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BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

August 6, 2007

Mr. Brian Rakvica. P.E.
Supervisor IV
Special Projects Branch
Bureau of Corrective Actions
Nevada Division of Environmental Protection
2030 E. Flamingo Road, Suite 230
Las Vegas, Nevada 89119-0818

RE: **Titanium Metals Corporation, Henderson, Nevada Facility**
NDEP Facility ID #H-000537
Response to NDEP Comments Dated June 6, 2007 on the *Conceptual Site Model*
Dated April 25, 2007

Dear Mr. Rakvica,

TIMET has received and reviewed NDEP's comments dated June 6, 2007 regarding the above referenced report. TIMET's response to the comments is attached.

Please contact me at 702-563-0600 if you have any questions regarding this correspondence.

Sincerely,
BROADBENT & ASSOCIATES, INC.

Kirk J. Stowers, EM-1549 (exp. 10/11/08)
Associate Geologist

JURAT: I, Kirk J. Stowers, hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances.

cc. Craig Wilkinson – TIMET, 1 hard copy and 1 electronic copy
Jim Najima – NDEP, Carson City, 1 hard copy and 1 electronic copy
Paul Hackenberry – Hackenberry Associates, Inc., 1 electronic copy
David Gratson – Neptune and Company, Inc., 1 hard copy and 1 electronic copy
James I. Gibson Public Library – Henderson, Nevada, 1 electronic copy
Brenda Pohlmann – City of Henderson, 1 electronic copy
Ranajit Sahu – BRC, 1 electronic copy
Susan Crowley – TRONOX, 1 electronic copy
Chris Silva – Pioneer Companies, Inc., 1 electronic copy
Joe Kelly – Montrose Chemical Corporation of California, 1 electronic copy
George Crouse – Syngenta Crop Protection, 1 electronic copy
Victoria Tyson – Tyson Contracting, Inc., 1 hard copy and 1 electronic copy
Candace Friday – Tetra Tech EM Inc., 1 electronic copy
Kathy Allford – T2 Environmental, 1 electronic copy
Jay Snyder – Golder and Associates, 1 electronic copy

Attachment A

NDEP #1. General comment, some of the appendices contain appendices. Please do not create an appendix to an appendix. These should be labeled as attachments to an appendix.
TIMET Response #1: Comment noted. Future documents will be in specified format. The former Appendices B-1 and B-2 to the DVSR (Appendix B to the CSM) were renamed as Attachments B-1 and B-2 in the revised version as requested.

NDEP #2. General comment, it would be helpful if there was a section of the report that described the path forward for the project. The CSM identifies a number of data gaps, however, the means to address these data gaps is not clear. In addition, the schedule for addressing these data gaps is not clear. In the response to comments letter, please explain how these data gaps will be addressed, as well as the proposed schedule.
TIMET Response #2: TIMET has proposed the following deliverables and revised the project schedule in the July 15, 2007 quarterly progress report:

Revised Data Validation Summary Report – July 6, 2007
Meeting with NDEP to Review Comments on CSM Document– July 11, 2007
Response to NDEP Comments on CSM – August 6, 2007
Vertical Delineation Sampling and Analysis Plan – July 31, 2007
Update to Plant Site Groundwater Monitoring Sampling Plan – July 26, 2007
Additional downgradient sampling – 3rd quarter 2007
Revise elements of the CSM (relevant tables and figures) – To be determined
Field Activities for Vertical Delineation – 4th quarter 2007
Data Assessment and Reporting (Vertical Delineation) – 1st and 2nd quarters 2008

TIMET acknowledges the activities as outlined do not address all data gaps identified in the CSM. Additional investigations scoped either by data gap(s) or source area(s) are necessary. It is anticipated that data obtained from the vertical delineation program will aid in scoping subsequent investigation at the ponds, landfill, and northern storage areas. Recent submittal of the groundwater monitoring plan contains site characterization elements which also address several noted data gaps. It should be noted that many data gaps are interrelated and will be answered from multiple sources.

That being said, TIMET has made significant progress advancing the collective body of knowledge in regards to site characterization at the facility. TIMET is committed to effectively addressing each source area in concert with the NDEP in manageable pieces that optimize resources.

NDEP #3. General comment, it is obvious that TIMET invested a lot of time and effort in producing this document. NDEP is particularly impressed by the links in the PDF version; this feature greatly facilitates review by the NDEP.
TIMET Response #3: Comment noted.

NDEP #4. General comment, in general the document is well referenced.

TIMET Response #4: Comment noted.

NDEP #5. General comment, the CSM document uses secondary references, such as citing another consultant's report for evapotranspiration data. This should be avoided.
TIMET Response #5: Comment noted.

NDEP #6. General comment, the report should use consistent units for measurement.
TIMET Response #6: Comment noted.

NDEP #7. General comment, when reporting very small numbers scientific notation would be useful.
TIMET Response #7: Comment noted.

NDEP #8. General comment, isoconcentration contours discussed in Section 4.3 do not always appear to honor the data and some contours exclude data.
TIMET Response #8: Comment noted.

NDEP #9. General comment, TIMET would likely benefit through use of geochemical modeling as there are a number of chemical species that are affected by redox conditions.
TIMET Response #9: Comment noted.

NDEP #10. General comment, although site data are used to develop the preliminary CSMs, a data usability evaluation and data adequacy analysis have not been completed for any portion of the site. Recognition of uncertainties associated with this issue should be given and these evaluations should be conducted as a component of the next update of the CSMs.
TIMET Response #10: Assessment of data usability will be provided in future submittals. Any data usability assessment will be a function of the level at which data are used to support decisions.

NDEP #11. Section 1.3.2.2, page 1-6, 2nd paragraph, TIMET states "From the 1940s to the mid-1970s, the unlined Upper and Lower Ponds were used as evaporation ponds of process effluent from the BMI Complex." Add infiltration with evaporation.
TIMET Response #11: Comment noted. Revision to the pond description will be made where appropriate.

NDEP #12. Section 1.4.3, page 1-11. "Several areas were excluded from the framework of this CSM." Specifically seven areas not "several." It would be helpful if the rationale for not including each area was included in the CSM.
TIMET Response #12: TIMET did not intend to infer that additional assessment of these areas would not be conducted. Where applicable, data collected in these areas have been retained and will be assessed along applicable pathways. Additional rationale is provided below:

Section 1.4.3 discusses six areas "excluded" from the CSM. Rationale is provided as follows:

- Wastewater Conservation Facility – A NFA has been issued by NDEP. Groundwater was excluded from NFA. Soil and groundwater data continue to be assessed along potentially complete pathways.
- TRECO – A NFA for the top ten feet of soils has been issued by NDEP. Soil and groundwater data were assessed in CSM and will continue to be assessed along relevant pathways.
- Parcel F – Property is not contiguous with Plant Site. A NFA has been issued by NDEP. Groundwater was excluded from NFA due to trespass plumes from off-site sources. Groundwater data will continue to be assessed from neighboring sampling programs.
- Parcel E – Property is not contiguous with Plant Site. An Investigation is being conducted as a separate action.
- Western Area Power Administration Substation – Property not owned by TIMET. Investigation work is being conducted by WAPA. TIMET is monitoring investigation results and will continue to assess relevant data and affected media at the Plant Site.
- Southern Nevada Power Company Electrical Transformer Area – Property is not owned by TIMET. Removal and investigation work will be monitored by TIMET. Assessment of relevant data and affected media at the Plant Site will continue.

NDEP #13. Section 1.4.4, page 1-17, 1st paragraph, TIMET states "Waste solids from Francy's Mountain and the ponds were excavated, blended, and transported via railcar..." It would be helpful to specify what the blending process was and why this was completed.
TIMET Response #13: The blending process consisted of mixing excavated solids from Francy's Mountain with CSD solids to ensure the terms and conditions of WCS's land disposal permit were met.

NDEP #14. Section 1.4.4, page 1-17, 1st paragraph, TIMET states "At the completion of the removal action, a soil boring was installed at the base of the North CSD Pond excavation (TMSB-123) for vertical delineation..." To clarify, a boring was not installed beneath the former Francy's Mountain.
TIMET Response #14: Comment noted.

NDEP #15. Figure 1-2: Various areas labeled could be indicated via arrows for more clarity. Features such as Pittman Lateral should be indicated via a line showing this alignment.
TIMET Response #15: Future figures will attempt to more clearly identify area features.

NDEP #16. Section 2.1.3, page 2-1, TIMET states "To characterize climate at TIMET, local weather observations from the meteorological monitoring station at McCarran Airport were used." Please explain this statement with respect to the weather station located at TIMET.
TIMET Response #16: Use of the McCarran Airport data is considered representative of area weather for the purposes of the CSM (i.e. to provide a conceptual framework). Site-

specific weather data will be compiled and reported in discussions where this level of detail is warranted.

NDEP #17. Section 2.1.3, page 2-2, regarding "Evapotranspiration rates..." ERM is a secondary source and SNWA may have done some work along these lines; but Shevenell (1996) "Statewide Potential Evaportransporation Maps for Nevada" may likely be a better source.
TIMET Response #17: Comment noted.

NDEP #18. Section 2.2.1, pages 2-5, Transitional Muddy Creek Formation, the NDEP has the following comments:

NDEP #18a. TIMET states "The Transitional MCF is not readily distinguished from the MCF." It would be helpful to present additional discussion regarding how TIMET did distinguish the Transitional MCF from the MCF.
TIMET Response #18a: Depiction of the transitional zone on Figure 2-4 was based upon review of boring logs from installation of piezometers along the northern property boundary and investigations conducted by other BMI companies. The transition zone occurs near the base of the Qal deposits and exhibits a greater percentage of fine-grained sediments mixed with coarser-grained sediments of the Qal deposits. The transition zone is further distinguished from the upper MCF by the presence of coarser-grained sediments (such as coarse-grained sands and coarse gravels exceeding approximately 1.5 inches in diameter) intercalated with fine-grained sediments (silts and clays). Hopefully, a better understanding of the relationship of contacts between these units as well as groundwater occurrence can be established during the vertical delineation program that was identified as a data gap.

NDEP #18b. TIMET states "As a result (although not specifically tested), it is suspected to be of sufficient permeability to transmit limited groundwater. Fine-grained MCF, which underlies the Transitional MCF, does not appear to yield appreciable groundwater." The basis for these statements is not clear, see additional comments below.
TIMET Response #18b: Transitional, reworked or weathered MCF is known to contain groundwater in water table monitor wells in the BMI complex. These water table wells yield sufficient water to be sampled. Speculation still exists as to whether or not in-place MCF is unsaturated in intervals at depth. The veracity of these speculations is yet to be established, due to lack of specific scope to unequivocally resolve these conceptual models. Monitor wells in such units will provide valuable information regarding migration pathways and vertical extent of impacts. We hope to obtain a much better understanding of these concepts with the vertical delineation program.

NDEP #19. Section 2.2.2, pages 2-5 through 2-7, the NDEP has the following comments:

NDEP #19a. TIMET states "most of the sand lenses in the upper portion of the Muddy Creek Formation appeared to be laterally discontinuous." The basis and veracity of this statement are unclear. The NDEP is not aware of any data that have been collected to date to substantiate this statement.
TIMET Response #19a: The idea that these sand lenses are discontinuous has been put forth by previous investigators. The density of data may not be sufficient to substantiate this statement. TIMET's vertical delineation program is scoped to better understand the nature and extent of these sand lenses.

NDEP #19b. TIMET discusses the TR series of wells at Tronox (TRX) and notes "the deeper portion of the Muddy Creek Formation contains thicker layers of coarse-grained sand and gravel". It is not evident that this statement considers the fact that these wells were drilled utilizing air rotary casing hammer technology which may have biased the lithologic logs as being coarser than they actually are.
TIMET Response #19b: Comment noted – any further assessment of these logs will consider the drilling methodology.

NDEP #20. Section 2.3, pages 2-8 and 2-9, the NDEP has the following comments:
NDEP #20a. TIMET states "The Transitional MCF, although more permeable than the fine grained MCF facies, is much lower – perhaps 1 foot per day or less." As TIMET has noted in Section 2.2.1, TIMET has no data to substantiate this statement. Unsupported statements will be rejected by the NDEP.
TIMET Response #20a: Comment noted.

