Section 8

Summary and Conclusions

This RI Update Report was developed to summarize and update the conceptual understanding of the SFB based on data collected as part of the GSIS field program along with the numerous other sources of information collected by USEPA and PRPs in the basin. Because of the comprehensive nature of the 1992 RI report, this document was developed as an update, summarizing sections of the 1992 RI that have changed, and providing expanded discussions in areas where new data are available, specifically the HCSM and the nature and extent of groundwater contamination in the SFB. Section 8.1 provides a summary of the investigations and findings from this RI Update Report and Section 8.2 provides conclusions from this report including data limitations along with recommendations for future work.

8.1 Summary

The following sections provide a summary of the results from this RI Update, focusing on the investigation activities as part of the GSIS; the updated HCSM; the nature, extent, fate, and transport of contamination; a summary of the model selection and capture zones; and an overview of the human-health risk assessment.

8.1.1 RI Update Activities

Remedial investigation activities as part of the GSIS were performed to fill data gaps to meet the overall objective of developing and implementing groundwater remediation in the SFB. The first step in this process was identification of data gaps based on existing data. The two primary data gaps identified included the following:

- Collection of comprehensive water quality data to identify the COCs (including both physical and chemical characteristics) and their distribution in groundwater in the SFB.
- Collection of data to update the HCSM and site physical characteristics of the SFB, specifically in areas with limited data, particularly in the areas of NHW, RT, and TJ.

To fill these data gaps, LADWP along with BC developed a monitoring well installation and testing program. This well installation part of the program identified 26 locations for completion of multi-level clustered monitoring wells for collection of hydrogeologic and water quality data. The monitoring well installation was performed between 2013 and 2014 and included the collection of the following data to assist with the hydrogeologic model of the SFB:

- Lithologic data through logging of soils by an onsite geologist and geophysical logging of the borehole. This information, along with data from adjacent wells, was also used to determine the appropriate screened intervals for the multi-level monitoring wells.
- Soil properties (e.g., soil bulk density, porosity, hydraulic conductivity) through geotechnical testing of select soil samples.
- Water quality data collected during advancement of the borehole, and after well installation during well development.

The second part of the program was collection of water quality data, which included collection of samples from existing monitoring wells and production wells (total of 67 wells sampled in 2012/2013) and the 26 newly installed wells (total of 75 wells sampled during 2014). These sampling events included a comprehensive list of over 400 chemicals that were analyzed and then subjected to Level 2a data validation to ensure a robust and defensible data set for establishing COCs and establishing their extents in groundwater.

8.1.2 HCSM

The HCSM presented in this report is based upon data generated over the past several years, since the completion of the original 1992 RI report. The hydrostratigraphic units of the basin have been defined in various investigations and are summarized in Figure 3-6. Each investigation developed these units for the specific objectives of that investigation. The objective of this investigation was to update the HCSM presented in the 1992 RI report in order to refine the hydrogeologic understanding of the eastern SFB and to help with the numerical model layering for subsequent model updates.

Five hydrostratigraphic layers (equivalent to model layers) are proposed herein. The layer interpretations are based upon the 1992 RI HCSM and were modified where geophysical data and geologist descriptions of soil cuttings from the new GSIS monitoring wells warranted a change.

- Layer 1 is generally the same as the 1992 RI model Layer 1, with the base of the layer coincident with the base of the Middle Zone where present. The Middle Zone is important both as the base of Layer 1 and as a lower permeability unit in the SFB. Based upon new data it is evident that the Middle Zone does not exist west of Coldwater Canyon Avenue as a distinguishable unit. In fact, most of the identifiable units in the NHOU area become less distinguishable west of Coldwater Canyon Avenue.
- Layer 2a generally corresponds with the original 1992 RI Layer 2 and comprises the coarse-grained, high-permeability, and high-resistivity layer observed in many of the geologic and geophysical logs from wells in the area of the NH and RT well fields. The top of this layer generally occurs at a depth of approximately 360 feet bgs and is marked by a sharp increase in resistivity values from geophysical logs. The bottom of Layer 2a is approximately 470 feet bgs and is indicated in the geophysical logs as a sharp decrease is resistivity. The top of Layer 2a correlates with the top of the screened intervals of the production wells in the Rinaldi-Toluca well field, and the Zone 1 (uppermost) screened intervals of the new GSIS nested monitoring wells are partially or completely within Layer 2a.
- The base of Layer 2b correlates with the base of the Watermaster-defined Blue Star Marker Bed (ULARA Watermaster, 2015), a high-resistivity layer that occurs at a depth of approximately 650 feet bgs and dips to the south at an angle similar to the ground surface. Layer 2b exhibits alternating high- and low-resistivity layers, but is generally characterized as lower resistivity than Layer 2a. The majority of the Zone 2 (middle) screened intervals of the new GSIS nested monitoring wells are located within Layer 2b.
- The base of Layer 3 occurs at a depth of approximately 850 to 900 feet bgs and dips parallel to ground surface. The base of Layer 3 is delineated by another sedimentary layer (similar to that of Layer 2a) that exhibits high resistivity values in geophysical logs. Layer 3 includes the deepest zone from which existing production wells are screened. The majority of the Zone 3 (deep) screened intervals of the new GSIS nested monitoring wells are located within Layer 3.

