
41.325	30	17450	1685	1295	1503.333		1.1624						
41.325	30	17450	1685	1295	1503.333		1.170362						
41.325	30	17450	1685	1295	1503.333		1.25794						
41.325	30	17450	1685	1295	1503.333		1.787389						
41.325	30	17450	1685	1295	1503.333		1.88691						
41.325	30	17450	1685	1295	1503.333		1.978468						
41.325	30	17450	1685	1295	1503.333							1.9836	
41.325	30	17450	1685	1295	1503.333							1.334798	
41.325	30	17450	1685	1295	1503.333							1.20669	
41.325	30	17450	1685	1295	1503.333		1.170362						
41.325	30	17450	1685	1295	1503.333		1.25794						
41.325	30	17450	1685	1295	1503.333						3.150902	1.098452	
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333					0.071359	0.515174	0.425482	
41.325	30	17450	1685	1295	1503.333					0.103084	0.783047	0.524398	
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						0.98685	0.39517	
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						0.548302	0.128612	
41.325	30	17450	1685	1295	1503.333						1.112255	0.34851	

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		95.2778 Without GW-83-D
					95.2778 All Wells
				1.520674	
				1.612233	
				2.042162	
				0.672759	
				0.855877	
				1.520674	
				0.281332	
				0.624989	
				1.401249	
				1.88691	
				1.978468	
				1.910794	
				1.285805	
				1.1624	
				1.170362	
				1.25794	
				1.787389	
				1.88691	
				1.978468	
				1.9836	
				1.334798	
				1.20669	
				1.170362	
				1.25794	
				4.249354	
		20.3315		20.3315	
				1.012016	
				1.410529	
			10.824	10.824	
	1.953252	3.207456	5.35788	10.51859	
				1.38202	
			9.621333	9.621333	
				0.676913	
				1.460765	

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IRON CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Iron Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333
2.5349603	4.579441	6.643333	97.97546	0.1	9.273333

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Iron Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
21.1	20	1200	19.65633	51.96667	32.4		0.174935						
21.1	20	1200	19.65633	51.96667	32.4		0.185467						
21.1	20	1200	19.65633	51.96667	32.4		0.234925						
21.1	20	1200	19.65633	51.96667	32.4		0.077393						
21.1	20	1200	19.65633	51.96667	32.4		0.098458						
21.1	20	1200	19.65633	51.96667	32.4		0.174935						
21.1	20	1200	19.65633	51.96667	32.4	0.0207867							
21.1	20	1200	19.65633	51.96667	32.4		0.071897						
21.1	20	1200	19.65633	51.96667	32.4		0.161196						
21.1	20	1200	19.65633	51.96667	32.4		0.217066						
21.1	20	1200	19.65633	51.96667	32.4		0.227598						
21.1	20	1200	19.65633	51.96667	32.4		0.219813						
21.1	20	1200	19.65633	51.96667	32.4		0.147916						
21.1	20	1200	19.65633	51.96667	32.4		0.13372						
21.1	20	1200	19.65633	51.96667	32.4		0.134636						
21.1	20	1200	19.65633	51.96667	32.4		0.14471						
21.1	20	1200	19.65633	51.96667	32.4		0.205617						
21.1	20	1200	19.65633	51.96667	32.4		0.217066						
21.1	20	1200	19.65633	51.96667	32.4		0.227598						
21.1	20	1200	19.65633	51.96667	32.4							1.0128	
21.1	20	1200	19.65633	51.96667	32.4							0.68153	
21.1	20	1200	19.65633	51.96667	32.4							0.61612	
21.1	20	1200	19.65633	51.96667	32.4		0.134636						
21.1	20	1200	19.65633	51.96667	32.4		0.14471						
21.1	20	1200	19.65633	51.96667	32.4						0.16988	0.560855	
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4					0.000232	0.027775	0.217246	
21.1	20	1200	19.65633	51.96667	32.4					0.000336	0.042218	0.267751	
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4						0.053206	0.201769	
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4						0.029562	0.065667	
21.1	20	1200	19.65633	51.96667	32.4						0.059967	0.177945	

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		9.063423 Without GW-83-D 9.063423 All Wells
				0.174935	
				0.185467	
				0.234925	
				0.077393	
				0.098458	
				0.174935	
				0.020787	
				0.071897	
				0.161196	
				0.217066	
				0.227598	
				0.219813	
				0.147916	
				0.13372	
				0.134636	
				0.14471	
				0.205617	
				0.217066	
				0.227598	
				1.0128	
				0.68153	
				0.61612	
				0.134636	
				0.14471	
				0.730735	
		0.815877		0.815877	
				0.245254	
				0.310304	
			0.23328	0.23328	
	0.022786	0.128711	0.115474	0.26697	
				0.254975	
			0.20736	0.20736	
				0.095229	
				0.237912	

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AMMONIA CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D	Ammonia Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
		4.80%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
		3.23%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
		2.92%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
								0.4769286	1.051597	5.615544	124.5387	0.064	6.3
	1.83%	2.66%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
						1.57%		0.4769286	1.051597	5.615544	124.5387	0.064	6.3
0.23%	0.30%	1.03%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
0.34%	0.46%	1.27%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
							0.72%	0.4769286	1.051597	5.615544	124.5387	0.064	6.3
					0.12%	0.25%	0.36%	0.4769286	1.051597	5.615544	124.5387	0.064	6.3
	0.57%	0.96%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
							0.64%	0.4769286	1.051597	5.615544	124.5387	0.064	6.3
	0.32%	0.31%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3
	0.65%	0.84%						0.4769286	1.051597	5.615544	124.5387	0.064	6.3

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Ammonia Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040171						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.04259						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.053947						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.017772						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.022609						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040171						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0039108							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.01651						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.037016						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.049846						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.052264						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.050477						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.033967						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030707						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030917						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.03323						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.047217						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.049846						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.052264						
0.643333	0.45	1400	106.5667	31.11633	45.2							0.03088	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.02078	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.018785	
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030917						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.03323						
0.643333	0.45	1400	106.5667	31.11633	45.2						0.115411	0.0171	
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2					0.000149	0.01887	0.006624	
0.643333	0.45	1400	106.5667	31.11633	45.2					0.000215	0.028681	0.008164	
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.036146	0.006152	
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.020083	0.002002	
0.643333	0.45	1400	106.5667	31.11633	45.2						0.04074	0.005425	

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Contribution to Total Concentration				Particle	Overall Total 2.610726 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	2.610726 All Wells
				0.040171	
				0.04259	
				0.053947	
				0.017772	
				0.022609	
				0.040171	
				0.003911	
				0.01651	
				0.037016	
				0.049846	
				0.052264	
				0.050477	
				0.033967	
				0.030707	
				0.030917	
				0.03323	
				0.047217	
				0.049846	
				0.052264	
				0.03088	
				0.02078	
				0.018785	
				0.030917	
				0.03323	
				0.132511	
		0.488526		0.488526	
				0.025642	
				0.03706	
			0.32544	0.32544	
	0.123532	0.077069	0.161093	0.361694	
				0.042298	
			0.28928	0.28928	
				0.022085	
				0.046165	

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Potassium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5	4.1	102	32	25	24		0.16808						
5	4.1	102	32	25	24		0.1782						
5	4.1	102	32	25	24		0.22572						
5	4.1	102	32	25	24		0.07436						
5	4.1	102	32	25	24		0.0946						
5	4.1	102	32	25	24		0.16808						
5	4.1	102	32	25	24	0.03526							
5	4.1	102	32	25	24		0.06908						
5	4.1	102	32	25	24		0.15488						
5	4.1	102	32	25	24		0.20856						
5	4.1	102	32	25	24		0.21868						
5	4.1	102	32	25	24		0.2112						
5	4.1	102	32	25	24		0.14212						
5	4.1	102	32	25	24		0.12848						
5	4.1	102	32	25	24		0.12936						
5	4.1	102	32	25	24		0.13904						
5	4.1	102	32	25	24		0.19756						
5	4.1	102	32	25	24		0.20856						
5	4.1	102	32	25	24		0.21868						
5	4.1	102	32	25	24								0.24
5	4.1	102	32	25	24								0.1615
5	4.1	102	32	25	24								0.146
5	4.1	102	32	25	24		0.12936						
5	4.1	102	32	25	24		0.13904						
5	4.1	102	32	25	24							0.139226	0.132904
5	4.1	102	32	25	24								
5	4.1	102	32	25	24						0.011622	0.022764	0.05148
5	4.1	102	32	25	24						0.016789	0.0346	0.063448
5	4.1	102	32	25	24								
5	4.1	102	32	25	24								
5	4.1	102	32	25	24							0.043605	0.047813
5	4.1	102	32	25	24								
5	4.1	102	32	25	24							0.024227	0.015561
5	4.1	102	32	25	24							0.049146	0.042167

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Contribution to Total Concentration					Overall Total	
GW-83-D	GW-85-D	GW-86-D	GW-87-D		Particle	5.385202 Without GW-83-D
				Total		5.385202 All Wells
				0.16808		
				0.1782		
				0.22572		
				0.07436		
				0.0946		
				0.16808		
				0.03526		
				0.06908		
				0.15488		
				0.20856		
				0.21868		
				0.2112		
				0.14212		
				0.12848		
				0.12936		
				0.13904		
				0.19756		
				0.20856		
				0.21868		
				0.24		
				0.1615		
				0.146		
				0.12936		
				0.13904		
				0.27213		
		0.3925		0.3925		
				0.085866		
				0.114837		
			0.1728	0.1728		
	0.037094	0.06192	0.085536	0.18455		
				0.091418		
			0.1536	0.1536		
				0.039788		
				0.091313		

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SODIUM CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D	Sodium Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
		4.80%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
		3.23%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
		2.92%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
								35.361111	35.5799	47.775	578.1579	52.1	61.08333
	1.83%	2.66%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
						1.57%		35.361111	35.5799	47.775	578.1579	52.1	61.08333
0.23%	0.30%	1.03%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
0.34%	0.46%	1.27%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
							0.72%	35.361111	35.5799	47.775	578.1579	52.1	61.08333
					0.12%	0.25%	0.36%	35.361111	35.5799	47.775	578.1579	52.1	61.08333
	0.57%	0.96%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
							0.64%	35.361111	35.5799	47.775	578.1579	52.1	61.08333
	0.32%	0.31%						35.361111	35.5799	47.775	578.1579	52.1	61.08333
	0.65%	0.84%						35.361111	35.5799	47.775	578.1579	52.1	61.08333

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Sodium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
29.83333	25	6120	258.6667	251.3333	337		1.359152						
29.83333	25	6120	258.6667	251.3333	337		1.440986						
29.83333	25	6120	258.6667	251.3333	337		1.825249						
29.83333	25	6120	258.6667	251.3333	337		0.6013						
29.83333	25	6120	258.6667	251.3333	337		0.764968						
29.83333	25	6120	258.6667	251.3333	337		1.359152						
29.83333	25	6120	258.6667	251.3333	337	0.2899611							
29.83333	25	6120	258.6667	251.3333	337		0.558604						
29.83333	25	6120	258.6667	251.3333	337		1.252412						
29.83333	25	6120	258.6667	251.3333	337		1.686487						
29.83333	25	6120	258.6667	251.3333	337		1.768321						
29.83333	25	6120	258.6667	251.3333	337		1.707835						
29.83333	25	6120	258.6667	251.3333	337		1.149231						
29.83333	25	6120	258.6667	251.3333	337		1.038933						
29.83333	25	6120	258.6667	251.3333	337		1.046049						
29.83333	25	6120	258.6667	251.3333	337		1.124325						
29.83333	25	6120	258.6667	251.3333	337		1.597537						
29.83333	25	6120	258.6667	251.3333	337		1.686487						
29.83333	25	6120	258.6667	251.3333	337		1.768321						
29.83333	25	6120	258.6667	251.3333	337								1.432
29.83333	25	6120	258.6667	251.3333	337								0.963617
29.83333	25	6120	258.6667	251.3333	337								0.871133
29.83333	25	6120	258.6667	251.3333	337		1.046049						
29.83333	25	6120	258.6667	251.3333	337		1.124325						
29.83333	25	6120	258.6667	251.3333	337							1.118998	0.792994
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337					0.121101	0.182957	0.307164	
29.83333	25	6120	258.6667	251.3333	337					0.174941	0.278088	0.378573	
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						0.350466	0.285281	
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						0.194721	0.092847	
29.83333	25	6120	258.6667	251.3333	337						0.395001	0.251596	

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Contribution to Total Concentration					Overall Total	
				Particle	45.03972	Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	45.03972	All Wells
				1.359152		
				1.440986		
				1.825249		
				0.6013		
				0.764968		
				1.359152		
				0.289961		
				0.558604		
				1.252412		
				1.686487		
				1.768321		
				1.707835		
				1.149231		
				1.038933		
				1.046049		
				1.124325		
				1.597537		
				1.686487		
				1.768321		
				1.432		
				0.963617		
				0.871133		
				1.046049		
				1.124325		
				1.911992		
		3.945933		3.945933		
				0.611222		
				0.831602		
			2.4264	2.4264		
	0.299846	0.622502	1.201068	2.123417		
				0.635747		
			2.1568	2.1568		
				0.287569		
				0.646598		

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CALCIUM CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Calcium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7
17.972222	22.46453	34.69833	121.7581	39.23333	53.7

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Calcium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
24.86667	34.5	284.5	240.3333	240.3333	278		0.858145						
24.86667	34.5	284.5	240.3333	240.3333	278		0.909813						
24.86667	34.5	284.5	240.3333	240.3333	278		1.15243						
24.86667	34.5	284.5	240.3333	240.3333	278		0.37965						
24.86667	34.5	284.5	240.3333	240.3333	278		0.482987						
24.86667	34.5	284.5	240.3333	240.3333	278		0.858145						
24.86667	34.5	284.5	240.3333	240.3333	278	0.1473722							
24.86667	34.5	284.5	240.3333	240.3333	278		0.352693						
24.86667	34.5	284.5	240.3333	240.3333	278		0.790751						
24.86667	34.5	284.5	240.3333	240.3333	278		1.064819						
24.86667	34.5	284.5	240.3333	240.3333	278		1.116487						
24.86667	34.5	284.5	240.3333	240.3333	278		1.078297						
24.86667	34.5	284.5	240.3333	240.3333	278		0.725604						
24.86667	34.5	284.5	240.3333	240.3333	278		0.655964						
24.86667	34.5	284.5	240.3333	240.3333	278		0.660457						
24.86667	34.5	284.5	240.3333	240.3333	278		0.709879						
24.86667	34.5	284.5	240.3333	240.3333	278		1.008657						
24.86667	34.5	284.5	240.3333	240.3333	278		1.064819						
24.86667	34.5	284.5	240.3333	240.3333	278		1.116487						
24.86667	34.5	284.5	240.3333	240.3333	278								1.1936
24.86667	34.5	284.5	240.3333	240.3333	278								0.803193
24.86667	34.5	284.5	240.3333	240.3333	278								0.726107
24.86667	34.5	284.5	240.3333	240.3333	278		0.660457						
24.86667	34.5	284.5	240.3333	240.3333	278		0.709879						
24.86667	34.5	284.5	240.3333	240.3333	278						0.983741	0.660976	
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278					0.091194	0.160842	0.256027	
24.86667	34.5	284.5	240.3333	240.3333	278					0.131738	0.244475	0.315548	
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						0.308104	0.237788	
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						0.171185	0.07739	
24.86667	34.5	284.5	240.3333	240.3333	278						0.347256	0.209711	

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Contribution to Total Concentration				Overall Total	
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Particle	32.84134 Without GW-83-D
				Total	32.84134 All Wells
				0.858145	
				0.909813	
				1.15243	
				0.37965	
				0.482987	
				0.858145	
				0.147372	
				0.352693	
				0.790751	
				1.064819	
				1.116487	
				1.078297	
				0.725604	
				0.655964	
				0.660457	
				0.709879	
				1.008657	
				1.064819	
				1.116487	
				1.1936	
				0.803193	
				0.726107	
				0.660457	
				0.709879	
				1.644717	
		3.773233		3.773233	
				0.508063	
				0.69176	
			2.0016	2.0016	
	0.278594	0.595258	0.990792	1.864644	
				0.545891	
			1.7792	1.7792	
				0.248575	
				0.556967	

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TOTAL DISSOLVED SOLIDS CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Total Dissolved Solids (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
252.37536	196.6876	400.2772		399.3812	539.9155

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Total Dissolved Solids (mg/L)					
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356

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Contribution to Total Concentration				Particle	Overall Total 303.1984 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	303.1984 All Wells
				7.513465	
				7.965846	
				10.09007	
				3.32402	
				4.228783	
				7.513465	
				2.069478	
				3.087995	
				6.923402	
				9.322991	
				9.775372	
				9.441003	
				6.353008	
				5.743277	
				5.782614	
				6.215327	
				8.831272	
				9.322991	
				9.775372	
				11.58723	
				7.797241	
				7.048899	
				5.782614	
				6.215327	
				16.30744	
		35.27815		35.27815	
				5.030938	
				6.862339	
			19.18336	19.18336	
	3.30621	5.565409	9.495764	18.36738	
				5.406159	
			17.05188	17.05188	
				2.47243	
				5.527246	

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MANGANESE CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D	Manganese Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
		4.80%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
		3.23%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
		2.92%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
								0.247	0.702632	0.9471	8.535857	0.0415	1.68
	1.83%	2.66%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
						1.57%		0.247	0.702632	0.9471	8.535857	0.0415	1.68
0.23%	0.30%	1.03%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
0.34%	0.46%	1.27%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
							0.72%	0.247	0.702632	0.9471	8.535857	0.0415	1.68
					0.12%	0.25%	0.36%	0.247	0.702632	0.9471	8.535857	0.0415	1.68
	0.57%	0.96%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
							0.64%	0.247	0.702632	0.9471	8.535857	0.0415	1.68
	0.32%	0.31%						0.247	0.702632	0.9471	8.535857	0.0415	1.68
	0.65%	0.84%						0.247	0.702632	0.9471	8.535857	0.0415	1.68

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Manganese Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.319	0.57	46.2	11.2	4.45	5.93		0.026841						
0.319	0.57	46.2	11.2	4.45	5.93		0.028457						
0.319	0.57	46.2	11.2	4.45	5.93		0.036045						
0.319	0.57	46.2	11.2	4.45	5.93		0.011874						
0.319	0.57	46.2	11.2	4.45	5.93		0.015107						
0.319	0.57	46.2	11.2	4.45	5.93		0.026841						
0.319	0.57	46.2	11.2	4.45	5.93	0.0020254							
0.319	0.57	46.2	11.2	4.45	5.93		0.011031						
0.319	0.57	46.2	11.2	4.45	5.93		0.024733						
0.319	0.57	46.2	11.2	4.45	5.93		0.033305						
0.319	0.57	46.2	11.2	4.45	5.93		0.034921						
0.319	0.57	46.2	11.2	4.45	5.93		0.033726						
0.319	0.57	46.2	11.2	4.45	5.93		0.022695						
0.319	0.57	46.2	11.2	4.45	5.93		0.020517						
0.319	0.57	46.2	11.2	4.45	5.93		0.020657						
0.319	0.57	46.2	11.2	4.45	5.93		0.022203						
0.319	0.57	46.2	11.2	4.45	5.93		0.031548						
0.319	0.57	46.2	11.2	4.45	5.93		0.033305						
0.319	0.57	46.2	11.2	4.45	5.93		0.034921						
0.319	0.57	46.2	11.2	4.45	5.93							0.015312	
0.319	0.57	46.2	11.2	4.45	5.93							0.010304	
0.319	0.57	46.2	11.2	4.45	5.93							0.009315	
0.319	0.57	46.2	11.2	4.45	5.93		0.020657						
0.319	0.57	46.2	11.2	4.45	5.93		0.022203						
0.319	0.57	46.2	11.2	4.45	5.93						0.030776	0.008479	
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93					9.65E-05	0.005032	0.003284	
0.319	0.57	46.2	11.2	4.45	5.93					0.000139	0.007648	0.004048	
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.009639	0.00305	
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.005356	0.000993	
0.319	0.57	46.2	11.2	4.45	5.93						0.010864	0.00269	

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		0.83629 Without GW-83-D
				0.026841	0.83629 All Wells
				0.028457	
				0.036045	
				0.011874	
				0.015107	
				0.026841	
				0.002025	
				0.011031	
				0.024733	
				0.033305	
				0.034921	
				0.033726	
				0.022695	
				0.020517	
				0.020657	
				0.022203	
				0.031548	
				0.033305	
				0.034921	
				0.015312	
				0.010304	
				0.009315	
				0.020657	
				0.022203	
				0.039256	
		0.069865		0.069865	
				0.008413	
				0.011836	
			0.042696	0.042696	
	0.012983	0.011022	0.021135	0.045139	
				0.012689	
			0.037952	0.037952	
				0.006348	
				0.013554	

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MAGNESIUM CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Magnesium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
4.7201481	4.723101	6.632833	57.87631	6.71	10.875

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Magnesium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5.045	5.7	370	65.2	67.45	78.7		0.180422						
5.045	5.7	370	65.2	67.45	78.7		0.191286						
5.045	5.7	370	65.2	67.45	78.7		0.242295						
5.045	5.7	370	65.2	67.45	78.7		0.07982						
5.045	5.7	370	65.2	67.45	78.7		0.101547						
5.045	5.7	370	65.2	67.45	78.7		0.180422						
5.045	5.7	370	65.2	67.45	78.7	0.0387052							
5.045	5.7	370	65.2	67.45	78.7		0.074153						
5.045	5.7	370	65.2	67.45	78.7		0.166253						
5.045	5.7	370	65.2	67.45	78.7		0.223875						
5.045	5.7	370	65.2	67.45	78.7		0.234738						
5.045	5.7	370	65.2	67.45	78.7		0.226709						
5.045	5.7	370	65.2	67.45	78.7		0.152556						
5.045	5.7	370	65.2	67.45	78.7		0.137915						
5.045	5.7	370	65.2	67.45	78.7		0.138859						
5.045	5.7	370	65.2	67.45	78.7		0.14925						
5.045	5.7	370	65.2	67.45	78.7		0.212067						
5.045	5.7	370	65.2	67.45	78.7		0.223875						
5.045	5.7	370	65.2	67.45	78.7		0.234738						
5.045	5.7	370	65.2	67.45	78.7							0.24216	
5.045	5.7	370	65.2	67.45	78.7							0.162954	
5.045	5.7	370	65.2	67.45	78.7							0.147314	
5.045	5.7	370	65.2	67.45	78.7		0.138859						
5.045	5.7	370	65.2	67.45	78.7		0.14925						
5.045	5.7	370	65.2	67.45	78.7						0.199221	0.1341	
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7					0.015597	0.032573	0.051943	
5.045	5.7	370	65.2	67.45	78.7					0.022531	0.04951	0.064019	
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7						0.062395	0.048243	
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7						0.034667	0.015701	
5.045	5.7	370	65.2	67.45	78.7						0.070324	0.042547	

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Contribution to Total Concentration				Particle Total	Overall Total 7.525806 Without GW-83-D 7.525806 All Wells
GW-83-D	GW-85-D	GW-86-D	GW-87-D		
				0.180422	
				0.191286	
				0.242295	
				0.07982	
				0.101547	
				0.180422	
				0.038705	
				0.074153	
				0.166253	
				0.223875	
				0.234738	
				0.226709	
				0.152556	
				0.137915	
				0.138859	
				0.14925	
				0.212067	
				0.223875	
				0.234738	
				0.24216	
				0.162954	
				0.147314	
				0.138859	
				0.14925	
				0.333321	
		1.058965		1.058965	
				0.100113	
				0.136059	
			0.56664	0.56664	
	0.07558	0.16706	0.280487	0.523127	
				0.110638	
			0.50368	0.50368	
				0.050368	
				0.112871	

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POTASSIUM CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Potassium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6

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BICARBONATE CALCULATION FOR ALL WELLS, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.82%**	s		1												0.038		
2	**4.05%**	s		1												0.041		
3	**5.13%**	s		1												0.051		
4	**1.69%**	s		1												0.017		
5	**2.15%**	s		1												0.022		
6	**3.82%**	s		1												0.038		
7	**0.82%**	b	1												0.008			
8	**1.57%**	s		1												0.016		
9	**3.52%**	s		1												0.035		
10	**4.74%**	s		1												0.047		
11	**4.97%**	s		1												0.05		
12	**4.80%**	s		1												0.048		
13	**3.23%**	s		1												0.032		
14	**2.92%**	s		1												0.029		
15	**2.94%**	s		1												0.029		
16	**3.16%**	s		1												0.032		
17	**4.49%**	s		1												0.045		
18	**4.74%**	s		1												0.047		
19	**4.97%**	s		1												0.05		
20	**4.80%**	m							100.00%									
21	**3.23%**	i			1				100.00%									
22	**2.92%**	i			1				100.00%									
23	**2.94%**	s		1												0.029		
24	**3.16%**	s		1												0.032		
25	**4.49%**	i			1			40.80%	59.20%									
26	**1.57%**	d				1							100.00%					
27	**1.56%**	i			1		14.90%	19.20%	66.00%									
28	**2.06%**	i			1		16.30%	22.10%	61.60%									
29	**0.72%**	d				1								100.00%				
30	**0.72%**	d				1						16.10%	34.40%	49.50%				
31	**1.53%**	i			1			37.50%	62.50%									
32	**0.64%**	d				1								100.00%				
33	**0.63%**	i			1			50.60%	49.40%									
34	**1.49%**	i			1			43.40%	56.60%									

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.80%					
		3.23%					
		2.92%					
	1.83%	2.66%					
						1.57%	
0.23%	0.30%	1.03%					
0.34%	0.46%	1.27%					
							0.72%
					0.12%	0.25%	0.36%
	0.57%	0.96%					
							0.64%
	0.32%	0.31%					
	0.65%	0.84%					

Bicarbonate Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55

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Bicarbonate Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
51	141	96	215	181	247		1.5662						
51	141	96	215	181	247		1.6605						
51	141	96	215	181	247		2.1033						
51	141	96	215	181	247		0.6929						
51	141	96	215	181	247		0.8815						
51	141	96	215	181	247		1.5662						
51	141	96	215	181	247	0.205							
51	141	96	215	181	247		0.6437						
51	141	96	215	181	247		1.4432						
51	141	96	215	181	247		1.9434						
51	141	96	215	181	247		2.0377						
51	141	96	215	181	247		1.968						
51	141	96	215	181	247		1.3243						
51	141	96	215	181	247		1.1972						
51	141	96	215	181	247		1.2054						
51	141	96	215	181	247		1.2956						
51	141	96	215	181	247		1.8409						
51	141	96	215	181	247		1.9434						
51	141	96	215	181	247		2.0377						
51	141	96	215	181	247								2.448
51	141	96	215	181	247								1.6473
51	141	96	215	181	247								1.4892
51	141	96	215	181	247		1.2054						
51	141	96	215	181	247		1.2956						
51	141	96	215	181	247							1.007556	1.355621
51	141	96	215	181	247								
51	141	96	215	181	247					0.074381	0.164736	0.525096	
51	141	96	215	181	247					0.10745	0.250393	0.64717	
51	141	96	215	181	247								
51	141	96	215	181	247								
51	141	96	215	181	247							0.315563	0.487688
51	141	96	215	181	247								
51	141	96	215	181	247							0.175329	0.158722
51	141	96	215	181	247							0.355663	0.430103

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Contribution to Total Concentration				Particle	Overall Total 49.47581 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	49.47581 All Wells
				1.5662	
				1.6605	
				2.1033	
				0.6929	
				0.8815	
				1.5662	
				0.205	
				0.6437	
				1.4432	
				1.9434	
				2.0377	
				1.968	
				1.3243	
				1.1972	
				1.2054	
				1.2956	
				1.8409	
				1.9434	
				2.0377	
				2.448	
				1.6473	
				1.4892	
				1.2054	
				1.2956	
				2.363177	
		2.8417		2.8417	
				0.764213	
				1.005012	
			1.7784	1.7784	
	0.249228	0.448301	0.880308	1.577837	
				0.80325	
			1.5808	1.5808	
				0.334051	
				0.785766	

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ALUMINUM CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Aluminum Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2