NDEP #20b. Page 2-8, TIMET states "Finally, in areas where sufficient Quaternary Alluvium exists to complete water table monitor wells, the wells are screened in Quaternary Alluvium only. Saturated Transitional MCF may exist in these locations, and may provide the ability to evaluate vertical concentration gradients for TIMET solute plumes via nested wells screened specifically in this interval." Given the previous description of the relationship between the alluvial aquifer and transitional TMCf this may not provide much of an evaluation of the vertical concentration gradients.
TIMET Response #20b: Comment noted and taken into consideration in scoping the vertical delineation program.

NDEP #20c. Page 2-9, 2nd bullet, TIMET states "Fine-grained MCF facies provide aquicludes between the coarse-grained facies." Based on the description and occurrence of deep groundwater contamination, aquitard is a better descriptor than aquiclude.
TIMET Response #20c: Comment noted and aquitard was the original intended usage. Our assumption that the entire domain of our assessment below the water table is saturated, and saturated fate and transport principals apply, requires a continuum of hydraulic gradient, and aquitards not

aquicludes. The degree to which aquitards may or may not have transported contaminants in a vertical sense is a question we intend to answer with vertical delineation.

NDEP #20d. Page 2-9, 5th bullet, TIMET states "The flux of groundwater through the alluvial aquifer appears to be far more than can be sustained by natural recharge, and is thought to be related to upslope irrigation infiltration." Does TIMET have information to document inflow from upgradient, off-site sources? What about potential on-site sources?
TIMET Response #20d: TIMET will consider other sources including but not limited to:

- Storm water infiltration through preferential pathways
- Pipeline breaks and leaks from adjacent properties

NDEP #20e. Page 2-9, 6th bullet, TIMET states "The flux of groundwater through these sediments at prevailing hydraulic gradients (one to three feet per hundred) is thought to be more in alignment with natural recharge." What documentation does TIMET have for this statement?
TIMET Response #20e: This point is made in the context of conceptualizing groundwater flow conditions. The point is that the historic water table, particularly at times of low recharge, may have existed in transitional MCF.

NDEP #21. Section 2.3.1, page 2-10, last paragraph in section. The measurement of pounds per square inch should be converted to feet and compared to land surface at this point.
TIMET Response #21: Comment noted.

NDEP #22. Section 2.3.2, page 2-11, 1st paragraph, TIMET states "As regards typical groundwater seepage velocities, this is on the high side." Explain.
TIMET Response #22: We consider 950 feet per year (estimated) seepage velocity high from the perspective of CSM and considering pathways and hypothetical points of exposure.

NDEP #23. Section 2.3.2, page 2-11, last paragraph on page. Strike the paragraph as the previous testing and analysis was never approved by the NDEP.
TIMET Response #23: Comment noted. These data will be vetted if they are used to support calculations.

NDEP #24. Section 2.3.2, page 2-12, 1st paragraph. If TIMET plans to use the Montrose data then TIMET should re-evaluate that data.
TIMET Response #24: Comment noted.

NDEP #25. Section 2.3.2, page 2-12, 1st paragraph. The units of ft^2/sec are incorrect for hydraulic conductivity.
TIMET Response #25: Comment noted.

NDEP #26. Section 2.3.2, page 2-12, 1st paragraph, last sentence, TIMET states "Based on laboratory tests, the vertical hydraulic conductivity of finer-grained clayey sediments that were cored at Montrose varied from 0.000000058 to 0.000002 centimeters per second (SECOR 2002a; Kleinfelder 1983)." Please report parameters in consistent units. Because the data are discredited in the footnote why include it here?
TIMET Response #26: Comment noted. Future discussions will be drawn from more recent subsurface investigations.

NDEP #27. Section 2.3.2, page 2-12, last paragraph of section. Refer to comment above.
TIMET Response #27: Comment noted.

NDEP #28. Figure 2-1, this Figure is labeled "Topographic Surface Map"; however, the topographic information is not readily discernable.
TIMET Response #28: This figure will be revised to add clarity in future submittals where used.

NDEP #29. Figure 2-5, the NDEP has the following comments:

NDEP #29a. The source(s) of the data on this Figure are not evident.
TIMET Response #29a: The sources of the data were as follows:

- TIMET's Hydrogeological Investigation
- Groundwater Monitoring Results, BMI Common Areas (Eastside), First Quarterly Event 2006, April – June 2006. October 2006
- Semi-Annual Chromium Mitigation Report – January - June 2006." Tronox LLC. July 25, 2006

NDEP #29b. The temporal setting for this Figure is not evident.
TIMET Response #29b: The potentiometric map displayed is for Spring 2006

NDEP #29c. It appears that the new wells installed by TIMET were not included in this Figure, please explain.
TIMET Response #29c: Water level measurements from the new wells will be added to future figures.

NDEP #30. Section 3.1.2.4, page 3-5, this Section, or a new Section, should discuss the discovery of decachlorobiphenyl in the dust recovered from the baghouse related to the magnesium recovery operations. The creation of this polychlorinated biphenyl (PCB) at levels exceeding TSCA should also be discussed.
TIMET Response #30: Future description of this process and associated waste streams will include a discussion of the discovery of decachlorobiphenyl in the baghouse dust wastes generated by the magnesium recovery operations. The presence of decachlorobiphenyl, a polychlorinated biphenyl (PCB), in the baghouse dust will be added in Table 3-1. Table 3-2 and Figure 3-3 will also be modified to address the baghouse dusts and associated PCBs in various source areas. The results from TIMET's split sample did not exceed TSCA limits.

NDEP #31. Section 3.2, page 3-8, please see comment below regarding Appendix D.

TIMET Response #31: Please see TIMET response to Comment # 35.

NDEP #32. Section 3.3, page 3-8, TIMET should discuss the usage of hexavalent chromium in cooling water historically used on Site.
TIMET Response #32: Hexavalent chromium was historically used in BMI's recirculating cooling water that supported the TIMET facility. The cooling towers and any waste generation from these facilities were located at the Tronox facility. Conveyances of cooling water could be PSAs for hexavalent chromium and will be considered in future site assessments. Impacts from cooling tower drift from cooling towers located adjacent and to the west of the TIMET property line on the Tronox facility will be considered. Blowdown was discharged to the former trade effluent ponds on Tronox property.

NDEP #33. Section 3.4, page 3-9, please explain what the "near-surface soil source areas" includes. Specifically, what depths do this address?
TIMET Response #33: This source area name was intended to refer to areas with potential or known storage of wastes or contaminants at the surface (e.g., drum storage). The initial investigation will be in shallow soils to determine if a release has occurred. The intent was not to limit the depth of investigation or potential contamination.

NDEP #34. Section 3.5, pages 3-9 and 3-10, the NDEP has the following comments:

NDEP #34a. It is not clear to the NDEP how TIMET can develop a list of "principal chemicals" for potential source areas (PSAs) when very limited data is available for many of the PSAs. In addition, generally, broad suite analyses have not been conducted at the Plant Site.
TIMET Response #34a: The purpose of the CSM is to identify processes, process waste streams and constituents of these waste streams, and areas where these process wastes were disposed. The identification of principal chemicals was not intended to limit analytical to the "principal chemical" list or indicate "only chemicals". The proposed analytical in Table 3-2 is the suite of analyses proposed. The goal was to identify the key SRC that can be used as indicator chemicals in the area of interest.

NDEP #34b. The NDEP does not object to the optimization of resources, however, broad suite analyses will be necessary.
TIMET Response #34b: Broad suite analyses will be conducted where necessary (e.g., taking into account wind blown dust contamination at the surface, surface runoff, and conveyances intersecting a PSA).

NDEP #35. Table 3-1, the NDEP has the following comments:

NDEP #35a. It would be helpful to have current, validated data for each of these waste streams. For those waste streams that no longer exist, historic data should be presented and caveated. This data should be compared to applicable metrics and the presented in tabular form.
TIMET Response #35a: Existing and historical waste stream analytical data will be compiled and summarized to address waste stream characterization.

The waste stream analytical data will be compiled and summarized in a technical memorandum. Analytical data gaps will be identified and a plan for resolving the data gaps will be proposed.

Waste stream data gap resolution will be addressed as necessary to determine the nature and extent of SRCs. If broad suite analyses are conducted on potential impacted media – refined waste analysis data are not needed. If more limited suite analysis are proposed, additional waste stream analysis may be needed and will be conducted on a case by case basis.

NDEP #35b. It appears that the baghouse dust from the magnesium recovery building is not listed as a waste stream. Please include this and any other excluded waste streams.
TIMET Response #35b: Chlorine baghouse dust is included as part of the OPW wastestream. See TIMET's response to Comment #30. We are unaware of any other excluded waste streams. The waste management process was changed in 2007 and the baghouse dust is now collected in drums and disposed off-site.

NDEP #35c. Waste stream 3; please explain how this waste stream was handled from 2003 to the present.
TIMET Response #35c: From 2003 until May 2005 caustic wastewater was managed on the TIMET plant site in Pond HP-6. Since May 2005 caustic wastewater has been managed in the WCF. Table 3-1 will be revised.

NDEP #35d. Waste stream 4; please explain if the leach liquor collector was a container and if leaks could be reasonably expected. In addition, please specify the date that this waste stream was no longer generated.
TIMET Response #35d: Leach liquor wastewater was drained from chip catch bins in the Unit 8 process floor to a curbed, acid tile lined area in the basement or to container boxes located in the basement curbed area. The curbed acid tile lined area drains to a narrow (1-2 feet wide) and shallow (0.75 – 1 foot deep) central trench that discharges directly to the OPW subsurface conveyance system. This process ceased operating in March 1999. The OPW collection and conveyance system is included on Table 3-2 as PSA 10. Where subsurface piping is present in another identified PSA, further evaluation will be managed within that PSA. For areas where subsurface piping is located outside of other identified PSAs, evaluation of soil to groundwater impacts will be considered and further assessed, as necessary. Note 1 in Table 3-2 will be modified to ensure that subsurface piping outside of identified PSAs is not excluded as a PSA.

NDEP #35e. Waste stream 5, it should also be noted that there is a pile of chlorinator dust adjacent the J2 Landfill.
TIMET Response #35e: Table 3-1 will be revised to clarify the storage of chlorinator dust adjacent to the west edge of the landfill.

NDEP #35f. Waste stream 7, please specify the method of disposition prior to 1970.
TIMET Response #35f: Prior to 1970 rutile was stored in Building B-5 located off the Plant Site on Parcel F. Rutile was transferred to the Plant Site via lugger boxes loaded onto trucks. The lugger boxes were offloaded and used directly in chlorination. Table 3-1 will be revised to include the prior storage and transfer methods.

NDEP #35g. Waste stream 24, please specify if this process ceased in the mid-1980s.
TIMET Response #35g: Waste management practices as described in Table 3-1 ceased in the mid-1980s although NaK continues to be utilized at the facility. Currently, NaK is used to cool the copper melt crucibles in the R&D department (Building K-53). If spillage occurs from the closed cooling system, any minor residues are washed with water to the OPW system. The NaK is highly reactive, and burns upon contact with the air. Potassium hydroxide and sodium hydroxide are formed upon contact with water, and residues are washed to the OPW system. Current management processes for this potential waste stream will be added to Table 3-1.

NDEP #36. Table 3-2, the NDEP has the following comments:

NDEP #36a. It appears that the sub-surface area of TRECO is not included in this Table or the CSM. Please explain.
TIMET Response #36a: Since surface soils at TRECO were closed with NFA to 10 ft bgs, the only remaining pathway would be secondary subsurface soil-to-groundwater that then reaches a receptor for exposure. Since the surface soils to 10 feet were closed and no known PSAs were at TRECO, and TRECO is upgradient hydraulically from the TIMET site, downgradient groundwater will be addressed as part of the groundwater assessment. Future development of the Lake Mead Crossing complex and associated parking/stormwater control system makes it unlikely that infiltration will proceed downward towards the water table, if indeed there are any subsurface contaminants. Closure of the UST-16 area and its piping are documented with NDEP; BRC's Risk Assessment of the TRECO property has been completed and no evidence of a need to investigate the subsurface was indicated. If contamination is absent in the surface, there is no need to investigate the subsurface. The detections of chromium, arsenic, sulfate, etc. in groundwater at monitoring locations along Lake Mead appear to be coming onsite as trespass contaminants.

