EXIDE TECHNOLOGIES

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October 29, 2013

Mr. Zac Covar
Executive Director
Texas Commission on Environmental Quality
P.O. Box 13087
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Sunita Singhi, Chief
Compliance Enforcement Section (6EN-HE)
Compliance Assurance and Enforcement Division
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
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Attn: Paul James

Order Compliance Team
Enforcement Division, MC 149A
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Attn: Mr. Gary Beyer, TCEQ
Mr. Bill Shafford, TCEQ

Subject: Response to TCEQ and EPA Comments on Affected Property Assessment Report, and Tier 2 Screening Level Ecological Risk Assessment for the Former Operating Plant
Exide Technologies Frisco Recycling Center, Frisco, Texas
TCEQ Agreed Order Docket No. 2011-1712-IHW-E;
IHW Permit No. HW-50206; TCEQ SWR No. 30516;
Customer No. CN600129779; Regulated Entity No. RN100218643;
EPA ID No. TXD 006451090; EPA Administrative Order on Consent
RCRA 06-2012-0966

Dear Mr. Covar, and Ms. Singhvi,

On July 9, 2013, Exide Technologies ("Exide") submitted to the TCEQ and EPA an Affected Property Assessment Report ("APAR") and a Tier 2 Screening Level Ecological Risk Assessment ("SLERA") for the subject property. The APAR was submitted to comply with ordering provisions of TCEQ Agreed Order Docket 2011-1712-IHW-E ("AO") and EPA Administrative Order on Consent RCRA 06-2012-0966 ("EPA AOC"). On October 8, 2013, the TCEQ issued a letter conveying comments on the APAR and SLERA. Enclosures to that letter included 1) TCEQ comments on the APAR, 2) TCEQ comments on the SLERA, and 3) EPA Region 6 comments on the APAR. In the cover letter, the TCEQ indicated that Exide's response to the comments be submitted by October 29, 2013. Enclosed are three documents with Exide's responses to TCEQ's comments on the APAR and the SLERA, and to EPA's comments on both. Per the TCEQ's request, a schedule with interim milestones to perform the work proposed in Exide's responses is also enclosed. This schedule uses November 15, 2013 as the start date for the

additional activities for purposes of illustration. The actual start date for the schedule will be the date on which Exide receives approval from the TCEQ.

Regarding groundwater classification, Exide maintains that a Class 3 and/or saturated soil designation is appropriate under applicable TCEQ guidance. Consistent with TCEQ's comments, Exide will assume Class 2 groundwater classification unless and until Exide performs additional field work and/or modeling that provides further support for a Class 3 determination. Rather than delaying the APAR process to perform additional field work and modeling to further evaluate groundwater classification, Exide will assume a Class 2 designation for purposes of the revised APAR to be submitted and associated assessment activities.

Regarding the classification of Stewart Creek, Exide maintains that an intermittent classification for Stewart Creek is appropriate as indicated in the enclosed responses. However, Exide will assume a perennial classification in the revised APAR to be submitted as requested by the TCEQ. Based on communications with TCEQ, Exide understands that TCEQ's reclassification does not apply to the North Tributary, which continues to be classified as intermittent.

Regarding application of the drinking water MCL for lead as the contact recreational PCL, Exide will apply the MCL to assess recreational exposure as requested by the TCEQ. However, please note Exide believes this to be overly conservative. As indicated in our responses, the MCL assumes an individual ingests approximately two liters of water per day every day for 350 days a year (we recognize that the TCEQ ^{GW}GW PCL is based on an age adjusted drinking water assumption of 0.8 liters per day). The standard TCEQ exposure scenario for recreational exposure is 50 ml per day for 39 days a year.

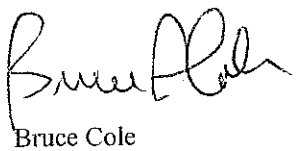
Regarding Constituents of Concern ("COCs"), the responses and schedule provided by Exide assume that COCs are agreed upon before commencement of the next phase of sampling. Any changes to COCs after the next phase of sampling commences could necessitate re-sampling of locations, resulting in delays in the project.

Regarding the enclosed schedule, this assumes implementation of the scope of work proposed by Exide in the enclosed response to comments. Exide reserves the right to modify the schedule proposed to accommodate any changes required in the scope of work proposed. The schedule also assumes that access to areas of Stewart Creek downstream of Exide's property can be obtained in 60 days. As discussed with the TCEQ, it is highly uncertain how long it will take to obtain legal access and the schedule could be affected.

I certify that I am the Executive Vice President & President of all of Exide's recycling facilities (including the Frisco, Texas facility) and am duly authorized to sign the certifications attached to this letter.

Sincerely,

EXIDE TECHNOLOGIES



Bruce Cole
EVP & President, Industrial/Recycling Americas & Asia Pacific

Mr. Zac Covar
Ms. Sunita Singhi
TCEQ Order Compliance Team
October 29, 2013

Enclosures

cc: Mr. Gary Beyer – TCEQ – 2 copies
Mr. Bill Shafford – TCEQ
Ms. Margaret Ligarde – TCEQ
Mr. John Shelton – TCEQ
Mr. Chris Shaw – TCEQ
Mr. Paul James – EPA
Mr. Guy Tidmore – EPA
Mr. Jay Przyborski – EPA
Mr. Mack Borchardt – City of Frisco
Mr. Matthew Love – Exide Technologies
Ms. Aileen Hooks – Baker Botts
Waste Section Manager, Dallas/Fort Work Regional Office, Texas Commission on Environmental Quality, 2309 Gravel Drive, Fort Worth, Texas 77118-6951

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that quality personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

I certify that this document and all attachments were prepared under my direction or supervision. I certify that the information contained in or accompanying this submittal is true, accurate, and complete. I certify that this submittal and all attachments were prepared in compliance with the RCRA § 3013 Administrative Order on Consent entered into between EPA and Exide Technologies; docket number RCRA 06-2012-0966. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Bruce Cole, Exide Technologies

State of Georgia
County of Fulton

The foregoing instrument was subscribed and sworn before me this 28th day of October, 2013 by Bruce Cole.