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Aluminum Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.2	0.1	27.8	0.2	0.2	0.2		0.004793						
0.2	0.1	27.8	0.2	0.2	0.2		0.005195						
0.2	0.1	27.8	0.2	0.2	0.2		0.007055						
0.2	0.1	27.8	0.2	0.2	0.2		0.001745						
0.2	0.1	27.8	0.2	0.2	0.2		0.002665						
0.2	0.1	27.8	0.2	0.2	0.2		0.005445						
0.2	0.1	27.8	0.2	0.2	0.2	0.00198							
0.2	0.1	27.8	0.2	0.2	0.2		0.002761						
0.2	0.1	27.8	0.2	0.2	0.2		0.005502						
0.2	0.1	27.8	0.2	0.2	0.2		0.009049						
0.2	0.1	27.8	0.2	0.2	0.2		0.008972						
0.2	0.1	27.8	0.2	0.2	0.2		0.008704						
0.2	0.1	27.8	0.2	0.2	0.2		0.006652						
0.2	0.1	27.8	0.2	0.2	0.2		0.006365						
0.2	0.1	27.8	0.2	0.2	0.2		0.006844						
0.2	0.1	27.8	0.2	0.2	0.2		0.007151						
0.2	0.1	27.8	0.2	0.2	0.2		0.008819						
0.2	0.1	27.8	0.2	0.2	0.2		*0.009049*						
0.2	0.1	27.8	0.2	0.2	0.2							0.00936	
0.2	0.1	27.8	0.2	0.2	0.2							0.00908	
0.2	0.1	27.8	0.2	0.2	0.2							0.00694	
0.2	0.1	27.8	0.2	0.2	0.2							0.00664	
0.2	0.1	27.8	0.2	0.2	0.2		0.006844						
0.2	0.1	27.8	0.2	0.2	0.2		0.007151						
0.2	0.1	27.8	0.2	0.2	0.2		0.008819						
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.002549	0.002611	
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.001297	0.002683	
0.2	0.1	27.8	0.2	0.2	0.2		0.003355						
0.2	0.1	27.8	0.2	0.2	0.2		0.002722						
0.2	0.1	27.8	0.2	0.2	0.2		0.004601						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.193038 Without GW-83-D
				0.004793	0.320918 With GW-83-D
				0.005195	
				0.007055	
				0.001745	
				0.002665	
				0.005445	
				0.00198	
				0.002761	
				0.005502	
				0.009049	
				0.008972	
				0.008704	
				0.006652	
				0.006365	
				0.006844	
				0.007151	
				0.008819	
				0.009049	
				0.00936	
				0.00908	
				0.00694	
				0.00664	
				0.006844	
				0.007151	
				0.008819	
			0.00398	0.00398	
	0.000558	0.001207	0.001635	0.0034	
				0.00516	
			0.00226	0.00226	
0.12788				0.12788	
				0.00398	
				0.003355	
				0.002722	
				0.004601	

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CHLORIDE CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Chloride Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667

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Chloride Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
69.73333	56	4630	515.3333	488.3333	580		1.680867						
69.73333	56	4630	515.3333	488.3333	580		1.82206						
69.73333	56	4630	515.3333	488.3333	580		2.474236						
69.73333	56	4630	515.3333	488.3333	580		0.611836						
69.73333	56	4630	515.3333	488.3333	580		0.934562						
69.73333	56	4630	515.3333	488.3333	580		1.909465						
69.73333	56	4630	515.3333	488.3333	580	0.717389							
69.73333	56	4630	515.3333	488.3333	580		0.968179						
69.73333	56	4630	515.3333	488.3333	580		1.929635						
69.73333	56	4630	515.3333	488.3333	580		3.173476						
69.73333	56	4630	515.3333	488.3333	580		3.146583						
69.73333	56	4630	515.3333	488.3333	580		3.052454						
69.73333	56	4630	515.3333	488.3333	580		2.333043						
69.73333	56	4630	515.3333	488.3333	580		2.232191						
69.73333	56	4630	515.3333	488.3333	580		2.400278						
69.73333	56	4630	515.3333	488.3333	580		2.507853						
69.73333	56	4630	515.3333	488.3333	580		3.092795						
69.73333	56	4630	515.3333	488.3333	580		3.173476						
69.73333	56	4630	515.3333	488.3333	580							3.26352	
69.73333	56	4630	515.3333	488.3333	580							3.165893	
69.73333	56	4630	515.3333	488.3333	580							2.419747	
69.73333	56	4630	515.3333	488.3333	580							2.315147	
69.73333	56	4630	515.3333	488.3333	580		2.400278						
69.73333	56	4630	515.3333	488.3333	580		2.507853						
69.73333	56	4630	515.3333	488.3333	580		3.092795						
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580						1.958512	0.910355	
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580						0.996897	0.935305	
69.73333	56	4630	515.3333	488.3333	580		1.176607						
69.73333	56	4630	515.3333	488.3333	580		0.954732						
69.73333	56	4630	515.3333	488.3333	580		1.613632						

US EPA ARCHIVE DOCUMENT

Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		93.09415 Without GW-83-D
				1.680867	114.3922 With GW-83-D
				1.82206	
				2.474236	
				0.611836	
				0.934562	
				1.909465	
				0.717389	
				0.968179	
				1.929635	
				3.173476	
				3.146583	
				3.052454	
				2.333043	
				2.232191	
				2.400278	
				2.507853	
				3.092795	
				3.173476	
				3.26352	
				3.165893	
				2.419747	
				2.315147	
				2.400278	
				2.507853	
				3.092795	
			11.542	11.542	
	1.436749	2.947092	4.74266	9.126501	
				2.868867	
			6.554	6.554	
21.298				21.298	
				1.932202	
				1.176607	
				0.954732	
				1.613632	

US EPA ARCHIVE DOCUMENT

SULFATE CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I	I	I	D		D	D	D	Sulfate Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
		4.68%						34.308749	39.8082	103.7029	1857.398	30.7	172
		4.54%						34.308749	39.8082	103.7029	1857.398	30.7	172
		3.47%						34.308749	39.8082	103.7029	1857.398	30.7	172
		3.32%						34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
							1.99%	34.308749	39.8082	103.7029	1857.398	30.7	172
					0.28%	0.60%	0.82%	34.308749	39.8082	103.7029	1857.398	30.7	172
	1.27%	1.31%						34.308749	39.8082	103.7029	1857.398	30.7	172
							1.13%	34.308749	39.8082	103.7029	1857.398	30.7	172
				0.46%				34.308749	39.8082	103.7029	1857.398	30.7	172
	0.65%	1.34%						34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172

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Sulfate Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
41.325	30	17450	1685	1295	1503.333		0.995205						
41.325	30	17450	1685	1295	1503.333		1.078803						
41.325	30	17450	1685	1295	1503.333		1.464942						
41.325	30	17450	1685	1295	1503.333		0.362255						
41.325	30	17450	1685	1295	1503.333		0.553334						
41.325	30	17450	1685	1295	1503.333		1.130553						
41.325	30	17450	1685	1295	1503.333	0.339657							
41.325	30	17450	1685	1295	1503.333		0.573238						
41.325	30	17450	1685	1295	1503.333		1.142496						
41.325	30	17450	1685	1295	1503.333		1.878948						
41.325	30	17450	1685	1295	1503.333		1.863025						
41.325	30	17450	1685	1295	1503.333		1.807293						
41.325	30	17450	1685	1295	1503.333		1.381345						
41.325	30	17450	1685	1295	1503.333		1.321633						
41.325	30	17450	1685	1295	1503.333		1.421153						
41.325	30	17450	1685	1295	1503.333		1.484847						
41.325	30	17450	1685	1295	1503.333		1.831178						
41.325	30	17450	1685	1295	1503.333		1.878948						
41.325	30	17450	1685	1295	1503.333							1.93401	
41.325	30	17450	1685	1295	1503.333							1.876155	
41.325	30	17450	1685	1295	1503.333							1.433978	
41.325	30	17450	1685	1295	1503.333							1.37199	
41.325	30	17450	1685	1295	1503.333		1.421153						
41.325	30	17450	1685	1295	1503.333		1.484847						
41.325	30	17450	1685	1295	1503.333		1.831178						
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						2.192174	0.53949	
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						1.115833	0.554276	
41.325	30	17450	1685	1295	1503.333		0.696644						
41.325	30	17450	1685	1295	1503.333		0.565277						
41.325	30	17450	1685	1295	1503.333		0.955397						

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Contribution to Total Concentration				Particle Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	
				0.995205
				1.078803
				1.464942
				0.362255
				0.553334
				1.130553
				0.339657
				0.573238
				1.142496
				1.878948
				1.863025
				1.807293
				1.381345
				1.321633
				1.421153
				1.484847
				1.831178
				1.878948
				1.93401
				1.876155
				1.433978
				1.37199
				1.421153
				1.484847
				1.831178
			29.91633	29.91633
	4.69778	7.815325	12.29276	24.80586
				2.731664
			16.98767	16.98767
80.27				80.27
				1.670108
				0.696644
				0.565277
				0.955397

Overall Total	
112.1911	Without GW-83-D
192.4611	With GW-83-D

US EPA ARCHIVE DOCUMENT

IRON CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								*100.00%*				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I	I	I	D		D	D	D	Iron Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
		4.68%						2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
		4.54%						2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
		3.47%						2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
		3.32%						2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
							1.99%	2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
					0.28%	0.60%	0.82%	2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
	1.27%	1.31%						2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
							1.13%	2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
				0.46%				2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
	0.65%	1.34%						2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
								2.5349603	4.57944	6.643333	97.97546	0.1	9.273333

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Iron Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
21.1	20	1200	19.65633	51.96667	32.4		0.114486						
21.1	20	1200	19.65633	51.96667	32.4		0.124103						
21.1	20	1200	19.65633	51.96667	32.4		0.168523						
21.1	20	1200	19.65633	51.96667	32.4		0.041673						
21.1	20	1200	19.65633	51.96667	32.4		0.063654						
21.1	20	1200	19.65633	51.96667	32.4		0.130056						
21.1	20	1200	19.65633	51.96667	32.4	0.025096							
21.1	20	1200	19.65633	51.96667	32.4		0.065944						
21.1	20	1200	19.65633	51.96667	32.4		0.13143						
21.1	20	1200	19.65633	51.96667	32.4		0.21615						
21.1	20	1200	19.65633	51.96667	32.4		0.214318						
21.1	20	1200	19.65633	51.96667	32.4		0.207907						
21.1	20	1200	19.65633	51.96667	32.4		0.158907						
21.1	20	1200	19.65633	51.96667	32.4		0.152037						
21.1	20	1200	19.65633	51.96667	32.4		0.163486						
21.1	20	1200	19.65633	51.96667	32.4		0.170813						
21.1	20	1200	19.65633	51.96667	32.4		0.210654						
21.1	20	1200	19.65633	51.96667	32.4		0.21615						
21.1	20	1200	19.65633	51.96667	32.4							0.98748	
21.1	20	1200	19.65633	51.96667	32.4							0.95794	
21.1	20	1200	19.65633	51.96667	32.4							0.73217	
21.1	20	1200	19.65633	51.96667	32.4							0.70052	
21.1	20	1200	19.65633	51.96667	32.4		0.163486						
21.1	20	1200	19.65633	51.96667	32.4		0.170813						
21.1	20	1200	19.65633	51.96667	32.4		0.210654						
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4						0.11819	0.275456	
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4						0.06016	0.283006	
21.1	20	1200	19.65633	51.96667	32.4		0.08014						
21.1	20	1200	19.65633	51.96667	32.4		0.065028						
21.1	20	1200	19.65633	51.96667	32.4		0.109907						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	9.134573 Without GW-83-D
				0.114486	14.65457 With GW-83-D
				0.124103	
				0.168523	
				0.041673	
				0.063654	
				0.130056	
				0.025096	
				0.065944	
				0.13143	
				0.21615	
				0.214318	
				0.207907	
				0.158907	
				0.152037	
				0.163486	
				0.170813	
				0.210654	
				0.21615	
				0.98748	
				0.95794	
				0.73217	
				0.70052	
				0.163486	
				0.170813	
				0.210654	
			0.64476	0.64476	
	0.054802	0.313619	0.264935	0.633355	
				0.393647	
			0.36612	0.36612	
5.52				5.52	
				0.343166	
				0.08014	
				0.065028	
				0.109907	

US EPA ARCHIVE DOCUMENT

AMMONIA CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Ammonia Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3

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Ammonia Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.643333	0.45	1400	106.5667	31.11633	45.2		0.02629						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.028498						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.038699						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.00957						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.014617						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.029865						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.004722							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.015143						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030181						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.049635						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.049215						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.047743						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.03649						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.034913						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.037542						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.039225						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.048373						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.049635						
0.643333	0.45	1400	106.5667	31.11633	45.2							0.030108	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.029207	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.022324	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.021359	
0.643333	0.45	1400	106.5667	31.11633	45.2		0.037542						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.039225						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.048373						
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.080295	0.008399	
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.040871	0.008629	
0.643333	0.45	1400	106.5667	31.11633	45.2		0.018403						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.014933						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.025238						

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Contribution to Total Concentration					Overall Total	
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Particle	3.279996	Without GW-83-D
				Total	9.719996	With GW-83-D
				0.02629		
				0.028498		
				0.038699		
				0.00957		
				0.014617		
				0.029865		
				0.004722		
				0.015143		
				0.030181		
				0.049635		
				0.049215		
				0.047743		
				0.03649		
				0.034913		
				0.037542		
				0.039225		
				0.048373		
				0.049635		
				0.030108		
				0.029207		
				0.022324		
				0.021359		
				0.037542		
				0.039225		
				0.048373		
			0.89948	0.89948		
	0.297108	0.187787	0.3696	0.854495		
				0.088693		
			0.51076	0.51076		
6.44				6.44		
				0.049499		
				0.018403		
				0.014933		
				0.025238		

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SODIUM CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Sodium Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333

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Sodium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
29.83333	25	6120	258.6667	251.3333	337		0.889497						
29.83333	25	6120	258.6667	251.3333	337		0.964215						
29.83333	25	6120	258.6667	251.3333	337		1.30934						
29.83333	25	6120	258.6667	251.3333	337		0.323777						
29.83333	25	6120	258.6667	251.3333	337		0.494561						
29.83333	25	6120	258.6667	251.3333	337		1.010469						
29.83333	25	6120	258.6667	251.3333	337	0.350075							
29.83333	25	6120	258.6667	251.3333	337		0.512351						
29.83333	25	6120	258.6667	251.3333	337		1.021143						
29.83333	25	6120	258.6667	251.3333	337		1.679371						
29.83333	25	6120	258.6667	251.3333	337		1.665139						
29.83333	25	6120	258.6667	251.3333	337		1.615327						
29.83333	25	6120	258.6667	251.3333	337		1.234623						
29.83333	25	6120	258.6667	251.3333	337		1.181253						
29.83333	25	6120	258.6667	251.3333	337		1.270202						
29.83333	25	6120	258.6667	251.3333	337		1.32713						
29.83333	25	6120	258.6667	251.3333	337		1.636675						
29.83333	25	6120	258.6667	251.3333	337		1.679371						
29.83333	25	6120	258.6667	251.3333	337							1.3962	
29.83333	25	6120	258.6667	251.3333	337							1.354433	
29.83333	25	6120	258.6667	251.3333	337							1.035217	
29.83333	25	6120	258.6667	251.3333	337							0.990467	
29.83333	25	6120	258.6667	251.3333	337		1.270202						
29.83333	25	6120	258.6667	251.3333	337		1.32713						
29.83333	25	6120	258.6667	251.3333	337		1.636675						
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						0.778519	0.389468	
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						0.396272	0.400143	
29.83333	25	6120	258.6667	251.3333	337		0.622648						
29.83333	25	6120	258.6667	251.3333	337		0.505235						
29.83333	25	6120	258.6667	251.3333	337		0.853918						

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Contribution to Total Concentration				Particle Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	
				0.889497
				0.964215
				1.30934
				0.323777
				0.494561
				1.010469
				0.350075
				0.512351
				1.021143
				1.679371
				1.665139
				1.615327
				1.234623
				1.181253
				1.270202
				1.32713
				1.636675
				1.679371
				1.3962
				1.354433
				1.035217
				0.990467
				1.270202
				1.32713
				1.636675
			6.7063	6.7063
	0.721163	1.516797	2.755649	4.993608
				1.167988
			3.8081	3.8081
28.152				28.152
				0.796415
				0.622648
				0.505235
				0.853918

Overall Total	
48.62906	Without GW-83-D
76.78106	With GW-83-D

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CALCIUM CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

US EPA ARCHIVE DOCUMENT

I	I	I	D		D	D	D	Calcium Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
		4.68%						17.972222	22.4645	34.69833	121.7581	39.23333	53.7
		4.54%						17.972222	22.4645	34.69833	121.7581	39.23333	53.7
		3.47%						17.972222	22.4645	34.69833	121.7581	39.23333	53.7
		3.32%						17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
							1.99%	17.972222	22.4645	34.69833	121.7581	39.23333	53.7
					0.28%	0.60%	0.82%	17.972222	22.4645	34.69833	121.7581	39.23333	53.7
	1.27%	1.31%						17.972222	22.4645	34.69833	121.7581	39.23333	53.7
							1.13%	17.972222	22.4645	34.69833	121.7581	39.23333	53.7
				0.46%				17.972222	22.4645	34.69833	121.7581	39.23333	53.7
	0.65%	1.34%						17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7
								17.972222	22.4645	34.69833	121.7581	39.23333	53.7

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Calcium Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
24.86667	34.5	284.5	240.3333	240.3333	278		0.561613						
24.86667	34.5	284.5	240.3333	240.3333	278		0.608789						
24.86667	34.5	284.5	240.3333	240.3333	278		0.826695						
24.86667	34.5	284.5	240.3333	240.3333	278		0.204427						
24.86667	34.5	284.5	240.3333	240.3333	278		0.312257						
24.86667	34.5	284.5	240.3333	240.3333	278		0.637993						
24.86667	34.5	284.5	240.3333	240.3333	278	0.177925							
24.86667	34.5	284.5	240.3333	240.3333	278		0.323489						
24.86667	34.5	284.5	240.3333	240.3333	278		0.644732						
24.86667	34.5	284.5	240.3333	240.3333	278		1.060326						
24.86667	34.5	284.5	240.3333	240.3333	278		1.05134						
24.86667	34.5	284.5	240.3333	240.3333	278		1.019889						
24.86667	34.5	284.5	240.3333	240.3333	278		0.779519						
24.86667	34.5	284.5	240.3333	240.3333	278		0.745822						
24.86667	34.5	284.5	240.3333	240.3333	278		0.801984						
24.86667	34.5	284.5	240.3333	240.3333	278		0.837927						
24.86667	34.5	284.5	240.3333	240.3333	278		1.033368						
24.86667	34.5	284.5	240.3333	240.3333	278		1.060326						
24.86667	34.5	284.5	240.3333	240.3333	278							1.16376	
24.86667	34.5	284.5	240.3333	240.3333	278							1.128947	
24.86667	34.5	284.5	240.3333	240.3333	278							0.862873	
24.86667	34.5	284.5	240.3333	240.3333	278							0.825573	
24.86667	34.5	284.5	240.3333	240.3333	278		0.801984						
24.86667	34.5	284.5	240.3333	240.3333	278		0.837927						
24.86667	34.5	284.5	240.3333	240.3333	278		1.033368						
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						0.684417	0.324629	
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						0.348373	0.333527	
24.86667	34.5	284.5	240.3333	240.3333	278		0.393129						
24.86667	34.5	284.5	240.3333	240.3333	278		0.318996						
24.86667	34.5	284.5	240.3333	240.3333	278		0.539149						

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		35.35234 Without GW-83-D 36.66104 With GW-83-D
				0.561613	
				0.608789	
				0.826695	
				0.204427	
				0.312257	
				0.637993	
				0.177925	
				0.323489	
				0.644732	
				1.060326	
				1.05134	
				1.019889	
				0.779519	
				0.745822	
				0.801984	
				0.837927	
				1.033368	
				1.060326	
				1.16376	
				1.128947	
				0.862873	
				0.825573	
				0.801984	
				0.837927	
				1.033368	
			5.5322	5.5322	
	0.670049	1.450412	2.273206	4.393667	
				1.009047	
			3.1414	3.1414	
1.3087				1.3087	
				0.6819	
				0.393129	
				0.318996	
				0.539149	

US EPA ARCHIVE DOCUMENT

TOTAL DISSOLVED SOLIDS CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I	I	I	D		D	D	D	TDS Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
		4.68%						252.37536	196.688	400.2772		399.3812	539.9155
		4.54%						252.37536	196.688	400.2772		399.3812	539.9155
		3.47%						252.37536	196.688	400.2772		399.3812	539.9155
		3.32%						252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
							1.99%	252.37536	196.688	400.2772		399.3812	539.9155
					0.28%	0.60%	0.82%	252.37536	196.688	400.2772		399.3812	539.9155
	1.27%	1.31%						252.37536	196.688	400.2772		399.3812	539.9155
							1.13%	252.37536	196.688	400.2772		399.3812	539.9155
				0.46%				252.37536	196.688	400.2772		399.3812	539.9155
	0.65%	1.34%						252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155
								252.37536	196.688	400.2772		399.3812	539.9155

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TDS Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.917189						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.330233						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.238102						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		1.789857						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.733957						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.585927						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	2.498516							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.832301						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.644933						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		9.283653						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		9.204978						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		8.929615						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.825059						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.530027						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.021746						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.336446						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		9.047628						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		9.283653						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							11.29755	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							10.95959	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							8.376603	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							8.014502	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.021746						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.336446						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		9.047628						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						6.881331	3.151437	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						3.502648	3.23781	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		3.442032						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.792963						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.720502						

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Contribution to Total Concentration				Particle Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	
				4.917189
				5.330233
				7.238102
				1.789857
				2.733957
				5.585927
				2.498516
				2.832301
				5.644933
				9.283653
				9.204978
				8.929615
				6.825059
				6.530027
				7.021746
				7.336446
				9.047628
				9.283653
				11.29755
				10.95959
				8.376603
				8.014502
				7.021746
				7.336446
				9.047628
			53.02068	53.02068
	7.951788	13.56074	21.78644	43.29897
				10.03277
			30.10722	30.10722
136.4835				136.4835
				6.740458
				3.442032
				2.792963
				4.720502

Overall Total	
328.2435	Without GW-83-D
464.7269	With GW-83-D

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MANGANESE CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Manganese Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.247	0.70263	0.9471	8.535857	0.0415	1.68

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Manganese Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.319	0.57	46.2	11.2	4.45	5.93		0.017566						
0.319	0.57	46.2	11.2	4.45	5.93		0.019041						
0.319	0.57	46.2	11.2	4.45	5.93		0.025857						
0.319	0.57	46.2	11.2	4.45	5.93		0.006394						
0.319	0.57	46.2	11.2	4.45	5.93		0.009767						
0.319	0.57	46.2	11.2	4.45	5.93		0.019955						
0.319	0.57	46.2	11.2	4.45	5.93	0.002445							
0.319	0.57	46.2	11.2	4.45	5.93		0.010118						
0.319	0.57	46.2	11.2	4.45	5.93		0.020166						
0.319	0.57	46.2	11.2	4.45	5.93		0.033164						
0.319	0.57	46.2	11.2	4.45	5.93		0.032883						
0.319	0.57	46.2	11.2	4.45	5.93		0.031899						
0.319	0.57	46.2	11.2	4.45	5.93		0.024381						
0.319	0.57	46.2	11.2	4.45	5.93		0.023327						
0.319	0.57	46.2	11.2	4.45	5.93		0.025084						
0.319	0.57	46.2	11.2	4.45	5.93		0.026208						
0.319	0.57	46.2	11.2	4.45	5.93		0.032321						
0.319	0.57	46.2	11.2	4.45	5.93		0.033164						
0.319	0.57	46.2	11.2	4.45	5.93							0.014929	
0.319	0.57	46.2	11.2	4.45	5.93							0.014483	
0.319	0.57	46.2	11.2	4.45	5.93							0.011069	
0.319	0.57	46.2	11.2	4.45	5.93							0.010591	
0.319	0.57	46.2	11.2	4.45	5.93		0.025084						
0.319	0.57	46.2	11.2	4.45	5.93		0.026208						
0.319	0.57	46.2	11.2	4.45	5.93		0.032321						
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.021412	0.004164	
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.010899	0.004279	
0.319	0.57	46.2	11.2	4.45	5.93		0.012296						
0.319	0.57	46.2	11.2	4.45	5.93		0.009977						
0.319	0.57	46.2	11.2	4.45	5.93		0.016863						

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		0.899904 Without GW-83-D
				0.017566	1.112424 With GW-83-D
				0.019041	
				0.025857	
				0.006394	
				0.009767	
				0.019955	
				0.002445	
				0.010118	
				0.020166	
				0.033164	
				0.032883	
				0.031899	
				0.024381	
				0.023327	
				0.025084	
				0.026208	
				0.032321	
				0.033164	
				0.014929	
				0.014483	
				0.011069	
				0.010591	
				0.025084	
				0.026208	
				0.032321	
			0.118007	0.118007	
	0.031226	0.026856	0.04849	0.106571	
				0.025576	
			0.067009	0.067009	
0.21252				0.21252	
				0.015177	
				0.012296	
				0.009977	
				0.016863	

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Potassium Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5	4.1	102	32	25	24		0.11						
5	4.1	102	32	25	24		0.11924						
5	4.1	102	32	25	24		0.16192						
5	4.1	102	32	25	24		0.04004						
5	4.1	102	32	25	24		0.06116						
5	4.1	102	32	25	24		0.12496						
5	4.1	102	32	25	24	0.04257							
5	4.1	102	32	25	24		0.06336						
5	4.1	102	32	25	24		0.12628						
5	4.1	102	32	25	24		0.20768						
5	4.1	102	32	25	24		0.20592						
5	4.1	102	32	25	24		0.19976						
5	4.1	102	32	25	24		0.15268						
5	4.1	102	32	25	24		0.14608						
5	4.1	102	32	25	24		0.15708						
5	4.1	102	32	25	24		0.16412						
5	4.1	102	32	25	24		0.2024						
5	4.1	102	32	25	24		0.20768						
5	4.1	102	32	25	24								0.234
5	4.1	102	32	25	24								0.227
5	4.1	102	32	25	24								0.1735
5	4.1	102	32	25	24								0.166
5	4.1	102	32	25	24		0.15708						
5	4.1	102	32	25	24		0.16412						
5	4.1	102	32	25	24		0.2024						
5	4.1	102	32	25	24								
5	4.1	102	32	25	24								
5	4.1	102	32	25	24						0.096864	0.065274	
5	4.1	102	32	25	24								
5	4.1	102	32	25	24								
5	4.1	102	32	25	24						0.049304	0.067063	
5	4.1	102	32	25	24		0.077						
5	4.1	102	32	25	24		0.06248						
5	4.1	102	32	25	24		0.1056						

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Contribution to Total Concentration				Particle / Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		
				0.11	Particle 5.525754 Without GW-83-D
				0.11924	Total 5.994954 With GW-83-D
				0.16192	
				0.04004	
				0.06116	
				0.12496	
				0.04257	
				0.06336	
				0.12628	
				0.20768	
				0.20592	
				0.19976	
				0.15268	
				0.14608	
				0.15708	
				0.16412	
				0.2024	
				0.20768	
				0.234	
				0.227	
				0.1735	
				0.166	
				0.15708	
				0.16412	
				0.2024	
			0.4776	0.4776	
	0.089216	0.150875	0.196248	0.436339	
				0.162138	
			0.2712	0.2712	
0.4692				0.4692	
				0.116367	
				0.077	
				0.06248	
				0.1056	

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MAGNESIUM CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Magnesium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875
4.7201481	4.7231	6.632833	57.87631	6.71	10.875

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Magnesium Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5.045	5.7	370	65.2	67.45	78.7		0.118078						
5.045	5.7	370	65.2	67.45	78.7		0.127996						
5.045	5.7	370	65.2	67.45	78.7		0.17381						
5.045	5.7	370	65.2	67.45	78.7		0.04298						
5.045	5.7	370	65.2	67.45	78.7		0.065651						
5.045	5.7	370	65.2	67.45	78.7		0.134136						
5.045	5.7	370	65.2	67.45	78.7	0.046729							
5.045	5.7	370	65.2	67.45	78.7		0.068013						
5.045	5.7	370	65.2	67.45	78.7		0.135553						
5.045	5.7	370	65.2	67.45	78.7		0.22293						
5.045	5.7	370	65.2	67.45	78.7		0.221041						
5.045	5.7	370	65.2	67.45	78.7		0.214429						
5.045	5.7	370	65.2	67.45	78.7		0.163892						
5.045	5.7	370	65.2	67.45	78.7		0.156807						
5.045	5.7	370	65.2	67.45	78.7		0.168615						
5.045	5.7	370	65.2	67.45	78.7		0.176172						
5.045	5.7	370	65.2	67.45	78.7		0.217263						
5.045	5.7	370	65.2	67.45	78.7		0.22293						
5.045	5.7	370	65.2	67.45	78.7							*0.236106*	
5.045	5.7	370	65.2	67.45	78.7							0.229043	
5.045	5.7	370	65.2	67.45	78.7							0.175062	
5.045	5.7	370	65.2	67.45	78.7							0.167494	
5.045	5.7	370	65.2	67.45	78.7		0.168615						
5.045	5.7	370	65.2	67.45	78.7		0.176172						
5.045	5.7	370	65.2	67.45	78.7		0.217263						
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7						0.138604	0.065861	
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7						0.07055	0.067667	
5.045	5.7	370	65.2	67.45	78.7		0.082654						
5.045	5.7	370	65.2	67.45	78.7		0.067068						
5.045	5.7	370	65.2	67.45	78.7		0.113354						

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Contribution to Total Concentration				Particle Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	
				0.118078
				0.127996
				0.17381
				0.04298
				0.065651
				0.134136
				0.046729
				0.068013
				0.135553
				0.22293
				0.221041
				0.214429
				0.163892
				0.156807
				0.168615
				0.176172
				0.217263
				0.22293
				0.236106
				0.229043
				0.175062
				0.167494
				0.168615
				0.176172
				0.217263
			1.56613	1.56613
	0.181778	0.407061	0.64353	1.232368
				0.204466
			0.88931	0.88931
1.702				1.702
				0.138217
				0.082654
				0.067068
				0.113354

Overall Total	
8.340346	Without GW-83-D
10.04235	With GW-83-D

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POTASSIUM CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Potassium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
4.3	4.4	5.4	19	5	7.6