NDEP #36b. It appears that the former U.S. Vanadium facility is not addressed in this Table or in the CSM. Please explain.
TIMET Response #36b: U.S. Vanadium will be added to Table 3-2 as a potential source area, and TIMET will continue efforts to locate documentation to verify the property use by U.S. Vanadium.

A brief synopsis of information available to TIMET is provided below. U.S. Vanadium (a subsidiary of Union Carbon and Carbide Corporation) is identified in the BMI Phase 1 ECA in Section 3.1.2, Industrial Activities and Table 3-1. "Once Basic operations were suspended in 1944, J.M. Montgomery & Co., Inc., as agents for the U.S. Government's Reconstruction Finance Corporation (RFC) immediately assumed control of the plant and townsite. Efforts were made to attract industry to Basic... ..In addition, there were *apparently* several larger industrial operators such as ...and U.S. Vanadium Corporation". A letter of intent to lease was found dated March 19, 1946 and is referenced in Table 3-1 of the BMI Phase I ECA. The product was refined tungsten compounds and the proposed lease terms were for 5 years with the option to negotiate an additional 5 years. Table 3-2, Chronology of Major Events and Property Transactions does not include a start up date for U.S. Vanadium. Reference documents from the BMI Phase I ECA that mention U.S. Vanadium include: The New Basic Magnesium Project Story (Henderson Nevada Chamber of Commerce, March 6, 1947) and a Letter to Plant Managers Regarding Hazardous Waste Sites (Basic Management Inc., Glen C. Taylor, May 12, 1981).

BRC's Closure Plan dated October 29, 2004 indicates that U.S. Vanadium leased Buildings J-1 and J-5, a portion of the flux plant and equipment, laboratory space, the west half of change house S-7, shop and maintenance equipment, and 3 settling ponds (Monthly Report of Status of Lessees dated October 1947).

An undated copy of a drawing with a handwritten note "Property Map Showing Areas leased to U. S. Vanadium Corp. U-124" was found that shows areas potentially leased to U. S. Vanadium. Certain of the potential leased areas on the drawing are marked through with hand written strikes. The potential areas leased to U.S. Vanadium at what became the TIMET facility include Building J-5 (note that NL began leasing Building J-5 in 1950) with the east boundary between Building J-5 and J-1, the south boundary at Avenue G, the north boundary at Avenue F, and the west boundary at the Tronox property line or 11th Street. The potential lease area also included the J-9 tailings ponds with the east boundary at the west edge of the landfill, the west boundary at the Tronox property line, the south boundary at Avenue F, and the North boundary at Avenue E. Other areas potentially leased to U. S. Vanadium, on what is now the Tronox facility, are also included on this drawing.

Based on a review of this information there are still questions regarding the length of the lease and how these facilities were used by U.S. Vanadium.

NDEP #36c. It appears that the TIMET research and development facilities are not listed as potential source areas. The only area this is covered is under

PSA 23 for Building K-53. Please explain where the chemical laboratory is addressed.
TIMET Response #36c: Table 3-2 will be modified to include Buildings K-53 and K-55 as potential source areas. The conveyance of wastes from Building K-53 is included as PSA 10 in the CSM. Waste streams from these facilities are included in OPW waste stream. The areas where it is known that wastes were potentially discharged are addressed as PSAs (OPW disposition areas and former NaK discharge area). Note 1 in Table 3-2 will be modified to ensure that subsurface piping outside of identified PSAs is not excluded as a PSA.

NDEP #36d. Source Area 2, TIMET indicates that the contents of the ponds were removed. It is the understanding of the NDEP that the total depth of these ponds may have not been removed. In addition, the sub-surface effects of these ponds have not yet been addressed.
TIMET Response #36d: Comment noted. The design depths of the north and south CSD ponds were 5.8 and 6.5 feet. While the contents of the ponds have been removed, TIMET acknowledges that sub-surface impacts have not been fully evaluated or addressed.

NDEP #36e. Source Area 3, please note that the surface expression of Francy's Mountain was removed, however, sub-surface impacts from this source area have not yet been evaluated or addressed.
TIMET Response #36e: Comment noted.

NDEP #36f. Source Area 4, the table indicates that this area was graded. Please explain if the slag was disposed of or relocated or graded in place.
TIMET Response #36f: The slag was graded in place and remains in this area. Table 3-2 will be revised to clarify that the slag was graded in place.

NDEP #36g. Source Area 12, Alpha Ditch, TIMET lists a number of waste streams which have not necessarily been defined. For example, it is not possible for the reviewer to understand what "dewatering box water" might contain. If any waste stream is not defined on Table 3-1 please revise and expand Table 3-1.
TIMET Response #36g: Alpha Ditch wastewater will be added to Table 3-1 and will be defined. The "dewatering box water" will be included in the Alpha Ditch wastewater added to Table 3-1. It is hydroblast water that is "clarified" in one of the dumpsters.

NDEP #36h. Please note that the NDEP's review of this table does not imply that the source areas listed herein are the only source areas for the Site.
TIMET Response #36h: Comment noted.

NDEP #37. Section 4.2, pages 4-4 through 4-6, the NDEP has the following comments;

NDEP #37a. Please note that comparison to the maximum portion of the background range is the least conservative comparison that can be made.
TIMET Response #37a: Comment noted.

NDEP #37b. Please note that use of the DAF20 soil screening level is not consistent with USEPA guidance. Per the USEPA *Users' Guide and Background Technical Document for USEPA Region 9's Preliminary Remediation Goals (PRG) Table*, the following is noted:

NDEP #37b-1. DAF1 values are appropriate for use at sites "where little or no dilution or attenuation of soil leachate concentrations is expected at a site (e.g.: sites with shallow water tables...or source size greater than 30 acres).
TIMET Response #37b-1: Evaluation of data in future submittals will include comparison to DAF1 values in tabular form.

NDEP #37b-2. Both of the listed criteria above appear to apply to the TIMET site.
TIMET Response #37b-2: Comment noted.

NDEP #37b-3. TIMET should either: use the DAF1 values; derive an appropriate set of site-specific screening levels for the leaching pathway; or perhaps compare to both the DAF20 and DAF 1 values.
TIMET Response #37b-3: Comment noted.

NDEP #37b-4. To be noted, the December 2004 *Technical Memorandum for Establishing a Screening Process for Soil and Groundwater data from On-Site and Off-Site Areas* did not specify or contemplate a specific DAF value that would be acceptable.
TIMET Response #37b-4: Comment noted.

NDEP #37b-5. NDEP is concerned that the discussions regarding the leaching pathway will be invalid or misleading.
TIMET Response #37b-5: Comment noted.

NDEP #37b-6. On page 4-6 TIMET proposes a hierarchy of screening values which includes the use of the DAF20
TIMET Response #37b-6: Comment noted.

NDEP #38. Section 4.3, general comment, the screening levels that are cited are often incorrect. It appears these errors are a function of rounding or perhaps transcription, examples follow:

NDEP #38a. Section 4.3.2.4, manganese, TIMET cites a 19,000 mg/kg USEPA Region IX PRG; the PRG is actually 19,458 mg/kg.
TIMET Response #38a: Errors have been identified and corrected in the TIMET database and will be checked when outputs are generated from Microsoft Access to Excel (for rounding errors).

NDEP #38b. Section 4.3.2.6, uranium, TIMET cites a 200 mg/kg USEPA Region IX PRG; the PRG is actually 204 mg/kg.
TIMET Response #38b: Errors have been identified and corrected in the TIMET database and will be checked when outputs are generated from Microsoft Access to Excel (for rounding errors).

NDEP #38c. Section 4.3.2.7, vanadium, TIMET cites a 1,000 mg/kg USEPA Region IX PRG; the PRG is actually 7,153 mg/kg.
TIMET Response #38c: Errors have been identified and corrected in the TIMET database and will be checked when outputs are generated from Microsoft Access to Excel (for rounding errors).

NDEP #38d. Section 4.3.2.8, antimony, TIMET cites a 410 mg/kg USEPA Region IX PRG; the PRG is actually 511 mg/kg.
TIMET Response #38d: Errors have been identified and corrected in the TIMET database and will be checked when outputs are generated from Microsoft Access to Excel (for rounding errors).

NDEP #38e. Additional examples exist, however, the NDEP will not examine or list all issues herein. It is requested that TIMET review this issue in detail and describe what effects it has on the conclusions of the CSM.
TIMET Response #38e: No significant changes to the CSM have been identified. Assessment of existing data will be conducted as part of scoping additional sampling and analysis plans, where applicable. Existing and future data will be compared to the corrected screening levels in the database.

NDEP #39. Section 4.3, page 4-7. NDEP expects that before general inorganic data are used further for site evaluation, TIMET will make cation-anion balance calculations.
TIMET Response #39: Cation-anion balance is a data usability consideration and will certainly be addressed when evaluating data for a specific purpose. In the meantime, cation-anion balance checks have been added to Paragon Analytics' quality checks and will be reported as part of TIMET's future data validation process.

NDEP #40. Section 4.3.1.1, pages 4-7 and 4-8, the NDEP has the following comments:

NDEP #40a. Regarding groundwater, TIMET should discuss the possibility of off-Site sources and should either collect data to address this data gap or review data collected by others. Data collected by TRX as part of their Phase A investigation may be useful for discussing this issue and refining the plume maps. This comment is applicable to a number of contaminants.
TIMET Response #40a: Comment noted. As off-site data become available, they will be used to refine plume delineation to extent possible.

NDEP #40b. Page 4-8, last paragraph of section, TIMET states "Based on the distribution of nitrate in groundwater, it appears that nitrate is elevated under the Ponds Area and J2 Landfill; however, soil data do not support this

observation." If this is a reference to vertical soil profiling, TIMET has not yet proven the methodology. There are elevated levels of nitrate in soils. Current soil conditions and current groundwater conditions may or may not be related as suggested herein.
TIMET Response #40b: This point was the basis for a data gap that will be addressed with future site assessment.

NDEP #40c. Page 4-8, last paragraph of section, TIMET states "Moreover, groundwater concentrations downgradient of the Plant Site exceed those on the Plant Site." This could simply be an indication that the plume has moved off-site and that there is not a continuing source.
TIMET Response #40c: Comment noted.

NDEP #41. Section 4.3.1.2, page 4-10, last paragraph of section, TIMET states "South of the Ponds Area and the J2 Landfill, chloride concentrations in groundwater, in conjunction with subsurface soil chloride profiles, indicate little migration to depth..." Figure 4-7 does not appear to support this conclusion.
TIMET Response #41: Comment noted.

NDEP #42. Section 4.3.1.3, pages 4-10 and 4-11, the NDEP has the following comments:

NDEP #42a. TIMET discusses elevated sulfate concentrations in two samples from boring TMSB-104. TIMET indicates that "these depths may be naturally high in gypsum, which is known to occur in local sediments." It is unclear to the NDEP why there is ambiguity surrounding this issue. TIMET installed these borings using sonic drilling and the presence of gypsum should have been noted on the boring logs. If this is not the case it is unclear why this speculation is present in the report. Another hypothesis would be that sulfate has already migrated through the soil column to groundwater and the deeper sulfate impacts are what remain in the vadose zone.

TIMET Response #42: Comment noted.

NDEP #43. Section 4.3.1.4, pages 4-11 and 4-12, the NDEP has the following comments:

NDEP #43a. TIMET states "Perchlorate is not associated with TIMET processes or waste streams." It should be noted that perchlorate has been present in the local drinking water supply for a number of years. Industrial use of this water and discharge throughout the Site may have resulted in minimal impacts to the Site. In addition, TIMET may have been impacted via windblown dust from the TRX facility. Large quantities of perchlorate were historically stored at the TRX facility and may have impacted TIMET. Relatively speaking these impacts are likely considered de minimus, however, the document should address these issues.
TIMET Response #43a: Comment noted.