Candace Camprini
Notary Public, State of Georgia
My commission expires: 3 March 2015

ATTACHMENT 1

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

October 29, 2013

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

General TCEQ Comments

1. **TCEQ Comment**: *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.*

   Response: Comment noted.

2. **TCEQ Comment**: *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.*

   Response: The initial APAR submittal recognized the need to address downstream portions of Stewart Creek but also recognized there are additional stakeholders involved in this assessment process and the desirability of a collaborative assessment effort with those stakeholders. This includes consideration of existing sampling data collected by the City of Frisco in connection with its proposed development projects, a sampling effort which was ongoing at the required time of submittal of the APAR. The APAR cites both historical Stewart Creek data collected as part of previous Exide downstream studies as well as other studies of downstream Stewart Creek sediments. The historical Exide sediment data are provided in Table A17-3A in Appendix 17, and these data are discussed in the summaries of the respective investigation reports for which they were obtained in Table 1C. Further discussion of the studies performed for Exide is provided in Section 7.3 of the APAR and in Section 2.1 of the Screening-Level Ecological Risk Assessment (SLERA).

   In response to this comment, Exide will include assessment of downstream portions of Stewart Creek in the revised APAR submittal and will perform the requested further investigation to evaluate the extent of COCs above applicable human health and ecological assessment levels in downstream Stewart Creek sediments. This investigation will include sediment data collected as part of studies of downstream areas, such as sediment data from the APAR for the Former Stewart Creek Wastewater Treatment Plant (FSCWWTP) and data collected by the City of Frisco consultants in 2011 and 2013 as well as evaluations of additional areas and additional sampling. The available existing reports or other documentation containing these data will be included as appendices in the revised APAR. Arsenic, cadmium and lead concentrations in the ten most downstream sediment samples collected from the City of Frisco studies (samples SC-SED-31 through SC-SED-40 collected by Southwest Geosciences (SWG) in June of 2013 and provided to Exide in August 2013 after the submittal deadline for the APAR) were all below the respective critical sediment PCLs for those compounds.

   In its May 14, 2013 Interim Report – Visual Survey of Stewart Creek, SWG identified four observations of possible slag material downstream of these sample locations, but did not collect samples from these areas on USACE-owned property south of 4th Army Memorial Road. Exide understands that to date SWG has not been able to secure access to collect samples from these areas. Exide will attempt to obtain access to this area and once access is obtained, will evaluate this area for the possible presence of slag material and battery case fragments, and will collect sediment samples from this area if those materials are found in this area. Similarly, Exide will attempt to obtain access to a reach of Stewart Creek downstream of Legacy Drive that to our knowledge has not been accessible to the City of Frisco for sediment sample collection. Once access to this area is

obtained, additional sediment samples will be collected within this reach.

Prior to performing additional sampling, Exide will survey the downstream creek area to evaluate previous sample locations, assess areas for potential sediment deposition, and select appropriate additional sample locations based on that information. Possible sampling locations may also be adjusted based on the findings and implementation of the downstream slag and battery case fragment investigation and recovery plan to be performed in response to Comment No. 3 below. Sediment samples will be analyzed for arsenic, cadmium and lead, grain-size distribution and total organic carbon. As feasible within the overarching project schedule, Exide will review proposed sediment sample locations with TCEQ staff prior to sample collection.

In addition to collection of downstream sediment samples, Exide proposes to collect surface water samples from downstream areas. These surface water samples will be co-located with additional sediment samples at approximately 10% of the new sediment sampling locations. In addition, three independent surface water samples will be collected immediately downstream of the Former Operating Plant (FOP). Surface water samples will be analyzed for total and dissolved arsenic, cadmium and lead.

Further delineation of other specific areas (in addition to downstream Stewart Creek sediments and surface water) is discussed in the responses to other TCEQ comments below.

3. **TCEQ Comment**: *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.*

Response: The requested interim slag and battery chip investigation and recovery plan to address slag and battery case fragments in and around the downstream portion of Stewart Creek will be submitted within 30 days of the date of the TCEQ's October 8, 2013 letter providing the APAR comments (i.e., by November 7, 2013).

4. **TCEQ Comment**: *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.*

Response: Multiple groundwater monitoring wells were installed in the generally downgradient direction and near vicinity of the Solar Evaporation Pond, including: (1) monitoring well MW-28, which was installed directly downgradient (southwest) of the solar evaporation pond and sampled as part of the Former Operating Plant (FOP) APAR; and (2) monitoring wells VCP-MW-5 and VCP-MW-6, which were installed west (VCP-MW-6) and south (VCP-MW-5) of the solar evaporation pond as part of the APAR for the adjacent Undeveloped Buffer Properties (UBP). Arsenic, cadmium, lead, and selenium concentrations were all below the detection limit in the groundwater samples collected from all three of these monitoring wells (the VCP-MW-5 and VCP-MW-6 data will be added to the FOP APAR in response to this comment).

Possible approaches for evaluating the integrity of the liners for these ponds were discussed with TCEQ personnel in response to this comment. Based on that discussion, Exide proposes to evaluate the liners' integrity through a combined approach consisting of: (1) a visual inspection of the condition of visible areas of the liner during the time of the APAR performance; (2) a review of any available Exide operational/maintenance information relevant to the liner performance; (3) a discussion with former Exide plant personnel regarding liner performance; (4) a review of

groundwater monitoring data for downgradient monitoring wells; and (5) a detailed inspection of the liner condition at the time of pond closure after the pond contents have been removed. This approach and information will be described in the revised APAR. Available information regarding the timing of the operation and closure of this pond will be provided in the revised APAR. It is anticipated that the Solar Evaporation Pond will be needed at least until the Class 2 landfill is closed; currently that timeframe is uncertain.

