ATTACHMENT 5 OF 7 TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S PROOF OF CLAIM #1

TCEQ COMMENTS TO THE AFFECTED PROPERTY ASSESSMENT REPORT (APAR) AND THE TIER 2 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT (SLERA) OCTOBER 8, 2013

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 8, 2013

CERTIFIED MAIL

Mr. Matt Love, Director
Global Environmental Remediation
Exide Technologies
P.O. Box 14294
Reading, PA 19612-4294

Re: Comments to the Affected Property Assessment Report (APAR) and the Tier 2 Screening Level Ecological Risk Assessment (SLERA) for the Former Operating Plant, dated July 9, 2013, Request for a Revised APAR
Exide Frisco Recycling Facility, 7471 5th St. Frisco, TX 75034-5047
TCEQ SWR No. 30516, TCEQ Hazardous Waste Permit No. HW-50206; TCEQ Agreed Order Docket No. 2011-1712-IHW-E; EPA ID No. TXD 006451090; Customer No. CN600129779; Regulated Entity No. RN100218643

Dear Mr. Love:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above referenced submittal, and comments provided by other interested parties. Based on our review, the TCEQ cannot approve the Affected Property Assessment Report for the Former Operating Plant at this time. TCEQ comments are provided as Enclosure 1 and 2. In addition, the United States Environmental Protection Agency, Region 6 Office (EPA) has also reviewed the APAR, and provided comments which are included in Enclosure 3. These comments are in line with the TCEQ's. In order to prevent unnecessary delays for any additional work to be conducted under the APAR, a response to each of the comments in this letter along with a proposed detailed schedule, with interim milestones, for conducting the additional work needed for a revised APAR should be provided no later than 21 days of the date of this letter.

In accordance with 30 TAC §350.33(d), Remedy Standard B is not a self-implementing standard. TCEQ written approval of the APAR and the Response Action Plan (RAP) must be obtained before commencing corrective action; however, interim corrective measures are authorized and required wherever necessary to protect human health and the environment.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the actual response action fails to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of your site to determine compliance with the Final Report.

Questions concerning this letter should be directed to me at (512) 239-2361. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Remediation Division at Mail Code MC-127 with an additional copy submitted to the local TCEQ Region Office. Please note that the Remediation Division has instituted a policy of sending letters via Portable Document Format (PDF) and email when appropriate. Therefore, current email addresses and the site identification information in the reference block should be included in any future submittals.

Sincerely,

Gary Beyer, Project Manager
Team 1, VCP-CA Section
Remediation Division
Texas Commission on Environmental Quality

GB/mdh

cc: Eric Pastor, Pastor, Behling, & Wheeler, LLC, 2201 Double Creek Drive, Suite 4004, Round Rock, Texas 78664
Sam Barrett, Waste Program Manager, TCEQ Region 4 Office, Dallas/Ft. Worth
Bill Shafford, Technical Specialist, TCEQ Office of Waste, MC-123
James Gradney, Enforcement Coordinator, TCEQ Office of Compliance and Enforcement, MC-224
Paul James, U.S. EPA Region 6 Office, Dallas

Enclosure(s):
1. Enclosure 1 – TCEQ Comments on the APAR
2. Enclosure 2 – TCEQ Comments on the Tier 2 SLERA
3. Enclosure 3 - EPA Region 6 Comments on the APAR

General Comments

1. Any area where waste is being managed on-site as part of the investigation, remediation, closure and decontamination of the facility may become a solid waste management unit (SWMU) subject to Affected Property Assessment Report (APAR) requirements if not removed and/or properly disposed in a timely manner.

2. The vertical and horizontal extent of any contamination sourcing from the site should be fully investigated both on-site and off-site and this information should be included in the revised APAR. This includes any contamination which has entered Stewart Creek and migrated downstream. See Comment No. 27 below for a more extensive discussion of this issue.

3. Please provide an interim slag and battery chip investigation and recovery plan to address slag and battery chips in and around the downstream portion of Stewart Creek within 30 days of the date of this letter.

4. The Solar Evaporation Pond and Storm Water Retention Pond should be investigated for potential releases to the environment. The integrity of the lining should be assessed. Timing for the operation and closure of these units should be discussed.

5. Please immediately implement interim measures to suppress dust emissions during windy periods from any areas which could serve as a source of contaminated particulates. See Comment 6 below for more information.

Specific Comments to the Affected Property Assessment Report for the Former Operating Plant

1. Page 1-3. **Former Fire Fighter Training Area.** Please provide information regarding the assessment and cleanup of the Former Fire Fighter Training Area, operated by the City of Frisco on Exide property.
2. Page 1-3. **PCB Waste.** During a site visit by TCEQ Region 4 Inspector, drums of PCBs were noted in the Crystallizer area. Please provide a discussion of the use of PCBs and documentation that no PCBs were released into the environment.
3. Page 1-15. Section 1.2.5.1-**Affected Property No. 1 (North Area).** Not all samples in the North Woods Area were delineated vertically to background levels (31.5 mg/kg lead) nor were subsurface soils vertically characterized to five feet for the human health and ecological pathways. Please collect additional samples to vertically delineate all soil borings to the residential assessment level. For the human health and ecological pathways, please ensure that soil samples are collected to define the extent of exceedances to five feet (the applicable exposure interval for both commercial/industrial and ecological receptors).

   In addition, the lateral extent of contamination of the southern boundary of the North Woods Area needs to be determined. The existence of sediment samples does not preclude additional vertical and horizontal delineation to the south. Finally, unless additional testing proves that the groundwater bearing unit (GWBU) at the site meets the Class 3 Groundwater Criteria, the Tier 2 $^{GW}Soil_{ing}$ calculation in Appendix 9, Table A9.1 should be modified to reflect the Tier 2 groundwater PCL. The residential assessment level (RAL) and critical soil PCLs should be reevaluated as part of this recalculation. (See Comments No. 31 regarding Appendix 7-Groundwater Classification).

4. Page 1-16. Section 1.2.5.3-**Affected Property No. 3 (South Area).** As detailed in Section 4, additional investigation is required at the isolated residential assessment levels (RAL) exceedance location in the drainage ditch west of the Crystallization Unit to provide vertical delineation to the higher of the Method Quantitation Limits (MQL) or background at this location.

5. Page 2-3. Section 2.5-**Groundwater Classification.** The new data presented in Appendix 7-Updated Groundwater Resource Classification Evaluation identifies a more extensive layer of quaternary alluvium, than previously documented, that may be capable of transporting contaminants off-site, onto the adjacent VCP Tract M. Based on the information provided, it appears that the GWBU is Class 2 , unless pump tests and aquifer analysis can demonstrate that the GWBU cannot reasonably sustain the 150 gallons per day (gpd) (see Comment No. 31) pump rate. Please note that the change in groundwater classification would affect the applicable $^{GW}soil_{Ing}$ PCL and the applicable RAL and possibly the Critical PCL for this portion of the site.

6. Page 2-3. Section 2.6-**Exposure Pathways.** Exposure pathway 2 should be modified to include the on-site commercial-industrial worker and the off-site residential receptors exposed to dust from the Class II Landfill. In the last paragraph of this section it states that "continued air emissions have ceased other than what may be entrained from surface soils through fugitive dust emissions during windy periods." This is considered a potentially complete exposure pathway and Exide should include a discussion of the monitoring of fugitive particulate air emissions as it relates to this exposure pathway during windy conditions. Immediately implement interim measures to suppress dust emissions during windy periods from any areas which could serve as a source of contaminated particulates.

7. Page 2-4. Section 2.6.1-**Chemical/Physical Properties.** Please include Arsenic and Selenium and all other chemicals of concern (COCs) identified at the site in the discussion of Chemical/Physical properties.