- Layer 4 occurs from the base of Layer 3 to the top of the non-water-bearing basement rock. The base of Layer 4 remains relatively undefined, as few wells in the SFB have encountered non-water-bearing material. New data from TJ-MW-06 indicate that the non-water-bearing basement rock is greater than 1,400 feet bgs in this area, several hundred feet deeper than the RI model Layer 4. Few, if any, wells in the SFB are screened in Layer 4.

8.1.3 Nature of Contamination

Sources of chemical releases in the SFB have originated from multiple anthropogenic activities. For chlorinated solvents and Cr(VI), the primary releases were typically leaking storage tanks or piping, leaching from sumps of other disposal practices, and spills or generally poor housekeeping from the aerospace manufacturers and supporting industries. For other chemicals, such as nutrients (nitrate and manganese) and other inorganic chemicals (e.g., perchlorate), there are multiple potential sources such as historical agricultural practices, and other industrial and/or municipal practices in the basin including historical landfills. In addition, metals such as Cr(VI) can be naturally occurring based on the generally aerobic and oxidizing nature of groundwater in the SFB.

To evaluate the nature of contamination in the SFB, LADWP performed two sampling events in 2012/2013 of existing wells and in 2014 of newly-installed wells. A total of 31 production wells, 61 monitoring wells, and 151 sampling intervals were sampled during the two events. The samples were analyzed for a comprehensive list of chemicals (over 400 individual chemicals or compounds) including organic compounds, inorganic chemicals or compounds, general water chemistry, pharmaceutical compounds, radionuclides, and bacterial indicators.

Using the data from the above monitoring events combined with other data sources including USEPA and PRPs in the SFV, a total of 93 chemicals have been reported in the groundwater above a regulatory threshold (i.e., MCL, SMCL, NL, and PHG) at least once since the start of monitoring in 1980. Although 93 chemicals were identified through the initial screening, only certain chemicals pose a long-term risk to human health, or require specific attention during the evaluation and design of remedial alternatives for groundwater in the SFB. To prioritize this list of chemicals they were each evaluated compared to occurrence in the SFB and LADWP production wells, toxicity, and relation to regulatory thresholds and treatment requirements. Using these criteria, a total of 12 COCs were identified as high priority, thereby requiring a more detailed evaluation. These 12 COCs and their concentration ranges in the study area are presented below.

- **Organic Chemicals**
  - TCE (<Reporting Limit [RL] to 670 µg/L)
  - PCE (<RL to 110 µg/L)
  - Cis-1,2-DCE (<RL to 46 µg/L)
  - 1,1-DCE (<RL to 28 µg/L)
  - 1,2-DCA (<RL to 0.59 µg/L)
  - CTET (<RL to 1.2 µg/L)
  - 1,2,3-TCP (<RL to 0.046 µg/L)
  - 1,4-Dioxane (<RL to 460 µg/L)
  - NDMA (<RL to 40 ng/L)

- **Inorganic Chemicals**
  - Cr(VI) (<RL to 4,600 µg/L)
  - Perchlorate (<RL to 11 µg/L)
  - Nitrate (as NO_3) (<RL to 80 mg/L)

The remaining chemicals were reported above established regulatory limits, so they should continually be evaluated, but are considered lower priority and many will be addressed through treatment of the high-priority COCs.