Existing monitoring well MW-13 is located immediately adjacent to the east side of the Storm Water Retention Pond (this does not appear to be the downgradient direction from the pond). Cadmium and lead concentrations in groundwater samples collected from this well in 2012 and 2013 were below the detection limit. In response to this comment, Exide will attempt to install a monitoring well north of the pond (between the pond and Stewart Creek) and a monitoring well near the northwest corner of the pond (downgradient). Due to accessibility issues (e.g., slope, soft ground, etc.) the locations of these proposed monitoring wells may need to be modified in the field. Groundwater samples will be collected from these wells for total and dissolved arsenic, cadmium, lead and selenium concentrations. Exide proposes to assess the condition of the Storm Water Retention Pond liner using the approach described above for the Solar Evaporation Pond. Available information regarding the timing of the operation and closure of this pond will be provided in the revised APAR. It is anticipated that the Storm Water Retention Pond will be needed until either active management of storm water is no longer required or an alternative approach for stormwater management is developed; currently that timeframe is uncertain.

5. **TCEQ Comment**: *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.*

   Response: Based on this comment and subsequent clarification from TCEQ, Exide will implement interim dust suppression measures. In particular, Exide will cover the two existing slag piles within the Class 2 Landfill with a custom fabricated tarp and/or tackifier and implement a tarp and/or tackifier maintenance/inspection program. Tackifier previously was applied to these piles on multiple occasions in 2013 and a temporary tarp placed in May 2013.

Specific TCEQ Comments on APAR

1. **TCEQ Comment**: *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.*

   Response: Information concerning the assessment of the Former Fire Fighting Training Area will be included in the revised APAR. The City of Frisco (the City), has advised Exide that records for the Former Fire Fighter Training Facility are available back to 1988, and that use of the facility has been discontinued. Chemicals used at the facility by the City included diesel and propane (as accelerants) and Class "A" and "B" foams. The City indicated that no formal measures were used to control runoff during operation of the facility and that no environmental assessment or cleanup activities, other than general housekeeping after each training session, were conducted. The City indicated that the parking lots immediately adjacent to the drill tower were used for simulated "emergency response" activities, and that an area of at least a 200-foot radius around the burn building may have been used at various times. The area east to "old" 5th Street was also used as a work area. Based on

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

Exide's review of this information, one additional boring will be completed in the vicinity of the Former Fire Fighter Training Facility. Soil samples will be collected at 0-2 and 2-4 feet bgs, and analyzed for total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAHs), as necessary, to vertically delineate to RALs.

2. **TCEQ Comment**: *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.*

   Response: Exide did not use PCBs as part of the secondary lead smelting process or associated operations. Exide will review information regarding the PCB-containing drums observed by the TCEQ inspector and any other information regarding potential management of PCB-containing materials in the Crystallization Unit area. The results of Exide's review will be included in the revised APAR. Based on the information provided by TCEQ, Exide proposes to complete one soil boring to approximately 4 feet below ground surface (bgs) in the vicinity of the noted drums with PCB labels. Soil samples will be collected from 0-2 and 2-4 feet bgs and analyzed for lead, cadmium and PCBs, as necessary, to complete vertical delineation to RALs at this location. Additional soil sampling will be performed if warranted by Exide's review or the sample results from this soil boring.

3. **TCEQ Comment**: *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 $^{GW}Soil_{lng}$ 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).

   Response: As presented on Table 4D.1 and Figure 4A of the APAR, vertical delineation to the RAL was completed at each of the soil borings in the North Woods Area (based on a Class 3 groundwater classification). Lead was also vertically delineated to background at soil boring E-11, which contained the soil sample with the highest lead concentration in the North Woods Area. Exide acknowledges that additional delineation of the soil affected property is required in this area due to changes in the soil RAL based on use of a Class 2 groundwater designation (see response to Comment No. 5 below).

   As discussed with the TCEQ, Exide proposes to address this comment by completing four additional soil borings along the north bank of the North Tributary to delineate the southern boundary of the North Woods affected property. Upon completion, two of the soil borings will be converted to

monitoring wells to satisfy the TCEQ request for monitoring wells in this area in Comment No. 24. Exide proposes to collect samples at 0-0.5 and 0.5-2 feet bgs from each of the proposed soil borings. Soil samples from these borings will be analyzed for arsenic, cadmium, lead and selenium to evaluate the potential surface and subsurface ecological exposure in this area and thus provide the requested ecological data within the upper 5 feet of the subsurface. The locations, depths, and number of proposed soil borings in this area are subject to change due to potential limited accessibility in this area. As noted above, soil samples will also be collected in this area to further delineate the affected property due to the change from a Class 3 to a Class 2 groundwater resource designation being used for the revised APAR submittal. Based on revised soil RALs due to the change in the soil to groundwater PCL resulting from use of a Class 2 groundwater classification, additional horizontal and vertical soil delineation data will be collected in the vicinity of sample locations D-11, D-13, E-11A, LMW-22, and historical sample location P-1.

4. **TCEQ Comment**: *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.*

Response: Exide proposes to complete one additional boring to 10 feet bgs at 2013-CUFT-7 to vertically delineate lead and cadmium in this area to the higher of MQLs or background. Additional soil samples will be collected from this boring at 2-4, 4-6, 6-8, and 8-10 feet bgs, and analyzed for lead and cadmium, as necessary, to complete vertical delineation. Exide acknowledges that additional delineation of the soil affected property is required in this area due to use of a Class 3 instead of a Class 2 groundwater resource designation (see response to Specific Comment No. 5 below). Specifically, additional soil delineation data are needed in the vicinity of sample locations 2013-CUFT-5 (horizontal and vertical for lead), 2013-CUFT-6 (horizontal and vertical for lead), and 2013-CUFT-10 (horizontal and vertical for lead).