   Also, in addition to dissolved phase transport, colloidal transport of COCs in groundwater should be discussed.

8. Page 2-4. Section 2.6.2-**Transport of COCs in Surface Soil via Surface Runoff.** More detail regarding the areal extent of the storm water collection system and its future operation should be presented. Also, a discussion of the transport of COCs in the Former Operating Plant (FOP) area as well as the operation of the French Drain interim remediation system should be discussed as part of the revised APAR. The possibility of a reduced vegetative cover due to drought, allowing for increased runoff erosion should be discussed. In addition, please indicate the location of the initial release and the French Drain on site maps.

   The high levels of contamination in flood wall samples collected in surface soils proximal to Stewart Creek may be washed into Stewart Creek. The W&M Slag and Battery Chip Sampling Reports for the west segment of Stewart Creek and the North and South Disposal Areas dated March 28, 2011, and the W&M Slag and Battery Chip Survey included in the APAR as Appendix 18 clearly indicate the presence of slag and battery chips in Stewart Creek; however, this is not mentioned in this section of the APAR. A comparison of these flood wall and slag samples to sediment, human health-and ecological PCLs in addition to Commercial/Industrial $^{Tot}Soil_{Comb}$ PCLs should be conducted.

9. Page 2-5. Section 2.6.3-**Transport of COCs in Groundwater to Surface Water and Sediments.** The TCEQ has reassessed the classification of Stewart Creek and has determined that is perennial. Therefore, more conservative surface water and sediment

PCLs are applicable. These include chronic-aquatic life, benthic, contact recreation, and incidental fishery surface water PCLs.

10. **Sulfate in Surface Water.** The Texas Surface Water Quality Standards (30 TAC§ 307, Appendix A) defines a maximum annual average sulfate level of 60 mg/L for Stream Segment 0823, Lake Lewisville. Please discuss how the sulfate levels measured in monitoring wells adjacent to Stewart Creek might affect water quality and how compliance with water quality standards could be impacted.

11. Page 3-2. Step-1 – **Target COCs.** The narrative as provided for this step appears to be primarily a defense for the selection of lead and cadmium as "primary COCs". With regard to selection of potential COCs, it should be noted that not just the initial permit, but subsequently issued permits should be followed when determining COCs to be investigated. In addition, Provisions VII and VIII of the existing Permit issued on March 30, 2001 refer to all Appendix VIII constituents which would reasonably be expected in the waste. Permit Section IX .B states that the permittee shall conduct a RCRA Facility Investigation (RFI) to determine whether hazardous waste or hazardous constituents listed in 40 CFR Part 261, Appendix VIII and/or 40 CFR Part 264, Appendix IX have been released into the environment. Also, as part of Step 3, air emissions containing sulfur dioxide was mentioned. Please discuss this as a possible source for sulfate on the site. It is noted on the MSDS form included in the APAR as Appendix 21-FRC Feed Documentation that one of the components of lead acid batteries is antimony, a minor constituent at 0.4% by weight. Please provide a detailed explanation of how antimony was screened out as a potential target COC. If sufficient justification cannot be provided, additional sampling for antimony should be conducted.

12. Page 4-2. Section 4.2.1. **Battery Receiving/Storage Building.** The soils in the shallow fill (0.9-2ft.) from soil boring for MW-31, immediately beneath the building slab indicate that a release of COCs from activities inside the building has occurred. Also, the existence of high levels of contamination documented in soil boring 2013-WMU14-1 (some of the highest levels of lead measured in the entire site, 95,000 mg/kg) appear to be associated with operations in the loading dock area, an integral part of the Battery Receiving/Storage Building. Therefore, contamination documented in this area is considered to be a release from the Battery Receiving/Storage Building and therefore subject to RCRA Corrective Action requirements.

    Also, the vertical and lateral extent of contamination in soil which exceeds the residential assessment level should continue to be assessed, such as in the vicinity of soil borings 2013-BSB-2 and 2013-BSB-9, where the vertical extent has not been determined. The discussion regarding the location of slag beneath the building does not state which soil boring samples documented the presence of slag.

    Section 4.2.1 discusses the presence of "fill zones" beneath the site. The presence of any slag is indicative of either pre-RCRA or post-RCRA waste disposal (depending on the date of disposal) and that area should be included as part of the PCLE zone. The PCLE Zone Map, Figure 11A should be updated to reflect this for the whole Battery Receiving/Storage Building. This will also hold true to any other areas containing fill which includes slag and/or battery casings, including the area around the Maintenance Building. Although aerial photographs were provided in Appendix 20 to the APAR and a reference to a June 6, 2013 email from Billy King of Exide were provided in this section of the APAR, clear documentation of the timing of disposal of the fill material was not made. Please provide a copy of the referenced email and detailed analyses of the aerial photographs to support the assertion that placement was made in the mid-1970's. This should include a discussion and

documentation of the timing of construction of the former buildings and pavement in the former operating area. In addition, the lower fill zone containing slag and battery chips should be identified as a waste disposal unit on the facility's notice of registration and should be discussed in Section 1.2.4.3 of the revised APAR regarding Notice of Registration Waste Management Units.

13. The soil samples gathered along the railroad track to the north of the Battery Receiving/Storage Building and the Battery Breaker Building as part of the July 12, 2012 Site Investigation Report (required by the May 2, 2012 EPA Order) were not included in the APAR as indicated in the introductory portions of the APAR . Please include these sample results in the revised APAR. Page 4-4. Section 4.2.2. **Raw Material Storage Building.** The lead critical PCL was exceeded in soil samples from within and adjacent to the Raw Material Storage Building, a RCRA regulated unit. The vertical extent of soil exceeding the RAL for surface soils should be defined in 2013-RRS-4A. Regarding water samples from soil borings 2012-RMSA-2 and 2012-RMSA-4, even though this might be considered "perched" water, the ability of this water to migrate either laterally or vertically to groundwater and surface water should be discussed and documentation provided. In order to characterize the nature of the water identified in borings 2012-RMSA-2 and 2012-RMSA-4 additional monitor wells should be installed in the vicinity of these borings and between the borings and Stewart Creek.

    In addition, monitor wells should be installed in the vicinity of the area between the former Slag Treatment Building and the on-site Wastewater Treatment Plant to evaluate the presence and nature of the shallow zone on this portion of the site. The new monitor wells should be screened across only the shallow saturated zone (5' or less). Please provide a detailed discussion of the interconnection between this shallow zone and the deeper groundwater bearing units at the site, including a discussion of the presence of any continuous confining unit. Finally, please provide a detailed evaluation of the potential for this shallow zone to discharge along the banks of Stewart Creek including a discussion of the crystalline material documented along the retaining wall next to the creek. Please provide detailed cross sections depicting the specific saturated and unsaturated materials encountered in borings installed to assess the Raw Materials Storage Building and the Slag Treatment Building relative to the banks of the creek to support this evaluation.

14. Page 4-5. Section 4.2.3. **Slag Treatment Building**. The vertical extent of contamination in soil which exceeds the residential assessment level should continue to be assessed, such as in the vicinity of soil borings 2013-STB-6, 2013-STB-7, 2013-STB-8, 2013-STB-11 and 2013-STB-12.

15. Page 4-6. Section 4.2.4. **Stewart Creek Floodwall**. The relatively shallow soil samples gathered as part of the Flood Wall project do not provide information as to the levels of contamination in deeper layers of fill material near the Slag Treatment Building and the Wastewater Treatment Building. Please collect additional deeper soil samples at these locations to identify the thickness of the fill material and to quantify levels of contamination beneath these buildings.