NDEP #43b. Page 4-12, paragraph under Shallow Soil, TIMET states "None of these samples exceeded the screening level of 100 mg/kg based upon the EPA Region 9 Industrial PRG." This sentence and the previous sentence reference Table 4-2 which indicates that the screening level number comes from Nevada but the text indicates EPA Region IX PRG. Please clarify.
TIMET Response #43b: EPA Region IX PRG is the correct reference and the source of the data point has been corrected in the table.

NDEP #44. Section 4.3.1.5, pages 4-13 and 4-14, the NDEP has the following comments:

NDEP #44a. NDEP has offered comments to TIMET and all of the remaining BMI Companies regarding conducting cation-anion balances. It is concerning to the NDEP that TIMET has chosen not to include this evaluation in the CSM.
TIMET Response #44a: Comment noted. Cation-anion balance checks have been added to analytical and validation procedures.

NDEP #44b. TIMET notes that Stiff and Piper diagrams may be useful in determining impacts from the Tronox facility. This item should be addressed on table 6-1 (Data Gaps).
TIMET Response #44b: Comment noted.

NDEP #45. Section 4.3.2, pages 4-14 through 4-26, the NDEP has the following comments:

NDEP #45a. It would be helpful to discuss the concentrations of the various metals (and radionuclides) in the TIMET ore as well as the waste streams.
TIMET Response #45a: Comment noted.

NDEP #45b. Use of a DAF of 20 for this site may under predict the impacts to groundwater. Also, the DAF calculations do not account for solubility of a metallic element.
TIMET Response #45b: Comment noted.

NDEP #46. Section 4.3.2.1, pages 4-14 through 4-16, the NDEP has the following comments:

NDEP #46a. TIMET indicates that "Arsenic has neither been suspected nor detected in historic or current waste streams." Please discuss the presence of arsenic in historic and current raw materials. In addition a cross reference to data that supports TIMET's statement is necessary (e.g.: data from Basic Magnesium operations through present for raw materials and waste streams). In addition, the ore used by Pioche Managanese may have been high in arsenic. Ore from the Three Kids Mine is known to contain elevated levels of arsenic.
TIMET Response #46a: It should be noted that we do not see elevated arsenic at depth in available borings. Even if the ore contained arsenic, it does not

mean the arsenic leached to appreciable depths. Nonetheless, this discrepancy has been identified as a data gap at the Pioche Manganese landfill.

NDEP #46b. Page 4-14, TIMET states "The distribution of arsenic in groundwater (solute plume) is shown on Figure 4-14." NDEP notes that a number of arsenic values posted on Figure 4-14 have elevated detection levels and the area greater than 100 µg/L could potentially be much larger.
TIMET Response #46b: Comment noted.

NDEP #47. Section 4.3.2.2, the NDEP has the following comments:

NDEP #47a. TIMET states that a screening level for trivalent chromium was not calculated for this CSM. Given the extremely extended time period that this CSM was in development it is not clear to the NDEP why this was not completed. Please explain.
TIMET Response #47a: A need to calculate a site specific screening level for trivalent chromium was not evident at the time the CSM was authored. If it becomes evident one is needed, we will establish one.

NDEP #47b. Page 4-17, 1st full paragraph, TIMET states "The distribution of chromium in shallow soils is shown on Figure 4-15, in subsurface soils on Figure 4-16, and in groundwater on Figure 4-17." Contours from the plant site area do not include POU-3 which was greater than 100 µg/L.
TIMET Response #47b: Comment noted – future contouring will include qualified data where appropriate.

NDEP #47c. Page 4-17, 1st full paragraph, TIMET states "The fate and transport of chromium in the environment is strongly a function of the oxidation state. Chromium VI (hexavalent chromium) is considered mobile, whereas trivalent chromium (chromium III) is virtually immobile. The distribution coefficient between the two varies by orders of magnitude. Because of this behavior, the migration of chromium at the Plant Site is suspected to be limited." Trivalent chromium can be oxidized to hexavalent chromium depending upon soil and groundwater redox conditions. What facts about soils and/or groundwater leads to this conclusion? Has TIMET been monitoring redox potential during groundwater sampling?
TIMET Response #47c: Additional data was supporting this statement will be provided in subsequent reports regarding site characterization and nature and extent.

NDEP #47d. Page 4-18, last paragraph of section, TIMET states "TIMET has begun to conduct speciation of chromium in groundwater in Plant Site samples. More data are required; however, based on the analyses conducted so far (Table 4-11), it appears that chromium in groundwater under the Plant Site is virtually all hexavalent chromium, and not trivalent chromium, trivalent chromium being the oxidation state of chromium in Plant Site waste streams." Hexavalent chromium is more soluble than trivalent chromium, thus one

would expect to see groundwater contaminated by hexavalent chromium. Please refer to comment #36 above. TIMET would benefit by conducting geochemical modeling to evaluate the redox environment and better understand fate of chromium in the soil and groundwater.
TIMET Response #47d: TIMET believes that direct observation is more defensible than geochemical modeling, and will continue to evaluate chromium species using analytical measurements. Geochemical modeling will only be performed as needed to answer specific fate and transport questions. It is difficult at this juncture to envision benefit gained regarding chromium modeling compared to the cost when it appears that hexavalent chromium is encroaching on the Plant Site from off-site sources. We intend, if possible, to establish this point by direct observation.

NDEP #48. Section 4.3.2.5, pages 4-20 and 4-21, the NDEP has the following comments:

NDEP #48a. Please discuss the background value of 1,010 mg/kg versus recently updated toxicity data for titanium. In addition, the USEPA region IX PRG is much higher than the background value. Please consider using a more appropriate screening level.
TIMET Response #48a: Comment noted. In future depictions of nature and extent of titanium in soil and groundwater, current and appropriate screening levels will be used.

NDEP #49. Section 4.3.2.7, pages 4-23 and 4-24, the NDEP has the following comments:

NDEP #49a. The basis for the screening level for vanadium in groundwater is not presented. TIMET uses a 100 ppb reference, whereas the USEPA PRG is 255 ppb. Please explain.
TIMET Response #49a: Comment noted. In future depictions of nature and extent of vanadium in soil and groundwater, current and appropriate screening levels will be used.

NDEP #50. Section 4.3.3, pages 4-26 and 4-27, the NDEP has the following comments:

NDEP #50a. Please discuss what types of wastes were received in historic (unlined) landfill operations on Site and how this relates to VOCs on Site.
TIMET Response #50: The J-2 landfill did not receive waste solvents historically as was documented in the TIMET Phase I Environmental Conditions Assessment (ECA, Section 5.3.5.1).

NDEP #50b. Please discuss where the wastes from the electrolytic cells are disposed of (currently and historically). It is the understanding of the NDEP that the electrolytic cells that were used to produce magnesium may have contained carbon tetrachloride and other wastes. Please discuss this as well as wastes relating to the magnesium recovery operation.

TIMET Response #50b: Refractory brick from the clean-out of the electrolytic cells in TIMET's magnesium recovery operations are disposed in the J-2 landfill as indicated on Table 3-1. Carbon tetrachloride has not been identified as a chemical of concern in regards to TIMET's magnesium recovery operations.

NDEP #50c. In addition, please discuss the historic use of VOCs as dust suppressants on roadways.
TIMET Response #50c: Discussion of this practice was included in Section 3.0, Table 3.2. Assessment of volatiles compounds has been conducted on roadways in previous investigations. This data will be assessed and utilized (as appropriate) in scoping additional investigations to address any further data needs.

NDEP #51. Section 4.3.3.1, pages 4-27 and 4-28, the NDEP has the following comments:

NDEP #51a. TIMET states that "Chloroform is not identified (by process knowledge) in historic or present-day Plant Site processes or waste streams." Chloroform is a potential degradation by product from other compounds that are or have been used on Site. Please discuss chloroform in this fashion.
TIMET Response #51a: Additional analysis of volatile organic compounds in future soil investigations will provide evidence regarding the significance (if any) of dechlorinination of carbon tetrachloride to chloroform.

NDEP #51b. As noted previously, the screening levels presented are incorrect. TIMET states that the screening level is 100 ppb for total trihalomethanes in groundwater. This is incorrect. The MCL for total trihalomethanes in groundwater is 80 ppb. Groundwater data should hence be discussed as total trihalomethanes.
TIMET Response #51b: Comment noted.

NDEP #52. Section 4.3.3.2, page 4-29, section on tetrachloroethene in groundwater, TIMET states "The distribution of PCE in groundwater is shown on Figure 4-44." Please note that the contours as drawn do not equally honor the data. The contours enclose a "J" flagged value to the east but to the west exclude such a value.
TIMET Response #52: Comment noted.

NDEP #53. Section 4.3.3.2, page 4-29, section on tetrachloroethene in groundwater, TIMET states "Because the Used Paint and Solvent Area is contained within the landfill boundaries, it is possible that PCE undergoes reductive dechlorination under anaerobic conditions to some degree, the byproduct of which is trichloroethene (TCE); and if the process continues, dichloroethene (DCE), then vinyl chloride (VC). There is no evidence of DCE or VC at the Plant Site, so reductive dechlorination, if occurring, appears limited."

NDEP #53a. The geochemical model for reductive dechlorination is far more complex than this statement implies.

NDEP #53b. Has TIMET collected geochemical data to support the argument of reductive dechlorination at the site?
NDEP #53c. As discussed in the following paragraph; if reducing conditions exist only under the landfill and oxidizing conditions exist downgradient of the landfill; the PCE could be reduced to TCE beneath the landfill and the DCE isomers and VC (if any were present) would be readily oxidized in the distil portions of the plume. Please note that VC only accumulates under reducing conditions.

TIMET Response #53: These points have been identified as data gaps. The intent of the discussion, within the framework of CSM, was to establish the need to collect such data. No comment was made regarding the complexity of reductive dechlorination, only that the relationship between PCE and TCE mass in groundwater suggests that TCE may be the result of direct release or transformation.

NDEP #54. Section 4.3.4.3, page 4-36 and 4-37, the NDEP has the following comments:
NDEP #54a. Please generate a set of Figures for Uranium-235 (U-235).
TIMET Response #54a: At such time as nature and extent is presented for U-235, or as necessary to scope delineation of U-235, these figures will be prepared.

NDEP #55. Section 4.3.5, pages 4-37 and 4-38, the NDEP has the following comments:
NDEP #55a. Please discuss if PAHs are formed in the magnesium recovery electrolytic cells or any other process on Site.
TIMET Response #55a: As NDEP is aware, EPA collected samples of TIMET waste streams in 2006 on two occasions. TIMET is not aware of publication of EPA's findings from their investigation. Once published, this data will be assessed and appropriate updates to CSM related tables will be made.

NDEP #55b. PAHs are the only semivolatile organic chemicals (SVOCs) mentioned in this section. Information should be provided as to whether other SVOCs have been associated with historical site activities.
TIMET Response #55b: Discussion of PAHs in this section is consistent with TIMET's list of site-related chemicals. The only known potential source of PAH contamination was from the burning of wooden pallets recorded in the Phase I ECA.

NDEP #55c. In addition to physical/chemical properties, the distribution of SVOCs in soil should be used to support decisions regarding the leaching potential of these chemicals.
TIMET Response #55c: Comment noted.

NDEP #55d. Page 4-38, TIMET states "However, PAHs as a class is hydrophobic and poorly soluble, and based upon their physical properties,

would not be expected in groundwater at the TIMET Plant Site." Technically, it would be best to avoid broad statements like this without supporting data. This is especially true when samples will be analyzed for the analytes in the future.
TIMET Response #55d: Comment noted.

NDEP #55e. Page 4-38, section on groundwater. Technically, it would be best to avoid broad statements like this without supporting data. This is especially true when samples will be analyzed for the analytes in the future.
TIMET Response #55e: Comment noted.

NDEP #56. Section 4.3.6, pages 4-38 and 4-39, the NDEP has the following comments:
NDEP #56a. It has been noted that PCBs (specifically decachlorobiphenyl) are formed in the electrolytic cells of the magnesium recovery operation. This issue needs discussion in this Section.
TIMET Response #56: See response to comment #30.