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BICARBONATE CALCULATION FOR ALL WELLS, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**2.50%**	s		1												0.025		
2	**2.71%**	s		1												0.0271		
3	**3.68%**	s		1												0.0368		
4	**0.91%**	s		1												0.0091		
5	**1.39%**	s		1												0.0139		
6	**2.84%**	s		1												0.0284		
7	**0.99%**	b	1												0.0099			
8	**1.44%**	s		1												0.0144		
9	**2.87%**	s		1												0.0287		
10	**4.72%**	s		1												0.0472		
11	**4.68%**	s		1												0.0468		
12	**4.54%**	s		1												0.0454		
13	**3.47%**	s		1												0.0347		
14	**3.32%**	s		1												0.0332		
15	**3.57%**	s		1												0.0357		
16	**3.73%**	s		1												0.0373		
17	**4.60%**	s		1												0.046		
18	**4.72%**	s		1												0.0472		
19	**4.68%**	i			1				100.00%									
20	**4.54%**	i			1				100.00%									
21	**3.47%**	i			1				100.00%									
22	**3.32%**	i			1				100.00%									
23	**3.57%**	s		1												0.0357		
24	**3.73%**	s		1												0.0373		
25	**4.60%**	s		1												0.046		
26	**1.99%**	d				1								100.00%				
27	**1.70%**	d				1						16.40%	35.50%	48.10%				
28	**2.58%**	i			1			49.40%	50.60%									
29	**1.13%**	d				1								100.00%				
30	**0.46%**	d				1					100.00%							
31	**1.99%**	i			1			32.60%	67.40%									
32	**1.75%**	s		1												0.0175		
33	**1.42%**	s		1												0.0142		
34	**2.40%**	s		1												0.024		

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.68%					
		4.54%					
		3.47%					
		3.32%					
							1.99%
					0.28%	0.60%	0.82%
	1.27%	1.31%					
							1.13%
				0.46%			
	0.65%	1.34%					

Bicarbonate Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55

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Bicarbonate Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
51	141	96	215	181	247		1.025						
51	141	96	215	181	247		1.1111						
51	141	96	215	181	247		1.5088						
51	141	96	215	181	247		0.3731						
51	141	96	215	181	247		0.5699						
51	141	96	215	181	247		1.1644						
51	141	96	215	181	247	0.2475							
51	141	96	215	181	247		0.5904						
51	141	96	215	181	247		1.1767						
51	141	96	215	181	247		1.9352						
51	141	96	215	181	247		1.9188						
51	141	96	215	181	247		1.8614						
51	141	96	215	181	247		1.4227						
51	141	96	215	181	247		1.3612						
51	141	96	215	181	247		1.4637						
51	141	96	215	181	247		1.5293						
51	141	96	215	181	247		1.886						
51	141	96	215	181	247		1.9352						
51	141	96	215	181	247								2.3868
51	141	96	215	181	247								2.3154
51	141	96	215	181	247								1.7697
51	141	96	215	181	247								1.6932
51	141	96	215	181	247		1.4637						
51	141	96	215	181	247		1.5293						
51	141	96	215	181	247		1.886						
51	141	96	215	181	247								
51	141	96	215	181	247								
51	141	96	215	181	247						0.700986	0.665795	
51	141	96	215	181	247								
51	141	96	215	181	247								
51	141	96	215	181	247						0.356807	0.684043	
51	141	96	215	181	247		0.7175						
51	141	96	215	181	247		0.5822						
51	141	96	215	181	247		0.984						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	52.2337 Without GW-83-D
				1.025	52.6753 With GW-83-D
				1.1111	
				1.5088	
				0.3731	
				0.5699	
				1.1644	
				0.2475	
				0.5904	
				1.1767	
				1.9352	
				1.9188	
				1.8614	
				1.4227	
				1.3612	
				1.4637	
				1.5293	
				1.886	
				1.9352	
				2.3868	
				2.3154	
				1.7697	
				1.6932	
				1.4637	
				1.5293	
				1.886	
			4.9153	4.9153	
	0.59942	1.092335	2.019719	3.711474	
				1.366781	
			2.7911	2.7911	
0.4416				0.4416	
				1.04085	
				0.7175	
				0.5822	
				0.984	

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ALUMINUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.032		
2	**2.63%**	s		1												0.026		
3	**2.48%**	s		1												0.025		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.012		
7	**1.96%**	s		1												0.02		
8	**0.88%**	s		1												0.009		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.026		
11	**5.83%**	s		1												0.058		
12	**5.92%**	s		1												0.059		
13	**3.44%**	s		1												0.034		
14	**3.33%**	s		1												0.033		
15	**2.63%**	s		1												0.026		
16	**2.89%**	b	1												0.029			
17	**2.89%**	s		1												0.029		
18	**2.62%**	b	1												0.026			
19	**5.83%**	b	1												0.058			
20	**5.92%**	b	1												0.059			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.033		
23	**2.63%**	s		1												0.026		
24	**2.89%**	s		1												0.029		
25	**2.89%**	b	1												0.029			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.012			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I GW-83-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Dissolved Aluminum Concentration, (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-83-M	GW-85-M
0.2	0.191714	0.186667	2.123095	0.2	0.2

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Dissolved Aluminum Concentration, (mg/L)						Contribution to Aluminum Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.2	0.1	27.8	0.2	0.2	0.2		0.006058						
0.2	0.1	27.8	0.2	0.2	0.2		0.005042						
0.2	0.1	27.8	0.2	0.2	0.2		0.004755						
0.2	0.1	27.8	0.2	0.2	0.2		0.004409						
0.2	0.1	27.8	0.2	0.2	0.2		0.002876						
0.2	0.1	27.8	0.2	0.2	0.2		0.002358						
0.2	0.1	27.8	0.2	0.2	0.2		0.003758						
0.2	0.1	27.8	0.2	0.2	0.2		0.001687						
0.2	0.1	27.8	0.2	0.2	0.2	0.0004							
0.2	0.1	27.8	0.2	0.2	0.2		0.005023						
0.2	0.1	27.8	0.2	0.2	0.2		0.011177						
0.2	0.1	27.8	0.2	0.2	0.2		0.011349						
0.2	0.1	27.8	0.2	0.2	0.2		0.006595						
0.2	0.1	27.8	0.2	0.2	0.2		0.006384						
0.2	0.1	27.8	0.2	0.2	0.2		0.005042						
0.2	0.1	27.8	0.2	0.2	0.2	0.00578							
0.2	0.1	27.8	0.2	0.2	0.2		0.005541						
0.2	0.1	27.8	0.2	0.2	0.2	0.00524							
0.2	0.1	27.8	0.2	0.2	0.2	0.01166							
0.2	0.1	27.8	0.2	0.2	0.2	0.01184							
0.2	0.1	27.8	0.2	0.2	0.2						0.00688		
0.2	0.1	27.8	0.2	0.2	0.2		0.006384						
0.2	0.1	27.8	0.2	0.2	0.2		0.005042						
0.2	0.1	27.8	0.2	0.2	0.2		0.005541						
0.2	0.1	27.8	0.2	0.2	0.2	0.00578							
0.2	0.1	27.8	0.2	0.2	0.2					0.00886			
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.00406		
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2	0.00242							
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.00474		
0.2	0.1	27.8	0.2	0.2	0.2						0.00444		

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Contribution to Aluminum Concentration				Particle Total	Overall Total 0.1957
GW-83-D	GW-85-D	GW-86-D	GW-87-D		
				0.006058	
				0.005042	
				0.004755	
				0.004409	
				0.002876	
				0.002358	
				0.003758	
				0.001687	
				0.0004	
				0.005023	
				0.011177	
				0.011349	
				0.006595	
				0.006384	
				0.005042	
				0.00578	
				0.005541	
				0.00524	
				0.01166	
				0.01184	
				0.00688	
				0.006384	
				0.005042	
				0.005541	
				0.00578	
				0.00886	
	0.00438			0.00438	
				0.00406	
	0.00824			0.00824	
	0.00292			0.00292	
				0.00242	
	0.00904			0.00904	
				0.00474	
				0.00444	

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CHLORIDE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Chloride Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-83-M	GW-85-M
72.463534	67.23467	110.5862	562.2795	120	153.6667

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Chloride Concentration (mg/L)						Contribution to Chloride Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M
69.73333	56	4630	515.3333	488.3333	580		2.124616					
69.73333	56	4630	515.3333	488.3333	580		1.768272					
69.73333	56	4630	515.3333	488.3333	580		1.66742					
69.73333	56	4630	515.3333	488.3333	580		1.546397					
69.73333	56	4630	515.3333	488.3333	580		1.00852					
69.73333	56	4630	515.3333	488.3333	580		0.826986					
69.73333	56	4630	515.3333	488.3333	580		1.3178					
69.73333	56	4630	515.3333	488.3333	580		0.591665					
69.73333	56	4630	515.3333	488.3333	580	0.1449271						
69.73333	56	4630	515.3333	488.3333	580		1.761548					
69.73333	56	4630	515.3333	488.3333	580		3.919781					
69.73333	56	4630	515.3333	488.3333	580		3.980293					
69.73333	56	4630	515.3333	488.3333	580		2.312873					
69.73333	56	4630	515.3333	488.3333	580		2.238915					
69.73333	56	4630	515.3333	488.3333	580		1.768272					
69.73333	56	4630	515.3333	488.3333	580	2.0941961						
69.73333	56	4630	515.3333	488.3333	580		1.943082					
69.73333	56	4630	515.3333	488.3333	580	1.8985446						
69.73333	56	4630	515.3333	488.3333	580	4.224624						
69.73333	56	4630	515.3333	488.3333	580	4.2898412						
69.73333	56	4630	515.3333	488.3333	580						5.286133	
69.73333	56	4630	515.3333	488.3333	580		2.238915					
69.73333	56	4630	515.3333	488.3333	580		1.768272					
69.73333	56	4630	515.3333	488.3333	580		1.943082					
69.73333	56	4630	515.3333	488.3333	580	2.0941961						
69.73333	56	4630	515.3333	488.3333	580					5.316		
69.73333	56	4630	515.3333	488.3333	580							
69.73333	56	4630	515.3333	488.3333	580						3.119433	
69.73333	56	4630	515.3333	488.3333	580							
69.73333	56	4630	515.3333	488.3333	580							
69.73333	56	4630	515.3333	488.3333	580	0.8768088						
69.73333	56	4630	515.3333	488.3333	580							
69.73333	56	4630	515.3333	488.3333	580						3.6419	
69.73333	56	4630	515.3333	488.3333	580						3.4114	

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Contribution to Chloride Concentration					Particle Total	Overall Total 134.4592 134.4592
GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D		
					2.124616	
					1.768272	
					1.66742	
					1.546397	
					1.00852	
					0.826986	
					1.3178	
					0.591665	
					0.144927	
					1.761548	
					3.919781	
					3.980293	
					2.312873	
					2.238915	
					1.768272	
					2.094196	
					1.943082	
					1.898545	
					4.224624	
					4.289841	
					5.286133	
					2.238915	
					1.768272	
					1.943082	
					2.094196	
					5.316	
				11.2858	11.2858	
					3.119433	
				21.23173	21.23173	
				7.523867	7.523867	
					0.876809	
				23.29307	23.29307	
					3.6419	
					3.4114	

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SULFATE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.16%	s		1												0.0316		
2	2.63%	s		1												0.0263		
3	2.48%	s		1												0.0248		
4	2.30%	s		1												0.023		
5	1.50%	s		1												0.015		
6	1.23%	s		1												0.0123		
7	1.96%	s		1												0.0196		
8	0.88%	s		1												0.0088		
9	0.20%	b	1												0.002			
10	2.62%	s		1												0.0262		
11	5.83%	s		1												0.0583		
12	5.92%	s		1												0.0592		
13	3.44%	s		1												0.0344		
14	3.33%	s		1												0.0333		
15	2.63%	s		1												0.0263		
16	2.89%	b	1												0.0289			
17	2.89%	s		1												0.0289		
18	2.62%	b	1												0.0262			
19	5.83%	b	1												0.0583			
20	5.92%	b	1												0.0592			
21	3.44%	i			1			100.00%										
22	3.33%	s		1												0.0333		
23	2.63%	s		1												0.0263		
24	2.89%	s		1												0.0289		
25	2.89%	b	1												0.0289			
26	4.43%	i			1		100.00%											
27	2.19%	d				1						100.00%						
28	2.03%	i			1			100.00%										
29	4.12%	d				1						100.00%						
30	1.46%	d				1						100.00%						
31	1.21%	b	1												0.0121			
32	4.52%	d				1						100.00%						
33	2.37%	i			1			100.00%										
34	2.22%	i			1			100.00%										

US EPA ARCHIVE DOCUMENT

I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Sulfate Concentration (mg/L)

Town Well	Shallowb	Medium	Deep	GW-83-M	GW-85-M
34.30875	39.80822	103.7029	1857.398	222.6667	172

US EPA ARCHIVE DOCUMENT

Sulfate Concentration (mg/L)						Contribution to Sulfate Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
41.325	30	17450	1685	1295	1503.333		1.25794						
41.325	30	17450	1685	1295	1503.333		1.046956						
41.325	30	17450	1685	1295	1503.333		0.987244						
41.325	30	17450	1685	1295	1503.333		0.915589						
41.325	30	17450	1685	1295	1503.333		0.597123						
41.325	30	17450	1685	1295	1503.333		0.489641						
41.325	30	17450	1685	1295	1503.333		0.780241						
41.325	30	17450	1685	1295	1503.333		0.350312						
41.325	30	17450	1685	1295	1503.333	0.0686175							
41.325	30	17450	1685	1295	1503.333		1.042975						
41.325	30	17450	1685	1295	1503.333		2.320819						
41.325	30	17450	1685	1295	1503.333		2.356647						
41.325	30	17450	1685	1295	1503.333		1.369403						
41.325	30	17450	1685	1295	1503.333		1.325614						
41.325	30	17450	1685	1295	1503.333		1.046956						
41.325	30	17450	1685	1295	1503.333	0.9915229							
41.325	30	17450	1685	1295	1503.333		1.150458						
41.325	30	17450	1685	1295	1503.333	0.8988892							
41.325	30	17450	1685	1295	1503.333	2.0002001							
41.325	30	17450	1685	1295	1503.333	2.031078							
41.325	30	17450	1685	1295	1503.333						5.9168		
41.325	30	17450	1685	1295	1503.333		1.325614						
41.325	30	17450	1685	1295	1503.333		1.046956						
41.325	30	17450	1685	1295	1503.333		1.150458						
41.325	30	17450	1685	1295	1503.333	0.9915229							
41.325	30	17450	1685	1295	1503.333					9.864133			
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						3.4916		
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333	0.4151359							
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						4.0764		
41.325	30	17450	1685	1295	1503.333						3.8184		

US EPA ARCHIVE DOCUMENT

Contribution to Sulfate Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	262.2117
				1.25794	262.2117
				1.046956	
				0.987244	
				0.915589	
				0.597123	
				0.489641	
				0.780241	
				0.350312	
				0.068617	
				1.042975	
				2.320819	
				2.356647	
				1.369403	
				1.325614	
				1.046956	
				0.991523	
				1.150458	
				0.898889	
				2.0002	
				2.031078	
				5.9168	
				1.325614	
				1.046956	
				1.150458	
				0.991523	
				9.864133	
36.9015				36.9015	
				3.4916	
69.422				69.422	
24.601				24.601	
				0.415136	
76.162				76.162	
				4.0764	
				3.8184	

US EPA ARCHIVE DOCUMENT

IRON CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

US EPA ARCHIVE DOCUMENT

I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Iron Concentration (mg/L)

Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
2.53496	4.579441	6.643333	97.97546	2.66	9.273333

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Iron Concentration (mg/L)					
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
21.1	20	1200	19.65633	51.96667	32.4

US EPA ARCHIVE DOCUMENT

Contribution to Iron Concentration				Particle Total	Overall Total 6.378318 6.378318
GW-83-D	GW-85-D	GW-86-D	GW-87-D		
				0.14471	
				0.120439	
				0.11357	
				0.105327	
				0.068692	
				0.056327	
				0.089757	
				0.040299	
				0.00507	
				0.119981	
				0.266981	
				0.271103	
				0.157533	
				0.152495	
				0.120439	
				0.07326	
				0.132346	
				0.066416	
				0.147788	
				0.15007	
				0.319003	
				0.152495	
				0.120439	
				0.132346	
				0.07326	
				0.117838	
	0.430474			0.430474	
				0.188249	
	0.809841			0.809841	
	0.286982			0.286982	
				0.030673	
	0.888466			0.888466	
				0.219778	
				0.205868	

US EPA ARCHIVE DOCUMENT

AMMONIA CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

US EPA ARCHIVE DOCUMENT

I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Ammonia Concentration (mg/L as N)

Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
0.476929	1.051597	5.615544	124.5387	19.645	6.3

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Ammonia Concentration (mg/L as N)						Contribution to Ammonia Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.643333	0.45	1400	106.5667	31.11633	45.2		0.03323						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.027657						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.02608						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.024187						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.015774						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.012935						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.020611						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.009254						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.000954							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.027552						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.061308						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.062255						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.036175						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.035018						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.027657						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.013783							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030391						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.012496							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.027805							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.028234							
0.643333	0.45	1400	106.5667	31.11633	45.2						0.21672		
0.643333	0.45	1400	106.5667	31.11633	45.2		0.035018						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.027657						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030391						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.013783							
0.643333	0.45	1400	106.5667	31.11633	45.2					0.870274			
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.12789		
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2	0.005771							
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.14931		
0.643333	0.45	1400	106.5667	31.11633	45.2						0.13986		

US EPA ARCHIVE DOCUMENT

Contribution to Ammonia Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	15.24707
				0.03323	
				0.027657	
				0.02608	
				0.024187	
				0.015774	
				0.012935	
				0.020611	
				0.009254	
				0.000954	
				0.027552	
				0.061308	
				0.062255	
				0.036175	
				0.035018	
				0.027657	
				0.013783	
				0.030391	
				0.012496	
				0.027805	
				0.028234	
				0.21672	
				0.035018	
				0.027657	
				0.030391	
				0.013783	
				0.870274	
2.33381				2.33381	
				0.12789	
4.390547				4.390547	
1.555873				1.555873	
				0.005771	
4.816813				4.816813	
				0.14931	
				0.13986	

US EPA ARCHIVE DOCUMENT

SODIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Sodium Concentration (mg/L)					
Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333
35.36111	35.5799	47.775	578.1579	64.7	61.08333

US EPA ARCHIVE DOCUMENT

Sodium Concentration (mg/L)						Contribution to Sodium Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
29.83333	25	6120	258.6667	251.3333	337		1.124325						
29.83333	25	6120	258.6667	251.3333	337		0.935751						
29.83333	25	6120	258.6667	251.3333	337		0.882382						
29.83333	25	6120	258.6667	251.3333	337		0.818338						
29.83333	25	6120	258.6667	251.3333	337		0.533698						
29.83333	25	6120	258.6667	251.3333	337		0.437633						
29.83333	25	6120	258.6667	251.3333	337		0.697366						
29.83333	25	6120	258.6667	251.3333	337		0.313103						
29.83333	25	6120	258.6667	251.3333	337	0.070722							
29.83333	25	6120	258.6667	251.3333	337		0.932193						
29.83333	25	6120	258.6667	251.3333	337		2.074308						
29.83333	25	6120	258.6667	251.3333	337		2.10633						
29.83333	25	6120	258.6667	251.3333	337		1.223949						
29.83333	25	6120	258.6667	251.3333	337		1.184811						
29.83333	25	6120	258.6667	251.3333	337		0.935751						
29.83333	25	6120	258.6667	251.3333	337	1.021936							
29.83333	25	6120	258.6667	251.3333	337		1.028259						
29.83333	25	6120	258.6667	251.3333	337	0.926461							
29.83333	25	6120	258.6667	251.3333	337	2.061553							
29.83333	25	6120	258.6667	251.3333	337	2.093378							
29.83333	25	6120	258.6667	251.3333	337						2.101267		
29.83333	25	6120	258.6667	251.3333	337		1.184811						
29.83333	25	6120	258.6667	251.3333	337		0.935751						
29.83333	25	6120	258.6667	251.3333	337		1.028259						
29.83333	25	6120	258.6667	251.3333	337	1.021936							
29.83333	25	6120	258.6667	251.3333	337					2.86621			
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						1.239992		
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337	0.427869							
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						1.447675		
29.83333	25	6120	258.6667	251.3333	337						1.35605		

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Contribution to Sodium Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	66.8022
				1.124325	
				0.935751	
				0.882382	
				0.818338	
				0.533698	
				0.437633	
				0.697366	
				0.313103	
				0.070722	
				0.932193	
				2.074308	
				2.10633	
				1.223949	
				1.184811	
				0.935751	
				1.021936	
				1.028259	
				0.926461	
				2.061553	
				2.093378	
				2.101267	
				1.184811	
				0.935751	
				1.028259	
				1.021936	
				2.86621	
5.6648				5.6648	
				1.239992	
10.65707				10.65707	
3.776533				3.776533	
				0.427869	
11.69173				11.69173	
				1.447675	
				1.35605	

US EPA ARCHIVE DOCUMENT

CALCIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type		I		I		I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Calcium Concentration (mg/L)					
Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
17.97222	22.46453	34.69833	121.7581	30.6	53.7

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Calcium Concentration (mg/L)						Contribution to Calcium Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
24.86667	34.5	284.5	240.3333	240.3333	278		0.709879						
24.86667	34.5	284.5	240.3333	240.3333	278		0.590817						
24.86667	34.5	284.5	240.3333	240.3333	278		0.55712						
24.86667	34.5	284.5	240.3333	240.3333	278		0.516684						
24.86667	34.5	284.5	240.3333	240.3333	278		0.336968						
24.86667	34.5	284.5	240.3333	240.3333	278		0.276314						
24.86667	34.5	284.5	240.3333	240.3333	278		0.440305						
24.86667	34.5	284.5	240.3333	240.3333	278		0.197688						
24.86667	34.5	284.5	240.3333	240.3333	278	0.035944							
24.86667	34.5	284.5	240.3333	240.3333	278		0.588571						
24.86667	34.5	284.5	240.3333	240.3333	278		1.309682						
24.86667	34.5	284.5	240.3333	240.3333	278		1.3299						
24.86667	34.5	284.5	240.3333	240.3333	278		0.77278						
24.86667	34.5	284.5	240.3333	240.3333	278		0.748069						
24.86667	34.5	284.5	240.3333	240.3333	278		0.590817						
24.86667	34.5	284.5	240.3333	240.3333	278	0.519397							
24.86667	34.5	284.5	240.3333	240.3333	278		0.649225						
24.86667	34.5	284.5	240.3333	240.3333	278	0.470872							
24.86667	34.5	284.5	240.3333	240.3333	278	1.047781							
24.86667	34.5	284.5	240.3333	240.3333	278	1.063956							
24.86667	34.5	284.5	240.3333	240.3333	278						1.84728		
24.86667	34.5	284.5	240.3333	240.3333	278		0.748069						
24.86667	34.5	284.5	240.3333	240.3333	278		0.590817						
24.86667	34.5	284.5	240.3333	240.3333	278		0.649225						
24.86667	34.5	284.5	240.3333	240.3333	278	0.519397							
24.86667	34.5	284.5	240.3333	240.3333	278					1.35558			
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						1.09011		
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278	0.217464							
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						1.27269		
24.86667	34.5	284.5	240.3333	240.3333	278						1.19214		

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Contribution to Calcium Concentration					Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Particle Total	51.77251
				0.709879	
				0.590817	
				0.55712	
				0.516684	
				0.336968	
				0.276314	
				0.440305	
				0.197688	
				0.035944	
				0.588571	
				1.309682	
				1.3299	
				0.77278	
				0.748069	
				0.590817	
				0.519397	
				0.649225	
				0.470872	
				1.047781	
				1.063956	
				1.84728	
				0.748069	
				0.590817	
				0.649225	
				0.519397	
				1.35558	
5.2633				5.2633	
				1.09011	
9.901733				9.901733	
3.508867				3.508867	
				0.217464	
10.86307				10.86307	
				1.27269	
				1.19214	

US EPA ARCHIVE DOCUMENT

TOTAL DISSOLVED SOLIDS CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.032		
2	**2.63%**	s		1												0.026		
3	**2.48%**	s		1												0.025		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.012		
7	**1.96%**	s		1												0.02		
8	**0.88%**	s		1												0.009		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.026		
11	**5.83%**	s		1												0.058		
12	**5.92%**	s		1												0.059		
13	**3.44%**	s		1												0.034		
14	**3.33%**	s		1												0.033		
15	**2.63%**	s		1												0.026		
16	**2.89%**	b	1												0.029			
17	**2.89%**	s		1												0.029		
18	**2.62%**	b	1												0.026			
19	**5.83%**	b	1												0.058			
20	**5.92%**	b	1												0.059			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.033		
23	**2.63%**	s		1												0.026		
24	**2.89%**	s		1												0.029		
25	**2.89%**	b	1												0.029			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.012			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

TDS Concentration (mg/L)

Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155
252.3754	196.6876	400.2772		605.7458	539.9155

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TDS Concentration (mg/L)						Contribution to Total TDS Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.215327						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.172883						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.877852						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.523814						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.950313						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.419257						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		3.855076						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		1.730851						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	0.504751							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.153214						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		11.46689						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		11.6439						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.766052						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.549696						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.172883						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	7.293648							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.684271						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.612235							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	14.71348							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	14.94062							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						18.57309		
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.549696						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.172883						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.684271						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	7.293648							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356					26.83454			
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						10.96028		
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	3.053742							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						12.796		
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						11.98612		

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Contribution to Total TDS Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	587.6803
				6.215327	587.6803
				5.172883	
				4.877852	
				4.523814	
				2.950313	
				2.419257	
				3.855076	
				1.730851	
				0.504751	
				5.153214	
				11.46689	
				11.6439	
				6.766052	
				6.549696	
				5.172883	
				7.293648	
				5.684271	
				6.612235	
				14.71348	
				14.94062	
				18.57309	
				6.549696	
				5.172883	
				5.684271	
				7.293648	
				26.83454	
	62.46204			62.46204	
				10.96028	
	117.5085			117.5085	
	41.64136			41.64136	
				3.053742	
	128.9171			128.9171	
				12.796	
				11.98612	

US EPA ARCHIVE DOCUMENT

MANGANESE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.032		
2	**2.63%**	s		1												0.026		
3	**2.48%**	s		1												0.025		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.012		
7	**1.96%**	s		1												0.02		
8	**0.88%**	s		1												0.009		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.026		
11	**5.83%**	s		1												0.058		
12	**5.92%**	s		1												0.059		
13	**3.44%**	s		1												0.034		
14	**3.33%**	s		1												0.033		
15	**2.63%**	s		1												0.026		
16	**2.89%**	b	1												0.029			
17	**2.89%**	s		1												0.029		
18	**2.62%**	b	1												0.026			
19	**5.83%**	b	1												0.058			
20	**5.92%**	b	1												0.059			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.033		
23	**2.63%**	s		1												0.026		
24	**2.89%**	s		1												0.029		
25	**2.89%**	b	1												0.029			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.012			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Manganese Concentration (mg/L)					
Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
0.247	0.702632	0.9471	8.535857	2.29	1.68

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Manganese Concentration (mg/L)						Contribution to Manganese Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.319	0.57	46.2	11.2	4.45	5.93		0.022203						
0.319	0.57	46.2	11.2	4.45	5.93		0.018479						
0.319	0.57	46.2	11.2	4.45	5.93		0.017425						
0.319	0.57	46.2	11.2	4.45	5.93		0.016161						
0.319	0.57	46.2	11.2	4.45	5.93		0.010539						
0.319	0.57	46.2	11.2	4.45	5.93		0.008642						
0.319	0.57	46.2	11.2	4.45	5.93		0.013772						
0.319	0.57	46.2	11.2	4.45	5.93		0.006183						
0.319	0.57	46.2	11.2	4.45	5.93	0.000494							
0.319	0.57	46.2	11.2	4.45	5.93		0.018409						
0.319	0.57	46.2	11.2	4.45	5.93		0.040963						
0.319	0.57	46.2	11.2	4.45	5.93		0.041596						
0.319	0.57	46.2	11.2	4.45	5.93		0.024171						
0.319	0.57	46.2	11.2	4.45	5.93		0.023398						
0.319	0.57	46.2	11.2	4.45	5.93		0.018479						
0.319	0.57	46.2	11.2	4.45	5.93	0.007138							
0.319	0.57	46.2	11.2	4.45	5.93		0.020306						
0.319	0.57	46.2	11.2	4.45	5.93	0.006471							
0.319	0.57	46.2	11.2	4.45	5.93	0.0144							
0.319	0.57	46.2	11.2	4.45	5.93	0.014622							
0.319	0.57	46.2	11.2	4.45	5.93						0.057792		
0.319	0.57	46.2	11.2	4.45	5.93		0.023398						
0.319	0.57	46.2	11.2	4.45	5.93		0.018479						
0.319	0.57	46.2	11.2	4.45	5.93		0.020306						
0.319	0.57	46.2	11.2	4.45	5.93	0.007138							
0.319	0.57	46.2	11.2	4.45	5.93					0.101447			
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.034104		
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93	0.002989							
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.039816		
0.319	0.57	46.2	11.2	4.45	5.93						0.037296		