    The floodwall samples collected next to Stewart Creek (see Comment 8) should be compared to human health, sediment and ecological PCLs, not only to Commercial/Industrial total soil combined PCLs. Soil samples collected by EPA Region 6 from the Flood Wall area were determined to be hazardous. Additional sampling in the area sampled by the EPA should be conducted. This should include sampling to define the lateral and vertical extent of the soils exceeding the RAL. The EPA's May 3, 2012 Administrative Order includes a discussion of an EPA investigator's observation of "liquid which appeared to be seeping from beneath the

flood wall between the Facility process area and Stewart Creek resulting in standing water and white crystalline substance on the ground between the wall and creek." Please provide copies of the analytical data characterizing the "white crystalline substance." Please include the location of the standing water and white crystalline substance on maps of this area of the site. Additional soil samples need to be collected surrounding MW-27, both near the creek and into the plant toward 2013 –WMU16-1 in order to define the extent of contamination near 2012-FWFS-1, 2012-FWFS-5, 2012-FWFS-6 and 2012-FWFS-7.

16. Page 4-7. Section 4.2.4 **Additional NOR WMUs within the Former Production Area.** The vertical and lateral extent of contamination in soil which exceeds the residential assessment level should continue to be assessed, such as in the vicinity of WMU 14-1.

17. Page 4-9. Section 4.2.6 **North Disposal Area**. Please collect shallow soil samples across the cap of the North Disposal Area to document whether contamination exists on the surface of the cap. Also, document the cap configuration (depth, permeability, etc.) and the condition of the cap to support a decision regarding the necessity for cap repair or need for the addition of new capping material.

18. Page 4-10. Section 4.2.7. **Slag Landfill and Former Stewart Creek and North Tributary Outfall.** It appears that the plugged railroad culvert serves as a dam which retains water from the North Tributary. Please submit documentation as to whether the pond created by the plugged railroad culvert is a perennial pool. Also, investigate the potential for the migration of pond water to groundwater and possibility for migration to Stewart Creek. Investigate overland flow from the dammed pond area to Stewart Creek.

    The vertical extent of soil exceeding the RAL in the area of 2012-BY-4 and 2012-SL-1 should be defined. In addition, please ensure that a sufficient number of subsurface (greater than 5 feet) samples have been collected in the Boneyard area to characterize the PCLE zone.

    Please install 2 monitoring wells along the northern boundary of the Slag Landfill to serve as points-of-compliance and exposure wells. Discuss the relationship between groundwater in the Slag Landfill and the North Tributary, whether it is gaining or losing, and any other information regarding the movement of groundwater in this area. Please collect shallow soil samples across the cap of the Slag Landfill to document whether contamination exists on the surface of the cap. Also, document the cap configuration (depth, permeability, etc.) and the condition of the cap to support a decision regarding the necessity for cap repair or need for the addition of new capping material.

19. Page 4-12. Section 4.2.9. **Class 2 Landfill.** There is insufficient coverage of soil borings in the area surrounding the Class 2 Landfill to conclude that no contamination exists in the surface or subsurface soils. Only four samples were gathered from the northeast corner and the southwest corner of the landfill. No samples were gathered from the northwest corner, the direction of potential deposition from southeasterly winds. No soil sample results are presented from LMW-5 and LMW-17. Figure 4C-2, Geologic Cross Sections, F-F' shows a soil RAL exceedance at LMW-5. Appendix 7, Figure 4 shows soil borings SB-9-16; however, no sampling data was presented for these borings. Groundwater samples from LMW-9 indicate the presence of selenium, yet this constituent was not included in the soil sampling protocol. Please collect a sufficient number of soil borings around all sides of the Class 2 Landfill utilizing a sampling grid and sample for all potential COCs, including selenium. Samples should be gathered from the sampling interval of 0-0.5 feet to characterize surface soils for aerially deposited COCs and also from intervals from land surface to the Eagle Ford Shale to characterize surface and subsurface soil conditions and to document potential groundwater migration pathways, especially as it relates to the selenium groundwater exceedance documented in monitoring well LMW-9.

Please collect shallow soil samples across the cap of the closed landfill cells to document whether contamination exists on the surface of the cap. Also, document the cap configuration (depth, permeability, etc.) and the condition of the cap to support a decision regarding the necessity for cap repair or need for the addition of new capping material.

The Solar Evaporation Pond was not investigated for releases as part of the APAR. Please sample any sediments which may be contained within in the Solar Evaporation Pond, provide the results of an inspection of the liner of the pond to assess liner integrity, and determine if any releases have occurred to soils and groundwater surrounding it.

20. Page 4-12. Section 4.2.10. **Bail Stabilization Area.** Since the RAL for cadmium was not attained in boring 2012-BSA-3A and lead was not vertically defined in the bail stabilization area, additional samples should be taken to define the vertical extent of contamination and the lateral and vertical extent of fill material. Please provide boring logs for 2012-BSA-2, 2012-BSA-6 and 2012-BSA-7.

21. Page 4-13. Section 4.2.11. **Truck Staging Area, Administrative Building, and Maintenance Building.** Soil sampling density in this area is insufficient. Please install an additional monitoring well near the truck washing station, between the flood wall and Stewart Creek to serve as a point-of-compliance/point-of-exposure well. Collect additional soil samples in the vicinity of the Maintenance Building and Administrative Building to more accurately evaluate the boundary of the southern border of Affected Property No. 2.

22. Page 4-14. Section 4.2.12. **South Disposal Area.** Please resample well B4-R adjacent to the former small arms firing range to confirm the lead concentration. Please determine the classification of groundwater in this area.

    Please collect shallow soil samples across the cap of the South Landfill to document whether contamination exists on the surface of the cap. Also, document the cap configuration (depth, permeability, etc.) and the condition of the cap to support a decision regarding the necessity for cap repair or need for the addition of new capping material.

23. Page 4-15. Section 4.2.13. **Crystallization Unit.** Please install additional samples around the Crystallization Unit in areas where potential leaks could have occurred, such as beneath piping and valves. Reiterating Comment 2 above, during a site visit by TCEQ Region 4 inspector, drums of PCBs were noted in the Crystallizer area. Please provide a discussion of the use of PCBs and documentation as to how these PCBs were managed and the potential for PCBs to be released into the environment of the Crystallizer. Also, as documented in the July 12, 2012 SIR, the levels of sulfate in soils surrounding the Crystallizer unit are much higher than in other areas. Please discuss the source of sulfates and determine if the surface water in Stewart Creek has been affected (see Comment 9).

24. Page 4-16. Section 4.2.15. **Potential Ecological Habitat Areas.** The comments regarding the Screening Level Ecological Assessment (SLERA) for Section 9 of the APAR are included as Enclosure 2 to this letter. Please install additional monitoring wells on the north bank of the North Tributary to serve as point-of-exposure wells to intercept contaminants from the North Woods. In the South Woods, the lateral extent of soil contamination surrounding soil sample ECO-7 and ECO-7A needs to be evaluated to determine if lead contamination exists off-site in this area, and between ECO-3 and ECO-2 to further delineate the eastern boundary of this PCLE zone. It also appears that boring logs for ECO-1, ECO-2, ECO-4, ECO-5, and ECO-10 are missing from Appendix 2 – Soil Boring Logs and Monitor Well Completion Details. Please provide copies of these logs. Finally, please determine whether the sand/possible fill noted in ECO-9 is indicative of the eastern boundary of the South Disposal Area.

25. Page 5-1. Section 5. **Groundwater Assessment**. Please reevaluate the groundwater data collected at the site in comparison to the applicable Class 2 groundwater PCLs unless it can be demonstrated that the GWBU cannot sustain a yield of 150 gpd.