NDEP #57. Section 4.3.7, pages 4-39 and 4-40, the NDEP has the following comments:
NDEP #57a. Regarding pesticide wastes, TIMET states "Wastewater discharges from these facilities traversed the Northern Storage Area via the Beta Ditch en route to the Pabco Ponds Area for evaporative treatment." The NDEP disagrees with the assertion that any meaningful treatment occurred via evaporation for pesticides. Please note that the BMI Upper and Lower Ponds and ditches were infiltration ponds as well as evaporation ponds.
TIMET Response #57a: Comment noted.

NDEP #57b. Please discuss if any investigation has been completed in the ditches themselves. This may be a data gap if investigations have not been completed for broad suites in the ditches.
TIMET Response #57b: No investigation within the centerline of the ditches has been conducted at the Plant Site. This is a data gap and will be scoped in future investigations.

NDEP #58. Section 4.3.9, page 4-41, the NDEP has the following comments:
NDEP #58a. It is not clear if the J2 landfill is the only potential source area for asbestos.
TIMET Response #58a: All known sources for asbestos have been identified within the CSM (i.e. demolition debris in the J2 landfill, gasket in waste pile at the Northern Storage Area, and an asbestos abatement in the cable tunnel).

NDEP #58b. If there is potential for asbestos to be present in specific areas of the site, analytical data, using NDEP-approved methods, should be used as the basis for characterization rather than visual inspection.
TIMET Response #58b: Comment noted.

NDEP #59. Section 4.3.10, page 4-41, the NDEP has the following comments:

NDEP #59a. As the NDEP has noted previously, it is not clear to the NDEP that there are not additional sources of dioxins or furans. Please refer to NDEP's previous comments, which will not be repeated herein.
TIMET Response #59a: Comment noted.

NDEP #60. Table 4-2, the NDEP has the following comments:

NDEP #60a. Please add columns which present the USEPA Soil Screening Level DAF 1 and the applicable comparisons to this metric. This comment applies to this table and all similar tables.
TIMET Response #60a: Screening tables will include DAF1 values and future assessment will also include comparison to DAF1.

NDEP #60b. In this table "- - " is used interchangeable for "0" or "NA". It is requested that "NA" or "- -" be used for instances where something is not applicable and "0" be used for when the indication is zero. This comment applies to this table and all similar tables.
TIMET Response #60b: Comment noted.

NDEP #61. Table 4-8, the NDEP has the following comments:

NDEP #61a. It is not clear to the NDEP why TIMET has not chosen an appropriate screening level for dioxins and furans. It is suggested that TIMET review the ATSDR guidance on this class of chemicals and select/justify a screening level.
TIMET Response #61a: Comment noted. Current and appropriate screening levels will be used in future comparisons.

NDEP #61b. Regarding PCBs it is not clear why TIMET has chosen to use TSCA as the basis for many screening levels except for Aroclors 1016, 1254 and 1260. It is not clear that this is appropriate. Please explain.
TIMET Response #61b: EPA Region IX Industrial PRGs are used for assessment of Aroclor 1016 and Aroclor 1254 results. Inclusion of the TSCA screening level (1 ppm) within the screening table is used as a default value for Aroclors which have no published PRG (except Aroclor 1260 which was inadvertently left blank). Assessment of the risks posed by PCBs is more complicated than comparison to these screening levels. At such time that a detailed evaluation of risk is conducted, appropriate values and rationale will be provided.

NDEP #61c. "water quality indicators" are not needed on this table.
TIMET Response #61c: Comment noted.

NDEP #61d. It would seem appropriate that for asbestos the screening level would be "any detection".
TIMET Response #61d: Comment noted.

NDEP #61e. Please note that the NDEP has not comprehensively verified the values presented on this table.
TIMET Response #61e: Comment noted.

NDEP #62. Table 4-9, the NDEP has the following comments:

NDEP #62a. This table does not indicate what the selected screening level is and hence this table is of limited utility. This table should be reformatted to be consistent with Table 4-8.
TIMET Response #62a: The format of Table 4-9 has been revised to be consistent with Table 4-8.

NDEP #62b. Please note that the NDEP has not verified the values presented on this table.
TIMET Response #62b: Comment noted.

NDEP #63. Section 5.0, pages 5-1 and 5-2 and general comments, the NDEP has the following comments:

NDEP #63a. TIMET states "Data for the site indicate some COPCs detected in groundwater samples at the TIMET site are not associated with current or previous TIMET operations and are likely associated with off-site sources or have an unknown origin (such as chloroform)." NDEP agrees with this in concept, however, NDEP does not agree with the statement about "chloroform". TIMET has not yet demonstrated that chloroform is from an off-Site source, solely.
TIMET Response #63a: While PCE and TCE cannot degrade through to chloroform, NDEP asserts that instead, a process-related generation of carbon tetrachloride was potentially related to the electrode use (NDEP #50) and that it can reduce through chloroform. The chloroform plume appears to originate from the ponds to the southwest (Montrose Closed Ponds), crosses Tronox, and continues across the Northern Storage Area.

Current soil data from the TIMET Plant Site do not suggest a source of chloroform exists. Additional subsurface investigations are planned to generate a defensible data set to further support TIMET's position.

NDEP #63b. TIMET discusses "downgradient" receptors but not "downwind" receptors. Please clarify what is intended.
TIMET Response #63b: We intend to include both types of receptors.

NDEP #63c. General comment, this Section could be much improved via a discussion of the structure of the Section "up front". Section 5.1 is titled "Conceptual Site Model for Each Source Area", however, this is not what is included in this Section. Perhaps the Section would be more accurately described as "Primary Source and Release Mechanisms". Accurate titles and descriptions would facilitate review times and minimize NDEP comments.
TIMET Response #63c: Comment noted.

NDEP #63d. General comment, please note that the NDEP's specific comments on sub-Sections below may be addressed by TIMET in the remaining sub-Sections and Figures. NDEP apologizes for any inaccuracies in the comments, however, these comments are a function of the lack of clarity of the structure of this Section.
TIMET Response #63d: Comment noted.

NDEP #63e. General comment, perhaps a new sub-section should be added to Section 5.5 which discusses groundwater as a receptor. Nevada has a non-degradation policy for groundwater and all groundwater is considered drinking water.
TIMET Response #63e: Technically speaking, groundwater itself cannot be a receptor: it can be a secondary source with subsequent exposure to a (human or ecological) receptor. Realistically, we do intend to evaluate the plume (e.g. TCE plume) and assess whether human or ecological receptors receive the (dilute) trace TCE. In addition, the soil-to-groundwater pathway will be assessed in additional investigation reports.

NDEP #63f. General comment, in addition to complete exposure pathways, potentially complete pathways should be included at this stage of the CSM.
TIMET Response #63f: The purpose of the Conceptual Site Model was to focus the discussion on the primary sources and principal contaminants, as well as the most important exposure pathways. Potentially (but unlikely to be) complete pathways would complicate the planning and assessment. If a specific exposure pathway changes the sampling and analysis plan (SAP) planning and future sampling efforts, then we welcome the specific NDEP comment.

NDEP #63g. General comment, the CSMs for each source area are correctly identified as preliminary CSMs. This is appropriate as (1) a data usability evaluation and documentation of adequate characterization for each exposure area has not been completed (accordingly data gaps may exist) and (2) a comprehensive exposure assessment has not been completed, which applies standard guidance to identify complete and potentially complete as well as insignificant pathways for both current and hypothetical future receptors.
TIMET Response #63g: Data usability will be conducted in the risk assessment according to standard guidance. Once site data are available, the comprehensive exposure assessment will be conducted as part of the risk assessment process.

NDEP #63h. General comment, mention is made of the California Regional Water Quality Control Board's environmental screening levels (ESLs) document and that document's discussion of the relationship between construction worker and short-term maintenance worker exposure. It is not clear what the intent of this reference is and why it is relevant for the CSM to

assess the relationship of construction worker and short-term maintenance receptors.

TIMET Response #63h: Comment noted. Details will be presented in the future risk assessment once additional data at relevant depths have been collected. Many of the exposure assumptions protective of a (more intrusive) construction worker will be abundantly conservative for a short-term maintenance worker (such as a utility repair person).

NDEP #64. Section 5.1.1, page 5-3, the NDEP has the following comments:

NDEP #64a. This comment applies to this Section of the report and other Sections that are similar in nature (e.g.: Section 5.1.2, 5.1.3, etc.).

NDEP #64b. It is strange that each source area is described in terms of potential source areas within the source area and the waste streams associated with each source area. This does not appear to adequately address issues such as: windblown deposition of contaminants; overland transport of contaminants; volatization of contaminants to the vadose zone from the water table (and vice versa); impacts to the vadose zone from upgradient source areas; etc. Source areas cannot be evaluated in isolation from the remainder of the Site and additional discussion is necessary. It appears that this issue may be addressed in other sub-Sections of this Section, however, as discussed in the comments above for Section 5.0, the structure of Section 5.0 is not clear.

TIMET Response #64: Each of the figures shows (for example) windblown dust inhalation for each of the source areas. Windblown transport would be accounted for because the surface soil sampled in cross-area pathways would become an input dose.

NDEP #65. Section 5.1.1.1, page 5-3, the NDEP has the following comments:

NDEP #65a. This Section is titled "Principal Waste Streams" and there are other sub-sections with the same title for the remaining source areas of the Site. It is the belief that additional clarification is needed regarding the word "Principal". It should be noted that additional waste streams, raw materials, degradation byproducts, chemical classes, etc. may have affected these areas and that the description of the "Principal Waste Streams" is not meant to be all inclusive.

TIMET Response #65: Comment noted. See also Section 3, which clarifies thoughts on source area grouping.

NDEP #66. Section 5.1.1.2, pages 5-3 and 5-4, the NDEP has the following comments:

NDEP #66a. This Source Area includes subsurface piping as one of the main potential source areas. Subsurface piping and pipe bedding material may act as a preferential pathway for contaminant transport.

TIMET Response #66a: Comment noted.

NDEP #66b. This Source Area includes former drainage ditches. TIMET should discuss the potential for the ditches to act as preferential pathways for contaminants to leach to the sub-surface. In addition depressions in the

ground surface tend to act as "sinks" for windblown contaminants (e.g.: heavy metals and radionuclides). These issues and others should be discussed in the context of the CSM.
TIMET Response #66b: Comment noted.

NDEP #66c. This Section does not discuss tresspassers or downgradient/downwind residents as receptors. Please explain. It is noted that some of these issues are covered in Section 5.0, however, it is confusing because a limited number of receptors and pathways are discussed in the specific sub-sections.
TIMET Response #66c: Clarification will be provided in future risk assessments.

NDEP #66d. As applicable, the above comments also apply to the remainder of the Sections of Section 5 and will not be repeated.
TIMET Response #66d: Comment noted.

NDEP #67. Section 5.1.2.1, pages 5-5 and 5-6, the NDEP has the following comments:
NDEP #67a. TIMET discusses that the PCE and TCE plumes are present in this area. Other volatile compounds (e.g.: chloroform and radon) are not discussed, please explain. This comment applies to other Sections of the report as well.
TIMET Response #67: These SRCs were given as examples. VOCs detected at TIMET will be addressed in future risk assessments.

NDEP #68. Section 5.1.3.2, pages 5-8 and 5-9, the NDEP has the following comments:
NDEP #68a. TIMET discusses the emptying and relining of ponds HP-1 and HP-6, however, the reasoning for this is not included. Anomalous groundwater sampling results in this area were observed by the NDEP and investigations of these ponds ensued. Anomalous groundwater results continue to exist in this area (specifically, elevated TDS and uranium). This issue should be discussed.
TIMET Response #68: Relining ponds HP-1 and HP-6 is important to the CSM in that discharges are unlikely to have percolated downward through the double liner. Thus, anomalous results are likely to be related to releases predating the emptying and double lining of these areas, as stated in the phrase, "impacts to the subsurface from historic practices are possible."

NDEP #69. Section 5.3.2, page 5-14 and 5-15, the NDEP has the following comments;
NDEP #69a. TIMET states "The only VOCs associated with the TIMET facility that have the potential to migrate into indoor air are PCE and TCE". Please explain the rationale behind this statement.
NDEP #69a-1. It is not clear to the NDEP why chloroform is not included in this statement. Perhaps this is due to TIMET's assertion that this is not site-related. As noted previously, the NDEP does not concur with this.