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Contribution to Manganese Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		2.063098
				0.022203	
				0.018479	
				0.017425	
				0.016161	
				0.010539	
				0.008642	
				0.013772	
				0.006183	
				0.000494	
				0.018409	
				0.040963	
				0.041596	
				0.024171	
				0.023398	
				0.018479	
				0.007138	
				0.020306	
				0.006471	
				0.0144	
				0.014622	
				0.057792	
				0.023398	
				0.018479	
				0.020306	
				0.007138	
				0.101447	
	0.24528			0.24528	
				0.034104	
	0.46144			0.46144	
	0.16352			0.16352	
				0.002989	
	0.50624			0.50624	
				0.039816	
				0.037296	

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MAGNESIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Magnesium Concentration (mg/L)					
Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875
4.720148	4.723101	6.632833	57.87631	5	10.875

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Magnesium Concentration (mg/L)					
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
5.045	5.7	370	65.2	67.45	78.7

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Contribution to Magnesium Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		12.78575
				0.14925	12.78575
				0.124218	
				0.117133	
				0.108631	
				0.070847	
				0.058094	
				0.092573	
				0.041563	
				0.00944	
				0.123745	
				0.275357	
				0.279608	
				0.162475	
				0.157279	
				0.124218	
				0.136412	
				0.136498	
				0.123668	
				0.275185	
				0.279433	
				0.3741	
				0.157279	
				0.124218	
				0.136498	
				0.136412	
				0.2215	
	1.42788			1.42788	
				0.220763	
	2.68624			2.68624	
	0.95192			0.95192	
				0.057114	
	2.94704			2.94704	
				0.257738	
				0.241425	

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CHLORIDE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

					I	D	I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Chloride Concentration (mg/L)						Contribution to Chloride Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
69.73333	56	4630	515.3333	488.3333	580		2.185127						
69.73333	56	4630	515.3333	488.3333	580		1.714484						
69.73333	56	4630	515.3333	488.3333	580		1.627079						
69.73333	56	4630	515.3333	488.3333	580		1.633803						
69.73333	56	4630	515.3333	488.3333	580		0.921115						
69.73333	56	4630	515.3333	488.3333	580		0.746305						
69.73333	56	4630	515.3333	488.3333	580		1.499333						
69.73333	56	4630	515.3333	488.3333	580		0.645453						
69.73333	56	4630	515.3333	488.3333	580	0.36956402							
69.73333	56	4630	515.3333	488.3333	580	1.89129824							
69.73333	56	4630	515.3333	488.3333	580		3.590331						
69.73333	56	4630	515.3333	488.3333	580		3.650843						
69.73333	56	4630	515.3333	488.3333	580		2.319596						
69.73333	56	4630	515.3333	488.3333	580		2.285979						
69.73333	56	4630	515.3333	488.3333	580		1.882571						
69.73333	56	4630	515.3333	488.3333	580		2.043934						
69.73333	56	4630	515.3333	488.3333	580		1.976699						
69.73333	56	4630	515.3333	488.3333	580	1.89129824							
69.73333	56	4630	515.3333	488.3333	580						8.2058		
69.73333	56	4630	515.3333	488.3333	580		3.650843						
69.73333	56	4630	515.3333	488.3333	580		2.319596						
69.73333	56	4630	515.3333	488.3333	580		2.285979						
69.73333	56	4630	515.3333	488.3333	580		1.882571						
69.73333	56	4630	515.3333	488.3333	580		2.043934						
69.73333	56	4630	515.3333	488.3333	580	2.1304279							
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580	1.44202433							
69.73333	56	4630	515.3333	488.3333	580					4.992			
69.73333	56	4630	515.3333	488.3333	580					1.704			
69.73333	56	4630	515.3333	488.3333	580	1.0579676							
69.73333	56	4630	515.3333	488.3333	580		3.139859						
69.73333	56	4630	515.3333	488.3333	580		1.721208						
69.73333	56	4630	515.3333	488.3333	580		1.741378						

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Contribution to Chloride Concentration				Particle	Overall Total 81.2414 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	283.5724 All Wells
				2.185127	
				1.714484	
				1.627079	
				1.633803	
				0.921115	
				0.746305	
				1.499333	
				0.645453	
				0.369564	
				1.891298	
				3.590331	
				3.650843	
				2.319596	
				2.285979	
				1.882571	
				2.043934	
				1.976699	
				1.891298	
				8.2058	
				3.650843	
				2.319596	
				2.285979	
				1.882571	
				2.043934	
				2.130428	
202.331				202.331	
	10.049			10.049	
				1.442024	
				4.992	
				1.704	
				1.057968	
				3.139859	
				1.721208	
				1.741378	

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ALUMINUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

					I	D	I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Dissolved Aluminum Concentration (mg/L)						Contribution to Aluminum Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.2	0.1	27.8	0.2	0.2	0.2		0.006231						
0.2	0.1	27.8	0.2	0.2	0.2		0.004889						
0.2	0.1	27.8	0.2	0.2	0.2		0.004639						
0.2	0.1	27.8	0.2	0.2	0.2		0.004659						
0.2	0.1	27.8	0.2	0.2	0.2		0.002626						
0.2	0.1	27.8	0.2	0.2	0.2		0.002128						
0.2	0.1	27.8	0.2	0.2	0.2		0.004275						
0.2	0.1	27.8	0.2	0.2	0.2		0.00184						
0.2	0.1	27.8	0.2	0.2	0.2	0.00102							
0.2	0.1	27.8	0.2	0.2	0.2	0.00522							
0.2	0.1	27.8	0.2	0.2	0.2		0.010238						
0.2	0.1	27.8	0.2	0.2	0.2		0.01041						
0.2	0.1	27.8	0.2	0.2	0.2		0.006614						
0.2	0.1	27.8	0.2	0.2	0.2		0.006518						
0.2	0.1	27.8	0.2	0.2	0.2		0.005368						
0.2	0.1	27.8	0.2	0.2	0.2		0.005828						
0.2	0.1	27.8	0.2	0.2	0.2		0.005636						
0.2	0.1	27.8	0.2	0.2	0.2	0.00522							
0.2	0.1	27.8	0.2	0.2	0.2						0.01068		
0.2	0.1	27.8	0.2	0.2	0.2		0.01041						
0.2	0.1	27.8	0.2	0.2	0.2		0.006614						
0.2	0.1	27.8	0.2	0.2	0.2		0.006518						
0.2	0.1	27.8	0.2	0.2	0.2		0.005368						
0.2	0.1	27.8	0.2	0.2	0.2		0.005828						
0.2	0.1	27.8	0.2	0.2	0.2	0.00588							
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2	0.00398							
0.2	0.1	27.8	0.2	0.2	0.2					0.00832			
0.2	0.1	27.8	0.2	0.2	0.2					0.00284			
0.2	0.1	27.8	0.2	0.2	0.2	0.00292							
0.2	0.1	27.8	0.2	0.2	0.2		0.008953						
0.2	0.1	27.8	0.2	0.2	0.2		0.004908						
0.2	0.1	27.8	0.2	0.2	0.2		0.004965						

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Contribution to Aluminum Concentration				Particle	Overall Total 0.185445 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	1.400305 All Wells
				0.006231	
				0.004889	
				0.004639	
				0.004659	
				0.002626	
				0.002128	
				0.004275	
				0.00184	
				0.00102	
				0.00522	
				0.010238	
				0.01041	
				0.006614	
				0.006518	
				0.005368	
				0.005828	
				0.005636	
				0.00522	
				0.01068	
				0.01041	
				0.006614	
				0.006518	
				0.005368	
				0.005828	
				0.00588	
1.21486				1.21486	
	0.0039			0.0039	
				0.00398	
				0.00832	
				0.00284	
				0.00292	
				0.008953	
				0.004908	
				0.004965	

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POTASSIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.032		
2	**2.63%**	s		1												0.026		
3	**2.48%**	s		1												0.025		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.012		
7	**1.96%**	s		1												0.02		
8	**0.88%**	s		1												0.009		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.026		
11	**5.83%**	s		1												0.058		
12	**5.92%**	s		1												0.059		
13	**3.44%**	s		1												0.034		
14	**3.33%**	s		1												0.033		
15	**2.63%**	s		1												0.026		
16	**2.89%**	b	1												0.029			
17	**2.89%**	s		1												0.029		
18	**2.62%**	b	1												0.026			
19	**5.83%**	b	1												0.058			
20	**5.92%**	b	1												0.059			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.033		
23	**2.63%**	s		1												0.026		
24	**2.89%**	s		1												0.029		
25	**2.89%**	b	1												0.029			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.012			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Potassium Concentration (mg/L)					
Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6
4.3	4.4	5.4	19	5	7.6

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Potassium Concentration (mg/L)					
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
5	4.1	102	32	25	24
5	4.1	102	32	25	24
5	4.1	102	32	25	24

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Contribution to Potassium Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	8.11854
				0.13904	8.11854
				0.11572	
				0.10912	
				0.1012	
				0.066	
				0.05412	
				0.08624	
				0.03872	
				0.0086	
				0.11528	
				0.25652	
				0.26048	
				0.15136	
				0.14652	
				0.11572	
				0.12427	
				0.12716	
				0.11266	
				0.25069	
				0.25456	
				0.26144	
				0.14652	
				0.11572	
				0.12716	
				0.12427	
				0.2215	
	0.7008			0.7008	
				0.15428	
	1.3184			1.3184	
	0.4672			0.4672	
				0.05203	
	1.4464			1.4464	
				0.18012	
				0.16872	

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BICARBONATE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, DRY SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.16%**	s		1												0.0316		
2	**2.63%**	s		1												0.0263		
3	**2.48%**	s		1												0.0248		
4	**2.30%**	s		1												0.023		
5	**1.50%**	s		1												0.015		
6	**1.23%**	s		1												0.0123		
7	**1.96%**	s		1												0.0196		
8	**0.88%**	s		1												0.0088		
9	**0.20%**	b	1												0.002			
10	**2.62%**	s		1												0.0262		
11	**5.83%**	s		1												0.0583		
12	**5.92%**	s		1												0.0592		
13	**3.44%**	s		1												0.0344		
14	**3.33%**	s		1												0.0333		
15	**2.63%**	s		1												0.0263		
16	**2.89%**	b	1												0.0289			
17	**2.89%**	s		1												0.0289		
18	**2.62%**	b	1												0.0262			
19	**5.83%**	b	1												0.0583			
20	**5.92%**	b	1												0.0592			
21	**3.44%**	i			1			100.00%										
22	**3.33%**	s		1												0.0333		
23	**2.63%**	s		1												0.0263		
24	**2.89%**	s		1												0.0289		
25	**2.89%**	b	1												0.0289			
26	**4.43%**	i			1		100.00%											
27	**2.19%**	d				1						100.00%						
28	**2.03%**	i			1			100.00%										
29	**4.12%**	d				1						100.00%						
30	**1.46%**	d				1						100.00%						
31	**1.21%**	b	1												0.0121			
32	**4.52%**	d				1						100.00%						
33	**2.37%**	i			1			100.00%										
34	**2.22%**	i			1			100.00%										

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
	3.44%						
4.43%							
					2.19%		
	2.03%						
					4.12%		
					1.46%		
					4.52%		
	2.37%						
	2.22%						

Bicarbonate Concentration (mg/L)					
Town Well	Shallow	Medium	Deep	GW-83-M	GW-85-M
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55
25	41	44	141	39	55

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Bicarbonate Concentration (mg/L)					
The average deep value was used for 65d					
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247
51	141	96	215	181	247

Percent of HCO3 Concentration						
Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M
	1.2956					
	1.0783					
	1.0168					
	0.943					
	0.615					
	0.5043					
	0.8036					
	0.3608					
0.05						
	1.0742					
	2.3903					
	2.4272					
	1.4104					
	1.3653					
	1.0783					
0.7225						
	1.1849					
0.655						
1.4575						
1.48						
					1.892	
	1.3653					
	1.0783					
	1.1849					
0.7225						
				1.7277		
					1.1165	
0.3025						
					1.3035	
					1.221	

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Percent of HCO3 Concentration					Particle	Overall Totals
GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	60.2507
					1.2956	
					1.0783	
					1.0168	
					0.943	
					0.615	
					0.5043	
					0.8036	
					0.3608	
					0.05	
					1.0742	
					2.3903	
					2.4272	
					1.4104	
					1.3653	
					1.0783	
					0.7225	
					1.1849	
					0.655	
					1.4575	
					1.48	
					1.892	
					1.3653	
					1.0783	
					1.1849	
					0.7225	
					1.7277	
		4.7085			4.7085	
					1.1165	
		8.858			8.858	
		3.139			3.139	
					0.3025	
		9.718			9.718	
					1.3035	
					1.221	

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SULFATE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

					I	D	I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												*0.0467*		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Sulfate Concentration (mg/L)						Contribution to Sulfate Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
41.325	30	17450	1685	1295	1503.333		1.293767						
41.325	30	17450	1685	1295	1503.333		1.01511						
41.325	30	17450	1685	1295	1503.333		0.963359						
41.325	30	17450	1685	1295	1503.333		0.96734						
41.325	30	17450	1685	1295	1503.333		0.545373						
41.325	30	17450	1685	1295	1503.333		0.441871						
41.325	30	17450	1685	1295	1503.333		0.887723						
41.325	30	17450	1685	1295	1503.333		0.382159						
41.325	30	17450	1685	1295	1503.333	0.1749746							
41.325	30	17450	1685	1295	1503.333	0.8954584							
41.325	30	17450	1685	1295	1503.333		2.125759						
41.325	30	17450	1685	1295	1503.333		2.161586						
41.325	30	17450	1685	1295	1503.333		1.373384						
41.325	30	17450	1685	1295	1503.333		1.353479						
41.325	30	17450	1685	1295	1503.333		1.11463						
41.325	30	17450	1685	1295	1503.333		1.21017						
41.325	30	17450	1685	1295	1503.333		1.170362						
41.325	30	17450	1685	1295	1503.333	0.8954584							
41.325	30	17450	1685	1295	1503.333						9.1848		
41.325	30	17450	1685	1295	1503.333		2.161586						
41.325	30	17450	1685	1295	1503.333		1.373384						
41.325	30	17450	1685	1295	1503.333		1.353479						
41.325	30	17450	1685	1295	1503.333		1.11463						
41.325	30	17450	1685	1295	1503.333		1.21017						
41.325	30	17450	1685	1295	1503.333	1.0086772							
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333	0.6827441							
41.325	30	17450	1685	1295	1503.333					9.262933			
41.325	30	17450	1685	1295	1503.333					3.161867			
41.325	30	17450	1685	1295	1503.333	0.5009077							
41.325	30	17450	1685	1295	1503.333		1.859044						
41.325	30	17450	1685	1295	1503.333		1.01909						
41.325	30	17450	1685	1295	1503.333		1.031033						

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Contribution to Sulfate Concentration				Particle	Overall Total 86.75381 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	849.3188 All Wells
				1.293767	
				1.01511	
				0.963359	
				0.96734	
				0.545373	
				0.441871	
				0.887723	
				0.382159	
				0.174975	
				0.895458	
				2.125759	
				2.161586	
				1.373384	
				1.353479	
				1.11463	
				1.21017	
				1.170362	
				0.895458	
				9.1848	
				2.161586	
				1.373384	
				1.353479	
				1.11463	
				1.21017	
				1.008677	
762.565				762.565	
	32.8575			32.8575	
				0.682744	
				9.262933	
				3.161867	
				0.500908	
				1.859044	
				1.01909	
				1.031033	

US EPA ARCHIVE DOCUMENT

IRON CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

					I		I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Iron Concentration (mg/L)						Contribution to Iron Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
21.1	20	1200	19.65633	51.96667	32.4		0.148832						
21.1	20	1200	19.65633	51.96667	32.4		0.116776						
21.1	20	1200	19.65633	51.96667	32.4		0.110822						
21.1	20	1200	19.65633	51.96667	32.4		0.11128						
21.1	20	1200	19.65633	51.96667	32.4		0.062738						
21.1	20	1200	19.65633	51.96667	32.4		0.050832						
21.1	20	1200	19.65633	51.96667	32.4		0.102122						
21.1	20	1200	19.65633	51.96667	32.4		0.043963						
21.1	20	1200	19.65633	51.96667	32.4	0.012928							
21.1	20	1200	19.65633	51.96667	32.4	0.066162							
21.1	20	1200	19.65633	51.96667	32.4		0.244542						
21.1	20	1200	19.65633	51.96667	32.4		0.248664						
21.1	20	1200	19.65633	51.96667	32.4		0.157991						
21.1	20	1200	19.65633	51.96667	32.4		0.155701						
21.1	20	1200	19.65633	51.96667	32.4		0.128224						
21.1	20	1200	19.65633	51.96667	32.4		0.139215						
21.1	20	1200	19.65633	51.96667	32.4		0.134636						
21.1	20	1200	19.65633	51.96667	32.4	0.066162							
21.1	20	1200	19.65633	51.96667	32.4						0.495196		
21.1	20	1200	19.65633	51.96667	32.4		0.248664						
21.1	20	1200	19.65633	51.96667	32.4		0.157991						
21.1	20	1200	19.65633	51.96667	32.4		0.155701						
21.1	20	1200	19.65633	51.96667	32.4		0.128224						
21.1	20	1200	19.65633	51.96667	32.4		0.139215						
21.1	20	1200	19.65633	51.96667	32.4	0.074528							
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4	0.050446							
21.1	20	1200	19.65633	51.96667	32.4					0.110656			
21.1	20	1200	19.65633	51.96667	32.4					0.037772			
21.1	20	1200	19.65633	51.96667	32.4	0.03701							
21.1	20	1200	19.65633	51.96667	32.4		0.21386						
21.1	20	1200	19.65633	51.96667	32.4		0.117234						
21.1	20	1200	19.65633	51.96667	32.4		0.118608						

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Contribution to Iron Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		4.569993 Without GW-83-D 57.00999 All Wells
				0.148832	
				0.116776	
				0.110822	
				0.11128	
				0.062738	
				0.050832	
				0.102122	
				0.043963	
				0.012928	
				0.066162	
				0.244542	
				0.248664	
				0.157991	
				0.155701	
				0.128224	
				0.139215	
				0.134636	
				0.066162	
				0.495196	
				0.248664	
				0.157991	
				0.155701	
				0.128224	
				0.139215	
				0.074528	
52.44				52.44	
	0.383299			0.383299	
				0.050446	
				0.110656	
				0.037772	
				0.03701	
				0.21386	
				0.117234	
				0.118608	

US EPA ARCHIVE DOCUMENT

AMMONIA CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

					I	D	I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

US EPA ARCHIVE DOCUMENT

Ammonia Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.643333	0.45	1400	106.5667	31.11633	45.2		0.034177						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.026816						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.025449						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.025554						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.014407						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.011673						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.023451						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.010095						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0024323							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0124478							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.056155						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.057102						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.03628						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.035754						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.029445						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.031969						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.030917						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0124478							
0.643333	0.45	1400	106.5667	31.11633	45.2						0.33642		
0.643333	0.45	1400	106.5667	31.11633	45.2		0.057102						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.03628						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.035754						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.029445						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.031969						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0140217							
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0094909							
0.643333	0.45	1400	106.5667	31.11633	45.2					0.817232			
0.643333	0.45	1400	106.5667	31.11633	45.2					0.278959			
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0069632							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.04911						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.026921						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.027236						

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Contribution to Total Concentration				Particle	Overall Total 4.311523 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	65.49152 All Wells
				0.034177	
				0.026816	
				0.025449	
				0.025554	
				0.014407	
				0.011673	
				0.023451	
				0.010095	
				0.002432	
				0.012448	
				0.056155	
				0.057102	
				0.03628	
				0.035754	
				0.029445	
				0.031969	
				0.030917	
				0.012448	
				0.33642	
				0.057102	
				0.03628	
				0.035754	
				0.029445	
				0.031969	
				0.014022	
61.18				61.18	
	2.07805			2.07805	
				0.009491	
				0.817232	
				0.278959	
				0.006963	
				0.04911	
				0.026921	
				0.027236	

US EPA ARCHIVE DOCUMENT

SODIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Sodium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
29.83333	25	6120	258.6667	251.3333	337		1.156347						
29.83333	25	6120	258.6667	251.3333	337		0.907287						
29.83333	25	6120	258.6667	251.3333	337		0.861034						
29.83333	25	6120	258.6667	251.3333	337		0.864592						
29.83333	25	6120	258.6667	251.3333	337		0.487445						
29.83333	25	6120	258.6667	251.3333	337		0.394937						
29.83333	25	6120	258.6667	251.3333	337		0.793432						
29.83333	25	6120	258.6667	251.3333	337		0.341567						
29.83333	25	6120	258.6667	251.3333	337	0.1803417							
29.83333	25	6120	258.6667	251.3333	337	0.922925							
29.83333	25	6120	258.6667	251.3333	337		1.899967						
29.83333	25	6120	258.6667	251.3333	337		1.931989						
29.83333	25	6120	258.6667	251.3333	337		1.227507						
29.83333	25	6120	258.6667	251.3333	337		1.209717						
29.83333	25	6120	258.6667	251.3333	337		0.996237						
29.83333	25	6120	258.6667	251.3333	337		1.081629						
29.83333	25	6120	258.6667	251.3333	337		1.046049						
29.83333	25	6120	258.6667	251.3333	337	0.922925							
29.83333	25	6120	258.6667	251.3333	337						3.26185		
29.83333	25	6120	258.6667	251.3333	337		1.931989						
29.83333	25	6120	258.6667	251.3333	337		1.227507						
29.83333	25	6120	258.6667	251.3333	337		1.209717						
29.83333	25	6120	258.6667	251.3333	337		0.996237						
29.83333	25	6120	258.6667	251.3333	337		1.081629						
29.83333	25	6120	258.6667	251.3333	337	1.0396167							
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337	0.7036861							
29.83333	25	6120	258.6667	251.3333	337					2.69152			
29.83333	25	6120	258.6667	251.3333	337					0.91874			
29.83333	25	6120	258.6667	251.3333	337	0.5162722							
29.83333	25	6120	258.6667	251.3333	337		1.661581						
29.83333	25	6120	258.6667	251.3333	337		0.910845						
29.83333	25	6120	258.6667	251.3333	337		0.921519						

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Contribution to Total Concentration				Particle	Overall Total 41.34263 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	308.7866 All Wells
				1.156347	
				0.907287	
				0.861034	
				0.864592	
				0.487445	
				0.394937	
				0.793432	
				0.341567	
				0.180342	
				0.922925	
				1.899967	
				1.931989	
				1.227507	
				1.209717	
				0.996237	
				1.081629	
				1.046049	
				0.922925	
				3.26185	
				1.931989	
				1.227507	
				1.209717	
				0.996237	
				1.081629	
				1.039617	
267.444				267.444	
	5.044			5.044	
				0.703686	
				2.69152	
				0.91874	
				0.516272	
				1.661581	
				0.910845	
				0.921519	

US EPA ARCHIVE DOCUMENT

CALCIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	5.34%						
				4.37%			
					1.95%		
4.16%							
1.42%							

Calcium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-83-M	GW-85-M
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7
17.972222	22.46453	34.69833	121.7581	30.6	53.7

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Calcium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
24.86667	34.5	284.5	240.3333	240.3333	278		0.730097						
24.86667	34.5	284.5	240.3333	240.3333	278		0.572845						
24.86667	34.5	284.5	240.3333	240.3333	278		0.543642						
24.86667	34.5	284.5	240.3333	240.3333	278		0.545888						
24.86667	34.5	284.5	240.3333	240.3333	278		0.307764						
24.86667	34.5	284.5	240.3333	240.3333	278		0.249356						
24.86667	34.5	284.5	240.3333	240.3333	278		0.500959						
24.86667	34.5	284.5	240.3333	240.3333	278		0.215659						
24.86667	34.5	284.5	240.3333	240.3333	278	0.0916583							
24.86667	34.5	284.5	240.3333	240.3333	278	0.469075							
24.86667	34.5	284.5	240.3333	240.3333	278		1.199606						
24.86667	34.5	284.5	240.3333	240.3333	278		1.219824						
24.86667	34.5	284.5	240.3333	240.3333	278		0.775026						
24.86667	34.5	284.5	240.3333	240.3333	278		0.763794						
24.86667	34.5	284.5	240.3333	240.3333	278		0.629007						
24.86667	34.5	284.5	240.3333	240.3333	278		0.682922						
24.86667	34.5	284.5	240.3333	240.3333	278		0.660457						
24.86667	34.5	284.5	240.3333	240.3333	278	0.469075							
24.86667	34.5	284.5	240.3333	240.3333	278						2.86758		
24.86667	34.5	284.5	240.3333	240.3333	278		1.219824						
24.86667	34.5	284.5	240.3333	240.3333	278		0.775026						
24.86667	34.5	284.5	240.3333	240.3333	278		0.763794						
24.86667	34.5	284.5	240.3333	240.3333	278		0.629007						
24.86667	34.5	284.5	240.3333	240.3333	278		0.682922						
24.86667	34.5	284.5	240.3333	240.3333	278	0.5283833							
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278	0.3576472							
24.86667	34.5	284.5	240.3333	240.3333	278					1.27296			
24.86667	34.5	284.5	240.3333	240.3333	278					0.43452			
24.86667	34.5	284.5	240.3333	240.3333	278	0.2623944							
24.86667	34.5	284.5	240.3333	240.3333	278		1.049093						
24.86667	34.5	284.5	240.3333	240.3333	278		0.575092						
24.86667	34.5	284.5	240.3333	240.3333	278		0.581831						

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Contribution to Total Concentration				Particle	Overall Total 27.31323 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	39.74588 All Wells
				0.730097	
				0.572845	
				0.543642	
				0.545888	
				0.307764	
				0.249356	
				0.500959	
				0.215659	
				0.091658	
				0.469075	
				1.199606	
				1.219824	
				0.775026	
				0.763794	
				0.629007	
				0.682922	
				0.660457	
				0.469075	
				2.86758	
				1.219824	
				0.775026	
				0.763794	
				0.629007	
				0.682922	
				0.528383	
12.43265				12.43265	
	4.6865			4.6865	
				0.357647	
				1.27296	
				0.43452	
				0.262394	
				1.049093	
				0.575092	
				0.581831	

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TOTAL DISSOLVED SOLIDS CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

Particle	percentage	interval	B	S	I	D	I GW-83-M	I GW-85-M	I GW-86-M	D GW-65-D	D GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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TDS Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.392346						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.015533						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.759839						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.779508						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.69462						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		2.183232						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		4.386133						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		1.888201						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	1.2871144							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.586997							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		10.50312						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		10.68013						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.785721						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.687377						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.507252						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.979302						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.782614						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.586997							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						28.83149		
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		10.68013						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.785721						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.687377						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.507252						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.979302						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	7.4198357							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	5.0222697							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356					25.19903			
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356					8.60159			
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	3.6846803							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		9.185309						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.035202						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.094208						

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Contribution to Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		287.8163 Without GW-83-D
					1584.409 All Wells
				6.392346	
				5.015533	
				4.759839	
				4.779508	
				2.69462	
				2.183232	
				4.386133	
				1.888201	
				1.287114	
				6.586997	
				10.50312	
				10.68013	
				6.785721	
				6.687377	
				5.507252	
				5.979302	
				5.782614	
				6.586997	
				28.83149	
				10.68013	
				6.785721	
				6.687377	
				5.507252	
				5.979302	
				7.419836	
1296.593				1296.593	
	55.61688			55.61688	
				5.02227	
				25.19903	
				8.60159	
				3.68468	
				9.185309	
				5.035202	
				5.094208	

US EPA ARCHIVE DOCUMENT

MANGANESE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I GW-83-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D

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Manganese Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.319	0.57	46.2	11.2	4.45	5.93		0.022836						
0.319	0.57	46.2	11.2	4.45	5.93		0.017917						
0.319	0.57	46.2	11.2	4.45	5.93		0.017004						
0.319	0.57	46.2	11.2	4.45	5.93		0.017074						
0.319	0.57	46.2	11.2	4.45	5.93		0.009626						
0.319	0.57	46.2	11.2	4.45	5.93		0.007799						
0.319	0.57	46.2	11.2	4.45	5.93		0.015669						
0.319	0.57	46.2	11.2	4.45	5.93		0.006745						
0.319	0.57	46.2	11.2	4.45	5.93	0.0012597							
0.319	0.57	46.2	11.2	4.45	5.93	0.0064467							
0.319	0.57	46.2	11.2	4.45	5.93		0.037521						
0.319	0.57	46.2	11.2	4.45	5.93		0.038153						
0.319	0.57	46.2	11.2	4.45	5.93		0.024241						
0.319	0.57	46.2	11.2	4.45	5.93		0.023889						
0.319	0.57	46.2	11.2	4.45	5.93		0.019674						
0.319	0.57	46.2	11.2	4.45	5.93		0.02136						
0.319	0.57	46.2	11.2	4.45	5.93		0.020657						
0.319	0.57	46.2	11.2	4.45	5.93	0.0064467							
0.319	0.57	46.2	11.2	4.45	5.93						0.089712		
0.319	0.57	46.2	11.2	4.45	5.93		0.038153						
0.319	0.57	46.2	11.2	4.45	5.93		0.024241						
0.319	0.57	46.2	11.2	4.45	5.93		0.023889						
0.319	0.57	46.2	11.2	4.45	5.93		0.019674						
0.319	0.57	46.2	11.2	4.45	5.93		0.02136						
0.319	0.57	46.2	11.2	4.45	5.93	0.0072618							
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93	0.0049153							
0.319	0.57	46.2	11.2	4.45	5.93					0.095264			
0.319	0.57	46.2	11.2	4.45	5.93					0.032518			
0.319	0.57	46.2	11.2	4.45	5.93	0.0036062							
0.319	0.57	46.2	11.2	4.45	5.93		0.032813						
0.319	0.57	46.2	11.2	4.45	5.93		0.017987						
0.319	0.57	46.2	11.2	4.45	5.93		0.018198						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.96231 Without GW-83-D
				0.022836	2.98125 All Wells
				0.017917	
				0.017004	
				0.017074	
				0.009626	
				0.007799	
				0.015669	
				0.006745	
				0.00126	
				0.006447	
				0.037521	
				0.038153	
				0.024241	
				0.023889	
				0.019674	
				0.02136	
				0.020657	
				0.006447	
				0.089712	
				0.038153	
				0.024241	
				0.023889	
				0.019674	
				0.02136	
				0.007262	
2.01894				2.01894	
	0.2184			0.2184	
				0.004915	
				0.095264	
				0.032518	
				0.003606	
				0.032813	
				0.017987	
				0.018198	