    Please note that groundwater samples for total selenium in the vicinity of the Class 2 Landfill from monitoring well MW-9, measured at 0.491 mg/l and 0.944 mg/l which exceeds the Class 2 groundwater standard for selenium which is 0.05 mg/l. There are J-flagged detections of selenium in monitoring wells LMW-8 and PMW-20R which indicate a possible release of selenium from the Class 2 Landfill less than Class 2 groundwater PCLs, but still indicative of a potential selenium issues in these wells which should be monitored as part of an ongoing monitoring program.

    Also, Figure 5A-3 has an improperly located potentiometric line depicting the 630 foot elevation in the vicinity of the former plant operations area. The line should be located a little further south of the MW-20 monitoring well, which has a groundwater elevation of 630.11 feet.

    Table 5C-Groundwater Geochemical Data Summary, depicts concentrations of sulfate in groundwater. Stream Segments 0823, Lake Lewisville has a prescribed maximum annual average sulfate level of 60 mg/l. Please discuss how the sulfate levels measured in monitoring wells adjacent to Stewart Creek might affect water quality and how compliance with water quality standards could be impacted. Please provide a discussion of the possible sources of the sulfate, such as leaks from wastewater near the Crystallizer, precipitates from stack emissions of sulfur dioxide, biological degradation of naturally occurring organics present in the Eagle Ford Shale, etc.

    Monitoring wells installed for investigation of sites typically included screen lengths of 10 feet or less in order to prevent sample dilution and to more accurately pinpoint discreet zones of contamination. Please provide a rationale for the use of a screen length longer than 10 ft. Please explain the reason the water level in LMW-5 is relatively lower than all other monitoring wells surrounding it, indicating a cone of depression. The Monitor Well Development and Purging Data provided in Appendix 3 to the APAR indicate that the wells were developed using a peristaltic pump run at a rate of approximately 0.1 gpm or less. In many cases despite continued development specific conductivity and turbidity measurements did not significantly decrease with development. In some cases these parameters actually increased. Please re-evaluate the methods used to develop the wells and provide alternatives for improving well efficiency and decreasing turbidity in the monitor wells.

26. Page 6-1. Section 6.0. **Surface Water Assessment and Critical PCL Development.** Please revise Section 6 of the APAR to reflect the change from intermittent to perennial. This should include recalculation of the PCLs in table 6A. The discussion in Section 6.2 states that "because Stewart Creek is an intermittent stream (and thus not a sustainable fishery) and is not used as a primary drinking water source, neither the water/fish ingestion nor the fish ingestion pathways are complete." However, since Stewart Creek has been reclassified as a perennial water body, then the risk associated with incidental fishing should be evaluated. Note that the human health water quality standard for an incidental fishery is 10 times the "fish only" value as indicated in the Texas Surface Water Quality Standards (§307.6 (d) (6)). The resulting surface water PCL for this pathway for dissolved lead is 0.0383 mg/L.

27. Page 7-1. Section 7.0. **Sediment Assessment and Critical PCL Development.** The PCLs summarized in Table 7A and the comparison in Table 7B need to be modified to reflect the change in classification of Stewart Creek from intermittent to perennial. As discussed in

Comment 8 above, W&M Slag and Battery Chip Sampling Reports for the west segment of Stewart Creek and the North and South Disposal Areas dated March 28, 2011, and the W&M Slag and Battery Chip Survey included in the APAR as Appendix 18 clearly indicate the presence of slag and battery chips in Stewart Creek. However, this is not mentioned in this section. The lead concentrations in the probable slag ranged from 11,500 mg/kg to 102,000 mg/kg in the March 28, 2011 Suspect Slag Sampling Report, Stewart Creek – West Segment. This area should be included as part of the PCLE zone and the PCLE zone Map, Figure 11A should be updated to reflect this. An investigation for slag, battery chips and impacted sediment should be conducted for the central and eastern portions of Stewart Creek on the facility and included in the Revised APAR.

The last several paragraphs of this section summarize various historical and current studies on Stewart Creek at locations downstream of the facility. Appendix 17 summarizes historical data. While much of the historical data indicates that sediment concentrations were well below the contact recreation PCL, a select few of the historical concentrations are 10 to 150 times this PCL. Since the creek has been designated as perennial, ecological PCLs for sediment are exceeded. Please reevaluate this data and revise the PCLs as appropriate. Exide must conduct additional investigation of the extent of slag, battery chips and impacted sediment and incorporate the results into the revised APAR.

28. Section 9. **Ecological Risk Assessment.** The comments regarding the Screening Level Ecological Assessment (SLERA) for Section 9 of the APAR are included as Enclosure 2 to this letter.

29. Page 10-1. Section 10.0. **COC Screening.** Please refer to Comment 11. Please explain how antimony was not selected as a potential target COC.

    Two SVOCs (benzidine and n-nitrosodimethylamine) measured in soils at levels greater than the applicable RALs but were screened out based on non-historical use. Our research indicates these compounds could have been used in dying and compounding rubber. Some of the older battery cases were made out of rubber. Rubber is listed on the MSDS sheet for lead acid batteries in Appendix 11. Please develop critical PCLs for benzidine and n-nitrosodimethylamine.

30. Page 11-1. Section 11.1 – **Tier 2 or 3 PCL Development and Non-Default Parameters.** The subsurface soil residential assessment level may need to be recalculated as part of the Tier 2 soil evaluation presented in Appendix 9, Table A9.1 due to the reclassification of the groundwater from Class 3 to Class 2. See Comment No. 31 regarding Appendix 7-Groundwater Classification, below.

31. Appendix 7 **Updated Groundwater Resource Classification.** The TCEQ's review of this section was compared to the TCEQ Interoffice Memorandum dated December 7, 2012 regarding the factors justifying a Class 3 groundwater determination. The new data presented in Appendix 7-Updated Groundwater Resource Classification Evaluation documents a more extensive layer of quaternary alluvium than previously documented and may be capable of transporting contaminants off-site, onto the adjacent VCP Tract M (VCP-MW-5, VCP-MW-6, PMW-20 R). This quaternary alluvium may extend across the entirety of Tract M, large parts of the former operating plant, and the Class 2 Landfill/North Woods area and thus would not be isolated to the west, according to TRRP -8, Section 2.8.2 Limited Hydrogeologic Extent. The map of the Distribution of Geologic Units in Colluvium/Alluvium in Figure 4 of Appendix 7 over generalizes the lithology identified at the site and therefore does not accurately depict the continuous nature of alluvium.

    Section 3.0 of the Updated Groundwater Resource Classification (Appendix 7 of the APAR),

indicates that the higher yield unit at the site is composed of gravels/sands that "occur in four isolated pockets at the Site" which are depicted on Figure 4, and that the cross sections provided illustrate the "laterally discontinuous (and thin) nature of the clayey gravels, gravels, and sands within a predominantly clay stratum." However, Appendix 7 fails to demonstrate that the units are separate groundwater-bearing units separated by a continuous confining unit or subsurface discontinuity that prevents either unit from flowing into another.

Section 2.4 Step 2 of the TCEQ's Groundwater Classification guidance document (TRRP-8) requires that a GWBU that can contribute COC's to another GWBU unit be treated as hydraulically interconnected. The monitor wells are continuously screened across all three GWBUs identified in the APAR. Although different lithologies may exhibit different transmissivities and therefore yields, 30 TAC 350.52 requires that if a GWBU meets the criteria for more than one classification, then the higher groundwater classification must be applied to the GWBU.