NDEP #69a-2. It is not clear to the NDEP why radon is not included in this statement, other than the fact that it is not a VOC per say. Nevertheless it is volatile and presents the same sorts of risks to inhabitants.

TIMET Response #69a: Radon is (in whole or in part) naturally occurring and is also a radionuclide (not a Volatile Organic Chemical) and thus was not included as a "VOC associated with the TIMET facility." NDEP is correct in that TIMET asserts chloroform is not site related: it appears to be emanating from facilities west of TIMET. While chloroform will be included in future cumulative risk assessments (despite not being a SRC) from all sources, the statement was correct as written.

NDEP #69b. In addition, modeling (analytical or numeric) has not been conducted to evaluate the impacts to downgradient or Site receptors for this pathway.

TIMET Response #69b: As was indicated on all the figures in Section 5, a quantitative assessment is planned for off-site residents with potentially impacted indoor air. Appropriate evaluations will be conducted for SRC once additional data is collected.

NDEP #70. Section 5.3.4, page 5-15, the NDEP has the following comments:

NDEP #70a. TIMET states "Impacted subsurface soil is only present within the TIMET property boundaries". It is not clear to the NDEP that there is any basis for this information.

TIMET Response #70a: The potential for VOCs in the water table to impact vadose zone soils at shallow depths (i.e. within 10 feet of the land surface) to which an utility worker may make contact will be determined in future off-site investigations of potential plumes.

NDEP #70b. Volatile compounds emanating from the TIMET Site may be impacting sub-surface soils downgradient of the Site. Please explain this with respect to the statement above.

TIMET Response #70b: Vadose zone soils with VOCs contaminating subsurface smear zones on the northern end of the TIMET site will be at 25-30 ft bgs. With approximately a 3-foot water table fluctuation, these trace VOCs will be beneath the reasonable depth of intrusive activities for subsurface soil (i.e., deeper than 10 ft bgs). As indicated in the response to NDEP Comment 69, TIMET intends to evaluate volatile contamination for its potential to migrate into off-site, downgradient indoor air. However, the direct contact pathways for any receptor to access the subsurface contamination (e.g., via incidental contact) are incomplete as no current or future receptor is likely to touch or ingest soils deeper than 10 ft bgs (and furthermore unlikely to touch soils much deeper than the surface, as most surfaces are paved or covered with rock).

NDEP #70c. Compounds in groundwater may be impacting sub-surface soils downgradient of the Site via fluctuating water table elevations. Compounds in

groundwater may contaminate sub-surface soils as the water table re-wets portions of the vadose zone. Please explain this with respect to the statement above.
TIMET Response #70c: See response above.

NDEP #71. Section 5.3.6, page 5-16, the NDEP has the following comments:
NDEP #71a. TIMET should discuss groundwater in terms of the State's non-degradation policy for groundwater and the fact that all water in the State (with some specific exceptions) is considered drinking water.
NDEP #71b. Please note that shallow groundwater is known to interact with the Las Vegas Wash irrespective of the presence of seeps.
TIMET Response #71: Comment noted.

NDEP #72. Figures 5-1 through 5-5, the NDEP has the following comments:
NDEP #72a. Please note that comments that apply to footnotes common to the figures reference the footnote numbers used in Figure 5-1.
NDEP #72b. The figure legend indicates a category for a "C" that has no box around it and a "C" that has a box around it. In the figure itself, these two categories are not apparent.
TIMET Response #72b: The C with a box around it is italicized (and when printed in color, has a yellow box around it, or if printed in black and white has a shaded box around it). Another distinction is that one assessment is quantitative while the other is expected to be qualitative. Both types of potentially complete pathway assessments are shown on each figure.

NDEP #72c. Some receptors and some pathways are different for the current scenario and the future scenario. Accordingly, the two scenarios should be split out on the figures and all potential pathways for hypothetical future receptors should be included as "C". For example, a hypothetical future commercial/industrial worker could be exposed to indoor air at any location on the site where a building could be built in the future.
TIMET Response #72c: Please see footnote 7 on each figure. Assessment will be conducted in the future risk assessment when data are available.

NDEP #72d. Many of the pathways identified as "I" (incomplete) are more correctly identified as insignificant. In order to classify a pathway as insignificant, the USEPA exposure assessment guidance (USEPA, 1992a) should be used and adequate rationale should be provided. For some pathways for which data are still inadequate, the pathway may need to be identified as a potentially complete pathway for purposes of the preliminary CSM. An example of this is windblown dust and deposition onto surface soil at offsite residential locations. Following completion of characterization and an evaluation of data usability and data adequacy, USEPA criteria for an insignificant pathway may be met.
TIMET Response #72d: The exposure assessment will be completed once data are available. However, not all "I" pathways are complete: specifically,

as an example, the pathways from indoor air to trespassers or workers (where no buildings exist) are incomplete because the media (indoor air) cannot possibly reach the receptor because the receptors cannot be in a building (i.e. see Figure 5-2 and footnotes 5 and 7) as buildings do not exist. We agree that windblown dust may travel some distance from the site and could then be insignificant (due to dilution) rather than incomplete. Once additional data are available, we will assess whether contaminants are reaching the fenceline.

NDEP #72e. More detail (i.e., rationale) should be provided for areas that have surface water identified as a secondary source with no secondary release mechanism and/or tertiary source listed.
TIMET Response #72e: A trespasser could walk or fall into a trench or pond (surface water) that has received contamination from a PSA. Thus, no secondary release or tertiary source is involved, as the person can be exposed directly to the secondary source (surface water) via the exposure routes indicated.

NDEP #72f. More detail (i.e., rationale) should be provided for areas that have subsurface soil identified as a secondary source with no secondary release mechanism and/or tertiary source listed.
TIMET Response #72f: The figures omit a secondary release mechanism and tertiary source to which subsurface soil relates only for the future on-site construction worker, who would have potentially complete direct exposure pathways under hypothetical repair or expansion construction conditions. No secondary release mechanism or tertiary source is appropriate for this scenario. Footnote 2 explains this assumption conceptually.

NDEP #72g. For potential VOC sources (e.g., petroleum mixtures, etc.), VOC data should be used to support the conclusion that VOC pathways are insignificant.
TIMET Response #72g: Comment noted. Exposure pathways will be finalized in the risk assessment based on appropriate data.

NDEP #72h. Footnote d: Default pathways for the future commercial/industrial worker receptor should be included (USEPA, 2002).
TIMET Response #72h: As the CSM presents a site-specific set of receptors, this is inappropriate for many TIMET source areas. Specifically:

- In Source Area 1 (Figure 5-1), workers do not (and are not expected to in the future) access the northern storage area and surface ditches. Employees of TIMET are expected (for current/future scenarios) to be present only in operational areas where their duties are assigned, minimizing their exposure to environmental media.
- In Source Area 2 (Figure 5-2) and in Source Area 5 (Figure 5-5), we agree that the default commercial/industrial worker pathways are shown to be potentially complete for surface soils related to miscellaneous PSAs.

- In the Ponds Area (Figure 5-3), current/future TIMET workers will not be spending significant time as their duties will be in the historical operational areas (see Figure 5-5). The default worker pathways are not appropriate.
- No workers will work in the J2 Landfill area and thus it is inappropriate to use default pathways for the commercial/industrial worker (see Figure 5-4). In contrast, windblown contamination emanating from the J2 Landfill is assessed for current/future workers.

NDEP #72i. Footnote f: This footnote states that the construction worker is not evaluated in the human health risk assessment. The reviewer is unaware of a risk assessment that has been conducted for the site, or any portion thereof.
TIMET Response #72i: The reviewer is correct: the risk assessment will follow once data is available.

NDEP #72j. Footnote g: This footnote identifies 0-1 foot bgs as "surface soil" and 1-10 feet bgs as "subsurface" soil. In the future, soil depth intervals should match those identified by USEPA as receptor-specific exposure depth intervals (i.e., 0-2 feet bgs for non-intrusive activities and 0-10 feet bgs for intrusive activities) (USEPA, 2002).
TIMET Response #72j: Given the conceptual release mechanisms of import at TIMET (particularly including surface releases and resuspension/redeposition) and given the SRC at TIMET (primarily the inorganics), the soil data grouping proposed is conservative. At this time, we will retain 0-1 ft bgs as surface soil because our primary SRC are inorganic in nature and dust redeposition within the top several inches of soil could result in current/future exposure. Since concentrations are lower from 1-2 ft bgs for the SRC of interest, use of the full 0-2 ft interval could "dilute" exposure point concentrations and be less conservative, in some instances. In addition, EPA has noted that the full 0-2 foot interval is unlikely to be resuspended: 0-1 ft bgs represents a more realistic evaluation of the uppermost layer of contaminants deposited via windblown deposition and therefore our definition of 0-1 ft bgs is more conservative. In addition, the comparable background soil data set is from 0-1 ft bgs, as approved by NDEP, and thus for the background data to be directly comparable to the TIMET site data, the 0-1 ft bgs interval is appropriate. This is consistent with EPA guidance on vertical data grouping. The use of any soil depth will be discussed in the uncertainty analysis when the time comes.

NDEP #72k. Footnote 1: Potential migration and exposure pathways associated with surface water should be included in the preliminary CSM. Pathways for both current and default future scenarios should be included.
TIMET Response #72k: The current/future trespasser scenario will incorporate appropriate exposure assumptions to be protective of current/future offsite residents subject to storm water runoff: there is no

default future residential scenario appropriate for surface water (USEPA 2002). Thus, the site-specific "trespasser" evaluation will be protective of migration and exposure pathways, as it will evaluate (undiluted) surface water nearest the point of release rather than further downstream (more diluted) surface water exposure of an off-site residential trespasser. This will be explained in the risk assessment following further data collection.

NDEP #73. Section 5.2, The term COPCs is used throughout this section (and others in the document). It is more appropriate to use an alternate term for purposes of the subject document, as the term Chemicals of Potential Concern (COPCs) has a specific definition within the risk assessment framework and implies that a specific selection process has been applied (USEPA, 1989).
TIMET Response #73: It is anticipated that the potential COPCs identified will be selected as per EPA guidance and eventually a subset of the SRC list will become COCs rather than COPCs. These SRCs discussed are our preliminary COPCs.

NDEP #74. Section 5.2.1, page 5-13, is stated that "For areas subject to direct disposal of solid waste and liquid or slurry, the residual soil, solid waste, or sludge directly in contact with the waste stream would represent a primary release mechanism because human receptors could come into contact with COPCs present in this material". To be more correct, the environmental release of chemicals associated with solid waste disposal, wastewater discharge, and other disposal methods described represents a *primary* release because this is the first point of chemical release from site operations, not because there is human exposure.
TIMET Response #74: Comment noted.

NDEP #75. Section 5.3, the NDEP has the following comments:

NDEP #75a. This section should be entitled "Complete and Potentially Complete Exposure Pathways".
TIMET Response #75a: Comment noted.

NDEP #75b. All potentially complete pathways should be included in the preliminary CSMs at this time. Incomplete and insignificant pathways generally require completed site characterization before categorized as such.
TIMET Response #75b: Comment noted. See also previous similar comment.

NDEP #76. Section 5.3.1, page5-14, Soil and/or soil gas data should be used as the basis for determining if inhalation of outdoor air is an insignificant pathway.
TIMET Response #76: Direct measurement of air (particularly for VOCs that are subject to flux) are potentially more appropriate for outdoor air. A specific path forward will be determined based on the next phase of data collection.

NDEP #77. Section 5.3.2, the NDEP has the following comments:

NDEP #77a. Page 5-14, since COPCs have not been formally identified, the indoor air pathway should not be limited to PCE and TCE, particularly since there is potential for breakdown products to be present.
TIMET Response #77a: Comment noted. The actual SRC present were used to illustrate the point. All detected VOCs will be addressed in the health risk assessment.

NDEP #77b. Page 5-15: For the hypothetical future scenario, a commercial/industrial worker could be exposed to indoor air at any location on the site where a building could be built in the future.
TIMET Response #77b: See previous comment and footnote 7 to each figure.

NDEP #78. Section 5.3.3, soil depth intervals for exposure assessment should match those identified by USEPA as receptor-specific exposure depth intervals (i.e., 0-2 feet bgs for non-intrusive activities and 0-10 feet bgs for intrusive activities) (USEPA, 2002).
TIMET Response #78: See TIMET Response #72j.