5. **TCEQ Comment**: *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 Class2, 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.*

Response: Exide believes that aquifer test data and lithologic data from the site and surrounding area indicate that a large portion of the site, including the central and eastern portions of the former production area and the areas south of Stewart Creek, meets TRRP-8 criteria for saturated soils ($K < 1 \times 10^{-5}$ cm/s) and reserves the right to submit data and documentation to support such demonstration at a future date after submittal of the APAR. The extensive coverage of these saturated soils, the confining nature of the structural bowl in which the site lies, and the apparent limited hydrogeological extent of the more transmissive sand/gravel and clayey gravel zones in the northern and western portions of the site were key considerations in classifying the entire site as a Class 3 groundwater resource in the APAR. Although Exide believes that the uppermost groundwater-

bearing unit is saturated soil or a Class 3 groundwater resource, to avoid delay, Exide will assume Class 2 groundwater classification in the revised APAR.

6. **TCEQ Comment**: *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.*

   Response: Based on this comment and subsequent clarification from TCEQ and as noted in the response to General Comment No. 5 above, as a dust suppression measure, Exide will cover the existing slag piles within the Class 2 Landfill with a custom fabricated tarp and/or tackfier, and implement a tarp and/or tackifier maintenance/inspection program. Exide believes that this action will address the first part of this comment and the requested changes to the discussion of exposure pathway 2 on this page would not apply.

   With regard to fugitive dust emissions, TCEQ continues to monitor the lead NAAQS monitors that surround Exide's property. Data collected from this monitoring program since the beginning of 2013 have not indicated emissions of contaminated particulates from any potential onsite sources including dust generation during windy periods. A summary of this program and Exide's dust suppression and monitoring program and these data will be discussed in the text of this section of the revised APAR.

7. **TCEQ Comment**: *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.

   Response: The requested chemical/physical properties information for arsenic, selenium and any other COCs detected above their respective RALs will be added to Section 2.6.1 of the revised APAR. A discussion of colloidal transport of COCs in groundwater will be added to Section 2.6.3 of the revised APAR.

8. **TCEQ Comment**: *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

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

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.

Response: More detail regarding the storm water collection system, its future operation, and potential transport of COCs within the FOP area will be provided in the revised APAR. Additional discussion regarding the possibility of a reduced vegetative cover due to drought allowing for increased runoff erosion will be added to this section of the revised APAR. The approximate location of the initial release and the location of the French drain will be added to site maps.

As noted in this comment, the French drain system was installed as an interim remediation system. As such, a post-installation inspection/monitoring program was not contemplated in the EPA-approved November 2011 Sampling and Analysis Work Plan that proposed the French drain installation. As described in the French Drain Construction Report provided in Appendix 19, W&M inspected the French drain and flood wall on three occasions after the French drain construction was completed and on all three occasions no evidence of recent seepage was observed and the drain and sumps appeared to be functioning as designed. The French Drain Construction Report will be revised to include information regarding those specific post-installation inspections, including available photographs. In addition, Exide will develop and implement a program to monitor the effectiveness of the French drain/flood wall and will include details of that program in Appendix 19 of the revised APAR.

A discussion of the observed presence of slag and battery case fragments in Stewart Creek as described in the March 28, 2011 W&M report will be added to Section 2.6.2 of the APAR. Data from surface soil samples collected along the flood wall and Stewart Creek were used in the SLERA to evaluate potential ecological risks from this corridor. As discussed with and confirmed by TCEQ staff, the quantitative comparison of soil samples to ecologically-based sediment PCLs is not appropriate. Further, as discussed, an extensive erosion control system (rock gabion system) is currently in place and appears to be effective based on the low concentrations of lead and cadmium detected in sediment samples in this area. Per discussions with TCEQ staff following receipt of the October 8 APAR comment letter, a qualitative discussion will be added to the APAR to discuss the soils data in this area relative to the potential surface soil to sediment pathway.

9. **TCEQ Comment**: *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.*

Response: Comment noted. Changes to the appropriate sections and tables will be made and PCLs specific to perennial water bodies will be used for samples from Stewart Creek. Based on this change, the hardness-adjusted ^{SW}RBELs for cadmium and lead (dissolved) based on chronic-aquatic life receptor exposures of 0.256 ug/L and 2.68 ug/L, respectively, will be the critical surface water PCLs. No changes are anticipated to the sediment PCLs due to the re-classification of the stream since Exide conservatively included the ecological-based sediment PCL in the APAR despite

TCEQ's intermittent classification of the stream at that time. Subsequent to receipt of the October 8 APAR comment letter, Exide has been advised by TCEQ that the North Tributary retains the intermittent classification.