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MAGNESIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

					I	D	I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Magnesium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5.045	5.7	370	65.2	67.45	78.7		0.153501						
5.045	5.7	370	65.2	67.45	78.7		0.120439						
5.045	5.7	370	65.2	67.45	78.7		0.114299						
5.045	*5.7*	*370*	*65.2*	*67.45*	*78.7*		*0.114771*						
5.045	5.7	370	65.2	67.45	78.7		0.064706						
5.045	5.7	370	65.2	67.45	78.7		0.052426						
5.045	5.7	370	65.2	67.45	78.7		0.105325						
5.045	5.7	370	65.2	67.45	78.7		0.045342						
5.045	5.7	370	65.2	67.45	78.7	0.0240728							
5.045	5.7	370	65.2	67.45	78.7	0.1231959							
5.045	5.7	370	65.2	67.45	78.7		0.252214						
5.045	5.7	370	65.2	67.45	78.7		0.256464						
5.045	5.7	370	65.2	67.45	78.7		0.162947						
5.045	5.7	370	65.2	67.45	78.7		0.160585						
5.045	5.7	370	65.2	67.45	78.7		0.132247						
5.045	5.7	370	65.2	67.45	78.7		0.143582						
5.045	5.7	370	65.2	67.45	78.7		0.138859						
5.045	5.7	370	65.2	67.45	78.7	0.1231959							
5.045	5.7	370	65.2	*67.45*	*78.7*						*0.580725*		
5.045	5.7	370	65.2	67.45	78.7		0.256464						
5.045	5.7	370	65.2	67.45	78.7		0.162947						
5.045	5.7	370	65.2	67.45	78.7		0.160585						
5.045	5.7	370	65.2	67.45	78.7		0.132247						
5.045	5.7	370	65.2	67.45	78.7		0.143582						
5.045	5.7	370	65.2	67.45	78.7	0.1387724							
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7	0.0939309							
5.045	5.7	370	65.2	67.45	78.7					0.208			
5.045	5.7	370	65.2	67.45	78.7					0.071			
5.045	5.7	370	65.2	67.45	78.7	0.0689142							
5.045	5.7	370	65.2	67.45	78.7		0.220569						
5.045	5.7	370	65.2	67.45	78.7		0.120911						
5.045	5.7	370	65.2	67.45	78.7		0.122328						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	6.04055 Without GW-83-D
				0.153501	22.20955 All Wells
				0.120439	
				0.114299	
				0.114771	
				0.064706	
				0.052426	
				0.105325	
				0.045342	
				0.024073	
				0.123196	
				0.252214	
				0.256464	
				0.162947	
				0.160585	
				0.132247	
				0.143582	
				0.138859	
				0.123196	
				0.580725	
				0.256464	
				0.162947	
				0.160585	
				0.132247	
				0.143582	
				0.138772	
16.169				16.169	
	1.2714			1.2714	
				0.093931	
				0.208	
				0.071	
				0.068914	
				0.220569	
				0.120911	
				0.122328	

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POTASSIUM CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	5.34%						
				4.37%			
					1.95%		
4.16%							
1.42%							

Potassium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-83-M	GW-85-M
4.3	4.4	5.4	19	5	7.6

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Potassium Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5	4.1	102	32	25	24		0.143						
5	4.1	102	32	25	24		0.1122						
5	4.1	102	32	25	24		0.10648						
5	4.1	102	32	25	24		0.10692						
5	4.1	102	32	25	24		0.06028						
5	4.1	102	32	25	24		0.04884						
5	4.1	102	32	25	24		0.09812						
5	4.1	102	32	25	24		0.04224						
5	4.1	102	32	25	24	0.02193							
5	4.1	102	32	25	24	0.11223							
5	4.1	102	32	25	24		0.23496						
5	4.1	102	32	25	24		0.23892						
5	4.1	102	32	25	24		0.1518						
5	4.1	102	32	25	24		0.1496						
5	4.1	102	32	25	24		0.1232						
5	4.1	102	32	25	24		0.13376						
5	4.1	102	32	25	24		0.12936						
5	4.1	102	32	25	24	0.11223							
5	4.1	102	32	25	24						0.40584		
5	4.1	102	32	25	24		0.23892						
5	4.1	102	32	25	24		0.1518						
5	4.1	102	32	25	24		0.1496						
5	4.1	102	32	25	24		0.1232						
5	4.1	102	32	25	24		0.13376						
5	4.1	102	32	25	24	0.12642							
5	4.1	102	32	25	24								
5	4.1	102	32	25	24								
5	4.1	102	32	25	24	0.08557							
5	4.1	102	32	25	24					0.208			
5	4.1	102	32	25	24					0.071			
5	4.1	102	32	25	24	0.06278							
5	4.1	102	32	25	24		0.20548						
5	4.1	102	32	25	24		0.11264						
5	4.1	102	32	25	24		0.11396						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	
				0.143	4.93904 Without GW-83-D
				0.1122	9.39644 All Wells
				0.10648	
				0.10692	
				0.06028	
				0.04884	
				0.09812	
				0.04224	
				0.02193	
				0.11223	
				0.23496	
				0.23892	
				0.1518	
				0.1496	
				0.1232	
				0.13376	
				0.12936	
				0.11223	
				0.40584	
				0.23892	
				0.1518	
				0.1496	
				0.1232	
				0.13376	
				0.12642	
4.4574				4.4574	
	0.624			0.624	
				0.08557	
				0.208	
				0.071	
				0.06278	
				0.20548	
				0.11264	
				0.11396	

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BICARBONATE CALCULATION FOR CHESTNUT ST #1 - ALL WELLS PUMPING, WET SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.25%**	s		1												0.0325		
2	**2.55%**	s		1												0.0255		
3	**2.42%**	s		1												0.0242		
4	**2.43%**	s		1												0.0243		
5	**1.37%**	s		1												0.0137		
6	**1.11%**	s		1												0.0111		
7	**2.23%**	s		1												0.0223		
8	**0.96%**	s		1												0.0096		
9	**0.51%**	b	1												0.0051			
10	**2.61%**	b	1												0.0261			
11	**5.34%**	s		1												0.0534		
12	**5.43%**	s		1												0.0543		
13	**3.45%**	s		1												0.0345		
14	**3.40%**	s		1												0.034		
15	**2.80%**	s		1												0.028		
16	**3.04%**	s		1												0.0304		
17	**2.94%**	s		1												0.0294		
18	**2.61%**	b	1												0.0261			
19	**5.34%**	i			1			100.00%										
20	**5.43%**	s		1												0.0543		
21	**3.45%**	s		1												0.0345		
22	**3.40%**	s		1												0.034		
23	**2.80%**	s		1												0.028		
24	**3.04%**	s		1												0.0304		
25	**2.94%**	b	1												0.0294			
26	**4.37%**	d				1					100.00%							
27	**1.95%**	d				1						100.00%						
28	**1.99%**	b	1												0.0199			
29	**4.16%**	i			1		100.00%											
30	**1.42%**	i			1		100.00%											
31	**1.46%**	b	1												0.0146			
32	**4.67%**	s		1												0.0467		
33	**2.56%**	s		1												0.0256		
34	**2.59%**	s		1												0.0259		

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I	I	I	D		D	D	D
GW-83-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D

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Bicarbonate Concentration (mg/L)						Contribution to Total Concentration						
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
51	141	96	215	181	247		1.3325						
51	141	96	215	181	247		1.0455						
51	141	96	215	181	247		0.9922						
51	141	96	215	181	247		0.9963						
51	141	96	215	181	247		0.5617						
51	141	96	215	181	247		0.4551						
51	141	96	215	181	247		0.9143						
51	141	96	215	181	247		0.3936						
51	141	96	215	181	247	0.1275							
51	141	96	215	181	247	0.6525							
51	141	96	215	181	247		2.1894						
51	141	96	215	181	247		2.2263						
51	141	96	215	181	247		1.4145						
51	141	96	215	181	247		1.394						
51	141	96	215	181	247		1.148						
51	141	96	215	181	247		1.2464						
51	141	96	215	181	247		1.2054						
51	141	96	215	181	247	0.6525							
51	141	96	215	181	247						2.937		
51	141	96	215	181	247		2.2263						
51	141	96	215	181	247		1.4145						
51	141	96	215	181	247		1.394						
51	141	96	215	181	247		1.148						
51	141	96	215	181	247		1.2464						
51	141	96	215	181	247	0.735							
51	141	96	215	181	247								
51	141	96	215	181	247								
51	141	96	215	181	247	0.4975							
51	141	96	215	181	247					1.6224			
51	141	96	215	181	247					0.5538			
51	141	96	215	181	247	0.365							
51	141	96	215	181	247		1.9147						
51	141	96	215	181	247		1.0496						
51	141	96	215	181	247		1.0619						

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	41.3063 Without GW-83-D 45.5015 All Wells
				1.3325	
				1.0455	
				0.9922	
				0.9963	
				0.5617	
				0.4551	
				0.9143	
				0.3936	
				0.1275	
				0.6525	
				2.1894	
				2.2263	
				1.4145	
				1.394	
				1.148	
				1.2464	
				1.2054	
				0.6525	
				2.937	
				2.2263	
				1.4145	
				1.394	
				1.148	
				1.2464	
				0.735	
4.1952				4.1952	
	4.1925			4.1925	
				0.4975	
				1.6224	
				0.5538	
				0.365	
				1.9147	
				1.0496	
				1.0619	

US EPA ARCHIVE DOCUMENT

ALUMINUM CALCULATION FOR BUTTERS ROW #1, DRY SEASON

Particle	percentage	interval	B	S	I	D	I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D	Aluminum Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
		4.22%						0.2	0.1917	0.186667	2.123095	0.2	0.2
		1.99%	1.86%					0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
	3.66%							0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
						0.74%	1.26%	0.2	0.1917	0.186667	2.123095	0.2	0.2
							1.15%	0.2	0.1917	0.186667	2.123095	0.2	0.2
	0.47%	1.04%						0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
	1.03%							0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
								0.2	0.1917	0.186667	2.123095	0.2	0.2
	1.61%							0.2	0.1917	0.186667	2.123095	0.2	0.2

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Aluminum Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.2	0.1	27.8	0.2	0.2	0.2		0.006422						
0.2	0.1	27.8	0.2	0.2	0.2		0.005694						
0.2	0.1	27.8	0.2	0.2	0.2		0.006422						
0.2	0.1	27.8	0.2	0.2	0.2		0.004908						
0.2	0.1	27.8	0.2	0.2	0.2		0.001687						
0.2	0.1	27.8	0.2	0.2	0.2		0.005426						
0.2	0.1	27.8	0.2	0.2	0.2	0.00588							
0.2	0.1	27.8	0.2	0.2	0.2	0.00468							
0.2	0.1	27.8	0.2	0.2	0.2		0.005962						
0.2	0.1	27.8	0.2	0.2	0.2		0.007937						
0.2	0.1	27.8	0.2	0.2	0.2		0.008205						
0.2	0.1	27.8	0.2	0.2	0.2		0.00809						
0.2	0.1	27.8	0.2	0.2	0.2		0.007381						
0.2	0.1	27.8	0.2	0.2	0.2		0.007189						
0.2	0.1	27.8	0.2	0.2	0.2	0.00724							
0.2	0.1	27.8	0.2	0.2	0.2		0.007017						
0.2	0.1	27.8	0.2	0.2	0.2		0.007688						
0.2	0.1	27.8	0.2	0.2	0.2		0.007937						
0.2	0.1	27.8	0.2	0.2	0.2		0.008205						
0.2	0.1	27.8	0.2	0.2	0.2							0.00844	
0.2	0.1	27.8	0.2	0.2	0.2							0.003981	0.00186
0.2	0.1	27.8	0.2	0.2	0.2	0.0075							
0.2	0.1	27.8	0.2	0.2	0.2	0.00724							
0.2	0.1	27.8	0.2	0.2	0.2						0.00732		
0.2	0.1	27.8	0.2	0.2	0.2		0.007688						
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.000936	0.002084	
0.2	0.1	27.8	0.2	0.2	0.2	0.00334							
0.2	0.1	27.8	0.2	0.2	0.2	0.00066							
0.2	0.1	27.8	0.2	0.2	0.2						0.00206		
0.2	0.1	27.8	0.2	0.2	0.2	0.00416							
0.2	0.1	27.8	0.2	0.2	0.2	0.00256							
0.2	0.1	27.8	0.2	0.2	0.2						0.00322		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.19332 Without GW-83-D 0.19332 With GW-83-D
				0.006422	
				0.005694	
				0.006422	
				0.004908	
				0.001687	
				0.005426	
				0.00588	
				0.00468	
				0.005962	
				0.007937	
				0.008205	
				0.00809	
				0.007381	
				0.007189	
				0.00724	
				0.007017	
				0.007688	
				0.007937	
				0.008205	
				0.00844	
				0.00584	
				0.0075	
				0.00724	
				0.00732	
				0.007688	
		0.00148	0.00252	0.004	
			0.0023	0.0023	
				0.00302	
				0.00334	
				0.00066	
				0.00206	
				0.00416	
				0.00256	
				0.00322	

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SULFATE CALCULATION FOR BUTTERS ROW #1, DRY SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
		4.22%					
		1.99%	1.86%				
	3.66%						
						0.74%	1.26%
							1.15%
	0.47%	1.04%					
	1.03%						
	1.61%						

Sulfate Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
34.308749	39.808	103.7029	1857.398	30.7	172

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Sulfate Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
41.325	30	17450	1685	1295	1503.333		1.333575						
41.325	30	17450	1685	1295	1503.333		1.182304						
41.325	30	17450	1685	1295	1503.333		1.333575						
41.325	30	17450	1685	1295	1503.333		1.01909						
41.325	30	17450	1685	1295	1503.333		0.350312						
41.325	30	17450	1685	1295	1503.333		1.126573						
41.325	30	17450	1685	1295	1503.333	1.0086772							
41.325	30	17450	1685	1295	1503.333	0.8028247							
41.325	30	17450	1685	1295	1503.333		1.238036						
41.325	30	17450	1685	1295	1503.333		1.64806						
41.325	30	17450	1685	1295	1503.333		1.703792						
41.325	30	17450	1685	1295	1503.333		1.679907						
41.325	30	17450	1685	1295	1503.333		1.532616						
41.325	30	17450	1685	1295	1503.333		1.492808						
41.325	30	17450	1685	1295	1503.333	1.2419767							
41.325	30	17450	1685	1295	1503.333		1.456981						
41.325	30	17450	1685	1295	1503.333		1.59631						
41.325	30	17450	1685	1295	1503.333		1.64806						
41.325	30	17450	1685	1295	1503.333		1.703792						
41.325	30	17450	1685	1295	1503.333							1.743915	
41.325	30	17450	1685	1295	1503.333							0.822553	0.557865
41.325	30	17450	1685	1295	1503.333	1.2865781							
41.325	30	17450	1685	1295	1503.333	1.2419767							
41.325	30	17450	1685	1295	1503.333						6.2952		
41.325	30	17450	1685	1295	1503.333		1.59631						
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						0.805132	0.430565	
41.325	30	17450	1685	1295	1503.333	0.5729561							
41.325	30	17450	1685	1295	1503.333	0.1132189							
41.325	30	17450	1685	1295	1503.333						1.7716		
41.325	30	17450	1685	1295	1503.333	0.713622							
41.325	30	17450	1685	1295	1503.333	0.439152							
41.325	30	17450	1685	1295	1503.333						2.7692		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	92.07245 Without GW-83-D
					92.07245 With GW-83-D
				1.333575	
				1.182304	
				1.333575	
				1.01909	
				0.350312	
				1.126573	
				1.008677	
				0.802825	
				1.238036	
				1.64806	
				1.703792	
				1.679907	
				1.532616	
				1.492808	
				1.241977	
				1.456981	
				1.59631	
				1.64806	
				1.703792	
				1.743915	
				1.380418	
				1.286578	
				1.241977	
				6.2952	
				1.59631	
		9.583	18.942	28.525	
			17.28833	17.28833	
				1.235697	
				0.572956	
				0.113219	
				1.7716	
				0.713622	
				0.439152	
				2.7692	

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IRON CALCULATION FOR BUTTERS ROW #1, DRY SEASON

Particle	percentage	interval	B	S	I	D	I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D	Iron Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
		4.22%						2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
		1.99%	1.86%					2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
	3.66%							2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
						0.74%	1.26%	2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
							1.15%	2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
	0.47%	1.04%						2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
	1.03%							2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
								2.5349603	4.5794	6.643333	97.97546	0.1	9.273333
	1.61%							2.5349603	4.5794	6.643333	97.97546	0.1	9.273333

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Iron Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
21.1	20	1200	19.65633	51.96667	32.4		0.153411						
21.1	20	1200	19.65633	51.96667	32.4		0.136009						
21.1	20	1200	19.65633	51.96667	32.4		0.153411						
21.1	20	1200	19.65633	51.96667	32.4		0.117234						
21.1	20	1200	19.65633	51.96667	32.4		0.040299						
21.1	20	1200	19.65633	51.96667	32.4		0.129598						
21.1	20	1200	19.65633	51.96667	32.4	0.0745278							
21.1	20	1200	19.65633	51.96667	32.4	0.0593181							
21.1	20	1200	19.65633	51.96667	32.4		0.142421						
21.1	20	1200	19.65633	51.96667	32.4		0.189589						
21.1	20	1200	19.65633	51.96667	32.4		0.196						
21.1	20	1200	19.65633	51.96667	32.4		0.193252						
21.1	20	1200	19.65633	51.96667	32.4		0.176308						
21.1	20	1200	19.65633	51.96667	32.4		0.171729						
21.1	20	1200	19.65633	51.96667	32.4	0.0917656							
21.1	20	1200	19.65633	51.96667	32.4		0.167608						
21.1	20	1200	19.65633	51.96667	32.4		0.183636						
21.1	20	1200	19.65633	51.96667	32.4		0.189589						
21.1	20	1200	19.65633	51.96667	32.4		0.196						
21.1	20	1200	19.65633	51.96667	32.4							0.89042	
21.1	20	1200	19.65633	51.96667	32.4							0.419985	0.37191
21.1	20	1200	19.65633	51.96667	32.4	0.095061							
21.1	20	1200	19.65633	51.96667	32.4	0.0917656							
21.1	20	1200	19.65633	51.96667	32.4						0.339404		
21.1	20	1200	19.65633	51.96667	32.4		0.183636						
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4						0.043408	0.219841	
21.1	20	1200	19.65633	51.96667	32.4	0.0423338							
21.1	20	1200	19.65633	51.96667	32.4	0.0083654							
21.1	20	1200	19.65633	51.96667	32.4						0.095515		
21.1	20	1200	19.65633	51.96667	32.4	0.0527272							
21.1	20	1200	19.65633	51.96667	32.4	0.0324475							
21.1	20	1200	19.65633	51.96667	32.4						0.149301		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	6.96322 Without GW-83-D
				0.153411	6.96322 With GW-83-D
				0.136009	
				0.153411	
				0.117234	
				0.040299	
				0.129598	
				0.074528	
				0.059318	
				0.142421	
				0.189589	
				0.196	
				0.193252	
				0.176308	
				0.171729	
				0.091766	
				0.167608	
				0.183636	
				0.189589	
				0.196	
				0.89042	
				0.791895	
				0.095061	
				0.091766	
				0.339404	
				0.183636	
		0.384553	0.40824	0.792793	
			0.3726	0.3726	
				0.263249	
				0.042334	
				0.008365	
				0.095515	
				0.052727	
				0.032447	
				0.149301	

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AMMONIA CALCULATION FOR BUTTERS ROW #1, DRY SEASON

Particle	percentage	interval	B	S	I	D	I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D	Ammonia Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
		4.22%						0.4769286	1.0516	5.615544	124.5387	0.064	6.3
		1.99%	1.86%					0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
	3.66%							0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
						0.74%	1.26%	0.4769286	1.0516	5.615544	124.5387	0.064	6.3
							1.15%	0.4769286	1.0516	5.615544	124.5387	0.064	6.3
	0.47%	1.04%						0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
	1.03%							0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
								0.4769286	1.0516	5.615544	124.5387	0.064	6.3
	1.61%							0.4769286	1.0516	5.615544	124.5387	0.064	6.3

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Ammonia Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.643333	0.45	1400	106.5667	31.11633	45.2		0.035228						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.031232						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.035228						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.026921						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.009254						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.02976						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0140217							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0111601							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.032705						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.043536						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.045008						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.044377						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040486						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.039435						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0172648							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.038488						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.042169						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.043536						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.045008						
0.643333	0.45	1400	106.5667	31.11633	45.2							0.027149	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.012805	0.008368
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0178848							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0172648							
0.643333	0.45	1400	106.5667	31.11633	45.2						0.23058		
0.643333	0.45	1400	106.5667	31.11633	45.2		0.042169						
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.02949	0.006703	
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0079647							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0015739							
0.643333	0.45	1400	106.5667	31.11633	45.2						0.06489		
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0099201							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.0061047							
0.643333	0.45	1400	106.5667	31.11633	45.2						0.10143		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	2.528699 Without GW-83-D
				0.035228	2.528699 With GW-83-D
				0.031232	
				0.035228	
				0.026921	
				0.009254	
				0.02976	
				0.014022	
				0.01116	
				0.032705	
				0.043536	
				0.045008	
				0.044377	
				0.040486	
				0.039435	
				0.017265	
				0.038488	
				0.042169	
				0.043536	
				0.045008	
				0.027149	
				0.021173	
				0.017885	
				0.017265	
				0.23058	
				0.042169	
		0.230261	0.56952	0.799781	
			0.5198	0.5198	
				0.036193	
				0.007965	
				0.001574	
				0.06489	
				0.00992	
				0.006105	
				0.10143	

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SODIUM CALCULATION FOR BUTTERS ROW #1, DRY SEASON

					I		I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.22%					
		1.99%	1.86%				
	3.66%						
						0.74%	1.26%
							1.15%
	0.47%	1.04%					
	1.03%						
	1.61%						

Sodium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333
35.361111	35.58	47.775	578.1579	52.1	61.08333

US EPA ARCHIVE DOCUMENT

Sodium Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
29.83333	25	6120	258.6667	251.3333	337		1.191927						
29.83333	25	6120	258.6667	251.3333	337		1.056723						
29.83333	25	6120	258.6667	251.3333	337		1.191927						
29.83333	25	6120	258.6667	251.3333	337		0.910845						
29.83333	25	6120	258.6667	251.3333	337		0.313103						
29.83333	25	6120	258.6667	251.3333	337		1.006911						
29.83333	25	6120	258.6667	251.3333	337	1.0396167							
29.83333	25	6120	258.6667	251.3333	337	0.82745							
29.83333	25	6120	258.6667	251.3333	337		1.106535						
29.83333	25	6120	258.6667	251.3333	337		1.473008						
29.83333	25	6120	258.6667	251.3333	337		1.52282						
29.83333	25	6120	258.6667	251.3333	337		1.501472						
29.83333	25	6120	258.6667	251.3333	337		1.369826						
29.83333	25	6120	258.6667	251.3333	337		1.334246						
29.83333	25	6120	258.6667	251.3333	337	1.2800722							
29.83333	25	6120	258.6667	251.3333	337		1.302224						
29.83333	25	6120	258.6667	251.3333	337		1.426754						
29.83333	25	6120	258.6667	251.3333	337		1.473008						
29.83333	25	6120	258.6667	251.3333	337		1.52282						
29.83333	25	6120	258.6667	251.3333	337							1.258967	
29.83333	25	6120	258.6667	251.3333	337							0.593818	0.464888
29.83333	25	6120	258.6667	251.3333	337	1.3260417							
29.83333	25	6120	258.6667	251.3333	337	1.2800722							
29.83333	25	6120	258.6667	251.3333	337						2.23565		
29.83333	25	6120	258.6667	251.3333	337		1.426754						
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						0.285931	0.310834	
29.83333	25	6120	258.6667	251.3333	337	0.5905306							
29.83333	25	6120	258.6667	251.3333	337	0.1166917							
29.83333	25	6120	258.6667	251.3333	337						0.629158		
29.83333	25	6120	258.6667	251.3333	337	0.7355111							
29.83333	25	6120	258.6667	251.3333	337	0.4526222							
29.83333	25	6120	258.6667	251.3333	337						0.983442		

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Percent of Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		45.52376 Without GW-83-D
					45.52376 With GW-83-D
				1.191927	
				1.056723	
				1.191927	
				0.910845	
				0.313103	
				1.006911	
				1.039617	
				0.82745	
				1.106535	
				1.473008	
				1.52282	
				1.501472	
				1.369826	
				1.334246	
				1.280072	
				1.302224	
				1.426754	
				1.473008	
				1.52282	
				1.258967	
				1.058705	
				1.326042	
				1.280072	
				2.23565	
				1.426754	
		1.859867	4.2462	6.106067	
			3.8755	3.8755	
				0.596765	
				0.590531	
				0.116692	
				0.629158	
				0.735511	
				0.452622	
				0.983442	

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Chloride Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
69.73333	56	4630	515.3333	488.3333	580		2.252361						
69.73333	56	4630	515.3333	488.3333	580		1.99687						
69.73333	56	4630	515.3333	488.3333	580		2.252361						
69.73333	56	4630	515.3333	488.3333	580		1.721208						
69.73333	56	4630	515.3333	488.3333	580		0.591665						
69.73333	56	4630	515.3333	488.3333	580		1.902741						
69.73333	56	4630	515.3333	488.3333	580	2.1304279							
69.73333	56	4630	515.3333	488.3333	580	1.6956467							
69.73333	56	4630	515.3333	488.3333	580		2.090998						
69.73333	56	4630	515.3333	488.3333	580		2.783515						
69.73333	56	4630	515.3333	488.3333	580		2.877644						
69.73333	56	4630	515.3333	488.3333	580		2.837303						
69.73333	56	4630	515.3333	488.3333	580		2.588535						
69.73333	56	4630	515.3333	488.3333	580		2.5213						
69.73333	56	4630	515.3333	488.3333	580	2.6231799							
69.73333	56	4630	515.3333	488.3333	580		2.460789						
69.73333	56	4630	515.3333	488.3333	580		2.69611						
69.73333	56	4630	515.3333	488.3333	580		2.783515						
69.73333	56	4630	515.3333	488.3333	580		2.877644						
69.73333	56	4630	515.3333	488.3333	580							2.942747	
69.73333	56	4630	515.3333	488.3333	580							1.388007	1.041348
69.73333	56	4630	515.3333	488.3333	580	2.7173825							
69.73333	56	4630	515.3333	488.3333	580	2.6231799							
69.73333	56	4630	515.3333	488.3333	580						5.6242		
69.73333	56	4630	515.3333	488.3333	580		2.69611						
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580						0.719314	0.726552	
69.73333	56	4630	515.3333	488.3333	580	1.210141							
69.73333	56	4630	515.3333	488.3333	580	0.2391297							
69.73333	56	4630	515.3333	488.3333	580						1.582767		
69.73333	56	4630	515.3333	488.3333	580	1.5072415							
69.73333	56	4630	515.3333	488.3333	580	0.9275332							
69.73333	56	4630	515.3333	488.3333	580						2.474033		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	89.69517 Without GW-83-D
				2.252361	89.69517 With GW-83-D
				1.99687	
				2.252361	
				1.721208	
				0.591665	
				1.902741	
				2.130428	
				1.695647	
				2.090998	
				2.783515	
				2.877644	
				2.837303	
				2.588535	
				2.5213	
				2.62318	
				2.460789	
				2.69611	
				2.783515	
				2.877644	
				2.942747	
				2.429355	
				2.717383	
				2.62318	
				5.6242	
				2.69611	
		3.613667	7.308	10.92167	
			6.67	6.67	
				1.445865	
				1.210141	
				0.23913	
				1.582767	
				1.507242	
				0.927533	
				2.474033	

US EPA ARCHIVE DOCUMENT

CHLORIDE CALCULATION FOR BUTTERS ROW #1, DRY SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D	Chloride Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
		4.22%						72.463534	67.235	110.5862	562.2795	156.5	153.6667
		1.99%	1.86%					72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
	3.66%							72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
						0.74%	1.26%	72.463534	67.235	110.5862	562.2795	156.5	153.6667
							1.15%	72.463534	67.235	110.5862	562.2795	156.5	153.6667
	0.47%	1.04%						72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
	1.03%							72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
								72.463534	67.235	110.5862	562.2795	156.5	153.6667
	1.61%							72.463534	67.235	110.5862	562.2795	156.5	153.6667