NDEP #79. Section 5.5.1.2, page 5-21, please delete the following sentences from the second paragraph, which do not add relevant information to the preliminary CSM and are not consistent with USEPA guidance (USEPA 1996, 2005) or other NDEP projects: "Exposures from ingestion of future hypothetical homegrown produce would be highly variable because of the long list of exposure assumptions and extrapolations necessary to predict risk. Further, inclusion of the homegrown produce consumption pathway often results in unrealistically elevated risk estimates that have the potential to drive risk because of the pathway's uncertainty." Determination of whether the homegrown produce pathway is complete should be based on the potential for source (i.e., soil and/or air) contamination.
TIMET Response #79: No discussion of future residential homegrown produce pathways will appear in the future submittals since further reconnaissance of the downgradient residential areas on June 20-21, 2007, indicated that downwind residential areas are largely paved or covered with stone in this urban portion of the Mojave Desert.

NDEP #80. Section 5.5.2, page 5-23, the potential for impact to aquatic receptors in the Las Vegas Wash is not mentioned.
TIMET Response #80: Comment noted. When appropriate, future risk assessments will evaluate all relevant site-specific ecological receptors once environmental data is available, and/or appropriate models are applied to downgradient (diluted) impacts in the Las Vegas Wash.

NDEP #81. Section 6.0, page 6-1, a comprehensive data gap analysis based on a data usability evaluation of existing data (USEPA, 1992b), analysis of spatial distributions of contaminants in relation to (1) all source areas, release mechanisms and migration and exposure pathways, and (2) risk benchmark and/or background concentrations, has not been conducted. Therefore, the information provided in Section 6 should be considered as a preliminary data gap analysis.
TIMET Response #81: Comment noted.

NDEP #82. Table 6-1, Data Gaps, the NDEP has the following comments:

NDEP #82a. Please note that the NDEP's comments on this Section should not be considered as a comprehensive list of data gaps. Additional comments above could also be used to formulate additional data gaps.
TIMET Response #82a: Comment noted.

NDEP #82b. General comment, text in some cells is hidden.
TIMET Response #82b: Reformatted tables have been provided to NDEP.

NDEP #82c. Problem Statement #1, regarding PCB distribution at the Site. TIMET does not discuss the discovery of decachlorobiphenyl at the Site. In addition, no data has been collected regarding the presence of this chemical in soils and/or groundwater. This is an issue that is not adequately discussed in this data gap. Also, TIMET's proposed action for this data gap is insufficient.
TIMET Response #82c: See comment #30 and its response.

NDEP #82d. Problem Statement #1, please note that elimination of specific chemicals from further consideration should not be conducted as a component of a preliminary CSM. TIMET should determine if characterization is complete for certain chemicals in specific exposure areas as part of the phased RI process.
TIMET Response #82d: Comment noted.

NDEP #82e. Problem Statement #2, regarding PAH contamination. It is not clear that PAH contamination has been addressed throughout the Plant Site and it is not clear why this data gap applies solely to the Northern Storage Area. PAHs may also be present in other areas of the Site (e.g.: the S-17 landfill, ditch segments, drum storage areas, etc.). Please discuss.
TIMET Response #82e: This statement was written specific to PAH contamination in the Northern Storage Area. Exclusion of the potential presence of PAH contamination in other areas was not intended.

NDEP #82f. Problem Statement #3, regarding asbestos in the Northern Storage Area. Please note that asbestos has been found throughout the BMI Complex and Common Areas. It is prudent to expand the asbestos investigation to cover large tracts of the Site. In addition, it is not clear that a visual observation for asbestos containing material will address the needs of a risk assessment.
TIMET Response #82f: See TIMET response #58.

NDEP #82g. Problem Statement #3: Visual observation is proposed as the only means of determining whether asbestos has been released at the site. If, based on historical information, there is potential for asbestos to have been released (and there is sufficient information), decisions should be based on analytical data and not limited to visual observations.

TIMET Response #82g: Comment noted

NDEP #82h. Problem Statement #4: Specific analytical methods should be included in the proposed action.
TIMET Response #82h: TIMET disagrees with providing this level of detail in the CSM. Analytical methods are provided in the Generic Sampling and Analysis Plan and will be confirmed or revised in future site-specific sampling and analysis plan.

NDEP #82i. Problem Statement #5: The need for groundwater sampling for PCBs should be based on whether the vertical gradient for PCBs in soil indicates the potential for PCBs to have migrated to groundwater. In addition, it should be noted that PCBs have been detected in groundwater downgradient of the Site. This must also be considered.
TIMET Response #82i: Comment noted.

NDEP #82j. Problem Statement # 6: Specific analytical methods should be included in the proposed action.
TIMET Response #82j: See TIMET response #82h.

NDEP #82k. Problem Statement #6, this statement does not address the inclusion of waste solvents used on Site roadways. Please discuss.
TIMET Response #82k: Assessment of volatiles compounds has been conducted on roadways in previous investigations. This data will be assessed and utilized (as appropriate) in scope additional investigations to address this data gap.

NDEP #82l. Problem Statements #7 and #9: "principal chemicals" should be specifically identified.
TIMET Response #82l: Additional detail will be provided in future site-specific sampling and analysis plans.

NDEP #82m. Problem Statement #8, perhaps this statement could be expanded to address the storage of chlorinator dust and CSD solids in other areas. For example, chlorinator dust stored east of the WCF.
TIMET Response #82m: Comment noted.

NDEP #82n. Problem Statement #11: The extent of arsenic contamination (i.e., to risk-based, leaching-based and/or background-based concentrations) should be delineated for all arsenic source areas.
TIMET Response #82n: Comment noted.

NDEP #82o. Problem Statements #12 and #13: The proposed action should be more specific than "Soil gas sampling (if possible) may be necessary to pinpoint PCE" (note typo for Problem Statement #13 under Proposed Action: "PCE" should be "TCE").

TIMET Response #82o: Future site-specific sampling and analysis plans will provide the requested level of specificity.

NDEP #82p. Problem Statement #15: When testing soil for CrVI, ensure that EPA Method 3060A is used for the extraction and that appropriate ancillary parameters (e.g., pH) are collected.
TIMET Response #82p: Comment noted.

NDEP #82q. Problem Statement #15, TIMET should also investigate the possibility of an off-Site source of nitrates.
TIMET Response #82q: Comment noted.

NDEP #82r. Problem Statement #18: The problem statement asks if sufficient data have been collected to determine background levels for certain constituents in the Qal aquifer, but the Proposed Action identifies statistical analysis of the soil data. Please clarify the rationale for the Proposed Action and the specific statistical analyses to be conducted.
TIMET Response #82r: TIMET will assess soil concentrations from the four borings installed at the Southern Plant Site (TMSB-101 through TMSB-104) by comparison to the approved background dataset. Prior to their use, the selection of the specific statistical analyses will be coordinated with NDEP and documented within the report. The objective of this exercise will be to evaluate the soil column in the corresponding groundwater monitoring wells (TMMW-101 through TMMW-104). Once complete, evaluation of groundwater concentrations at these locations will be made (i.e. Are overlying soils a contributing source or is groundwater impacted from upgradient off-site sources?).

NDEP #82s. Problem Statement #18, the extent of the influence of off-Site plumes is an important data gap that may need to be addressed via invasive investigations. It appears that insufficient control exists on the western side of the TIMET site.
TIMET Response #82: Comment noted.

NDEP #82t. Page 2 of 4, 2nd row (Problem Statement #9). Vertical soil profiling has not been proven to NDEP as a substitute for groundwater monitor wells.
TIMET Response #82t: The approach was to determine if there was a soil source area for release to groundwater, but not as a substitute for monitor wells. The document did not state we were substituting a soil profile for groundwater.

NDEP #82u. Page 2 of 4, 3rd row, 2nd column (Problem Statement #10). Unable to read all the text.
TIMET Response #82u: Reformatted tables have been provided to NDEP.

NDEP #82v. Page 2 of 4, 6th row, 2nd column (Problem Statement #12). What were the detection limits?
TIMET Response #82v: TIMET disagrees that this level of detail is necessary for purposes of this table. Detailed sampling and analysis plans (with applicable detection limits) and corresponding reports are better suited for this level of discussion.

NDEP #82w. Page 2 of 4, 6th row, 3rd column (Problem Statement #12). Low concentrations are not necessarily indicative of vapor phase transport.
TIMET Response #82w: Comment noted.

NDEP #82x. Page 2 of 4, 6th row, 4th column (Problem Statement #12). What would prevent vapor phase sampling?
TIMET Response #82x: Drilling obstacles.

NDEP #82y. Page 3 of 4, 1st row, 1st column (Problem Statement #14). Does TIMET have geochemical data to support reductive dechlorination?
TIMET Response #82y: As noted, collection of this data will be included in future sampling and analysis as needed.

NDEP #82z. Page 3 of 4, 1st row, 4th column (Problem Statement #14). What would prevent vapor phase sampling?
TIMET Response #82z: Drilling obstacles.

NDEP #82aa. Page 3 of 4, 2nd row, 2nd column (Problem Statement #15). Vertical soil profiling has not been proven to NDEP as a substitute for groundwater monitor wells.
TIMET Response #82aa: The approach was to determine if there was a soil source area for release to groundwater, but not as a substitute for monitor wells. The document did not state we were substituting a soil profile for groundwater.

NDEP #82bb. Page 3 of 4, 2nd row, 3rd column (Problem Statement #15). Concentrations could increase downgradient of the plant because there is not a continuing source and the plume is migrating.
TIMET Response #82bb: Comment noted.

NDEP #82cc. Page 3 of 4, 4th row, 2nd column (Problem Statement #17). Given the statement in Section 2.3 Hydrogeology, page 2-9, last paragraph; this statement may have not meaning if the groundwater elevation in the alluvial aquifer is higher than the TMCf water bearing zones.
TIMET Response #82cc: Comment noted.

NDEP #82dd. Page 3 of 4, 4th row, 4th column (Problem Statement #17). Reviewer assumes that the reference is to the first water bearing zone below the transitional TMCf.

TIMET Response #82dd: Vertical extent of solute plumes will be defined until we reach suitable criteria regardless of lithology.

NDEP #82ee. Page 3 of 4, 6th row, 4th column (Problem Statement #19). Conduct comparison statistics for all NDEP approved site related background data sets.
TIMET Response #82ee: Comment noted.

NDEP #82ff. In addition to the data gaps listed by TIMET, the NDEP offers additional consideration for data gaps as follows:

NDEP #82ff-1. The permeability of the transitional MCF and the MCF are unknown. In addition, vertical gradient data is unknown. These data are necessary to address hydrogeologic and chemodynamic issues.
TIMET Response #82ff-1: Comment noted.

NDEP #82ff-2. Deep soils and groundwater chemical data has not been collected and Site impacts to these horizons is unknown.
TIMET Response #82ff-2: Comment noted.

NDEP #82ff-3. The hydraulic communication between water bearing zones is unknown.
TIMET Response #82ff-3: Comment noted.

NDEP #82ff-4. Soil data with broad suite analyses is largely lacking throughout the Site. This is especially true in the sub-surface. The basis for limited suite analyses is unclear.
TIMET Response #82ff-4: Site-specific sampling and analysis plans (ie analytical program) will be scoped based upon type of wastes received and associated releases in the particular area as presented in the CSM.

NDEP #82ff-5. Soil data beneath the existing Unit Buildings has not been collected. These buildings are a likely source area.
TIMET Response #82ff-5: Unit buildings are not listed as source areas. There are no collection sumps for process waste in the Unit Buildings. Wastewater from Unit Buildings was collected in shallow lined surface drains and subsurface conveyances that are included as PSA 10 in the CSM. Portions of these conveyances are located beneath the existing unit buildings. Where subsurface piping is present in another identified PSA, further evaluation will be managed within that PSA. For areas where subsurface piping is located outside of other identified PSAs, evaluation of soil to groundwater impacts will be considered and further assessed as necessary. Note 1 in Table 3-2 will be modified to ensure that

subsurface piping outside of identified PSAs is not excluded as a PSA.