10. **TCEQ Comment**: ***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.*

Response: A mass balance calculation will be performed to discuss the potential effect that sulfate levels measured in monitoring wells adjacent to Stewart Creek might have on water quality and surface water quality standards. A discussion of this calculation and potential for sulfate impacts from the affected property will be added to Section 5 of the revised APAR. Notwithstanding this proposed evaluation, Exide notes, as discussed in Section 5.2 of the APAR, that sulfate concentrations in Site groundwater are highly variable and the variability does not appear to be related to the proximity to potential source areas. For example, the second highest sulfate concentration (4,040 mg/L) observed in groundwater samples collected in 2012-2013 for the APAR was at background well MW-20 located on the UBF Property east of the former production area. Moreover, the sulfate concentration in monitoring well MW-31, located in the Battery Receiving/Storage Building and screened within an interval where slag was observed, was reported at a much lower concentration of 927 mg/L. The source of shallow clayey soils at the Site in which these monitoring wells are screened is weathering from the surrounding source rock, primarily the Eagle Ford Shale. Elevated naturally occurring sulfate concentrations in these soils and associated groundwater would not be unexpected, since, as noted in Burkart, Cross and Kern (1999), gypsum (calcium sulfate) is common in soils developed on Eagle Ford Group shales in North Texas [Burkart, Berke, Cross, Glenn C., and Kern, James P., 1999, "The role of gypsum in production of sulfate-induced deformation of lime-stabilized soils," *Environmental & Engineering Geoscience*, v. 5, no. 2, pp. 173-187]. The local presence of potentially elevated sulfate concentrations in Eagle Ford Formation derived clays is recognized in the City of Frisco's Engineering Standards (City of Frisco, 1999), which include stabilization requirements for Eagle Ford clays with sulfate concentrations greater than 25,000 ppm sulfate.

11. **TCEQ Comment**: *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*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

sampling for antimony should be conducted.

Response: Based on discussions with TCEQ subsequent to receipt of the October 8, 2013 APAR comment letter, Exide understands that the addition of a more robust narrative discussion regarding the basis for the selection of COCs in Section 3.1.2 of the APAR to more completely reflect scoping discussions between TCEQ and Exide in February 2013 would satisfy this comment. In those discussions, TCEQ noted that although, lead and cadmium are the presumptive COCs, "a complete historical review should be conducted of all products, waste management activities, and past COC occurrences and investigations, such as arsenic and selenium as measured in a landfill leachate sample by a 2009 EPA investigation, PST removals and final closure documentation, spills around the above ground diesel tank, corrosive liquids from battery acid at Battery Breaking area, herbicides, pesticide storage etc. and justification as to why/why not these constituents are being screened according to TRRP-10 and TRRP-14." In response to this request, Exide prepared and reviewed with TCEQ a detailed screening table evaluating each of these requested factors on February 15, 2013. An updated version of that table is proposed to be included as Table 3B in the revised APAR. Section 3.1.2 of the APAR will be revised to incorporate this background information and the discussion below.

The following analytes were also identified as additional COCs at the specific areas listed below where they were associated with a potential release or a specific operation/activity that had taken place in those specific areas.

- Class 2 Landfill – As detailed in Section 5 of the APAR, arsenic and selenium were added as COCs for groundwater in the Class 2 landfill area to evaluate the potential for a release of leachate containing these metals to groundwater. As described in Section 4, soil samples from the 0.0 to 0.5-foot bgs depth interval from borings in this area were analyzed for lead and cadmium to evaluate the potential for atmospheric deposition of these metals in this area in the prevailing downwind direction from the former production area. Soil samples from PMW-19R and LMW-22 were additionally analyzed for arsenic to evaluate potential aerial deposition of arsenic in this area. Arsenic and selenium analyses will also be performed on soil samples to be collected on the landfill perimeter in response to other TCEQ comments.
- Underground Storage Tank and Diesel Fuel Spill Area – Groundwater samples collected downgradient of the former diesel tank release area were additionally analyzed for total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAHs). Soil samples collected along the Stewart Creek floodwall (creek side and facility side) during 2012 were evaluated for TPH. In addition, soil samples between the Stewart Creek floodwall and Stewart Creek were evaluated for PAHs in soil samples collected in this area in January 2013. Soil samples collected in March-April 2013 from inside and adjacent to the Slag Treatment Building, located on the west side of the former spill area, were also analyzed for TPH and volatile organic compounds (VOCs).
- Battery Breaking Area – Soil samples collected near the locations of the sump in this area where battery breaking occurred were analyzed for pH.
- Vehicle Maintenance Building - Annual waste activity reports indicated shipments of Safety-Kleen parts cleaner off-site. Discussions with Exide personnel indicated that these parts cleaners were used in the vehicle maintenance building. Soil samples collected within the vehicle maintenance building were analyzed for VOCs to evaluate the potential presence of chlorinated solvents.
- Raw Materials Storage Building (RMSB) - Consistent with RCRA Permit requirements for this

permitted unit, Exide reviewed and discussed with TCEQ the Permit requirements related to closure of the this unit (Permit Provision VII.D), which included analyses for "representative constituents identified in 40 CFR Part 261, Appendix VIII which would reasonably be expected to be present in the waste." Fifty-two soil samples (including duplicate samples) were collected from the Raw Material Storage Building ("RMSB" samples) or adjacent vicinity ("RMSA" samples) during the SIR and APAR investigations, including forty soil samples (including duplicate samples) from ten borings completed inside the Raw Material Storage Building. Based on closure requirements in the RCRA Permit, discussions with TCEQ personnel, and procedures detailed in the Final (January 25, 2013) Decontamination and Demolition Work Plan, all soil samples collected from the Raw Material Storage Building were analyzed for arsenic, cadmium, lead and selenium, and all samples collected at three of the boring locations were analyzed for a broader suite of compounds, including RCRA 8 metals, VOCs, and SVOCs. Concentrations of TPH, VOCs, SVOCs, and all RCRA metals except for arsenic, cadmium, lead, and selenium are below their respective residential assessment levels (RALs) (based on a Class 2 groundwater classification) in these soil samples collected from inside and in the immediate vicinity of the RMSB that were analyzed for the expanded analytical suite.

In addition to the evaluation of the above areas, Exide also reviewed historical herbicide and pesticide usage with a long-term facility employee who was familiar with that information. As indicated in Table 3B, Mr. Wendell Carlile indicated that only minor amounts of weed killer, such as Round Up, were used by a landscaping contractor in landscaped areas around the office building and the employee parking lot. Mr. Carlile also indicated that only small amounts of wasp killer were used when needed for wasp control. Based on the reported limited use of herbicides and pesticides at the Site and consistent with TRRP-10 guidance, herbicides and pesticides were not considered site COCs.