In addition, it is unclear how the saturated thickness of the GWBU was determined. While the static water elevation for Well B5N was not provided in the APAR, the static water level depicted on the boring log for B5N indicates a saturated thickness of approximately 8'. The same is noted of most of the wells used to classify the groundwater. Because the monitor wells used in slug testing are screened across the entire GWBU (including the gravelly clays, clayey gravels, etc.), Exide has not conclusively documented that the slug tests are only measuring the characteristics of the gravels and sands identified at the site using these wells. If the slug testing data provided will be used to classify the GWBU, please revise the calculations using the full thickness of the saturated thickness of the GWBU. Alternatively, direct yield testing can be conducted to evaluate the yield from the entire GWBU.

These same issues with saturated thickness estimates were carried through to the Calculated Well Yields provided in Table 1, Appendix 7. Well yield calculations are sensitive to the saturated thickness parameter. For instance, the groundwater elevation for MW-16S provided for six gauging events in Table 5D of the APAR indicates that the average saturated thickness in this well is approximately 15.5'. Using this average saturated thickness and the hydraulic conductivity from the slug test on this well, the yield of MW-16S is approximately 2,030 gallons per day (gpd), which is significantly above the Class 3 maximum yield of 150 gpd. However, the saturated thickness presented Table 1, Appendix 7 and used in the well yield calculation in the APAR was 2' which resulted in a calculated well yield of 65 gpd, which is well below the 150 gpd criterion.

The wells used for aquifer testing were developed using peristaltic pumps surged at rates up to a maximum of 1.4 gpm. While this is acceptable for purging a monitor well prior to sampling, TRRP 8 requires that wells used for determining groundwater classification be developed according to ASTM Guide D 5521. Although peristaltic pumps can be used to develop the wells, they should be run at a rate of 5-10 gpm. If the wells dewater during development at this pump rate, distilled water should be added to the well to prevent the well from going dry during surging efforts. Alternatively, one of the other development methods in the ASTM Guide can be used.

The available well testing data provided indicates that the GWBU is Class 2, however, the GWBU may be classified as Class 3 if Exide can clearly demonstrate that the yield is not sustainable. Since the GWBU is not ephemeral and the APAR does not make a clear demonstration that the GWBU is of such a limited hydrogeologic extent that it cannot maintain sufficient yield, the appropriate GWBU classification is Class 2. Please note that the TCEQ's Groundwater Classification guidance document (TRRP 8) should be followed in

any future aquifer testing. This includes guidance on development of monitor wells used in aquifer tests referenced in Table A-1 of TRRP 8. Specifically wells should be developed according to one of the methods outlined in ASTM Guide D 5521. In the past, the TCEQ has approved some demonstrations of lack of sustainability based on long term aquifer testing that dewaters the well in less than 8 hours using Method 2c: Well Yield by Constant Discharge (0.1 gpm) Test described in section 2.7.2.4 of TRRP. These tests have been conducted on fully penetrating wells which have been installed and developed according to guidance and are representative of the heterogeneity of the GWBU at the site. Because of the heterogeneity of the GWBU at this site and the fact that this aquifer testing method depends on dewatering the aquifer to demonstrate lack of sustainability, the results cannot be averaged across different wells (one monitor well dewaters but two others do not), wells selected for testing should be biased to represent the wells installed in areas with the highest transmissivity and saturated thickness. If the results of the wells in the most transmissive portions of the GWBU cannot sustain the 150 gpd pumping rate, then the GWBU can be classified as Class 3.

32. Page A9-1. Appendix 9, **Development of Non-Default RBELs and PCLs Recreational Surface Water PCL**. Exide proposes a contact recreation PCL for surface water in the event the site (future use) or downstream areas are used for recreation. Currently there is no TCEQ Tier 1 contact recreation surface water PCL for lead. Exide derived a value of 1.5 mg/L by scaling the drinking water standard for lead (0.015 mg/L) using the ratio between the exposure assumptions used to calculate contact recreation PCLs, with those used for residential drinking water exposure.

    TCEQ does not concur with this proposed PCL. Based on recommendations from the TCEQ Toxicology Division, Exide should use the drinking water standard for lead (0.015 mg/L) for the contact recreation PCL.

33. Appendix 9, **Development of Non-Default RBELs and PCLs.** The subsurface soil residential assessment level may be need to be recalculated as part of the Tier 2 soil evaluation presented in Appendix 9, Table A9.1 due to the reclassification of the groundwater from Class 3 to Class 2 in this area if it cannot be demonstrated by pumping tests that the GWBU cannot maintain a sustainable pumping rate of 150 gpd. (See Comments No. 31 regarding Appendix 7-Groundwater Classification)

34. Appendix 19, **French Drain Construction Report.** This report presents details on the construction of the French Drain system along the barrier wall on the southern edge of the former operating plant. Additional information is needed on the performance of the system, water level maps to depict groundwater flow into the system, gallons of water intercepted and treated, concentrations of contaminants in the water, and, most importantly, if the discharges to Stewart Creek have ceased.

TCEQ Interoffice Memorandum

To: Gary Beyer, Project Manager; VCP/CA Section, Remediation Division

From: Larry Champagne, Ecological Risk Assessor; Division Support Section, Remediation Division

Date: October 8, 2013

Subject: Exide Technologies Former Operating Plant
Draft Screening Level Ecological Risk Assessment (SLERA)
May 10, 2013

I have completed my review of this draft SLERA and have the following comments.

General Comments:

1. It is understood that Stewart Creek was evaluated in this SLERA under the current permit designation that it was an intermittent stream. However, TCEQ has recently conducted a reassessment and has determined that it is a perennial water body and should be reevaluated as such. As a perennial water body, chronic water quality criteria will apply. If these values are exceeded by monitoring well concentrations at the groundwater-to-surface water interface, then an approved dilution factor (DL) for the groundwater-to-surface water pathway will be needed (i.e., a demonstration that the default DL of 0.15 is appropriate or the derivation of a site-specific DL). In addition, sediment protective concentration levels (PCLs) for the protection of the benthic invertebrate community will now apply.
2. In this SLERA, the Stewart Creek evaluation was limited to the property boundary of the former operating plant. However, the Texas Risk Reduction Program Rule 30 TAC 350.4(1) essentially defines the affected property as the entire area, both on-site and off-site, where chemicals of concern (COCs) are equal to or exceed the assessment level. The SLERA acknowledged other studies that reported sediment "hot spots" of lead and cadmium adjacent to the downstream former waste water treatment plant, around the Dallas North Toll Way, and further downstream and recommended further evaluation of these hot spots. The assessment of Stewart Creek will need to be continued downstream of the property boundary.
3. In several places in this document, it is stated that soil "... sample points with lead concentrations exceeding 1600 mg/kg ... were removed from the data set for the SLERA because these areas will be addressed to remove potential ecological exposure as part of the response action at the Site." It is understood that 1600 mg/kg lead is the human health industrial PCL and that this remediation level - at a minimum - will be achieved pending the outcome of the SLERA; however, these sample points should not be removed from the dataset. Ecological

including the threatened Louisiana pigtoe and the Texas heelsplitter. In addition, it is possible that more viable habitat downstream may exist for other protected species, including the threatened White-faced ibis. It is recommended that these species and other protected species known to occur in Collin and Denton Counties be re-evaluated for potential occurrence in downstream Stewart Creek.

7. For risk evaluation purposes, Stewart Creek and the North Tributary Corridor were combined to form one exposure unit. Similarly, an evaluation of risk from the combined terrestrial areas to the wider-ranging receptors should be included in the SLERA.
8. Because the comments in this memo require substantial changes be made, it is not possible to concur with the conclusions and recommendations of this SLERA.
9. The perennial designation of Stewart Creek, the extension of the affected property downstream, and other aspects of the preceding general comments will have a cascading effect throughout various sections of the SLERA that will need to be addressed. The following specific comments identify some of these areas where changes are needed.