US EPA ARCHIVE DOCUMENT

CALCIUM CALCULATION FOR BUTTERS ROW #1, DRY SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	**3.75%**	b	1												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.22%					
		1.99%	1.86%				
	3.66%						
						0.74%	1.26%
							1.15%
	0.47%	1.04%					
	1.03%						
	1.61%						

Calcium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
17.972222	22.465	34.69833	121.7581	39.23333	53.7

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Calcium Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
24.86667	34.5	284.5	240.3333	240.3333	278		0.752562						
24.86667	34.5	284.5	240.3333	240.3333	278		0.667196						
24.86667	34.5	284.5	240.3333	240.3333	278		0.752562						
24.86667	34.5	284.5	240.3333	240.3333	278		0.575092						
24.86667	34.5	284.5	240.3333	240.3333	278		0.197688						
24.86667	34.5	284.5	240.3333	240.3333	278		0.635746						
24.86667	34.5	284.5	240.3333	240.3333	278	0.5283833							
24.86667	34.5	284.5	240.3333	240.3333	278	0.42055							
24.86667	34.5	284.5	240.3333	240.3333	278		0.698647						
24.86667	34.5	284.5	240.3333	240.3333	278		0.930031						
24.86667	34.5	284.5	240.3333	240.3333	278		0.961482						
24.86667	34.5	284.5	240.3333	240.3333	278		0.948003						
24.86667	34.5	284.5	240.3333	240.3333	278		0.864884						
24.86667	34.5	284.5	240.3333	240.3333	278		0.84242						
24.86667	34.5	284.5	240.3333	240.3333	278	0.6505944							
24.86667	34.5	284.5	240.3333	240.3333	278		0.822202						
24.86667	34.5	284.5	240.3333	240.3333	278		0.900827						
24.86667	34.5	284.5	240.3333	240.3333	278		0.930031						
24.86667	34.5	284.5	240.3333	240.3333	278		0.961482						
24.86667	34.5	284.5	240.3333	240.3333	278							1.049373	
24.86667	34.5	284.5	240.3333	240.3333	278							0.494959	0.641545
24.86667	34.5	284.5	240.3333	240.3333	278	0.6739583							
24.86667	34.5	284.5	240.3333	240.3333	278	0.6505944							
24.86667	34.5	284.5	240.3333	240.3333	278						1.96542		
24.86667	34.5	284.5	240.3333	240.3333	278		0.900827						
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						0.25137	0.259086	
24.86667	34.5	284.5	240.3333	240.3333	278	0.3001361							
24.86667	34.5	284.5	240.3333	240.3333	278	0.0593083							
24.86667	34.5	284.5	240.3333	240.3333	278						0.55311		
24.86667	34.5	284.5	240.3333	240.3333	278	0.3738222							
24.86667	*34.5*	*284.5*	*240.3333*	*240.3333*	*278*	*0.2300444*							
24.86667	34.5	284.5	240.3333	240.3333	278						0.86457		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	31.78677 Without GW-83-D
				0.752562	31.78677 With GW-83-D
				0.667196	
				0.752562	
				0.575092	
				0.197688	
				0.635746	
				0.528383	
				0.42055	
				0.698647	
				0.930031	
				0.961482	
				0.948003	
				0.864884	
				0.84242	
				0.650594	
				0.822202	
				0.900827	
				0.930031	
				0.961482	
				1.049373	
				1.136503	
				0.673958	
				0.650594	
				1.96542	
				0.900827	
		1.778467	3.5028	5.281267	
			3.197	3.197	
				0.510456	
				0.300136	
				0.059308	
				0.55311	
				0.373822	
				0.230044	
				0.86457	

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TOTAL DISSOLVED SOLIDS CALCULATION FOR BUTTERS ROW #1, DRY SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.35%**	s		1												0.0335		
2	**2.97%**	s		1												0.0297		
3	**3.35%**	s		1												0.0335		
4	**2.56%**	s		1												0.0256		
5	**0.88%**	s		1												0.0088		
6	**2.83%**	s		1												0.0283		
7	**2.94%**	b	1												0.0294			
8	**2.34%**	b	1												0.0234			
9	**3.11%**	s		1												0.0311		
10	**4.14%**	s		1												0.0414		
11	**4.28%**	s		1												0.0428		
12	**4.22%**	s		1												0.0422		
13	**3.85%**	s		1												0.0385		
14	**3.75%**	s		1												0.0375		
15	**3.62%**	b	1												0.0362			
16	**3.66%**	s		1												0.0366		
17	**4.01%**	s		1												0.0401		
18	**4.14%**	s		1												0.0414		
19	**4.28%**	s		1												0.0428		
20	**4.22%**	i			1				100.00%									
21	**3.85%**	i			1				51.70%	48.30%								
22	***3.75%***	*b*	*1*												0.0375			
23	**3.62%**	b	1												0.0362			
24	**3.66%**	i			1			100.00%										
25	**4.01%**	s		1												0.0401		
26	**2.00%**	d				1							37.00%	63.00%				
27	**1.15%**	d				1								100.00%				
28	**1.51%**	i			1			31.00%	69.00%									
29	**1.67%**	b	1												0.0167			
30	**0.33%**	b	1												0.0033			
31	**1.03%**	m						100.00%										
32	**2.08%**	b	1												0.0208			
33	**1.28%**	b	1												0.0128			
34	**1.61%**	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.22%					
		1.99%	1.86%				
	3.66%						
						0.74%	1.26%
							1.15%
	0.47%	1.04%					
	1.03%						
	1.61%						

TDS Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155
252.37536	196.69	400.2772		399.3812	539.9155

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TDS Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.589033						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.841621						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.589033						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.035202						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		1.730851						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.566258						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	7.4198357							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	5.9055835							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.116983						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		8.142865						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		8.418228						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		8.300215						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.572471						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.375784						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.1359882							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.198765						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.887171						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		8.142865						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		8.418228						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							10.18711	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							4.804959	2.636642
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.4640762							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.1359882							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						19.76091		
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.887171						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						2.527344	2.515153	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	4.2146686							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	0.8328387							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						5.56113		
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	5.2494076							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	3.2304047							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						8.69264		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	308.9263 Without GW-83-D
					308.9263 With GW-83-D
				6.589033	
				5.841621	
				6.589033	
				5.035202	
				1.730851	
				5.566258	
				7.419836	
				5.905584	
				6.116983	
				8.142865	
				8.418228	
				8.300215	
				7.572471	
				7.375784	
				9.135988	
				7.198765	
				7.887171	
				8.142865	
				8.418228	
				10.18711	
				7.441602	
				9.464076	
				9.135988	
				19.76091	
				7.887171	
		16.62792	33.57088	50.1988	
			30.64009	30.64009	
				5.042498	
				4.214669	
				0.832839	
				5.56113	
				5.249408	
				3.230405	
				8.69264	

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MANGANESE CALCULATION FOR BUTTERS ROW #1, DRY SEASON

Particle	percentage	Interval	B	S	I	D	I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D	B	S	I	D
1	3.35%	s		1												0.0335		
2	2.97%	s		1												0.0297		
3	3.35%	s		1												0.0335		
4	2.56%	s		1												0.0256		
5	0.88%	s		1												0.0088		
6	2.83%	s		1												0.0283		
7	2.94%	b	1												0.0294			
8	2.34%	b	1												0.0234			
9	3.11%	s		1												0.0311		
10	4.14%	s		1												0.0414		
11	4.28%	s		1												0.0428		
12	4.22%	s		1												0.0422		
13	3.85%	s		1												0.0385		
14	3.75%	s		1												0.0375		
15	3.62%	b	1												0.0362			
16	3.66%	s		1												0.0366		
17	4.01%	s		1												0.0401		
18	4.14%	s		1												0.0414		
19	4.28%	s		1												0.0428		
20	4.22%	i			1				100.00%									
21	3.85%	i			1				51.70%	48.30%								
22	3.75%	b	1												0.0375			
23	3.62%	b	1												0.0362			
24	3.66%	i			1			100.00%										
25	4.01%	s		1												0.0401		
26	2.00%	d				1							37.00%	63.00%				
27	1.15%	d				1								100.00%				
28	1.51%	i			1			31.00%	69.00%									
29	1.67%	b	1												0.0167			
30	0.33%	b	1												0.0033			
31	1.03%	m						100.00%										
32	2.08%	b	1												0.0208			
33	1.28%	b	1												0.0128			
34	1.61%	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.22%					
		1.99%	1.86%				
	3.66%						
						0.74%	1.26%
							1.15%
	0.47%	1.04%					
	1.03%						
	1.61%						

Manganese Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68
0.247	0.7026	0.9471	8.535857	0.0415	1.68

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Manganese Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.319	0.57	46.2	11.2	4.45	5.93		0.023538						
0.319	0.57	46.2	11.2	4.45	5.93		0.020868						
0.319	0.57	46.2	11.2	4.45	5.93		0.023538						
0.319	0.57	46.2	11.2	4.45	5.93		0.017987						
0.319	0.57	46.2	11.2	4.45	5.93		0.006183						
0.319	0.57	46.2	11.2	4.45	5.93		0.019884						
0.319	0.57	46.2	11.2	4.45	5.93	0.0072618							
0.319	0.57	46.2	11.2	4.45	5.93	0.0057798							
0.319	0.57	46.2	11.2	4.45	5.93		0.021852						
0.319	0.57	46.2	11.2	4.45	5.93		0.029089						
0.319	0.57	46.2	11.2	4.45	5.93		0.030073						
0.319	0.57	46.2	11.2	4.45	5.93		0.029651						
0.319	0.57	46.2	11.2	4.45	5.93		0.027051						
0.319	0.57	46.2	11.2	4.45	5.93		0.026349						
0.319	0.57	46.2	11.2	4.45	5.93	0.0089414							
0.319	0.57	46.2	11.2	4.45	5.93		0.025716						
0.319	0.57	46.2	11.2	4.45	5.93		0.028176						
0.319	0.57	46.2	11.2	4.45	5.93		0.029089						
0.319	0.57	46.2	11.2	4.45	5.93		0.030073						
0.319	0.57	46.2	11.2	4.45	5.93							0.013462	
0.319	0.57	46.2	11.2	4.45	5.93							0.00635	0.010599
0.319	0.57	46.2	11.2	4.45	5.93	0.0092625							
0.319	0.57	46.2	11.2	4.45	5.93	0.0089414							
0.319	0.57	46.2	11.2	4.45	5.93						0.061488		
0.319	0.57	46.2	11.2	4.45	5.93		0.028176						
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.007864	0.003324	
0.319	0.57	46.2	11.2	4.45	5.93	0.0041249							
0.319	0.57	46.2	11.2	4.45	5.93	0.0008151							
0.319	0.57	46.2	11.2	4.45	5.93						0.017304		
0.319	0.57	46.2	11.2	4.45	5.93	0.0051376							
0.319	0.57	46.2	11.2	4.45	5.93	0.0031616							
0.319	0.57	46.2	11.2	4.45	5.93						0.027048		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.794001 Without GW-83-D
				0.023538	0.794001 With GW-83-D
				0.020868	
				0.023538	
				0.017987	
				0.006183	
				0.019884	
				0.007262	
				0.00578	
				0.021852	
				0.029089	
				0.030073	
				0.029651	
				0.027051	
				0.026349	
				0.008941	
				0.025716	
				0.028176	
				0.029089	
				0.030073	
				0.013462	
				0.016949	
				0.009263	
				0.008941	
				0.061488	
				0.028176	
		0.03293	0.074718	0.107648	
			0.068195	0.068195	
				0.011188	
				0.004125	
				0.000815	
				0.017304	
				0.005138	
				0.003162	
				0.027048	

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MAGNESIUM CALCULATION FOR BUTTERS ROW #1, DRY SEASON

							I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.35%	s		1												0.0335		
2	2.97%	s		1												0.0297		
3	3.35%	s		1												0.0335		
4	2.56%	s		1												0.0256		
5	0.88%	s		1												0.0088		
6	2.83%	s		1												0.0283		
7	2.94%	b	1												0.0294			
8	2.34%	b	1												0.0234			
9	3.11%	s		1												0.0311		
10	4.14%	s		1												0.0414		
11	4.28%	s		1												0.0428		
12	4.22%	s		1												0.0422		
13	3.85%	s		1												0.0385		
14	3.75%	s		1												0.0375		
15	3.62%	b	1												0.0362			
16	3.66%	s		1												0.0366		
17	4.01%	s		1												0.0401		
18	4.14%	s		1												0.0414		
19	4.28%	s		1												0.0428		
20	4.22%	i			1				100.00%									
21	3.85%	i			1				51.70%	48.30%								
22	3.75%	b	1												0.0375			
23	3.62%	b	1												0.0362			
24	3.66%	i			1			100.00%										
25	4.01%	s		1												0.0401		
26	2.00%	d				1							37.00%	63.00%				
27	1.15%	d				1								100.00%				
28	1.51%	i			1			31.00%	69.00%									
29	1.67%	b	1												0.0167			
30	0.33%	b	1												0.0033			
31	1.03%	m						100.00%										
32	2.08%	b	1												0.0208			
33	1.28%	b	1												0.0128			
34	1.61%	i			1			100.00%										

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I	I	I	D		D	D	D	Magnesium Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
		4.22%						4.7201481	4.7231	6.632833	57.87631	6.71	10.875
		1.99%	1.86%					4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
	3.66%							4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
						0.74%	1.26%	4.7201481	4.7231	6.632833	57.87631	6.71	10.875
							1.15%	4.7201481	4.7231	6.632833	57.87631	6.71	10.875
	0.47%	1.04%						4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
	1.03%							4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
								4.7201481	4.7231	6.632833	57.87631	6.71	10.875
	1.61%							4.7201481	4.7231	6.632833	57.87631	6.71	10.875

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Magnesium Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5.045	5.7	370	65.2	67.45	78.7		0.158224						
5.045	5.7	370	65.2	67.45	78.7		0.140276						
5.045	5.7	370	65.2	67.45	78.7		0.158224						
5.045	5.7	370	65.2	67.45	78.7		0.120911						
5.045	5.7	370	65.2	67.45	78.7		0.041563						
5.045	5.7	370	65.2	67.45	78.7		0.133664						
5.045	5.7	370	65.2	67.45	78.7	0.1387724							
5.045	5.7	370	65.2	67.45	78.7	0.1104515							
5.045	5.7	370	65.2	67.45	78.7		0.146888						
5.045	5.7	370	65.2	67.45	78.7		0.195536						
5.045	5.7	370	65.2	67.45	78.7		0.202149						
5.045	5.7	370	65.2	67.45	78.7		0.199315						
5.045	5.7	370	65.2	67.45	78.7		0.181839						
5.045	5.7	370	65.2	67.45	78.7		0.177116						
5.045	5.7	370	65.2	67.45	78.7	0.1708694							
5.045	5.7	370	65.2	67.45	78.7		0.172866						
5.045	5.7	370	65.2	67.45	78.7		0.189396						
5.045	5.7	370	65.2	67.45	78.7		0.195536						
5.045	5.7	370	65.2	67.45	78.7		0.202149						
5.045	5.7	370	65.2	67.45	78.7							0.212899	
5.045	5.7	370	65.2	67.45	78.7							0.100418	0.105994
5.045	5.7	370	65.2	67.45	78.7	0.1770056							
5.045	5.7	370	65.2	67.45	78.7	0.1708694							
5.045	5.7	370	65.2	67.45	78.7						0.398025		
5.045	5.7	370	65.2	67.45	78.7		0.189396						
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7						0.050906	0.052564	
5.045	5.7	370	65.2	67.45	78.7	0.0788265							
5.045	5.7	370	65.2	67.45	78.7	0.0155765							
5.045	5.7	370	65.2	67.45	78.7						0.112013		
5.045	5.7	370	65.2	67.45	78.7	0.0981791							
5.045	5.7	370	65.2	67.45	78.7	0.0604179							
5.045	5.7	370	65.2	67.45	78.7						0.175088		

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Percent of Total Concentration				Particle Total	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D		7.429724 Without GW-83-D
					7.429724 With GW-83-D
				0.158224	
				0.140276	
				0.158224	
				0.120911	
				0.041563	
				0.133664	
				0.138772	
				0.110451	
				0.146888	
				0.195536	
				0.202149	
				0.199315	
				0.181839	
				0.177116	
				0.170869	
				0.172866	
				0.189396	
				0.195536	
				0.202149	
				0.212899	
				0.206413	
				0.177006	
				0.170869	
				0.398025	
				0.189396	
		0.49913	0.99162	1.49075	
			0.90505	0.90505	
				0.10347	
				0.078826	
				0.015576	
				0.112013	
				0.098179	
				0.060418	
				0.175088	

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POTASSIUM CALCULATION FOR BUTTERS ROW #1, DRY SEASON

Particle	percentage	interval	B	S	I	D	I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D	B	S	I	D
1	3.35%	s		1												0.0335		
2	2.97%	s		1												0.0297		
3	3.35%	s		1												0.0335		
4	2.56%	s		1												0.0256		
5	0.88%	s		1												0.0088		
6	2.83%	s		1												0.0283		
7	2.94%	b	1												0.0294			
8	2.34%	b	1												0.0234			
9	3.11%	s		1												0.0311		
10	4.14%	s		1												0.0414		
11	4.28%	s		1												0.0428		
12	4.22%	s		1												0.0422		
13	3.85%	s		1												0.0385		
14	3.75%	s		1												0.0375		
15	3.62%	b	1												0.0362			
16	3.66%	s		1												0.0366		
17	4.01%	s		1												0.0401		
18	4.14%	s		1												0.0414		
19	4.28%	s		1												0.0428		
20	4.22%	i			1				100.00%									
21	3.85%	i			1				51.70%	48.30%								
22	3.75%	b	1												0.0375			
23	3.62%	b	1												0.0362			
24	3.66%	i			1			100.00%										
25	4.01%	s		1												0.0401		
26	2.00%	d				1							37.00%	63.00%				
27	1.15%	d				1								100.00%				
28	1.51%	i			1			31.00%	69.00%									
29	1.67%	b	1												0.0167			
30	0.33%	b	1												0.0033			
31	1.03%	m						100.00%										
32	2.08%	b	1												0.0208			
33	1.28%	b	1												0.0128			
34	1.61%	i			1			100.00%										

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I	I	I	D		D	D	D	Potassium Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
		4.22%						4.3	4.4	5.4	19	5	7.6
		1.99%	1.86%					4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
	3.66%							4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
						0.74%	1.26%	4.3	4.4	5.4	19	5	7.6
							1.15%	4.3	4.4	5.4	19	5	7.6
	0.47%	1.04%						4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
	1.03%							4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
								4.3	4.4	5.4	19	5	7.6
	1.61%							4.3	4.4	5.4	19	5	7.6

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Potassium Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5	4.1	102	32	25	24		0.1474						
5	4.1	102	32	25	24		0.13068						
5	4.1	102	32	25	24		0.1474						
5	4.1	102	32	25	24		0.11264						
5	4.1	102	32	25	24		0.03872						
5	4.1	102	32	25	24		0.12452						
5	4.1	102	32	25	24	0.12642							
5	4.1	102	32	25	24	0.10062							
5	4.1	102	32	25	24		0.13684						
5	4.1	102	32	25	24		0.18216						
5	4.1	102	32	25	24		0.18832						
5	4.1	102	32	25	24		0.18568						
5	4.1	102	32	25	24		0.1694						
5	4.1	102	32	25	24		0.165						
5	4.1	102	32	25	24	0.15566							
5	4.1	102	32	25	24		0.16104						
5	4.1	102	32	25	24		0.17644						
5	4.1	102	32	25	24		0.18216						
5	4.1	102	32	25	24		0.18832						
5	4.1	102	32	25	24							0.211	
5	4.1	102	32	25	24							0.099523	0.076242
5	4.1	102	32	25	24	0.16125							
5	4.1	102	32	25	24	0.15566							
5	4.1	102	32	25	24						0.27816		
5	4.1	102	32	25	24		0.17644						
5	4.1	102	32	25	24								
5	4.1	102	32	25	24								
5	4.1	102	32	25	24						0.035576	0.052095	
5	4.1	102	32	25	24	0.07181							
5	4.1	102	32	25	24	0.01419							
5	4.1	102	32	25	24						0.07828		
5	4.1	102	32	25	24	0.08944							
5	4.1	102	32	25	24	0.05504							
5	4.1	102	32	25	24						0.12236		

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Percent of Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	5.259885 Without GW-83-D
				0.1474	5.259885 With GW-83-D
				0.13068	
				0.1474	
				0.11264	
				0.03872	
				0.12452	
				0.12642	
				0.10062	
				0.13684	
				0.18216	
				0.18832	
				0.18568	
				0.1694	
				0.165	
				0.15566	
				0.16104	
				0.17644	
				0.18216	
				0.18832	
				0.211	
				0.175764	
				0.16125	
				0.15566	
				0.27816	
				0.17644	
		0.185	0.3024	0.4874	
			0.276	0.276	
				0.087671	
				0.07181	
				0.01419	
				0.07828	
				0.08944	
				0.05504	
				0.12236	

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BICARBONATE CALCULATION FOR BUTTERS ROW #1, DRY SEASON

					I	D	I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.35%	s		1												0.0335		
2	2.97%	s		1												0.0297		
3	3.35%	s		1												0.0335		
4	2.56%	s		1												0.0256		
5	0.88%	s		1												0.0088		
6	2.83%	s		1												0.0283		
7	2.94%	b	1												0.0294			
8	2.34%	b	1												0.0234			
9	3.11%	s		1												0.0311		
10	4.14%	s		1												0.0414		
11	4.28%	s		1												0.0428		
12	4.22%	s		1												0.0422		
13	3.85%	s		1												0.0385		
14	3.75%	s		1												0.0375		
15	3.62%	b	1												0.0362			
16	3.66%	s		1												0.0366		
17	4.01%	s		1												0.0401		
18	4.14%	s		1												0.0414		
19	4.28%	s		1												0.0428		
20	4.22%	i			1				100.00%									
21	3.85%	i			1				51.70%	48.30%								
22	3.75%	b	1												0.0375			
23	3.62%	b	1												0.0362			
24	3.66%	i			1			100.00%										
25	4.01%	s		1												0.0401		
26	2.00%	d				1							37.00%	63.00%				
27	1.15%	d				1								100.00%				
28	1.51%	i			1			31.00%	69.00%									
29	1.67%	b	1												0.0167			
30	0.33%	b	1												0.0033			
31	1.03%	m						100.00%										
32	2.08%	b	1												0.0208			
33	1.28%	b	1												0.0128			
34	1.61%	i			1			100.00%										

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
		4.22%					
		1.99%	1.86%				
	3.66%						
						0.74%	1.26%
							1.15%
	0.47%	1.04%					
	1.03%						
	1.61%						

Bicarbonate Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55

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Bicarbonate Concentration (mg/L)						Percent of Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
51	141	96	215	181	247		1.3735						
51	141	96	215	181	247		1.2177						
51	141	96	215	181	247		1.3735						
51	141	96	215	181	247		1.0496						
51	141	96	215	181	247		0.3608						
51	141	96	215	181	247		1.1603						
51	141	96	215	181	247	0.735							
51	141	96	215	181	247	0.585							
51	141	96	215	181	247		1.2751						
51	141	96	215	181	247		1.6974						
51	141	96	215	181	247		1.7548						
51	141	96	215	181	247		1.7302						
51	141	96	215	181	247		1.5785						
51	141	96	215	181	247		1.5375						
51	141	96	215	181	247	0.905							
51	141	96	215	181	247		1.5006						
51	141	96	215	181	247		1.6441						
51	141	96	215	181	247		1.6974						
51	141	96	215	181	247		1.7548						
51	141	96	215	181	247							2.1522	
51	141	96	215	181	247							1.01513	2.621966
51	141	96	215	181	247	0.9375							
51	141	96	215	181	247	0.905							
51	141	96	215	181	247						2.013		
51	141	96	215	181	247		1.6441						
51	141	96	215	181	247								
51	141	96	215	181	247								
51	141	96	215	181	247						0.257455	0.531369	
51	141	96	215	181	247	0.4175							
51	141	96	215	181	247	0.0825							
51	141	96	215	181	247						0.5665		
51	141	96	215	181	247	0.52							
51	141	96	215	181	247	0.32							
51	141	96	215	181	247						0.8855		

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Percent of Total Concentration				Particle	Overall Total 47.09262 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	47.09262 With GW-83-D
				1.3735	
				1.2177	
				1.3735	
				1.0496	
				0.3608	
				1.1603	
				0.735	
				0.585	
				1.2751	
				1.6974	
				1.7548	
				1.7302	
				1.5785	
				1.5375	
				0.905	
				1.5006	
				1.6441	
				1.6974	
				1.7548	
				2.1522	
				3.637095	
				0.9375	
				0.905	
				2.013	
				1.6441	
		1.3394	3.1122	4.4516	
			2.8405	2.8405	
				0.788824	
				0.4175	
				0.0825	
				0.5665	
				0.52	
				0.32	
				0.8855	

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ALUMINUM CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.22%	s		1												0.0322		
2	2.59%	b	1												0.0259			
3	3.63%	s		1												0.0363		
4	1.97%	b	1												0.0197			
5	0.46%	b	1												0.0046			
6	2.58%	s		1												0.0258		
7	2.70%	b	1												0.027			
8	1.91%	b	1												0.0191			
9	3.18%	s		1												0.0318		
10	3.88%	s		1												0.0388		
11	3.92%	s		1												0.0392		
12	3.87%	s		1												0.0387		
13	3.67%	s		1												0.0367		
14	3.63%	b	1												0.0363			
15	3.57%	b	1												0.0357			
16	3.60%	b	1												0.036			
17	3.82%	s		1												0.0382		
18	3.88%	s		1												0.0388		
19	3.92%	i			1			22.50%	77.50%									
20	3.87%	i			1				100.00%									
21	3.67%	b	1												0.0367			
22	3.63%	b	1												0.0363			
23	3.57%	b	1												0.0357			
24	3.60%	b	1												0.036			
25	3.82%	s		1												0.0382		
26	2.71%	i			1				45.80%	54.20%								
27	1.40%	d				1								100.00%				
28	1.90%	i			1			35.50%	64.50%									
29	2.40%	b	1												0.024			
30	0.59%	b	1												0.0059			
31	1.42%	i			1			38.10%	61.90%									
32	3.07%	b	1												0.0307			
33	2.00%	b	1												0.02			
34	2.38%	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Aluminum Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2
0.2	0.19171	0.186667	2.123095	0.2	0.2

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Aluminum Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.2	0.1	27.8	0.2	0.2	0.2		0.006173						
0.2	0.1	27.8	0.2	0.2	0.2	0.00518							
0.2	0.1	27.8	0.2	0.2	0.2		0.006959						
0.2	0.1	27.8	0.2	0.2	0.2	0.00394							
0.2	0.1	27.8	0.2	0.2	0.2	0.00092							
0.2	0.1	27.8	0.2	0.2	0.2		0.004946						
0.2	0.1	27.8	0.2	0.2	0.2	0.0054							
0.2	0.1	27.8	0.2	0.2	0.2	0.00382							
0.2	0.1	27.8	0.2	0.2	0.2		0.006097						
0.2	0.1	27.8	0.2	0.2	0.2		0.007439						
0.2	0.1	27.8	0.2	0.2	0.2		0.007515						
0.2	0.1	27.8	0.2	0.2	0.2		0.007419						
0.2	0.1	27.8	0.2	0.2	0.2		0.007036						
0.2	0.1	27.8	0.2	0.2	0.2	0.00726							
0.2	0.1	27.8	0.2	0.2	0.2	0.00714							
0.2	0.1	27.8	0.2	0.2	0.2	0.0072							
0.2	0.1	27.8	0.2	0.2	0.2		0.007323						
0.2	0.1	27.8	0.2	0.2	0.2		0.007439						
0.2	0.1	27.8	0.2	0.2	0.2						0.001764	0.006076	
0.2	0.1	27.8	0.2	0.2	0.2							0.00774	
0.2	0.1	27.8	0.2	0.2	0.2	0.00734							
0.2	0.1	27.8	0.2	0.2	0.2	0.00726							
0.2	0.1	27.8	0.2	0.2	0.2	0.00714							
0.2	0.1	27.8	0.2	0.2	0.2	0.0072							
0.2	0.1	27.8	0.2	0.2	0.2		0.007323						
0.2	0.1	27.8	0.2	0.2	0.2							0.002482	0.001469
0.2	0.1	27.8	0.2	0.2	0.2								
0.2	0.1	27.8	0.2	0.2	0.2						0.001349	0.002451	
0.2	0.1	27.8	0.2	0.2	0.2	0.0048							
0.2	0.1	27.8	0.2	0.2	0.2	0.00118							
0.2	0.1	27.8	0.2	0.2	0.2						0.001082	0.001758	
0.2	0.1	27.8	0.2	0.2	0.2	0.00614							
0.2	0.1	27.8	0.2	0.2	0.2	0.004							
0.2	0.1	27.8	0.2	0.2	0.2	0.00476							