With regard to specific requests in this comment, Exide will add a discussion regarding the potential for historic sulfur dioxide emissions to impact Site soils. As noted in this comment, the MSDS for lead acid batteries indicates that antimony is a minor battery component, only 0.4% by weight and far less than the lead component percentage (54 – 62% by weight). Antimony was screened out based on this significantly lower constituent percentage; however, in response to this comment, Exide will include antimony analyses in the analytical suite for a subset of soil samples (primarily those samples located near potential source areas) to be collected in response to TCEQ and EPA comments on this APAR.

12. **TCEQ Comment**: *Page 4-2. Section 4.2.1.* ***Battery Receiving/Storage Building.*** *The soils in the shallow fill (0.9-2 ft.) 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

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

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.

Response: As detailed in Section 3.5.3 of the APAR, several lines of evidence indicate that the MW-31 soil sample referenced by the TCEQ (0.9-2 ft) was mislabeled in the field, and the results for that sample do not indicate a release from activities inside the Battery Receiving/Storage Building. However, as noted in the TCEQ comment above, lead levels in soil samples from 2013-WMU14-1 do indicate the possibility of a release in the vicinity of the loading dock associated with the RCRA unit. Exide proposes to incorporate RCRA Corrective Action requirements into the response action required by TRRP for the PCLE zone in this area.

As described in Section 4.2.1 of the APAR, two distinct zones of non-native material, or fill zones, were typically encountered below the concrete slab in borings completed below the Battery Receiving/ Storage Building. The upper fill zone, directly below the building, generally consisted of select fill material (reddish-yellow clayey sand) within the upper 4 to 8 feet bgs. No slag material was observed in the upper fill zone. The lower fill zone generally consisted of silty clay or sandy clay to a depth of 10.5 feet bgs or less. Slag material was observed within the lower fill zone.

As noted in Section 4.2.1 and 4.2.5 of the APAR, it is assumed that the affected property in the vicinity of the Battery Receiving/Storage Building (including at boring locations 2013-BSB-2, 2013-BSB-9, and 2013-WMU14-1) extends to the top of the saturated zone based on the observation of slag material within the lower fill zone as described above. Consistent with TRRP Rule §350.51(d)(3), groundwater samples were collected adjacent to these sample locations at monitoring well MW-31, and were analyzed for total and dissolved lead and cadmium to determine whether groundwater is affected in this area. As shown in APAR Table 5B.1, lead and cadmium were not detected in the MW-31 groundwater samples. Thus, since slag material was observed to depth and a groundwater sample was collected in this area, Exide conservatively assumed that the vertical extent of soils above the RAL in this area extends to the saturated zone. As requested by the TCEQ, further discussion of the fill zones observed in the former production area, including the fill zone containing slag in vicinity of the Battery Receiving/Storage Building and borings in which slag was observed, will be provided in the revised APAR. A map demarcating the extent of the slag-containing fill zones as within the lateral extent of contamination will also be provided in an updated PCLE zone map in the revised APAR.

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

As requested by the TCEQ, additional documentation and details will be provided in the revised APAR regarding timing of the placement of fill material within the former operating area. This information will include statements from one or more long time Exide current or former employees and a discussion of historical aerial photographs. Also per this comment, the lower fill zone in the Battery Receiving/Storage Building area where slag was observed will be identified as a waste disposal unit on the facility's notice of registration and will be discussed in Section 1.2-4.3 of the revised APAR regarding Notice of Registration Waste Management Units.

13. **TCEQ Comment**: *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.

Response: The referenced railroad samples are historical soil samples collected as part of the Phase II RFI conducted in 1998. The results for these samples were presented on Figure 16 of the Site Investigation Report (noted as Phase II RFI samples in the Explanation of Figure 16), but these samples were not collected during the SIR investigation. The railroad soil sample data are presented with other historical data in Appendix 17 of the APAR. The locations of these and other historical samples are shown on Figure 1B, the Affected Property Map.

Regarding additional vertical delineation at 2013-RRS-4A, the vertical extent of the soil affected property in the vicinity of the Battery Breaker Building was delineated (meeting both Class 2 and Class 3 soil to groundwater criteria) at the location with the highest observed lead concentration in this area (MW-30). However, to further address this comment, Exide proposes to analyze a deeper sample from 2013-RRS-4A (from the 2-3 foot bgs depth interval) that is currently available for lead, the COC exceeding the RAL at this boring location. Additional soil samples may be collected as

necessary to vertically delineate COCs to RALs in this area.

The perched water zone observed immediately below the concrete slab at 2012-RMSA-2 and 2012-RMSA-4 and the potential migration (or lack thereof) of this water to groundwater and surface water will be further evaluated in the revised APAR. As noted in the initial APAR submittal, groundwater results from monitoring well MW-29 located downgradient from these locations were below RALs. Based on soil boring observations, the perched water zone is not present on the creek side of the floodwall; therefore, monitoring wells will be installed on the facility side of the floodwall to assess the potential lateral migration of the perched water. The observed depths of the perched zone and the step-like drop in elevation from the facility side to the creek side of the floodwall suggest that migration of the perched water to Stewart Creek is impeded by the floodwall and the French drain system, as evident by the seeps that previously formed in the floodwall. As noted in the French Drain Construction Report in Appendix 19 of the APAR, "W&M visited the wall project on three occasions since the drain was completed to observe the condition of the wall. On each occasion, the entire perimeter of the wall was walked and observed for evidence of ongoing seepage. No evidence of recent seepage has been observed, and the drain and sumps appear to be functioning as designed." The French Drain Construction Report will be revised to include information regarding those specific post-installation inspections, including available photographs. In addition, Exide will develop and implement a program to monitor the effectiveness of the French drain/flood wall and will include that program in Appendix 19 of the revised APAR.