Specific Comments:

1. P. 3, **2.1 Site History**, second paragraph: This paragraph requires clarification. As currently written, the indication is that no wastewater from the site was ever treated by the Former Stewart Creek Wastewater Treatment Plant (FSCWWTP). This conflicts with a statement from the Affected Property Assessment Report for the FSCWWTP (Pastor, Behling & Wheeler, 2013) that states that the plant treated wastewater streams from downtown Frisco and local industrial sources, including the GNB (now Exide) lead battery recycling center.
2. P. 7, **3.1.1 Data Summary**, 1st paragraph, last sentence: This sentence should be modified to reflect that TCEQ identifies the 0-6 inch soil depth as "surface soil" and the 6 inch to 5 feet depth as "subsurface soil" for ecological receptors. The combination of these depths represents the total depth of ecological exposure.
3. P. 9, **3.1.2 TCEQ Benchmarks/Initial Screening Comparison**, and elsewhere: Discussions of Stewart Creek as being intermittent and acute criteria applying will need to be revised. In addition, statements that indicate there are no exceedances of water quality criteria may need to be revised.
4. P. 14, **3.3 Assessment Endpoints**: An assessment endpoint (and associated text/tables elsewhere in the document) will need to be added to the bullets that reflects protection of the benthic invertebrate community in Stewart Creek with no unacceptable effects on species diversity due to site-related cadmium or lead in the sediment. Any associated text or table evaluating sediment concentrations to the protection of the benthics should include the benthic sediment PCLs for cadmium and lead.
5. P. 15, **3.3 Assessment Endpoints**, last sentence and Table 7: The quotation from the TCEQ discharge permit regarding protected species speaks to the effect

References:

Dellinger, Rachel L., Petra Bohall Wood, Patrick D. Keyser and George Seidel. 2007. Habitat Partitioning of Four Sympatric Thrush Species at Three Spatial Scales on a Managed Forest in West Virginia. *The Auk.* Vol. 124, No. 4 (Oct., 2007), pp. 1425-1438.

Pastor, Behling & Wheeler, LLC. 2013. Affected Property Assessment Report: Former Stewart Creek Wastewater Treatment Plant. Frisco, Collin County, Texas. April.

U.S. Environmental Protection Agency (USEPA). 1993. Wildlife Exposure Factors Handbook, Volume I of II, EPA/600/R-93/187a. Wildlife Exposure Factors Handbook Appendix: Literature Review Database, Volume II of II, EPA/600/R-93/187b. Office of Research and Development, Washington D.C. 20460.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

September 12, 2013

VCP-CA Section, Team 1
Attn: Gary Beyer, MC 127
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

RE: Comments on Exide Technologies' Affected Property Assessment Report
EPA ID NO. TXD006451090 / DOCKET NO. RCRA-06-2012-0966

Dear Mr. Beyer:

Please find enclosed the U.S. Environmental Protection Agency's (EPA's) comments on the Affected Property Assessment Report (APAR), submitted by Exide Technologies (Exide) on July 10, 2013, pursuant to the Administrative Order on Consent (AOC) issued under Section 3013(a) of the Resource Conservation and Recovery Act.

Based on the EPA's review, the current APAR does not meet the objectives of the AOC; therefore, EPA will require Exide to submit a revised APAR. As discussed, TCEQ will formerly respond to Exide sharing our unified (EPA's and TCEQ's) concerns/comments regarding the content of the APAR. Please copy me on that correspondence at:

H. Troy Stuckey, Ph.D., Chief
RCRA Corrective Action and Compliance Inspection Section
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733
ATTN: Paul James / 6EN-HC

Please feel free to call or email any questions to Paul James of my staff at (214) 665-6445, or james.paul@epa.gov.

Sincerely,

H. Troy Stuckey, Ph.D., Chief
Corrective Action and
Compliance Inspection Section

Enclosures

cc: Sam Barrett - sam.barrett@tceq.texas.gov
Bill Shafford - bill.shafford@tceq.texas.gov

U.S. E.P.A.'s comments concerning Exide Technologies; July 10, 2013 APAR:

1. General comment: Please include a list of definitions for all the acronyms and abbreviations used in the APAR.

2. General comment: Please check all referenced T.A.C.s. - e.g. Table 1C, page 16 of 22 references 351.51(d)(1) which does not exist.

3. General comment: The APAR indicates that during a previous investigation, it was determined that soil was excavated from the Lake parcel for use in constructing the clay liner in the class 2 landfill. (1) Please provide records showing accurate locations, areas and depths of the former pits (2) After use, what fill material was placed back into the borrow pits? (3) Please provide all analytical/lithological data demonstrating the size and contents of the pits.

4. Page 3. Cover Letter: Title and date are missing as defined on page 7-8 of the AOC. Please note, for purposes of the Order, the EPA recognizes as duly authorized representatives of Respondent, the person holding the title of "Plant Manager" of the Facility and the person holding the title of "Vice President, Global Environment, Health and Safety" for Respondent. Does Ms. Coleman hold one of these titles? Note: The facility must notify the EPA when a representative defined in the order has been reassigned.

5. Page iv. Cover Page: The APAR provided the wrong Latitude and Longitude for the facility. The listed coordinates are for the City of Frisco WWTP VCP site. Also the longitude must be a negative value, since the facility is west of the Prime Meridian.

6. Page vi. Executive Summary: It is stated in the APAR that there are no actual or probable exposures on-site and off-site in all media. Yet there are COC exceedances in the soil, and slag that exceeds TCLP has been identified in the creek sediments. These areas have to be further evaluated and addressed under the APAR.

7. Page vi. Executive Summary: "Hot spots" have been identified downstream in previous and ongoing studies. Since these hot spots are likely the result of off-site migration and are considered off-site affected property, the APAR needs to address these areas.

8. Page vi. Executive Summary: The EPA does not concur that the information provided in the APAR demonstrates that the groundwater bearing unit (GWBU) at the facility is Class 3 (see comment #25 for details).

9. Page xii. Conclusions - Response Actions and Recommendations: As defined in the APAR instructions, describe response actions completed or underway. Since the French drain was a response to diminish the contaminated water discharging from the facility into Stewart Creek, please add a brief narrative on its current and future operations and its effectiveness.

10. Page xii. Conclusions - Response Actions and Recommendations: As defined in the APAR instructions, specify if a Remedy Standard A or Remedy Standard B is planned, if known.

11. Page 1-2. Section 1.2 - Affected Property and Sources of Release: Please add (1) the history of all known releases; (2) the history/problems/concerns of both channelized creeks; and (3) the history/problems/concerns of the fill material used under the facility and the old creek channels. Please note fill material may be sources of contamination and/or potential pathways (e.g base

material has a greater K values than the in-situ clay soils, therefore the French drain was installed within the base material to try to stop the contamination from entering Stewart Creek).

12. Page 1-2. Section 1.2.1 - History and Operations: As defined in the APAR Instructions, under Section 1.2.1 - History and Operations, please add a narrative describing "*...planned future operations...*"

13. Page 1-2. Section 1.2.1 - History and Operations: As defined in the APAR Instructions, under Section 1.2.1 - History and Operations, "*...for each different use of the property, include a description of the type of business or facility and associated NAICS codes...*" Please provide NAICS codes for the facility's current and past operations.

14. Page 1-3. Section 1.2.1 - History and Operations: "*Process wastewater previously generated at the Site was treated in the on-site wastewater treatment facility and then discharged to the North Texas Municipal Water District sanitary sewer.*" During the history and operation of the facility, was this always the case? If not, please include historical information on past operations and determine if more investigation is required.