8.1.4 Extent of Contamination

To evaluate the COCs, a comprehensive evaluation of the chemicals was performed examining both their vertical and horizontal distribution in the SFB as well as trends in concentrations over time. Because of the long-term industrial (~1940s–present) and agricultural (pre-1940) history of the SFB, there are multiple sources of these chemicals. The dynamic nature (e.g., lithology, groundwater flow, and usage) of the groundwater system has allowed some of the COCs to become widely dispersed in the basin, both horizontally and vertically. A description of the high-priority chemicals is presented below.

Volatile Organic Compounds and 1,4-Dioxane

A total of eight of the high-priority COCs are VOCs related to either primary chlorinated solvent releases (TCE, PCE, and 1,2,3-TCP), degradation of chlorinated compounds (cis-1,2-DCE, 1,1-DCE, 1,2-DCA), or association (1,4-dioxane). The source areas for these chemicals are generally around known PRPs, which are primarily composed of former aerospace manufacturers and related industries. The VOCs and 1,4-dioxane are generally co-located, largely attributable to their use and release at similar locations and time intervals. VOCs are generally concentrated in shallow groundwater and decrease with depth.

TCE is the most prevalent VOC reported above the MCL (reported above the MCL in over 30 percent of samples collected in the SFB), and the plume occupies a substantial part of the areal extent of the SFB with concentrations above the MCL occupying an area of 22 square miles and a mass in groundwater greater than 170,000 kilograms. Unlike some of the other VOCs, it is present in all of the well fields from the surface to the bottom depth of all the TJ, RT, and NH production wells. Concentrations of TCE are generally stable, though some wells in the RT and NHW well fields have shown increased frequency of detection and concentrations since mid-2000.

Although the other chlorinated compounds noted above mimic TCE, though at generally lower concentrations and extents, some notable deviations to this pattern are presented below:

- Though PCE has a similar distribution to TCE, near the Hewitt Pit; near the Strathern, Penrose, and Tuxford landfills; and west of the NHW well field, there appear to be separate source areas for PCE with concentrations in these areas being higher than those of TCE. PCE also has a generally increasing trend in the center of the TJ well field (TJ-06 and TJ-07) and in some of the NHW production wells.
- Similar to PCE, 1,1-DCE is elevated near the Hewitt Pit and the Strathern, Penrose, and Tuxford landfills, and in deeper sampling intervals in the TJ well field. 1,1-DCE and cis,1-2 DCE are infrequently reported in the NHW well field, though there are a number of sources and reported concentrations in NHE downgradient to Pollock.
- 1,2,3-TCP is currently not reported above the AL in the TJ, RT, or NH well fields, though it has historically been reported above the AL in both TJ and NHE wells. The primary 1,2,3-TCP impacts are located in the eastern section of the SFB near the NHOU, BOU, and GOU.

- 1,4-Dioxane is most commonly reported in the RT and NH well fields, but groundwater impacted with 1,4-dioxane extends from the TJ well field all the way to the Pollock well field. 1,4-dioxane has a similar depth pattern to TCE, particularly in the TJ where concentrations are greater at depth in the outlying monitoring wells. The highest concentrations are east of the RT well field and just north of the NHW well field near the Hewitt Pit, where concentrations of 1,4-dioxane are above 100 µg/L in some monitoring wells.

NDMA

NDMA is located primarily near NH, and has been reported in the SFB in over 7.5 percent of samples collected. The highest concentrations are located east of the NHE well field and extend southeast in the direction of groundwater flow.

Hexavalent Chromium

Cr(VI) is reported in the majority of samples collected in the SFB at generally low concentrations that are likely natural background values. Overall, Cr(VI) is reported in over 20 percent of the samples collected in the SFB above the MCL. Concentrations of Cr(VI) are similar to those of total chromium, so it can be assumed that it makes up the majority of the total chromium in groundwater in the SFB. Cr(VI) reported above the MCL is most prevalent in the NHE well field with a few wells with concentrations near or over the MCL east of the RT well field and northwest of the NHW well field. The highest Cr(VI) concentrations are located in the southern part of the SFB north of Pollock, where there are a number of PRPs and sources of Cr(VI) to groundwater. Cr(VI) is generally confined to shallow groundwater above the middle zone in Layer 1. Trends are generally stable in production wells where it is reported.