Exide proposes to complete five shallow (5 feet bgs or less) monitoring wells to further evaluate the perched water zone in the former production area: two wells in the vicinity of the referenced RMSA borings, one well south of the Raw Material Storage Building on the facility side of the flood wall, one well at the Slag Treatment Building, and one well adjacent to the Wastewater Treatment Plant. One additional monitoring well will be installed adjacent to one of the perched zone wells and screened within the uppermost GWBU to evaluate potential hydraulic connectivity between the two zones and the potential of the shallow zone to discharge to Stewart Creek. All of these wells will be developed and sampled for total and dissolved cadmium and lead (assuming the wells produce sufficient volumes of water for sampling).

The revised APAR will include a discussion of the crystalline material observed along the floodwall and will also include cross sections depicting the saturated and unsaturated zones in this area.

14. **TCEQ Comment**: *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.*

Response: As noted in the initial APAR submittal, the vertical extent of the affected property at the Slag Treatment Building was delineated based on the vertical delineation to RALs (meeting both Class 2 and Class 3 soil to groundwater criteria) at borings 2013-STB-4 and 2013-STB-9, which contained the soil samples with the highest observed lead concentration along the perimeter of the building and inside the building, respectively. Based on this assessment and subsequent discussions with the TCEQ, Exide believes that the vertical extent of the affected property in this area has been sufficiently characterized.

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

15. **TCEQ Comment**: *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.

Response: Several soil borings in and around the Slag Treatment Building were completed to a depth of 4 to 5 feet bgs. The observed depth of fill within the Slag Treatment Building was typically 3 feet bgs or less, with the maximum observed depth of fill in the Slag Treatment Building being 3.4 feet bgs (at boring 2013-STB-2). During construction of the French drain (i.e., the Flood Wall project) soil samples were collected from the walls and floor at various locations within the excavation for the French drain in September-October 2012. During the APAR investigation (and after the French drain project was completed), soil borings were completed to approximately 5 feet bgs along the facility side of the flood wall in March-April 2013 at locations 2012-FWFS-1, 2012-FWFS-4, 2012-FWFS-6, 2012-FWFS-8, and 2012-FWFS-9 (see boring logs presented on pages A2-49 through A2-56 in Appendix 2 of the APAR). The depth of fill was delineated in each of these borings (maximum observed fill depth of 2.5 feet bgs at 2012-FWFS-6) and soil samples were collected at deeper intervals in these borings than those collected from the walls and floor of the French drain excavation during its construction. The post-French drain construction borings, along with the soil samples collected from the French drain excavation, were used to assess the affected property along the floodwall in the APAR. Based on this assessment and subsequent discussions with the TCEQ regarding these data, Exide believes that the soil affected property in this area has been sufficiently characterized.

As noted previously in the response to Comment No. 8 above, data from surface soil samples collected along the flood wall and Stewart Creek were used in the SLERA to evaluate potential ecological risks from this corridor. As discussed with and confirmed by TCEQ staff, the quantitative comparison of soil samples to ecologically-based sediment PCLs is not appropriate. An extensive erosion control system (rock gabion system) is currently in place and appears to be effective based on the low concentrations of lead and cadmium detected in sediment samples in this area. Per discussions with TCEQ staff meeting, a qualitative discussion will be added to the APAR to discuss the soils data in this area relative to the potential surface soil to sediment pathway.

Based on EPA Comment No. 40 and Exide's interaction with EPA during sampling in the vicinity of the flood wall in 2012, Exide is aware of a composite sample of waste material (white crystalline substance) with entrained soil, labeled as "Floodwall Comp-01" that was collected by EPA, and a split of Exide soil sample 2012-FWCS-8 that was also collected by EPA. The "Floodwall Comp-01" sample was collected by EPA from several locations where white crystalline material was present on the creek side of the floodwall near the floodwall. The specific locations where the subsamples used to construct this composite sample were collected by EPA have not been provided to Exide, and thus Exide is not able to designate specific locations associated with this composite waste sample. Exide has requested this information from the EPA and will add the location information, if available, to the revised APAR. Similarly Exide has not been provided with specific locations where standing water was observed by EPA. However, Exide believes that the general areas where these samples were collected and where standing water was observed are included with the areas on the creek side of the floodwall already sampled as part of the APAR investigation.

To respond to this comment, Exide will add EPA's analytical laboratory report for the Floodwall Comp-01 and 2012-FWCS-8 split samples as an appendix to the APAR.

The RAL exceedances at 2012-FWFS-1, 2012-FWFS-6, and 2012-FWFS-7 were all laterally delineated in the direction of Stewart Creek by soil samples from the creek side of the floodwall (see APAR Figure 4A) that meet both Class 2 and Class 3 soil to groundwater criteria. Additional lateral delineation will be performed on the creek side of 2012-FWFS-5.

As requested, Exide will collect additional soil samples northwest, north, and northeast of MW-27 to further evaluate the affected property in this area. Exide proposes to complete four additional borings in this area to approximately 4 feet bgs. Soil samples will be collected at 0-2 and 2-4 feet bgs at each location and analyzed, as necessary, to vertically delineate lead and cadmium to RALs. Locations of these borings may be co-located with the proposed monitoring wells discussed in the response to Comment No. 13. The lead concentration of the soil sample from MW-27 is less than the RAL based on the criteria for Class 3 groundwater, but is above the soil RAL based on the criteria for Class 2 groundwater. This is also the case at sample location MW-29, located west of MW-27 along the floodwall. Additional soil samples will be collected in the vicinity of MW-27 and MW-29, including samples between these locations and Stewart Creek to further evaluate the soil affected property in the vicinity of these sample locations. The specific locations and depths of these samples will be determined in the field based on accessibility considerations.