15. Page 1-3. Section 1.2.1 - History and Operations: "*Storm water control features within the former production area include a concrete slab cover, a retention wall/flood wall, and a French drain system that route storm water to the storm water retention pond located south of Stewart Creek via a conduit passing over the creek.*" During the history and operation of the facility, was this always the case? If not, please include historical information on past operations and determine if more investigation is required.

16. Page 1-4. Section 1.2.3 - Previous Investigations: Under "Groundwater Investigation, Frisco, Texas Plant, Dames and Moore, 1983," it states, "*The study concluded that groundwater was flowing toward and discharging into Stewart Creek and its tributaries at a low flow rate (e.g., $3.1x10^{-5}$ to $1.0x10^{-8}$ cm/sec).*" Are these values in the parenthesis examples of low flow rates, calculated flow rates, or actual measurements of flow rates?

17. Page 1-4. Section 1.2.3 - Previous Investigations: Under "Stream Sediment Test; GNB, Inc. Plant, Southwestern Laboratories, 1986d," it states, "*The final sediment sampling event data (SWL, 1986d) indicated that sediments in the cleanup area were below the cleanup standards of 5.0 mg/L for lead EP Toxicity and 1.0 mg/L for cadmium EP Toxicity.*" Please note "EP" was not defined in the APAR, and that this standard is an older method that does not meet the current requirements.

18. Page 1-6. Section 1.2.3 - Previous Investigations: Under "Notification of On-site Class 2 Industrial Waste Landfill, RMT/Jones & Neuse, Inc., 1995 (RMT/JN, 1995)," it states, "*Slug tests were performed in four wells and a pumping test was performed in LMW-17.*" Do the data from these tests support PBW's Class 3 designation? See comment #25 for further details.

19. Page 1-7. Section 1.2.3 - Previous Investigations: Slag "buttons" and lead "buttons" have been used in various places in the APAR but have not been defined. Define slag and lead "buttons" and are they considered to be hazardous waste?

20. Page 1-10. Section 1.2.4.1 - Potential Sources of Release Identified in the Phase I RFI: Under 6. Stewart Creek, it states, "*Stewart Creek is an on-site stream that runs along the south side of the*

former production area". The EPA does not accept that Stewart Creek is an "*on-site stream*", yet a creek that is approximately eight miles long runs through the facility along with residential, agricultural, wetlands, woodlands areas, etc. and flows into Lake Lewisville. Please verify and amend.

21. Page 1-12. Section 1.2.4.2 - Potential Sources Identified in the 2011 Sampling and Analysis Work Plan: Under 4. Stewart Creek Flood Wall, it stated the following, "*During a TCEQ inspection of the Site in May-June 2011, the TCEQ noted seepage along the Stewart Creek flood wall near the Slag Treatment Building and where the storm water conduit exits the flood wall near the Battery Receiving/ Storage Building... Following the TCEQ inspection, a French drain system was installed along the facility side of the flood wall to route water away from the flood wall (see Appendix 19)*". Based on Appendix 19, the wall is defined as a retaining wall, designed to retain and collect storm water and other water generated from the facility. In most occurrences, flood walls are designed to keep flood water out and retaining walls are to keep flood water in. To be consistent and factual, verify if the wall is a retaining wall or a flood wall, and make changes throughout the APAR.

22. Page 1-16. Section 1.2.5.3 - Affected Property No. 3 (South Area): In the area associated with the Crystallization Unit, a soil sample (2013-CUFT-7) exceeded RAL. Based on this sample, the contamination in the area was not fully delineated as required in the order and in the requirements of a completed APAR. Please verify and delineate further.

23. Page 1-18. Section 1.3.3 - Surface Water Hydrology: The APAR states "Urban runoff is the primary source of water in Stewart Creek ..." What is the purpose of this statement? Please provide the hydrological data/reference(s) to support the statement. Please note the creek has been a part of the landscape for many decades/centuries before the facility and the recent land development within its watershed. One could argue that the primary source of water in Stewart Creek comes from the overburden GWBU (as described on site), since the creek still flows with the urban concrete culverts/channels being dry.

24. Figure 1B – Affected Property Map: The North and South Disposal Areas' boundaries are demarcated on the map with a dashed black line. Adjacent to the lines are disposal area delineation boring locations (e.g. "NL-..", "NB-..", "SL-.."). Were these borings used to delineate the boundaries by using analytical and/or lithological methods? Please include all analytical data and lithological descriptions for each disposal area delineation boring.

25. Page 2-3. Section 2.5 - Groundwater Resource Classification: In a memorandum dated November 29, 2012, PBW summarized their groundwater classification assessment activities for the Exide Frisco site, where they found the uppermost GWBU to be a Class 3 groundwater resource. This memo was submitted to and discussed with TCEQ and EPA representatives in a meeting on December 7, 2012. TCEQ later concurred with PBW's Class 3 designation as documented in an Interoffice Memorandum in 2013. PBW has now prepared an *Updated Groundwater Resources Classification Evaluation* provided as Appendix 7 of the July 9, 2013 APAR for the Exide Operating Plant. The update is based on information obtained subsequent to their initial groundwater classification effort in 2012. The updated review concluded for the second time the uppermost GWBU at the site is a Class 3 groundwater resource.

    The EPA has reviewed the updated information provided by PBW in Appendix 7 and has the following comments:

The importance of accurately classifying the groundwater at the Exide site (using the TCEQ regulatory guidance on Groundwater Classification RG-366/TRRP-8, 3/2010) is that it could significantly impact the required cleanup levels for contaminated soils. If the groundwater is found to be a Class 2 resource (i.e., potential drinking water aquifer), then the cleanup level for lead in soils greater than 5 feet deep would be 274.51 mg/kg. If the groundwater is determined to be a Class 3 resource (i.e., non-potable uses), then the cleanup level increases by a factor of 100x and would be 27,451 mg/kg.

The EPA's overall conclusion from this review is that a portion of the GWBU (i.e., Gravels and Sands unit) at the Exide site exhibits Class 2 groundwater resource characteristics: water quality (TDS ≤ 10,000 mg/l), hydraulic conductivity (≥ $1x10^{-5}$ cm/sec) and groundwater yield (≥ 150 gpd). This conclusion is based on the data provided by PBW in their Updated Groundwater Classification Evaluation, consisting of a description of site geology, soil boring logs, geologic cross-sections, and aquifer data (slug tests and pumping tests). Under TRRP, if a GWBU meets the criteria for more than one groundwater classification, then the GWBU shall be assigned the higher quality classification (§350.52).

PBW largely calculated aquifer yields (gpd) at the site using hydraulic conductivity values from slug tests and the saturated thickness of the GWBU (per TRRP-8; Section 2.7.1 Method 1). Because aquifer classification is a significant driver of soil cleanup levels at the site, the EPA suggests conducting additional pump tests within the various GWBUs to determine conclusively whether or not the transmissive zones at the site can sustainably produce 150 gpd.