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Contribution to Total Concentration				Particle	Overall Total	
					0.195321	Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.195321	With GW-83-D
				0.006173		
				0.00518		
				0.006959		
				0.00394		
				0.00092		
				0.004946		
				0.0054		
				0.00382		
				0.006097		
				0.007439		
				0.007515		
				0.007419		
				0.007036		
				0.00726		
				0.00714		
				0.0072		
				0.007323		
				0.007439		
				0.00784		
				0.00774		
				0.00734		
				0.00726		
				0.00714		
				0.0072		
				0.007323		
				0.003951		
			0.0028	0.0028		
				0.0038		
				0.0048		
				0.00118		
				0.00284		
				0.00614		
				0.004		
				0.00476		

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CHLORIDE CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.22%	s		1												0.0322		
2	2.59%	b	1												0.0259			
3	3.63%	s		1												0.0363		
4	1.97%	b	1												0.0197			
5	0.46%	b	1												0.0046			
6	2.58%	s		1												0.0258		
7	2.70%	b	1												0.027			
8	1.91%	b	1												0.0191			
9	3.18%	s		1												0.0318		
10	3.88%	s		1												0.0388		
11	3.92%	s		1												0.0392		
12	3.87%	s		1												0.0387		
13	3.67%	s		1												0.0367		
14	3.63%	b	1												0.0363			
15	3.57%	b	1												0.0357			
16	3.60%	b	1												0.036			
17	3.82%	s		1												0.0382		
18	3.88%	s		1												0.0388		
19	3.92%	i			1			22.50%	77.50%									
20	3.87%	i			1				100.00%									
21	3.67%	b	1												0.0367			
22	3.63%	b	1												0.0363			
23	3.57%	b	1												0.0357			
24	3.60%	b	1												0.036			
25	3.82%	s		1												0.0382		
26	2.71%	i			1				45.80%	54.20%								
27	1.40%	d				1								100.00%				
28	1.90%	i			1			35.50%	64.50%									
29	2.40%	b	1												0.024			
30	0.59%	b	1												0.0059			
31	1.42%	i			1			38.10%	61.90%									
32	3.07%	b	1												0.0307			
33	2.00%	b	1												0.02			
34	2.38%	b	1												0.0238			

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I GW-84-M	I GW-85-M	I GW-86-M	D GW-65-D	GW-83-D	D GW-85-D	D GW-86-D	D GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Chloride Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667
72.463534	67.2347	110.5862	562.2795	156.5	153.6667

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Chloride Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
69.73333	56	4630	515.3333	488.3333	580		2.164956						
69.73333	56	4630	515.3333	488.3333	580	1.876806							
69.73333	56	4630	515.3333	488.3333	580		2.440619						
69.73333	56	4630	515.3333	488.3333	580	1.427532							
69.73333	56	4630	515.3333	488.3333	580	0.333332							
69.73333	56	4630	515.3333	488.3333	580		1.734655						
69.73333	56	4630	515.3333	488.3333	580	1.956515							
69.73333	56	4630	515.3333	488.3333	580	1.384054							
69.73333	56	4630	515.3333	488.3333	580		2.138063						
69.73333	56	4630	515.3333	488.3333	580		2.608705						
69.73333	56	4630	515.3333	488.3333	580		2.635599						
69.73333	56	4630	515.3333	488.3333	580		2.601982						
69.73333	56	4630	515.3333	488.3333	580		2.467512						
69.73333	56	4630	515.3333	488.3333	580	2.630426							
69.73333	56	4630	515.3333	488.3333	580	2.586948							
69.73333	56	4630	515.3333	488.3333	580	2.608687							
69.73333	56	4630	515.3333	488.3333	580		2.568364						
69.73333	56	4630	515.3333	488.3333	580		2.608705						
69.73333	56	4630	515.3333	488.3333	580						1.35534	2.118499	
69.73333	56	4630	515.3333	488.3333	580							2.69868	
69.73333	56	4630	515.3333	488.3333	580	2.659412							
69.73333	56	4630	515.3333	488.3333	580	2.630426							
69.73333	56	4630	515.3333	488.3333	580	2.586948							
69.73333	56	4630	515.3333	488.3333	580	2.608687							
69.73333	56	4630	515.3333	488.3333	580		2.568364						
69.73333	56	4630	515.3333	488.3333	580							0.865516	0.822539
69.73333	56	4630	515.3333	488.3333	580								
69.73333	56	4630	515.3333	488.3333	580						1.036482	0.854582	
69.73333	56	4630	515.3333	488.3333	580	1.739125							
69.73333	56	4630	515.3333	488.3333	580	0.427535							
69.73333	56	4630	515.3333	488.3333	580						0.831367	0.612942	
69.73333	56	4630	515.3333	488.3333	580	2.22463							
69.73333	56	4630	515.3333	488.3333	580	1.449271							
69.73333	56	4630	515.3333	488.3333	580	1.724632							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	78.70844 Without GW-83-D
				2.164956	78.70844 With GW-83-D
				1.876806	
				2.440619	
				1.427532	
				0.333332	
				1.734655	
				1.956515	
				1.384054	
				2.138063	
				2.608705	
				2.635599	
				2.601982	
				2.467512	
				2.630426	
				2.586948	
				2.608687	
				2.568364	
				2.608705	
				3.473839	
				2.69868	
				2.659412	
				2.630426	
				2.586948	
				2.608687	
				2.568364	
				1.688055	
			8.12	8.12	
				1.891064	
				1.739125	
				0.427535	
				1.444309	
				2.22463	
				1.449271	
				1.724632	

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SULFATE CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D	Sulfate Concentration (mg/L)					
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
	0.88%	3.04%						34.308749	39.8082	103.7029	1857.398	30.7	172
		3.87%						34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
		1.24%	1.47%					34.308749	39.8082	103.7029	1857.398	30.7	172
							1.40%	34.308749	39.8082	103.7029	1857.398	30.7	172
	0.67%	1.23%						34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
	0.54%	0.88%						34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172
								34.308749	39.8082	103.7029	1857.398	30.7	172

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Sulfate Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
41.325	30	17450	1685	1295	1503.333		1.281825						
41.325	30	17450	1685	1295	1503.333	0.888597							
41.325	30	17450	1685	1295	1503.333		1.445038						
41.325	30	17450	1685	1295	1503.333	0.675882							
41.325	30	17450	1685	1295	1503.333	0.15782							
41.325	30	17450	1685	1295	1503.333		1.027052						
41.325	30	17450	1685	1295	1503.333	0.926336							
41.325	30	17450	1685	1295	1503.333	0.655297							
41.325	30	17450	1685	1295	1503.333		1.265901						
41.325	30	17450	1685	1295	1503.333		1.544559						
41.325	30	17450	1685	1295	1503.333		1.560482						
41.325	30	17450	1685	1295	1503.333		1.540578						
41.325	30	17450	1685	1295	1503.333		1.460962						
41.325	30	17450	1685	1295	1503.333	1.245408							
41.325	30	17450	1685	1295	1503.333	1.224822							
41.325	30	17450	1685	1295	1503.333	1.235115							
41.325	30	17450	1685	1295	1503.333		1.520674						
41.325	30	17450	1685	1295	1503.333		1.544559						
41.325	30	17450	1685	1295	1503.333						1.51704	1.255454	
41.325	30	17450	1685	1295	1503.333							1.599278	
41.325	30	17450	1685	1295	1503.333	1.259131							
41.325	30	17450	1685	1295	1503.333	1.245408							
41.325	30	17450	1685	1295	1503.333	1.224822							
41.325	30	17450	1685	1295	1503.333	1.235115							
41.325	30	17450	1685	1295	1503.333		1.520674						
41.325	30	17450	1685	1295	1503.333							0.512918	0.440646
41.325	30	17450	1685	1295	1503.333								
41.325	30	17450	1685	1295	1503.333						1.16014	0.506438	
41.325	30	17450	1685	1295	1503.333	0.82341							
41.325	30	17450	1685	1295	1503.333	0.202422							
41.325	30	17450	1685	1295	1503.333						0.930554	0.363238	
41.325	30	17450	1685	1295	1503.333	1.053279							
41.325	30	17450	1685	1295	1503.333	0.686175							
41.325	30	17450	1685	1295	1503.333	0.816548							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	60.60026 Without GW-83-D
					60.60026 With GW-83-D
				1.281825	
				0.888597	
				1.445038	
				0.675882	
				0.15782	
				1.027052	
				0.926336	
				0.655297	
				1.265901	
				1.544559	
				1.560482	
				1.540578	
				1.460962	
				1.245408	
				1.224822	
				1.235115	
				1.520674	
				1.544559	
				2.772494	
				1.599278	
				1.259131	
				1.245408	
				1.224822	
				1.235115	
				1.520674	
				0.953564	
			21.04667	21.04667	
				1.666578	
				0.82341	
				0.202422	
				1.293793	
				1.053279	
				0.686175	
				0.816548	

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IRON CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Iron Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333
2.5349603	4.57944	6.643333	97.97546	0.1	9.273333

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Iron Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
21.1	20	1200	19.65633	51.96667	32.4		0.147458						
21.1	20	1200	19.65633	51.96667	32.4	0.065655							
21.1	20	1200	19.65633	51.96667	32.4		0.166234						
21.1	20	1200	19.65633	51.96667	32.4	0.049939							
21.1	20	1200	19.65633	51.96667	32.4	0.011661							
21.1	20	1200	19.65633	51.96667	32.4		0.11815						
21.1	20	1200	19.65633	51.96667	32.4	0.068444							
21.1	20	1200	19.65633	51.96667	32.4	0.048418							
21.1	20	1200	19.65633	51.96667	32.4		0.145626						
21.1	20	1200	19.65633	51.96667	32.4		0.177682						
21.1	20	1200	19.65633	51.96667	32.4		0.179514						
21.1	20	1200	19.65633	51.96667	32.4		0.177224						
21.1	20	1200	19.65633	51.96667	32.4		0.168066						
21.1	20	1200	19.65633	51.96667	32.4	0.092019							
21.1	20	1200	19.65633	51.96667	32.4	0.090498							
21.1	20	1200	19.65633	51.96667	32.4	0.091259							
21.1	20	1200	19.65633	51.96667	32.4		0.174935						
21.1	20	1200	19.65633	51.96667	32.4		0.177682						
21.1	20	1200	19.65633	51.96667	32.4						0.081791	0.641018	
21.1	20	1200	19.65633	51.96667	32.4							0.81657	
21.1	20	1200	19.65633	51.96667	32.4	0.093033							
21.1	20	1200	19.65633	51.96667	32.4	0.092019							
21.1	20	1200	19.65633	51.96667	32.4	0.090498							
21.1	20	1200	19.65633	51.96667	32.4	0.091259							
21.1	20	1200	19.65633	51.96667	32.4		0.174935						
21.1	20	1200	19.65633	51.96667	32.4							0.261889	0.293764
21.1	20	1200	19.65633	51.96667	32.4								
21.1	20	1200	19.65633	51.96667	32.4						0.062549	0.258581	
21.1	20	1200	19.65633	51.96667	32.4	0.060839							
21.1	20	1200	19.65633	51.96667	32.4	0.014956							
21.1	20	1200	19.65633	51.96667	32.4						0.050171	0.185465	
21.1	20	1200	19.65633	51.96667	32.4	0.077823							
21.1	20	1200	19.65633	51.96667	32.4	0.050699							
21.1	20	1200	19.65633	51.96667	32.4	0.060332							

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Contribution to Total Concentration				Particle	Overall Total 6.062253 Without GW-83-D
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	6.062253 With GW-83-D
				0.147458	
				0.065655	
				0.166234	
				0.049939	
				0.011661	
				0.11815	
				0.068444	
				0.048418	
				0.145626	
				0.177682	
				0.179514	
				0.177224	
				0.168066	
				0.092019	
				0.090498	
				0.091259	
				0.174935	
				0.177682	
				0.722809	
				0.81657	
				0.093033	
				0.092019	
				0.090498	
				0.091259	
				0.174935	
				0.555653	
			0.4536	0.4536	
				0.321129	
				0.060839	
				0.014956	
				0.235635	
				0.077823	
				0.050699	
				0.060332	

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AMMONIA CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.22%	s		1												0.0322		
2	2.59%	b	1												0.0259			
3	3.63%	s		1												0.0363		
4	1.97%	b	1												0.0197			
5	0.46%	b	1												0.0046			
6	2.58%	s		1												0.0258		
7	2.70%	b	1												0.027			
8	1.91%	b	1												0.0191			
9	3.18%	s		1												0.0318		
10	3.88%	s		1												0.0388		
11	3.92%	s		1												0.0392		
12	3.87%	s		1												0.0387		
13	3.67%	s		1												0.0367		
14	3.63%	b	1												0.0363			
15	3.57%	b	1												0.0357			
16	3.60%	b	1												0.036			
17	3.82%	s		1												0.0382		
18	3.88%	s		1												0.0388		
19	3.92%	i			1			22.50%	77.50%									
20	3.87%	i			1				100.00%									
21	3.67%	b	1												0.0367			
22	3.63%	b	1												0.0363			
23	3.57%	b	1												0.0357			
24	3.60%	b	1												0.036			
25	3.82%	s		1												0.0382		
26	2.71%	i			1				45.80%	54.20%								
27	1.40%	d				1								100.00%				
28	1.90%	i			1			35.50%	64.50%									
29	2.40%	b	1												0.024			
30	0.59%	b	1												0.0059			
31	1.42%	i			1			38.10%	61.90%									
32	3.07%	b	1												0.0307			
33	2.00%	b	1												0.02			
34	2.38%	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Ammonia Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3
0.4769286	1.0516	5.615544	124.5387	0.064	6.3

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Ammonia Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.643333	0.45	1400	106.5667	31.11633	45.2		0.033861						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.012352							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.038173						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.009395							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.002194							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.027131						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.012877							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.009109							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.033441						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040802						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.041223						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040697						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.038594						
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017313							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017026							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017169							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040171						
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040802						
0.643333	0.45	1400	106.5667	31.11633	45.2						0.055566	0.019544	
0.643333	0.45	1400	106.5667	31.11633	45.2							0.024897	
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017503							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017313							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017026							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.017169							
0.643333	0.45	1400	106.5667	31.11633	45.2		0.040171						
0.643333	0.45	1400	106.5667	31.11633	45.2							0.007985	0.00661
0.643333	0.45	1400	106.5667	31.11633	45.2								
0.643333	0.45	1400	106.5667	31.11633	45.2						0.042494	0.007884	
0.643333	0.45	1400	106.5667	31.11633	45.2	0.011446							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.002814							
0.643333	0.45	1400	106.5667	31.11633	45.2						0.034084	0.005655	
0.643333	0.45	1400	106.5667	31.11633	45.2	0.014642							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.009539							
0.643333	0.45	1400	106.5667	31.11633	45.2	0.011351							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	1.468823 Without GW-83-D
					1.468823 With GW-83-D
				0.033861	
				0.012352	
				0.038173	
				0.009395	
				0.002194	
				0.027131	
				0.012877	
				0.009109	
				0.033441	
				0.040802	
				0.041223	
				0.040697	
				0.038594	
				0.017313	
				0.017026	
				0.017169	
				0.040171	
				0.040802	
				0.07511	
				0.024897	
				0.017503	
				0.017313	
				0.017026	
				0.017169	
				0.040171	
				0.014595	
			0.6328	0.6328	
				0.050378	
				0.011446	
				0.002814	
				0.039739	
				0.014642	
				0.009539	
				0.011351	

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SODIUM CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Sodium Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333
35.361111	35.5799	47.775	578.1579	52.1	61.08333

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Sodium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
29.83333	25	6120	258.6667	251.3333	337		1.145673						
29.83333	25	6120	258.6667	251.3333	337	0.915853							
29.83333	25	6120	258.6667	251.3333	337		1.29155						
29.83333	25	6120	258.6667	251.3333	337	0.696614							
29.83333	25	6120	258.6667	251.3333	337	0.162661							
29.83333	25	6120	258.6667	251.3333	337		0.917961						
29.83333	25	6120	258.6667	251.3333	337	0.95475							
29.83333	25	6120	258.6667	251.3333	337	0.675397							
29.83333	25	6120	258.6667	251.3333	337		1.131441						
29.83333	25	6120	258.6667	251.3333	337		1.3805						
29.83333	25	6120	258.6667	251.3333	337		1.394732						
29.83333	25	6120	258.6667	251.3333	337		1.376942						
29.83333	25	6120	258.6667	251.3333	337		1.305782						
29.83333	25	6120	258.6667	251.3333	337	1.283608							
29.83333	25	6120	258.6667	251.3333	337	1.262392							
29.83333	25	6120	258.6667	251.3333	337	1.273							
29.83333	25	6120	258.6667	251.3333	337		1.359152						
29.83333	25	6120	258.6667	251.3333	337		1.3805						
29.83333	25	6120	258.6667	251.3333	337						0.538755	0.906337	
29.83333	25	6120	258.6667	251.3333	337							1.15455	
29.83333	25	6120	258.6667	251.3333	337	1.297753							
29.83333	25	6120	258.6667	251.3333	337	1.283608							
29.83333	25	6120	258.6667	251.3333	337	1.262392							
29.83333	25	6120	258.6667	251.3333	337	1.273							
29.83333	25	6120	258.6667	251.3333	337		1.359152						
29.83333	25	6120	258.6667	251.3333	337							0.370285	0.367205
29.83333	25	6120	258.6667	251.3333	337								
29.83333	25	6120	258.6667	251.3333	337						0.412007	0.365608	
29.83333	25	6120	258.6667	251.3333	337	0.848667							
29.83333	25	6120	258.6667	251.3333	337	0.208631							
29.83333	25	6120	258.6667	251.3333	337						0.330473	0.262229	
29.83333	25	6120	258.6667	251.3333	337	1.085586							
29.83333	25	6120	258.6667	251.3333	337	0.707222							
29.83333	25	6120	258.6667	251.3333	337	0.841594							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	39.50156 Without GW-83-D
				1.145673	39.50156 With GW-83-D
				0.915853	
				1.29155	
				0.696614	
				0.162661	
				0.917961	
				0.95475	
				0.675397	
				1.131441	
				1.3805	
				1.394732	
				1.376942	
				1.305782	
				1.283608	
				1.262392	
				1.273	
				1.359152	
				1.3805	
				1.445092	
				1.15455	
				1.297753	
				1.283608	
				1.262392	
				1.273	
				1.359152	
				0.73749	
			4.718	4.718	
				0.777615	
				0.848667	
				0.208631	
				0.592702	
				1.085586	
				0.707222	
				0.841594	

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CALCIUM CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.22%	s		1												0.0322		
2	2.59%	b	1												0.0259			
3	3.63%	s		1												0.0363		
4	1.97%	b	1												0.0197			
5	0.46%	b	1												0.0046			
6	2.58%	s		1												0.0258		
7	2.70%	b	1												0.027			
8	1.91%	b	1												0.0191			
9	3.18%	s		1												0.0318		
10	3.88%	s		1												0.0388		
11	3.92%	s		1												0.0392		
12	3.87%	s		1												0.0387		
13	3.67%	s		1												0.0367		
14	3.63%	b	1												0.0363			
15	3.57%	b	1												0.0357			
16	3.60%	b	1												0.036			
17	3.82%	s		1												0.0382		
18	3.88%	s		1												0.0388		
19	3.92%	i			1			22.50%	77.50%									
20	3.87%	i			1				100.00%									
21	3.67%	b	1												0.0367			
22	3.63%	b	1												0.0363			
23	3.57%	b	1												0.0357			
24	3.60%	b	1												0.036			
25	3.82%	s		1												0.0382		
26	2.71%	i			1				45.80%	54.20%								
27	1.40%	d				1								100.00%				
28	1.90%	i			1			35.50%	64.50%									
29	2.40%	b	1												0.024			
30	0.59%	b	1												0.0059			
31	1.42%	i			1			38.10%	61.90%									
32	3.07%	b	1												0.0307			
33	2.00%	b	1												0.02			
34	2.38%	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Calcium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7
17.972222	22.4645	34.69833	121.7581	39.23333	53.7

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Calcium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
24.86667	34.5	284.5	240.3333	240.3333	278		0.723358						
24.86667	34.5	284.5	240.3333	240.3333	278	0.465481							
24.86667	34.5	284.5	240.3333	240.3333	278		0.815462						
24.86667	34.5	284.5	240.3333	240.3333	278	0.354053							
24.86667	34.5	284.5	240.3333	240.3333	278	0.082672							
24.86667	34.5	284.5	240.3333	240.3333	278		0.579585						
24.86667	34.5	284.5	240.3333	240.3333	278	0.48525							
24.86667	34.5	284.5	240.3333	240.3333	278	0.343269							
24.86667	34.5	284.5	240.3333	240.3333	278		0.714372						
24.86667	34.5	284.5	240.3333	240.3333	278		0.871624						
24.86667	34.5	284.5	240.3333	240.3333	278		0.880609						
24.86667	34.5	284.5	240.3333	240.3333	278		0.869377						
24.86667	34.5	284.5	240.3333	240.3333	278		0.824448						
24.86667	34.5	284.5	240.3333	240.3333	278	0.652392							
24.86667	34.5	284.5	240.3333	240.3333	278	0.641608							
24.86667	34.5	284.5	240.3333	240.3333	278	0.647							
24.86667	34.5	284.5	240.3333	240.3333	278		0.858145						
24.86667	34.5	284.5	240.3333	240.3333	278		0.871624						
24.86667	34.5	284.5	240.3333	240.3333	278						0.473634	0.755449	
24.86667	34.5	284.5	240.3333	240.3333	278							0.96234	
24.86667	34.5	284.5	240.3333	240.3333	278	0.659581							
24.86667	34.5	284.5	240.3333	240.3333	278	0.652392							
24.86667	34.5	284.5	240.3333	240.3333	278	0.641608							
24.86667	34.5	284.5	240.3333	240.3333	278	0.647							
24.86667	34.5	284.5	240.3333	240.3333	278		0.858145						
24.86667	34.5	284.5	240.3333	240.3333	278							0.30864	0.506743
24.86667	34.5	284.5	240.3333	240.3333	278								
24.86667	34.5	284.5	240.3333	240.3333	278						0.362207	0.304741	
24.86667	34.5	284.5	240.3333	240.3333	278	0.431333							
24.86667	34.5	284.5	240.3333	240.3333	278	0.106036							
24.86667	34.5	284.5	240.3333	240.3333	278						0.290528	0.218573	
24.86667	34.5	284.5	240.3333	240.3333	278	0.551747							
24.86667	34.5	284.5	240.3333	240.3333	278	0.359444							
24.86667	34.5	284.5	240.3333	240.3333	278	0.427739							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	25.09021 Without GW-83-D
					25.09021 With GW-83-D
				0.723358	
				0.465481	
				0.815462	
				0.354053	
				0.082672	
				0.579585	
				0.48525	
				0.343269	
				0.714372	
				0.871624	
				0.880609	
				0.869377	
				0.824448	
				0.652392	
				0.641608	
				0.647	
				0.858145	
				0.871624	
				1.229083	
				0.96234	
				0.659581	
				0.652392	
				0.641608	
				0.647	
				0.858145	
				0.815383	
			3.892	3.892	
				0.666948	
				0.431333	
				0.106036	
				0.509101	
				0.551747	
				0.359444	
				0.427739	

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TOTAL DISSOLVED SOLIDS CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	3.22%	s		1												0.0322		
2	2.59%	b	1												0.0259			
3	3.63%	s		1												0.0363		
4	1.97%	b	1												0.0197			
5	0.46%	b	1												0.0046			
6	2.58%	s		1												0.0258		
7	2.70%	b	1												0.027			
8	1.91%	b	1												0.0191			
9	3.18%	s		1												0.0318		
10	3.88%	s		1												0.0388		
11	3.92%	s		1												0.0392		
12	3.87%	s		1												0.0387		
13	3.67%	s		1												0.0367		
14	3.63%	b	1												0.0363			
15	3.57%	b	1												0.0357			
16	3.60%	b	1												0.036			
17	3.82%	s		1												0.0382		
18	3.88%	s		1												0.0388		
19	3.92%	i			1			22.50%	77.50%									
20	3.87%	i			1				100.00%									
21	3.67%	b	1												0.0367			
22	3.63%	b	1												0.0363			
23	3.57%	b	1												0.0357			
24	3.60%	b	1												0.036			
25	3.82%	s		1												0.0382		
26	2.71%	i			1				45.80%	54.20%								
27	1.40%	d				1								100.00%				
28	1.90%	i			1			35.50%	64.50%									
29	2.40%	b	1												0.024			
30	0.59%	b	1												0.0059			
31	1.42%	i			1			38.10%	61.90%									
32	3.07%	b	1												0.0307			
33	2.00%	b	1												0.02			
34	2.38%	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

TDS Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155
252.37536	196.688	400.2772		399.3812	539.9155

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TDS Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.33334						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.536522							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.139759						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	4.971795							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	1.160927							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		5.074539						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.814135							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	4.820369							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		6.254665						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.631478						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.710153						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.611809						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.218434						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.161226							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.0098							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.085513							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.513465						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.631478						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						4.762055	7.333752	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							9.342205	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.262176							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.161226							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.0098							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	9.085513							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356		7.513465						
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356							2.996217	2.082629
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356								
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						3.64173	2.958365	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.057009							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	1.489015							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356						2.921051	2.121863	
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	7.747924							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	5.047507							
241.4007	141.7893	29670.32	2852.148	2247.016	2664.356	6.006534							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	267.5204 Without GW-83-D
					267.5204 With GW-83-D
				6.33334	
				6.536522	
				7.139759	
				4.971795	
				1.160927	
				5.074539	
				6.814135	
				4.820369	
				6.254665	
				7.631478	
				7.710153	
				7.611809	
				7.218434	
				9.161226	
				9.0098	
				9.085513	
				7.513465	
				7.631478	
				12.09581	
				9.342205	
				9.262176	
				9.161226	
				9.0098	
				9.085513	
				7.513465	
				5.078846	
			37.30098	37.30098	
				6.600095	
				6.057009	
				1.489015	
				5.042914	
				7.747924	
				5.047507	
				6.006534	

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MANGANESE CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Manganese Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68
0.247	0.70263	0.9471	8.535857	0.0415	1.68

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Manganese Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
0.319	0.57	46.2	11.2	4.45	5.93		0.022625						
0.319	0.57	46.2	11.2	4.45	5.93	0.006397							
0.319	0.57	46.2	11.2	4.45	5.93		0.025506						
0.319	0.57	46.2	11.2	4.45	5.93	0.004866							
0.319	0.57	46.2	11.2	4.45	5.93	0.001136							
0.319	0.57	46.2	11.2	4.45	5.93		0.018128						
0.319	0.57	46.2	11.2	4.45	5.93	0.006669							
0.319	0.57	46.2	11.2	4.45	5.93	0.004718							
0.319	0.57	46.2	11.2	4.45	5.93		0.022344						
0.319	0.57	46.2	11.2	4.45	5.93		0.027262						
0.319	0.57	46.2	11.2	4.45	5.93		0.027543						
0.319	0.57	46.2	11.2	4.45	5.93		0.027192						
0.319	0.57	46.2	11.2	4.45	5.93		0.025787						
0.319	0.57	46.2	11.2	4.45	5.93	0.008966							
0.319	0.57	46.2	11.2	4.45	5.93	0.008818							
0.319	0.57	46.2	11.2	4.45	5.93	0.008892							
0.319	0.57	46.2	11.2	4.45	5.93		0.026841						
0.319	0.57	46.2	11.2	4.45	5.93		0.027262						
0.319	0.57	46.2	11.2	4.45	5.93						0.014818	0.009691	
0.319	0.57	46.2	11.2	4.45	5.93							0.012345	
0.319	0.57	46.2	11.2	4.45	5.93	0.009065							
0.319	0.57	46.2	11.2	4.45	5.93	0.008966							
0.319	0.57	46.2	11.2	4.45	5.93	0.008818							
0.319	0.57	46.2	11.2	4.45	5.93	0.008892							
0.319	0.57	46.2	11.2	4.45	5.93		0.026841						
0.319	0.57	46.2	11.2	4.45	5.93							0.003959	0.008372
0.319	0.57	46.2	11.2	4.45	5.93								
0.319	0.57	46.2	11.2	4.45	5.93						0.011332	0.003909	
0.319	0.57	46.2	11.2	4.45	5.93	0.005928							
0.319	0.57	46.2	11.2	4.45	5.93	0.001457							
0.319	0.57	46.2	11.2	4.45	5.93						0.009089	0.002804	
0.319	0.57	46.2	11.2	4.45	5.93	0.007583							
0.319	0.57	46.2	11.2	4.45	5.93	0.00494							
0.319	0.57	46.2	11.2	4.45	5.93	0.005879							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	0.548658 Without GW-83-D
				0.022625	0.548658 With GW-83-D
				0.006397	
				0.025506	
				0.004866	
				0.001136	
				0.018128	
				0.006669	
				0.004718	
				0.022344	
				0.027262	
				0.027543	
				0.027192	
				0.025787	
				0.008966	
				0.008818	
				0.008892	
				0.026841	
				0.027262	
				0.024509	
				0.012345	
				0.009065	
				0.008966	
				0.008818	
				0.008892	
				0.026841	
				0.012332	
			0.08302	0.08302	
				0.015241	
				0.005928	
				0.001457	
				0.011893	
				0.007583	
				0.00494	
				0.005879	

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MAGNESIUM CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Magnesium Concentration (mg/L)

Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
4.7201481	4.7231	6.632833	57.87631	6.71	10.875

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Magnesium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5.045	5.7	370	65.2	67.45	78.7		0.152084						
5.045	5.7	370	65.2	67.45	78.7	0.122252							
5.045	5.7	370	65.2	67.45	78.7		0.171449						
5.045	5.7	370	65.2	67.45	78.7	0.092987							
5.045	5.7	370	65.2	67.45	78.7	0.021713							
5.045	5.7	370	65.2	67.45	78.7		0.121856						
5.045	5.7	370	65.2	67.45	78.7	0.127444							
5.045	5.7	370	65.2	67.45	78.7	0.090155							
5.045	5.7	370	65.2	67.45	78.7		0.150195						
5.045	5.7	370	65.2	67.45	78.7		0.183256						
5.045	5.7	370	65.2	67.45	78.7		0.185146						
5.045	5.7	370	65.2	67.45	78.7		0.182784						
5.045	5.7	370	65.2	67.45	78.7		0.173338						
5.045	5.7	370	65.2	67.45	78.7	0.171341							
5.045	5.7	370	65.2	67.45	78.7	0.168509							
5.045	5.7	370	65.2	67.45	78.7	0.169925							
5.045	5.7	370	65.2	67.45	78.7		0.180422						
5.045	5.7	370	65.2	67.45	78.7		0.183256						
5.045	5.7	370	65.2	67.45	78.7						0.095918	0.153267	
5.045	5.7	370	65.2	67.45	78.7							0.195242	
5.045	5.7	370	65.2	67.45	78.7	0.173229							
5.045	5.7	370	65.2	67.45	78.7	0.171341							
5.045	5.7	370	65.2	67.45	78.7	0.168509							
5.045	5.7	370	65.2	67.45	78.7	0.169925							
5.045	5.7	370	65.2	67.45	78.7		0.180422						
5.045	5.7	370	65.2	67.45	78.7							0.062618	0.083723
5.045	5.7	370	65.2	67.45	78.7								
5.045	5.7	370	65.2	67.45	78.7						0.073352	0.061826	
5.045	5.7	370	65.2	67.45	78.7	0.113284							
5.045	5.7	370	65.2	67.45	78.7	0.027849							
5.045	5.7	370	65.2	67.45	78.7						0.058836	0.044345	
5.045	5.7	370	65.2	67.45	78.7	0.144909							
5.045	5.7	370	65.2	67.45	78.7	0.094403							
5.045	5.7	370	65.2	67.45	78.7	0.11234							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	5.935248 Without GW-83-D 5.935248 With GW-83-D
				0.152084	
				0.122252	
				0.171449	
				0.092987	
				0.021713	
				0.121856	
				0.127444	
				0.090155	
				0.150195	
				0.183256	
				0.185146	
				0.182784	
				0.173338	
				0.171341	
				0.168509	
				0.169925	
				0.180422	
				0.183256	
				0.249185	
				0.195242	
				0.173229	
				0.171341	
				0.168509	
				0.169925	
				0.180422	
				0.14634	
			1.1018	1.1018	
				0.135178	
				0.113284	
				0.027849	
				0.10318	
				0.144909	
				0.094403	
				0.11234	

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POTASSIUM CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Potassium Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
4.3	4.4	5.4	19	5	7.6

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Potassium Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
5	4.1	102	32	25	24		0.14168						
5	4.1	102	32	25	24	0.11137							
5	4.1	102	32	25	24		0.15972						
5	4.1	102	32	25	24	0.08471							
5	4.1	102	32	25	24	0.01978							
5	4.1	102	32	25	24		0.11352						
5	4.1	102	32	25	24	0.1161							
5	4.1	102	32	25	24	0.08213							
5	4.1	102	32	25	24		0.13992						
5	4.1	102	32	25	24		0.17072						
5	4.1	102	32	25	24		0.17248						
5	4.1	102	32	25	24		0.17028						
5	4.1	102	32	25	24		0.16148						
5	4.1	102	32	25	24	0.15609							
5	4.1	102	32	25	24	0.15351							
5	4.1	102	32	25	24	0.1548							
5	4.1	102	32	25	24		0.16808						
5	4.1	102	32	25	24		0.17072						
5	4.1	102	32	25	24						0.067032	0.1519	
5	4.1	102	32	25	24							0.1935	
5	4.1	102	32	25	24	0.15781							
5	4.1	102	32	25	24	0.15609							
5	4.1	102	32	25	24	0.15351							
5	4.1	102	32	25	24	0.1548							
5	4.1	102	32	25	24		0.16808						
5	4.1	102	32	25	24							0.062059	0.060222
5	4.1	102	32	25	24								
5	4.1	102	32	25	24						0.051262	0.061275	
5	4.1	102	32	25	24	0.1032							
5	4.1	102	32	25	24	0.02537							
5	4.1	102	32	25	24						0.041118	0.043949	
5	4.1	102	32	25	24	0.13201							
5	4.1	102	32	25	24	0.086							
5	4.1	102	32	25	24	0.10234							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	4.754616 Without GW-83-D
				0.14168	4.754616 With GW-83-D
				0.11137	
				0.15972	
				0.08471	
				0.01978	
				0.11352	
				0.1161	
				0.08213	
				0.13992	
				0.17072	
				0.17248	
				0.17028	
				0.16148	
				0.15609	
				0.15351	
				0.1548	
				0.16808	
				0.17072	
				0.218932	
				0.1935	
				0.15781	
				0.15609	
				0.15351	
				0.1548	
				0.16808	
				0.122281	
			0.336	0.336	
				0.112537	
				0.1032	
				0.02537	
				0.085067	
				0.13201	
				0.086	
				0.10234	

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BICARBONATE CALCULATION FOR BUTTERS ROW #1, WET SEASON

			Well Type				I	I	I	D		D	D	D				
Particle	percentage	interval	B	S	I	D	GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	B	S	I	D
1	**3.22%**	s		1												0.0322		
2	**2.59%**	b	1												0.0259			
3	**3.63%**	s		1												0.0363		
4	**1.97%**	b	1												0.0197			
5	**0.46%**	b	1												0.0046			
6	**2.58%**	s		1												0.0258		
7	**2.70%**	b	1												0.027			
8	**1.91%**	b	1												0.0191			
9	**3.18%**	s		1												0.0318		
10	**3.88%**	s		1												0.0388		
11	**3.92%**	s		1												0.0392		
12	**3.87%**	s		1												0.0387		
13	**3.67%**	s		1												0.0367		
14	**3.63%**	b	1												0.0363			
15	**3.57%**	b	1												0.0357			
16	**3.60%**	b	1												0.036			
17	**3.82%**	s		1												0.0382		
18	**3.88%**	s		1												0.0388		
19	**3.92%**	i			1			22.50%	77.50%									
20	**3.87%**	i			1				100.00%									
21	**3.67%**	b	1												0.0367			
22	**3.63%**	b	1												0.0363			
23	**3.57%**	b	1												0.0357			
24	**3.60%**	b	1												0.036			
25	**3.82%**	s		1												0.0382		
26	**2.71%**	i			1				45.80%	54.20%								
27	**1.40%**	d				1								100.00%				
28	**1.90%**	i			1			35.50%	64.50%									
29	**2.40%**	b	1												0.024			
30	**0.59%**	b	1												0.0059			
31	**1.42%**	i			1			38.10%	61.90%									
32	**3.07%**	b	1												0.0307			
33	**2.00%**	b	1												0.02			
34	**2.38%**	b	1												0.0238			

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I	I	I	D		D	D	D
GW-84-M	GW-85-M	GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D
	0.88%	3.04%					
		3.87%					
		1.24%	1.47%				
							1.40%
	0.67%	1.23%					
	0.54%	0.88%					

Bicarbonate Concentration (mg/L)					
Town Wells	Shallow	Medium	Deep	GW-84-M	GW-85-M
25	41	44	141	32	55
25	41	44	141	32	55
25	41	44	141	32	55

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Bicarbonate Concentration (mg/L)						Contribution to Total Concentration							
GW-86-M	GW-65-D	GW-83-D	GW-85-D	GW-86-D	GW-87-D	Town Well	Shallow	Medium	Deep	GW-84-M	GW-85-M	GW-86-M	GW-65-D
51	141	96	215	181	247		1.3202						
51	141	96	215	181	247	0.6475							
51	141	96	215	181	247		1.4883						
51	141	96	215	181	247	0.4925							
51	141	96	215	181	247	0.115							
51	141	96	215	181	247		1.0578						
51	141	96	215	181	247	0.675							
51	141	96	215	181	247	0.4775							
51	141	96	215	181	247		1.3038						
51	141	96	215	181	247		1.5908						
51	141	96	215	181	247		1.6072						
51	141	96	215	181	247		1.5867						
51	141	96	215	181	247		1.5047						
51	141	96	215	181	247	0.9075							
51	141	96	215	181	247	0.8925							
51	141	96	215	181	247	0.9							
51	141	96	215	181	247		1.5662						
51	141	96	215	181	247		1.5908						
51	141	96	215	181	247						0.4851	1.54938	
51	141	96	215	181	247							1.9737	
51	141	96	215	181	247	0.9175							
51	141	96	215	181	247	0.9075							
51	141	96	215	181	247	0.8925							
51	141	96	215	181	247	0.9							
51	141	96	215	181	247		1.5662						
51	141	96	215	181	247							0.633002	2.071036
51	141	96	215	181	247								
51	141	96	215	181	247						0.370975	0.625005	
51	141	96	215	181	247	0.6							
51	141	96	215	181	247	0.1475							
51	141	96	215	181	247						0.297561	0.44828	
51	141	96	215	181	247	0.7675							
51	141	96	215	181	247	0.5							
51	141	96	215	181	247	0.595							

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Contribution to Total Concentration				Particle	Overall Total
GW-83-D	GW-85-D	GW-86-D	GW-87-D	Total	39.42974 Without GW-83-D
					39.42974 With GW-83-D
				1.3202	
				0.6475	
				1.4883	
				0.4925	
				0.115	
				1.0578	
				0.675	
				0.4775	
				1.3038	
				1.5908	
				1.6072	
				1.5867	
				1.5047	
				0.9075	
				0.8925	
				0.9	
				1.5662	
				1.5908	
				2.03448	
				1.9737	
				0.9175	
				0.9075	
				0.8925	
				0.9	
				1.5662	
				2.704038	
			3.458	3.458	
				0.99598	
				0.6	
				0.1475	
				0.745841	
				0.7675	
				0.5	
				0.595	

D

ATTACHMENT D

EXCERPTS FROM CTM MANUAL

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USER'S GUIDE TO CTM AND PRESCRN1

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ABSTRACT

The CTM computer code may be used to model reactive solute transport for inorganic aqueous solutions. Using CTM, it is possible to simulate subsurface transport and reaction of aqueous solutions in porous, homogeneous media along a one-dimensional streamtube under steady-state flow conditions. The CTM code uses a two-step algorithm to link the hydrologic and geochemical modules that perform the calculations. The CTM code may be used: 1) without the geochemical module, in which case, transport of the solution is modeled without reaction between the aqueous phase and the porous medium; 2) with an equilibrium speciation, solubility, and adsorption geochemical module; or 3) with a constant K_d adsorption geochemical module. The PRESCRN1 computer code is an interactive preprocessor that creates input files for the CTM code.

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1.0 COMPUTER CODE ABSTRACT

The CTM computer code calculates reactive solute transport for inorganic aqueous solutions. Using CTM, it is possible to simulate subsurface transport of aqueous solutions in porous, homogeneous media along a one-dimensional streamtube under steady-state flow conditions. The CTM code uses a two-step algorithm to perform the calculations. In the first step, the solutes are transported according to the hydrologic model of the system. In the second step, the aqueous solution reacts with the solid phase assemblage according to the geochemical model of the system. In addition to its use as a reactive solute transport code with equilibrium speciation, solubility, and adsorption, CTM may be used as a transport code (with no aqueous speciation, solubility, or adsorption) or with constant K_d adsorption. The PRESCRN1 computer code is an interactive preprocessor that creates input files for the CTM code.

The CTM code was originally developed to run on VAX mainframe computers, but has been modified using Microsoft FORTRAN (version 5.0) to run on an IBM PS/2 Model 70 computer with a math coprocessor. The PRESCRN1 preprocessor was developed on an IBM PS/2 Model 70 computer with a math coprocessor using Microsoft FORTRAN (version 5.0) and the user interface software HI-SCREEN XL[1]. The codes can be installed and operated on any compatible computer of equal or greater capabilities.

This user's guide provides descriptions of the CTM and PRESCRN1 codes (Section 2.1), including a description of the options that may be selected when the codes are used (Section 2.2); descriptions of the external data files (Section 2.3) and input files for the CTM code (Section 2.4); system commands necessary to operate the PRESCRN1 and CTM codes (Section 2.5); descriptions of the output files (Section 2.6); sample problems that demonstrate the use of PRESCRN1 and CTM (Section 2.7); a brief description of the theory behind CTM (Section 3.0); and descriptions of the source codes (Section 4.1) and the hardware required for code implementation (Section 4.2).

2.0 APPLICATION INFORMATION

2.1 CODE DESCRIPTION

PRESCRN1 is a preprocessing code that constructs input files for CTM, using information supplied interactively by the user and the thermodynamic data stored in data files. The CTM code was designed to calculate reaction and transport of inorganic aqueous components under steady-state flow conditions in homogeneous, porous media along a one-dimensional streamtube. The CTM code uses a two-step algorithm to link the transport model with the geochemical model.

---

[1]HI-SCREEN XL is a trademark licensed to Softway Inc., San Francisco, California.

Transport is modeled in the CTM code as steady-state flow along a one-dimensional streamtube in a homogeneous, porous medium. The transport model in the CTM code is based on the theory of Markov processes. The transport processes modeled by the CTM code include advection and hydrodynamic dispersion, which are described using a discretized version of a continuous probability density function (pdf).

Three geochemistry options are available in CTM: 1) no geochemistry, in which case, transport processes alone affect the calculated distribution of a tracer; 2) equilibrium aqueous speciation, solid phase solubility, and adsorption that is modeled using a surface-complexation algorithm, and 3) constant K_d adsorption.

The CTM code calculates the total concentrations of the components in the different bins at each time step, the effluent concentrations at each time step, and the aqueous concentrations of the components in each bin at each time step. In addition, the concentrations of the adsorbed phases, solid phases, and monitored species in each bin at each time step may be calculated, depending upon the geochemical model selected.

2.2 CODE CONSIDERATIONS

Because the CTM code uses a direct simulation method, both time and distance are discretized. The time steps and the bins in CTM are of standard lengths that are selected by the user. The initial aqueous concentrations, amounts of solid phases, and number of adsorption surface sites are specified by the user and may vary as a function of location in the streamtube. The composition of the influent is allowed to vary with time, so that systems with variable source terms can be simulated.

The user of the CTM code selects the geochemical model to be used in the calculation: 1) no geochemistry (transport processes only); 2) equilibrium speciation, solubility, and adsorption; or 3) constant K_d adsorption. If the equilibrium speciation, solubility, and adsorption option is used, the CTM code contains an optional adaptive grid. If the adaptive grid option is selected, those bins having the same concentrations (within a user-specified tolerance) are grouped together into geochemical grid elements, and their chemical compositions are averaged. Because a number of bins can form one grid element, this step effectively reduces the total number of bins in the streamtube to be involved in the geochemical equilibration process, and thus reduces the computation time for CTM.

2.3 EXTERNAL DATA FILES

Thermodynamic data used by the equilibrium speciation, solubility, and adsorption geochemistry model are contained in the files listed in Table 1. These files are read by

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Table 1. Thermodynamic Data Files for the Equilibrium Speciation, Solubility, and Adsorption Geochemical Model

File Name	Thermodynamic Data
CMP.DAT	Components
CPX.DAT	Aqueous complexes
SOL.DAT	Solids
SRB.DAT	Adsorbates
OUT.DAT	Monitored species

the PRESCRN1 code. If the equilibrium speciation, solubility, and adsorption geochemistry model is selected, the appropriate data from these files are included in the geochemical input file for the CTM code. The format of each of these files is listed in the Appendix, as are the thermodynamic data files that were used in the example problem.

2.4 INPUT DATA

Input files for CTM may be created using the PRESCRN1 code or by editing existing files. The following files are generated by the PRESCRN1 code: 1) a main input file, 2) a geochemical input file, 3) a hydrologic input file, 4) an initial conditions input file, 5) a boundary conditions input file, and 6) a probability density function (pdf) file. Except for the pdf file, all of these files are necessary for CTM operation. The pdf file is created by PRESCRN1 so that a graphical depiction of the probability density function can be generated using graphics or spreadsheet software. The contents of the various input files and their formats are described in the Appendix. After the PRESCRN1 code has been used to generate the input files, the CTM code is invoked separately.

Table 2 contains a description of the input data and information that are required to construct the CTM input files. The data in Table 2 are listed with the screens that appear during the operation of the PRESCRN1 code. The screen numbers in Table 2 correspond to the numbers in the lower left or upper left portion of the screens. The particular screens that appear when PRESCRN1 is used vary according to the choices made during construction of the input files.

2.5 SYSTEM CONTROL REQUIREMENTS

Executable versions of the CTM and PRESCRN1 codes (CTM.EXE and PRESCRN1.EXE) are provided as part of the code package, and it should not be

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Table 2. Input Data for CTM, Arranged in the Order of the Screens That Appear in the PRESCRN1 code. The variable names in the source code that correspond to the input and displayed data are listed in parentheses

Screen Number	Description/Instructions
MAIN INPUT SECTION	
CTM1	Title screen
CTM2	Enter the names of the input files and the pdf file that will be created by PRESCRN1 (logical unit numbers 0, 1, 2, 3, 4 and 18). These must be new files, or an error message will be generated and the PRESCRN1 code will be terminated. This feature prevents the accidental loss of existing files. After these files are generated, the file names must be entered into CTM by the user. Therefore, it may be useful to print this screen for later reference
CTM2a	The version numbers of the thermodynamic data files are displayed. These version numbers are not printed on the input or output files, so it may be useful to print this screen for later reference
CTM3	Enter the title of the overall simulation (title1, title2). This title is printed on the main CTM input file and output file
GEOCHEMISTRY INPUT SECTION	
CTM4	Select geochemistry type: • no geochemistry (ichem = 1) • equilibrium speciation/solubility/adsorption (ichem = 2) • constant K_d adsorption (ichem = 3)
CTM20	Values are displayed for • the convergence tolerance (ctol, default value of 0.0001) • the maximum number of iterations (itmax, default value of 200) • the Newton-Raphson divisor (divnr, default value of 10) and the adaptive grid is off. Indicate if you wish to change these values
CTM5	Enter • the convergence tolerance (ctol) • the maximum number of iterations (itmax) • the Newton-Raphson divisor (divnr) • adaptive grid on/off
CTM5a	If the adaptive grid is on, set the grid tolerance (gtol, default value of 0). The grid tolerance is the maximum concentration difference between bins that can be combined into a grid element

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Table 2. (contd.)

Screen Number	Description/Instructions
CTM19	Values are displayed for • the convergence tolerance (ctol) • the maximum number of iterations (itmax) • the Newton-Raphson divisor (divnr) • the grid tolerance (gtol) and the adaptive grid is on. Indicate if you wish to change these values
CTM6	Enter the time and space frequency for the speciation output (ipt and ipx, default values of 1). For example, for ipt=5 and ipx=6, speciation output would be printed for every five time steps at every sixth bin
CTM7	Select the type of geochemistry output: • no geochemistry output (icout=0) • final speciation only (icout=1) • final speciation plus information on the phase assemblage (icout=2) • final speciation plus speciation upon phase assemblage changes (icout=3) • output speciation at every iteration (icout=4)
CTM8	Select the long or short version of the master CTM output file (imout). The long version contains a printout of the global mass of each component at each time step during a CTM run. Generally, the short version is adequate
CTM9	Enter the title for the geochemical conceptual model (title3, title4)
D15	Select the components for inclusion in the geochemical model (idcmp, namcmp, zcmp, gfwcmp). H_2O is automatically added for equilibrium speciation/solubility/adsorption and should remain in the problem. For constant K_d adsorption, H_2O is not automatically added to the problem. Components are highlighted using the arrow keys; the **Enter** key is used to change the status of the component so that it is either in or out of the problem. A maximum of 11 components (including H_2O) may be selected. When the component selection is complete, press **Enter** on the **"done modifying component list"** menu bar
D16	Displays the number of complexes in the problem (ncpx)
D17	This error message is displayed if the number of complexes to be loaded into the array exceeds the size of the array (maxp). Generally, the user should terminate code operation (**Esc**, then **Cntrl-C**) if this error message is displayed

Table 2. (contd.)

Screen Number	Description/Instructions
D19	Select the solids for the geochemical conceptual model, using the same method as in screen D15 (idsol, namsol, ksol, gfwsol)
D18	Select the adsorbates for the geochemical conceptual model, using the same method as in screen D15 (idsrb, namsrb, ksrb, gfwsrb, zsrb)
D20	Select the monitored species for the geochemical conceptual model, using the same method as in screen D15 (idout, namout, kout, gfwout). Values for monitored species are calculated by the CTM code based on the geochemical model (e.g., log P_{CO2})
CTM34	Enter the K_d for the adsorbates in the constant K_d adsorption model (ksrb)
CTM35	The K_d values are displayed for the adsorbates in the constant K_d adsorption model, and an opportunity to return to CTM34 and edit the K_d values is provided
HYDROLOGIC INPUT SECTION	
CTM13	Enter the title for the hydrologic conceptual model (title5, title6) This title is printed on the hydrologic input file
CTM25	Enter the following data: • the number of bins (nbin); the maximum number is 250 • the length of the streamtube (clen) • the time increment (delt) • the porewater velocity (avel)
CTM31	This error message is displayed if the number of bins input in CTM25 exceeds 250 (maxn). The code will return to screen CTM25, and the user should enter a value for the number of bins that is 250 or less
CTM24	Select the pdf type: • normal (idstr=1) • lognormal (idstr=2) • exponential (idstr=3) • multinomial (idstr=4) • plug flow (idstr=5)
CTM27	Enter the dispersion coefficient (disp), for normal, lognormal, or exponential pdf
CTM28	The Peclet and Courant numbers are displayed for normal, lognormal, or exponential pdf (peclet, couran)
CTM38	Enter the row elements (yplt) for multinomial distribution.

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Table 2. (contd.)

Screen Number	Description/Instructions
CTM39	The row sum is displayed (sum). Indicate whether you are ready to form the transport matrix
CTM36	Indicate whether you wish to change the physical parameters of the streamtube
CTM37	Indicate whether you wish to change the transport model parameters
CTM42	Indicate whether the transport matrix should be printed on the main CTM output file (ipflg)
	INITIAL CONDITIONS INPUT SECTION
CTM14	Enter the title for the initial conditions input file (title7, title8)
CTM43	Enter the bin at the end of the layer (jbin)
CTM45	This error message is displayed if the bin number entered in CTM43 (jbin) exceeds the number of bins in the streamtube (nbin). The code will return to screen CTM43 and the user should reenter a smaller value for jbin
CTM46	Enter the initial aqueous concentrations (molal units) in the layer (cmp). The concentration data are entered in two parts, first the mantissa and then the exponent, separated by "Enter". The moles per kilogram of H_2O is 55.509. The concentration of H^+ that is entered should be the proton condition, which must be calculated using an equilibrium geochemical modeling code [e.g., MINTEQ (Felmy et al. 1984; Peterson et al. 1987)]
CTM47	Enter the initial concentrations (in mol/kgH_2O) of the solids in the layer (sol)
CTM48	Enter the initial concentrations (in mol/kgH_2O) of the adsorbates in the layer (srb)
	BOUNDARY CONDITIONS INPUT SECTION
CTM15	Enter the title for the boundary conditions input file (title9, title0)
CTM49	Enter the total number of time steps (nstep)
CTM50	Enter the time step at the end of the next change in influent concentration (jstep)
CTM51	This error message is displayed if the time step entered in CTM50 (jstep) exceeds the simulation length (nstep). The code will return to screen CTM50, and the user should enter a smaller value for jstep
CTM52	Enter the aqueous concentrations in the influent (cmp)

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necessary to recompile the codes. If compilation of the codes is necessary, both the CTM and PRESCRN1 codes must be compiled with the data threshold set equal to a minimum of 128K. (When using Microsoft FORTRAN, the FL command option is /Gt128). The common block files for the CTM and PRESCRN1 codes are COMMONC.FOR and COMMONR.FOR, respectively. These files must be in the default drive when the codes are compiled.

Before the PRESCRN1 code can be used, the files indicated in Table 3 must be in the default disk drive. When the PRESCRN1 code is used to construct the input files, the thermodynamic data files must be in the default disk drive regardless of the geochemical model that is selected by the user. In order for the input screens to be displayed properly, the DISPLAY.COM module must be loaded into memory by typing "DISPLAY" at the DOS prompt. The PRESCRN1 code then may be started by typing "PRESCRN1" at the DOS prompt. Throughout the operation of the PRESCRN1 code, "ESC" followed by Ctrl-C will exit the code. When "Continue" is highlighted on the screen, the Enter key will allow the user to continue to the next screen. Menu items are highlighted using the arrow keys and then selected using the Enter key.

Before the CTM code is started, the DISPLAY.COM module must be loaded into resident memory and the input files, CTM.LBR, and CTM.EXE must be in the default disk drive. The CTM code is started by typing "CTM" at the DOS prompt. At the beginning of CTM operation, the user provides the input and output file names, and the CTM code will then perform the simulation. Table 4 lists the screens that will appear and the file names that must be input into CTM.

Table 3. Files Required to Operate the PRESCRN1 Code

File Name	Description
DISPLAY.COM	Utility program that controls the user-friendly interface between the executable codes and screen/menu libraries
PRESCRN1.EXE	Executable PRESCRN1 code, the CTM preprocessor
PRE.LBR	Menu/screen library for PRESCRN1
CMP.DAT	Component thermodynamic data file
CPX.DAT	Aqueous complex thermodynamic data file
SOL.DAT	Solids thermodynamic data file
SRB.DAT	Adsorbate thermodynamic data file
OUT.DAT	Monitored species thermodynamic data file

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2.4. Description of the File Names That Are Entered into the CTM Code

Screen Number	Description/Instructions
CTMINP	Enter • main input file name (unit 0) • geochemistry input file name (unit 1) • hydrology input file name (unit 2) • initial conditions input file name (unit 3) • boundary conditions input file name (unit 4)
CTMOUT1	Enter • main CTM output file name (unit 7) • graphics output file name for global masses of the components (unit 8) • graphics output file name for influent and effluent concentrations at each time step (unit 9) • graphics output file name for aqueous concentrations of the components in each bin at each time step (unit 10)
CTMOUT11	Enter the graphics output file name for concentrations of the solids in each bin at each time step (unit 11)
CTMOUT12	Enter the graphics output file name for adsorbate concentrations in each bin at each time step (unit 12)
CTMOUT13	Enter the graphics output file name for monitored species concentrations in each bin at each time step (unit 13)

2.6 OUTPUT INFORMATION

Output from the PRESCRN1 code consists of the CTM input files and the pdf file. The pdf file, which is in ASCII format, may be used with graphics or spreadsheet software to produce a plot of the probability density function.

The CTM code output consists of a main output file and a series of graphics files. The main output file and the graphics files that contain the global masses of components output, the influent and effluent concentrations output, and the aqueous concentrations output are created for all problems run on CTM. If adsorbed or solid phases are present in the geochemical model, graphics output files that contain the adsorbate or solid phase concentrations, respectively, will also be created. The formats of the output files are listed in the Appendix. The graphics output files are in ASCII format that can be examined using text processing software or plotted with graphics software.

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2.7 SAMPLE PROBLEMS

Three sample problems have been developed to demonstrate the operation of the CTM code. These problems were adapted from a conceptual model of uranium transport at uranium mill tailings disposal sites developed by Erikson et al. (1990). Tables 5 through 7 contain step-by-step descriptions of the data that should be input into the PRESCRN1 code to recreate these problems.

PROBLEM 1: NO GEOCHEMISTRY

For the CTM example problem that includes only the transport process, the data described in Table 5 should be input into the PRESCRN1 code. In this problem, the initial tracer concentration and boundary condition tracer concentration are equal to the UO_2^{2+} concentrations in the conceptual model of Erikson et al. (1990).

After the input files are constructed by the PRESCRN1 code, the user separately invokes the CTM code. The names of the input files that were generated by the PRESCRN1 code and the output file names are input into the CTM code, and then the output files are produced. Figure 1 illustrates the concentrations of the tracer in the aqueous phase at different time steps. This figure was created by importing the graphics output file into LOTUS 123[a].

Table 5. Input Data for the "No Geochemistry" Example Problem. The bold typeface indicates selections that are entered into the PRESCRN1 code by the user

Screen Number	Instructions
CTM2	Enter names for the following files: • **the main input file** • **the geochemistry input file** • **the hydrologic input file** • **the initial conditions input file** • **the boundary conditions input file** • **the pdf file**
CTM3	Enter the title of the overall simulation. The title used in the example problem was "**example problem 1, no geochemistry, 3/7/92**"
CTM4	Select geochemistry type: "**no geochemistry**"

[a]LOTUS 123 is a trademark of Lotus Development Corporation, Cambridge Massachusetts.

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