Perchlorate

Perchlorate has been reported above its respective MCL in less than 3 percent of the samples collected in the SFB. Though reported in a low number of samples, perchlorate concentrations are elevated near LADWP's production wells specifically in the eastern portion of the TJ well field, central to northern portion of the RT well field, and north of the Pollock well field where concentrations are stable but below the MCL. In TJ, perchlorate has been reported in the eastern production wells periodically above the MCL. Perchlorate has consistently impacted RT production wells RT-02, RT-03, and RT-04, experiencing regular exceedances of the MCL since 2011. Perchlorate is reported in several monitoring wells east of the RT production wells above the MCL with the highest concentrations reported in the deep screen intervals below 630 feet bgs.

Nitrate (as NO_3)

Nitrate is reported in the majority of monitoring wells and production wells in the SFB, but reported above the MCL in only less than 1 percent of the samples collected. Though not regularly reported above the MCL, two plumes near the TJ and NH well fields, and additional plumes in the southern part of the SFB, have contributed to elevated concentrations in the production wells. Its occurrence is widely attributable to historical agricultural practices in the SFB, and there are not any specific sources areas of nitrate. Nitrate concentrations above the MCL are almost entirely confined to shallow groundwater. This shallow occurrence is expected, given the presumed areally extensive release, and vertical migration of contamination from fertilizer application, septic tanks, or leaking sewer lines down to groundwater. Similar to Cr(VI), trends are generally stable in production wells, with some reduction in concentrations during pumping in the TJ production wells along with an increase in concentrations during pumping in some NHW wells.

8.1.5 Fate and Transport

The fate and transport of COCs in the SFB is not only dependent on natural processes of advection, dispersion, and retardation, but is also highly affected by anthropogenic advection of COCs through groundwater extraction. In general, under natural groundwater flow conditions COCs migrate from source areas to the southeast following the natural groundwater flow direction. Highly-soluble compounds, such as 1,4-dioxane, flow at the natural groundwater velocity ranging from 290 to 1,330 feet per year (JMM 1992). VOCs flow at somewhat reduced velocities because of retardation, with values of retardation for the organic COCs ranging from 1 to approximately 3.

Although there is likely some natural transport outside of influence of the pumping, groundwater extraction has a significant impact on the fate and transport of COCs in the SFB. COC concentrations, particularly VOCs, tend to increase in production wells once pumping is started as the plumes from the source area are pulled through the more permeable layers in the aquifer toward the production wells. Despite this mobility in the permeable zones, because of the heterogeneity of the subsurface, there will be the continued diffusing of mass from less permeable materials, which will provide a long-term source of COCs to groundwater.

Limited biotic and abiotic degradation is evident in the SFB for chlorinated solvents based the presence of intermediate degradation products such as cis-1,2-DCE for the biotic degradation of PCE and TCE, and the 1,1-DCE and 1,1-DCA from the abiotic degradation of 1,1,1-TCA. Though these processes appear to be present and resulting in some degradation of mass, complete degradation is inhibited because of the relatively low concentrations and aerobic nature of the SFB groundwater; therefore, degradation is considered a minor process in the SFB. There is no evidence of degradation or transformation of inorganic COCs.

8.1.6 Risk Assessment

An updated baseline risk assessment is not included in this RI Update Report because the exposure pathways have not changed from the 1992 RI, and notification levels and MCLs (which are established based on risk to human health) as well as other ARARs will be used to develop remedial technologies alternatives in the Draft FS.

The LADWP SFB well fields are dominated by diverse land uses that range from residential to industrial, and these land uses are generally interspersed throughout the area. As presented in the 1992 RI, volatilization and inhalation of chemicals in indoor air, along with dermal contact with chemicals in soil and groundwater, is not a complete exposure pathway outside of the source areas because of the relatively low concentrations of volatile chemicals and depth to groundwater near the well fields. The primary exposure route is through potable use of the groundwater after extraction (if untreated), including ingestion, dermal contact, and inhalation (i.e., showering). Because the receptor and exposure pathways have not changed, the risk identified in the 1992 RI would be similar if not more conservative based on changes in toxicity and methods of performing risk assessments.