NDEP #82ff-6. Background groundwater data (multiple horizons) has not been collected and is necessary to address certain compounds which may be naturally or anthropogenically elevated in groundwater.
TIMET Response #82ff-6: Comment noted.

NDEP #82ff-7. Background soils data for the MCF is unknown.
TIMET Response #82ff-7: Comment noted.

NDEP #82ff-8. The extent of natural bioremediation in the vicinity of the landfill is unknown. In addition, the source of the high methane gas concentrations has not been determined.
TIMET Response #82ff-8: During recent investigations, drilling was precluded in most areas due to obstacles. The CGI reading for volatile materials (calibrated to landfill gas) found in the field report indicated we should stop drilling (dry ice applied) in Appendix A, Summary of Field Activities. TIMET cannot confirm nor quantify the presence of methane based upon readings of the field instrument. Additional investigation of subsurface conditions in this area will address this data need.

NDEP #82ff-9. It is not evident that data has been collected in the various ditches that cross the Site. The influence of these sources in unknown.
TIMET Response #82ff-9: Comment noted.

NDEP #82ff-10. Dioxin and furan data has not been collected and the extents of the impacts of this important chemical class is unknown. Dioxins and furans have been detected throughout the BMI Complex in soils and in some case, in groundwater.
TIMET Response #82ff-10: Comment noted.

NDEP #82ff-11. Validated, usable data for the current and historic waste streams may or may not be available.
TIMET Response #82ff-11: Comment noted.

NDEP #82ff-12. It appears that no characterization has been completed in the vicinity of the former acid tank farm. The releases of acids in this area may have impacts to the chemodynamic environment.
TIMET Response #82ff-12: Table 3-2 includes the acid tank farm area as a PSA. The potential impact to the chemodynamic environment will be considered in future investigations.

NDEP #83. Appendix A, the NDEP has the following comments:

NDEP #83a. Section 2.4, page 4, TIMET indicates that the PID readings are located in Appendix B to Appendix A. The actual results are not discussed in the Appendix or in the main body of the report. Additional comments are provided below on Appendix B.
TIMET Response #83a: As noted, PID readings are recorded as a column on each of the lithologic logs in Appendix B.

NDEP #83b. Section 2.5, pages 4 through 7, where are the results of the XRF analyses discussed and correlated to the soil data? It appears that this issue is not addressed in this Appendix or the main body of the report. The Appendix notes that these issues will be discussed in the CSM, however, this discussion could not be found.
TIMET Response #83b: This discussion is included in Attachment B-1 (formerly identified as Appendix B) of the DVSR in Appendix B of the CSM.

NDEP #83c. Section 2.5.3, page 7, TIMET notes that the XRF device did not capture total uranium results. Please discuss the source of this error and if this error could have affected any of the remaining results.
TIMET Response #83c: The detection limit of the XRF device used to evaluate uranium was higher than promised by the vendor. As a result and after considerable effort to rectify this issue, it was determined that the XRF data were not usable for correlation since concentrations recorded by the laboratory were lower than the detection limit of the XRF device as discussed in Attachment B-1 of the DVSR. The remaining results were not impacted by this issue.

NDEP #83d. Appendix A (Field Forms) to Appendix A, the NDEP has the following comments:

NDEP #83d-1. Please do not create Appendices to an Appendix. Please label the primary section as an Appendix and the subjugated sections as Attachments.
TIMET Response #83d-1: Comment noted.

NDEP #83d-2. January 12, 2006 field notes, page 3, TIMET notes that the boreholes are backfilled with the cuttings. This practice is not allowed in the State of Nevada. Please refer to NAC 534.4371. This practice is listed several other times in the field forms.
TIMET Response #83d-2: Comment noted.

NDEP #83e. Appendix B (Borehole Lithologic Logs and Construction Diagrams) to Appendix A, the NDEP has the following comments:

NDEP #83e-1. As discussed above regarding Section 2.4 of Appendix A, there is no discussion of PID results in the Appendix or in the main body of the report.

TIMET Response #83e-1: PID readings were used in the field to identify depths from which samples for VOC analysis should be collected. In the absence of PID readings in a particular borehole, a VOC analysis was performed on a sample slightly above the first groundwater interface.

NDEP #83e-2. Examples of boreholes with notable PID concentrations are as follows:

1. TMPZ-107 – 24-25' bgs
2. TMPZ-108 – 13-19' bgs
3. TMPZ-112 – 19.5 – 24' bgs

TIMET Response #83e-2: Laboratory analyses for VOCs were performed on samples from the noted depths.

NDEP #83e-3. In addition, a number of locations indicated that the PID reading was "not measured". This is especially evident in lower sampling intervals. Please explain the basis for this. The approved May 2005 work plan did not contemplate this.
TIMET Response #83e-3: PID readings were not measured at those depths at which it appeared the drilling had advanced below shallow groundwater.

NDEP #84. Appendix B, the NDEP has the following comments:

NDEP #84a. This Data Validation Summary Report (DVSR) should be revised and resubmitted under separate cover **by July 6, 2007**.
TIMET Response #84a: Revised DVSR was submitted on July 6, 2007.

NDEP #84b. Section B2.1.8. Other Qualifications. pages B-13 to B-14 under other qualification for radiochemistries. This section references Table B-14 instead of Table B-15. Please correct the text and link.
TIMET Response #84b: The table reference was corrected in revised DVSR.

NDEP #84c. Tables. Most of the tables present a Result column containing the result and a second sub-column with a qualifier that appears to be the lab qualifier. Please provide additional clarification as to what this qualifier means.
TIMET Response #84c: A footnote has been added to all applicable tables in the revised DVSR to indicate that the result field includes the numerical concentration and the laboratory qualifier or code. The qualifier in the "qualifier" column is the final reported qualifier (either the laboratory qualifier or the superseding validation qualifier).

NDEP #84d. Tables B-5, B-7, B-8, B-9, B-10, B-11, B-12, B-14, B-15 . Each table should specify the data quality indicator and objective. (See NDEP's letter titled *Additional Details on Requirements for DVSR* for more information.) It is important to provide this information so that the reason the

data is qualified is transparent. Transparency is important so we can check accuracy and so that it is easy to evaluate usability.

NDEP #84d-1. Table B-5. In Table B-5, "Qualifications Based on Holding Time Exceedences," please include either the sample date or the number of days the holding time was exceeded. Each table should specify the data quality indicator and objective.
TIMET Response #84d-1: The lapsed time will be included and compared to the technical holding time for each analytical group affected.

NDEP #84d-2. Tables B-7 and B-8. In Tables B-7 and B-8, it is not clear which, if any, sample ID numbers correspond to blank samples and which sample ID numbers correspond to the samples associated with the blank contamination. The table should clearly show the results of the blanks as well as the associated samples. In cases where the sample values are censored due to blank contamination (U) and the value is near either a screening level value or may be important in comparison with the background the sample results should be included in these tables. This information needs to be provided so that the reader can understand why sample results were qualified based on blank contamination and can be used in the future with the data usability evaluation.
TIMET Response #84d-2: Tables were added that summarize the blank values (both laboratory and field) and the associated sample ids. TIMET will defer the comparison of censored results against background or any other screening level to such a time as a data usability evaluation will be undertaken for a specific purpose.

NDEP #84d-3. Table B-9. In Table B-9, Matrix Spike and Laboratory Control Exceedances, please provide the percent recovery results for the matrix spike and laboratory control samples that exceeded recovery limits. Also provide the recovery limits.
TIMET Response #84d-3: The table was revised to include MS/MSD and LCS percent recoveries that exceed QC limits and indicated the associated sample IDs.

NDEP #84d-4. Table B-10. Table B-10 for surrogate recovery needs information on the surrogate recoveries. Please present the percent recovery results as well as the percentile limits for the surrogates that were outside the recovery limits
TIMET Response #84d-4: The table was revised to include surrogate recoveries that exceed QC limits for each affected sample.

NDEP #84d-5. Table B-11. Table B-11, Tracer Yield Exceedances, should contain the tracer yields as well as the acceptable yield range for those tracer yields that were outside the acceptable limits.

TIMET Response #84d-5: The table was revised to include tracer recoveries that exceed QC limits for each affected sample.

NDEP #84d-6. Table B-14. In Table B-14, please include the percent difference between the original analysis and the required ICP serial dilution with the QC limit for the metals. For the pesticides, include the percent differences between the results of the two columns with the QC limit.
TIMET Response #84d-6: The table was revised to include the percent difference for both the serial dilutions and second column results along with associated QC limits.

NDEP #84d-7. Table B-15. In Table B-15, information should be provided for transparency for the results qualified based on the density of the sample and LCS criterion and for the results qualified because of the MDC. (See Section B2.1.8 bullets 3 and 4.)
TIMET Response #84d-7: The table was revised to include additional available information. Please note that the density evaluation data and peak identification data are not available from the laboratory. These decisions were made at the laboratory bench level by a trained gamma spectroscopist.

NDEP #84e. Table B-5. In Table B-5 there is an "o" qualifier comment. The footnotes to this table state "o Comment code representing qualification of radiochemistry data for reasons specified in Table 14." There is no Table 14 in this appendix. Please include the correct table reference.
TIMET Response #84e: The reference was corrected in the revision.

NDEP #84f. Table B-9, page 2 of 7, Antimony, Sample ID No. TMSB-109-10. In Table B-9, page 2 of 7, the Qualifier for Antimony for Sample ID No. TMSB-109-10 is given as J, however in the data base the qualifier for this sample is given as J-. Please resolve this discrepancy in data qualifiers.
TIMET Response #84f: The discrepancy was resolved in the revised DVSR.

NDEP #84g. Appendix B1, XRF Summary and Findings. For several of the analytes the report states, "All the XRF reporting limits were greater than the corresponding laboratory, indicating that the XRF did not have any false negative results." This sentence required clarification. What is "... the corresponding laboratory?" Does this refer to the corresponding laboratory reporting limit or concentration? How does an XRF reporting limit that is greater than either the laboratory reporting limit or laboratory derived concentration show there is no evidence of false negative values?
TIMET Response #84g: The corresponding laboratory refers to the fixed laboratory that conducted the metals analysis. The referenced statement compares the XRF detection limit (sample-specific reporting limit) to the fixed laboratory detected concentrations. The statement intended to say that

the XRF did not report any non-detects below the fixed laboratory detected concentrations; hence no false negatives. The higher detection limit of the XRF actually indicates the lack of sensitivity on the part of the XRF to accurately detect some of the levels measured by the ICP. This statement was clarified in the revised DVSR.

NDEP #85. Appendix C, the NDEP has the following comments:

NDEP #85a. Pages in this appendix are not numbered.
TIMET Response #85a: Comment noted.

NDEP #85b. Introduction, 2nd paragraph, please note that groundwater characterization is broader in scope than conducting and analyzing aquifer tests.
TIMET Response #85b: Comment noted.

NDEP #85c. Appendix C, Aquifer Testing Report, Field Methods states that the pumps were equipped with a check valve. Appendix A, Sampling and Analysis Plan on page 17 states that "Where practical, the pump was equipped with a check valve..." Was a check valve used for all tests and if not were there any noticeable affects on the test results?
TIMET Response #85c: A check valve was used on all tests.

NDEP #85d. Appendix C, Aquifer Testing Report, Results – The NDEP would prefer results to be provided in consistent units, *e.g.*, for aquifer transmissivity ft^2/day in lieu of gpd/ft.
TIMET Response #85d: Comment noted.

NDEP #85e. Appendix C, Appendix A, Calculations. Calculations checked and appear correct.

NDEP #85f. Appendix C, Appendix B, Recovery Plots. Water level recovery curves appear very uniform. Straight line analysis method used late-time data for curve fit. All data plots and curve fit appear very reasonable.

NDEP #85g. Appendix C, Appendix D, Drawdown/Recovery Plots. All data plots look reasonable.

NDEP #86. Appendix D, the NDEP has the following comments:

NDEP #86a. It would be helpful if this information was summarized in a tabular form.
TIMET Response #86a: Comment noted.

NDEP #86b. It is important to denote the status of this data. For example, NDEP believes that none of this data has been validated and the usability of this data is unclear. Since this data is used as the basis for a number of decisions in the CSM it is important to address these issues.

TIMET Response #86b: See TIMET response #35a.