According to information in the revised Groundwater Classification Evaluation, the uppermost groundwater bearing unit at the Exide site consists of colluvium/alluvial sediments subdivided into three primary geologic units which are underlain by the Eagle Ford Shale and Austin Chalk. They are:

a) Clay or Non-Gravel unit – This unit is described as stiff high plasticity clay with minor amounts of calcareous nodules or gravel. Most of the site borings with this lithology are located south and east of the former operating plant. Six slug tests were conducted in this unit, with hydraulic conductivities (k) ranging between $6.1x10^{-4}$ to $2.8x10^{-8}$ cm/sec, with a geometric mean of $3.3x10^{-6}$ cm/sec. Under TRRP, with an average K ≤$1x10^{-5}$, this unit would not be considered to be a groundwater bearing zone; rather it would be deemed a saturated soil. The saturated thickness for this unit was calculated as the vertical distance between the static water level and the base of the saturated unit (contact between the clay and Eagle Ford Shale). Groundwater yields estimated from these tests were generally much less than 150 gpd, with the exception of MW-17 where the yield was estimated at 565 gpd. The slug test results were highly variable due to the amount of gravel or calcareous nodules present in a given boring, suggesting that this unit may not be as uniform across the site as described.

b) Clayey Gravel and Sands unit – This unit is described as lenses of clayey gravel and sands embedded within a dense clay matrix. The thickness of the clayey gravel and sands unit ranged from 0.5 feet to 5 feet with an average thickness of around 2 feet. This unit was identified in borings more often in the northwestern and western portion of the former operating plant. Six slug tests were conducted in this unit, with hydraulic conductivities ranging between $3.4x10^{-2}$ to $4.5x10^{-4}$ cm/sec, with a geometric mean of $1.7x10^{-3}$ cm/sec. The saturated thickness for this unit was calculated by PBW to be the thickness of the lens or more permeable gravel or sand containing zone (average 2 feet), excluding any saturated zones above or below. Calculated groundwater yields from slug tests for the Clayey Gravel and Sand unit ranged from 12 gpd to 4,975 gpd. The EPA suggests that the saturated thickness for wells completed in this unit be the vertical distance between the static water level and the base of the saturated unit.

c) Gravels and Sands unit – This unit is described as relatively "clean" unconsolidated gravels and sands. Clayey gravels and sands described in the field as loose were also included by PBW in this geologic unit. The thickness of the Gravels and Sands unit ranged between 0.5 feet to 5.2 feet, with an average thickness of around 2 feet. Two slug tests and two pumping tests were conducted in this unit, with hydraulic conductivities ranging between $1.2x10^{-1}$ to $5.7x10^{-3}$ cm/sec, with a geometric mean of $2x10^{-2}$ cm/sec. Calculated groundwater yields by PBW from the aquifer tests ranged between 536 gpd to 19,669 gpd.

PBW acknowledges in their report that short term aquifer tests for most of the wells completed in the Gravels and Sands unit will likely meet the Class 2 resource yield criterion of ≥150 gpd. Portions of the Clayey Gravels and Sands unit may also exhibit Class 2 groundwater characteristics. Actual aquifer yields from pumping tests are as follows:

a) Monitoring well LMW-17 - (completed in Gravel and Sands unit), pump test conducted by J&N in 1995. The well was pumped at a rate of 8 gpm for 300 minutes (5 hours), producing 480 gph or 2,400 gallons over the pumping period, with some drawdown.

b) Monitoring well B5N (completed in the Clayey Gravel and Sands) was able to maintain a pumping rate of 0.1 gpm (150 gpd) over a 48 hour pump test by PBW in March 2013.

This suggests that portions of the Clayey Gravels and Sands unit also exhibit Class 2 groundwater characteristics.

26. Page 2-3. Section 2.6 - Exposure Pathways: Please include fill/base material underneath the facility as a pathway for COC to soil, groundwater and surface water. Even though this is not a conventional COC pathway, it is a pathway at the facility that has caused concerns (i.e. French drain was installed to try to stop the COC from entering Stewart Creek).

27. Table 2C - Complete or Reasonably Anticipated to be Complete Exposure Pathways: Please define "NA" in the note section.

28. Page 3-7. Section 3.2.5 - Utilities/Preferential Pathways: Please add a narrative on the current/past conditions of preferential pathways under the concrete structures/pavements and within fill material (higher K values than the in-situ soils). As it is known, these affected areas/pathways cause concern when it comes to the contaminated areas in and around Stewart Creek, and possible other areas (e.g. future exposures to construction workers).

29. Page 3-8. Section 3.3 - Assessment Methods: Add a narrative to discuss the assessment methods concerning the base/fill material.

30. Figure 4-3 - Soil COC Concentration Map, Lead and Cadmium: The Soil RAL Exceedance Zone marked in green appears to be spatially interpreted biased-low. Example: Soil samples ECO-01(0-0.5), ECO-02(0-0.5), ECO-03(0-0.5) had lead concentrations 431 mg/kg, 396 mg/kg and 1,740 mg/kg, respectively; yet the RAL Exceedance Zone line of 500 mg/kg is much closer to ECO-03(0-0.5) than ECO-01(0-0.5) and ECO-02(0-0.5). Please verify and amend the boundary of the Soil RAL Exceedance Zone with all analytical results from the soil sample locations.

31. Figure 4C-2 – Geologic Cross Sections: (a) Cross section C-C' uses "?" for the contact with the gravel/sand layers. Since the "?" is not defined, it is believed that the contact is inferred. Please confirm. (b) In the same figure (in other cross sections), why weren't the other discontinuous gravel/sand contacts marked inferred? Please verify and amend.

32. Page 5-1. Section 5.0 - Groundwater Assessment: Please see comment #25 and reassess.

33. Figure 5A.1 - Groundwater Potentiometric Contour Map for March 11, 2013: (a) The contour lines north of the Fire Training facility are disconnected. Please verify and amend. (b) Monitoring well LMW-5's water elevation is much lower than the surrounding wells. Please explain the deviation.

34. Figure 5A.2 - Groundwater Potentiometric Contour Map for April 5, 2013: See comment #31.

35. Figure 5A.3 - Groundwater Potentiometric Contour Map for April 29, 2013: Contour lines around monitoring wells VCP-MW-8, VCP-MW-9, and MW-19 are drawn incorrectly based on listed water elevations. Please verify and amend.

36. Page 6-1. Section 6.0 - Surface Water Assessment and Critical PCL Development: Even though Stewart creek maybe tagged as an intermittent stream by TCEQ, one has to be accountable in assessing the creek properly. Based on the following, Stewart Creek has characteristics of a perennial stream:

    i. A stream that flows throughout a majority of the year (or greater than 90% of the time) and flows in a well-defined channel (4 T.A.C. 12 §215.1).

    ii. A stream that has never been documented not flowing: (a) EPA inspectors, TCEQ inspectors and personnel at the facility all have consistently seen Stewart Creek flow, and never seen it not flow – even during drought conditions. (b) Based on all historical aerial photos that EPA possesses, the creek appears to have continuous flow.

    Please verify and amend.

37. Page 6-1. Section 6.0 - Surface Water Assessment and Critical PCL Development: The ^{SW}RBEL value for a given COC shall be protective of relevant downgradient water bodies in consideration of the water body use (e.g., designated drinking water supply or sustainable fishery), the water body type (e.g., estuary or perennial freshwater stream), the standards applicable to the type of

water body/use, and the fate and transport characteristics of the COC in question at the particular affected property (§350.74 (h)). Please assess ^{SW}RBEL to evaluate the PCL development concerning potential impacts on downgradient water bodies and make appropriate changes to the PCL.

38. Page 7-1. Section 7.0 - Sediment Assessment and Critical PCL Development: Please see comments #36 and #37, and reassess.

39. Section 9 - Ecological Risk Assessment (ERA): (a) Note: root zone and burrow depth are at least 0-1 ft bgs. Subsurface soils (below 0.5 ft bgs) should be sampled for evaluating the risks for plants and burrow mammals. (b) One year (4 quarters) of current groundwater sampling data should be used. (c) Sediment hot spots in Stewart Creek downstream of the site should be included in ERA. (d) All soil, surface water and groundwater data should be used in ERA.

40. Figure 11A - Soil PCLE Zone Map: The EPA has analytical data (Floodwall Comp-01) that was shared with Exide that shows contamination (hazardous waste) that exceeds TCLP outside the retaining wall next to Stewart Creek. Also, contaminant concentration found in soil samples in this area shows impact that may affect ecological receptors. Please verify and amend.