8.1.7 Groundwater Modeling

Groundwater modeling was performed as part of this RI Update Report to identify regional flow fields for development of the 2, 5, and 10-year capture zones, and to provide the basis modeling performed as part of the Draft FS to refine remedial alternatives. Currently, several active groundwater models are being used in the SFB. The primary models include a version of the 1992 RI model being used by LADWP for regional planning and a version of the 1992 RI model used by USEPA for evaluating remedial actions. Both models are based on the 1992 RI model with a number of updates being made over the years as new data have become available. Because of the presence of multiple models, the first task was to select one of the models for the flow and transport modeling as part of this RI Update Report and the Draft FS. Based on the evaluation of the different models, the selected model layering and grid were the USEPA 2009 FFS and 2012 Groundwater Management Plan, and the selected modeling code was MODFLOW-SURFACT for this RI Update Report and the Draft FS.

As part of this RI Update Report, flow fields were developed to identify the 2, 5, and 10-year capture zones. These capture zones were overlaid on the TCE, PCE, and 1,4-dioxane contour maps to evaluate the capture of these plumes over time. Based on the maps at 10 years all of the plumes are captured by the pumping of LADWP's production wells TJ, RT and NH.

8.2 Conclusions

This document updates the 1992 RI, specifically with regard to hydrogeology and nature and extent of contamination, based on data collected as part of the GSIS program along with other data sources such as USEPA. Although this update has increased the understanding of groundwater flow and contamination in the SFB, similar to the 1992 RI, it is a broad discussion of the regional dynamics of the groundwater system and contamination. Because of the size of the SFB, a detailed discussion of the SFB is not possible or relevant for the purposes of the GSIS program. The following sections present some of the limitations of this RI Update Report with regard to use of data and analysis, and also include recommendations of future work based on the results of the GSIS.

8.2.1 Data Limitations

This RI Update Report was prepared solely for LADWP in accordance with professional standards at the time the services were performed and in accordance with Agreement 47785 between LADWP and BC, dated April 26, 2009. This document is governed by the specific scope of work authorized by LADWP; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. BC has relied on information or instructions provided by LADWP and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

The results presented in this RI Update Report are based on field investigation and groundwater sampling conducted from 2009 through 2014 as part of the GSIS, and represents a snapshot of the groundwater conditions relative to the time scale involved in the occurrence and distribution of contaminants. Groundwater quality data collected as part of the GSIS represent "Primary Data." In addition, data were available from other investigations conducted within the SFB; these "other data" are referred to as "Secondary Data." Available Secondary Data were used and included in the characterization of the nature and extent of contamination in the SFB.

Primary data were subject to a rigorous quality assurance, quality control, and data validation process, with details of the process provided in Appendices B and C. As a result, BC was able to verify the validity, completeness, and accuracy of primary data. Secondary data were not subjected to the same scrutiny. Verification of the validity, completeness, and accuracy of Secondary Data was not done and was beyond the scope of the GSIS.

Additional data may become available in the future, particularly as a result of localized investigations of source areas, continued work within the operable units, and ongoing monitoring of wells constructed as part of the 1992 RI and the GSIS. Therefore, the interpretations contained in this report and the conclusions made may need to be reviewed and possibly adjusted in light of findings from future investigations.

The overarching GSIS objective was to develop a comprehensive remediation and cleanup program to address the groundwater contamination in the SFB, not currently addressed by USEPA. During the development of this RI Update Report, BC used data from all available sources, including data from PRPs and USEPA. However, because of the regional nature of the GSIS, BC did not make any source interpretations or estimates of volumes of COCs released to the environment, both soil and groundwater. BC's interpretation is limited to the COCs in the regional aquifers and associated remediation. The effect of this regional focus may have significant influence on interpreting local groundwater flow, contaminant characterization, and contaminant transport.

8.2.2 Recommendations for Future Work

The GSIS program was developed to fill a number of data gaps in preparation for evaluation and development of a remedial strategy for the SFB. As part of this investigation, data gaps were identified in the planning stages of the project, and were continually updated or completed as data were collected. As data gaps were filled, new data gaps were identified as more data were collected and analyzed. This process of identifying and filling data gaps is a primary component of the DQO and NCP processes. This is generally an ongoing process from investigation through remediation and eventually closure. With that said, sufficient data are present to move on to development of the Draft FS to identify the eventual remedial strategy for the regional groundwater in the eastern SFB. The following sections give a brief discussion of the future work that should be performed as part of the GSIS program, which includes development of the Draft FS, development of a groundwater monitoring program, and investigation in other parts of the SFB where LADWP may extract groundwater.

8.2.2.1 Feasibility Study

With the completion of this RI Update, sufficient data have been collected for development of the Draft FS. A Draft FS Report is being developed concurrently with this document. The Draft FS is the first step in developing the remedial strategy for groundwater near the TJ, RT, and NH well fields. Per CERCLA, the objectives of the Draft FS Report consist of:

- Identify remedial action objectives, ARARs including chemical-, location-, and action-specific ARARs for the selected remedial alternative, and preliminary cleanup goals to address contaminated groundwater in the SFB
- Identify and screen general response actions, remedial technologies and process options for their ability to meet the RAOs
- Develop remedial alternatives consisting of compliance with ARARs, short- and long-term from the retained remedial technologies and process options and screen them for effectiveness, implementability and cost;
- Conduct a detailed analysis of a proposed alternative
- The Draft FS will culminate in a short list of viable remedial alternatives retained from the screening process and evaluate them against criteria specified by the "proposed alternative." USEPA
- Conduct a comparative analysis of the remedial alternatives against the USEPA criteria
- Provide the information needed for subsequent remedy selection and preparation of a Proposed Plan.

8.2.2.2 Groundwater Monitoring

LADWP will need to develop a short- and long-term strategy for groundwater monitoring that includes collection of water elevation data and groundwater samples. These data are required so that remedial designs can address the changing groundwater conditions, and potential future trends for high-priority COCs. The monitoring program should also include emerging contaminants and future chemicals (e.g., anticipated daughter products of current COCs) to prevent shutdown of the future treatment plants. The monitoring programs should develop both short- and long-term DQOs that are summarized in a groundwater monitoring work plan. The general considerations for development of the program should include the following:

- Identify current COCs and potential COCs, and the appropriate sampling interval to establish trends and refine the selection and implementation of remedial alternatives
- Review well locations and screen intervals compared to COC concentrations, and determine the appropriate sampling interval to properly evaluate the condition of groundwater in the SFB vertically and horizontally
- Review the DQOs and determine the appropriate level of data validation to ensure that data collection and analysis meet the intended use of the data (e.g., performing Stage 2B data validation for data used in evaluating risk to human health)
- Review the list of analytical methods and refine to ensure that appropriate analyses are performed at each well to meet overall project DQOs

8.2.2.3 Headworks Well Field Investigation

The study areas for the investigations performed in this RI Update Report are generally located near the TJ, RT, and NH well fields. Data from other well fields are included in this report, but are based on available data from USEPA or other studies and were not specifically developed to evaluate all of LADWP's potential groundwater production areas. This is especially the case in the southwestern section of the SFB, where LADWP has a group of inactive production wells known as the Headworks (Figure 1-2). These wells may be a part of future remedial plans by LADWP, but little is known about current groundwater quality and the needed remediation. To that end, LADWP is currently developing a plan to investigate groundwater quality near the Headworks well field that will include monitoring well installation along with groundwater sampling. These data will then be used to determine if remediation will be required and if an FS for this area should be developed.

8.2.2.4 Tujunga Investigation

With the completion of the investigations, a significant amount of new information was obtained in the TJ area both vertically and horizontally in the saturated zone. The location and size of COC groundwater impacts was further delineated, but with the additional information new data gaps were identified—specifically, the area between the northern TJ monitoring well (TJ-MW-12) and the path of the Verdugo Fault Zone that bisects this investigation and the investigations being performed north of the fault (Figure 4-5a and b). Based on these additional data, it is recommended that further investigation be performed in the area between TJ-MW-12 and the fault in the form of monitoring well installation to further refine groundwater elevations and flow directions along with the extents of contamination. As part of this additional investigation, a work plan addendum should be developed that includes the specific DQOs for the additional investigation along with the location of the additional monitoring wells.

8.2.2.5 Groundwater Model Update

The model used as part of this Updated RI for development of capture zones and in evaluating remedial alternatives in the Draft FS is an updated version of the 1992 RI model that was further modified and updated by USEPA. Though the model has been updated, the new data from the investigative work performed as part of this RI Update Report, along with the proposed layering and hydraulic parameters, have not been included in the model. Section 3 presented hydrostratigraphic layers that would correlated with proposed model layers and tie in with the existing model layers as presented in the cross-sections in Appendix E. With the completion of this investigation, along with the two other additional areas of investigation presented above, an update of the model and recalibration is recommended. This will provide a long-term tool for evaluation of remedial effectiveness and provide an enhanced management tool for the SFB.