16. **TCEQ Comment**: *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.*

Response: As discussed in the response to Comment No. 12, and consistent with TRRP Rule §350.51(d)(3), the entire soil column was assumed to be affected in this area and groundwater samples were collected from monitoring well MW-31 to evaluate potential impacts to the GWBU. All groundwater sample results from MW-31 were below RALs (see APAR Table 5B.1). As shown on Figure 1B and 11A in the APAR, the area around 2013-WMU14-1 and most of the former operating area is included within the affected property and PCLE zone boundaries in the APAR. Based on this assessment and subsequent discussions with the TCEQ, Exide believes that the extent of the affected property in this area has been sufficiently characterized given the boundaries to be used for the PCLE

zone. As noted in the response to Comment No. 12, further discussion of the fill zones observed in the former production area, including the fill zone containing slag in the vicinity of 2013-WMU14-1 and the Battery Receiving/Storage Building, will be provided in the revised APAR.

17. **TCEQ Comment**: *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.*

Response: In response to this comment, surface soil samples will be collected from the existing North Disposal Area (NDA) cap on an approximately 100-foot grid cell pattern. These samples will be collected of the existing cap material from the 0-0.5 and 0.5-1 foot depth intervals and will be analyzed for cadmium and lead. A field inspection of the existing cap condition will be performed with particular attention paid to potential erosion features and/or desiccation cracks, if any. Available cap construction documentation and previous delineation boring data from the RFI will also be reviewed to evaluate available information regarding the cap construction details (thickness, permeability testing, etc.). In addition, up to three soil borings will be completed through the cap to evaluate the thickness of the cap and to obtain cap soil samples for laboratory testing of the vertical hydraulic conductivity of the cap material.

18. **TCEQ Comment**: *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.

Response: The plugged railroad culverts are located approximately 450 feet southeast of the current point of confluence between the North Tributary and Stewart Creek, in the immediate vicinity of monitoring well MW-24 (see APAR Figure 1B). Ponded or pooled water was not observed at the plugged railroad culverts during the SIR or APAR investigations. To clarify the location of the plugged railroad culverts, a label will be added to site maps in the revised APAR showing their location.

Water from the North Tributary, when present, is currently conveyed to Stewart Creek through culverts that run underneath the railroad spur. The area on the upstream side of the active culverts tends to pool when the North Tributary is flowing; however, this area has been observed dry when the North Tributary is dry, and it is not considered a perennial pool.

With regard to the vertical extent of soil exceeding the RAL in the area of 2012-BY-4 and 2012-SL-1, Exide notes that both of these sample locations are within the boundaries of the Slag Landfill. As such, an attempt was not made to delineate the vertical extent of COC concentrations in surface soil samples at these locations since it is known that COC-containing waste is located below these samples.

Subject to any accessibility constraints, two monitoring wells will be installed along the northern boundary of the Slag Landfill as requested. Groundwater samples will be collected from these wells for total and dissolved cadmium and lead. Water levels measured in these wells will be used to discuss the relationship between the Slag Landfill and North Tributary.

Also in response to this comment, surface soil samples will be collected from the existing cap of the Slag Landfill on an approximately 100-foot grid cell pattern. These samples will be collected of the existing cap material from the 0-0.5 and 0.5-1.0 foot depth intervals and will be analyzed for cadmium and lead. In addition, a field inspection of the existing cap condition will be performed with particular attention paid to potential erosion features and/or desiccation cracks, if any. In addition, up to three soil borings will be completed through the cap to evaluate the thickness of the cap and to obtain cap soil samples for laboratory testing of the vertical hydraulic conductivity of the cap material.

19. **TCEQ Comment**: *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

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

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.

Response: Exide proposes to collect additional soil samples as outlined below in response to this comment, but first a couple of apparent misconceptions in this comment require clarification. It is noted that wells LMW-5, LMW-17 and soil borings SB-9 through SB-16 are soil borings/monitoring wells that were installed in 1995 (RMT/Jones and Neuse, 1995) as part of the landfill pre-construction investigations. That is why lithologic data for these borings are included in Appendix 7, but no corresponding soil sampling data are included (soil samples were not collected for laboratory analyses from these pre-landfill construction borings). The soil sample RAL exceedance at LMW-5 referred to in this comment is a misinterpretation of the cross-section; the RAL exceedance shown on the cross-section is actually at soil boring D-11 located approximately 150 feet to the south of LMW-5, and does not indicate a measured RAL exceedance at LMW-5.

The following additional investigation activities are proposed in response to this comment:

1. Landfill Perimeter Borings: Soil borings will be located at an approximately 200-foot spacing along the perimeter of the Class 2 landfill. This will entail the installation of three new soil borings on the east side of the landfill (one about 200 feet south of existing well PMW-19R, one slightly southwest of existing well LMW-9, and one near the southeast corner of the landfill), three new soil borings on the north side of the landfill (approximately 200 feet, 400 feet, and 600 feet west of the northeast corner of the landfill), and three new soil borings on the west side of the landfill (approximately 200 feet, 400 feet, and 600 feet south of the northwest corner of the landfill). No additional soil borings are proposed south of the landfill as this area is covered by four existing monitoring wells (LMW-5, LMW-22, LMW-17, and LMW-8). Soil boring locations may require adjustment based on accessibility constraints. Soil borings will be drilled to the top of the Eagle Ford Shale (approximate depth of 20 feet below grade) and will be sampled continuously for lithologic purposes. Soil samples will be collected for laboratory analyses for arsenic, cadmium, lead and selenium from the 0 to 0.5 foot, 1 to 2 foot, and 4 to 5 foot depth intervals bgs, and analyzed as necessary to vertically delineate to RALs. In addition, as feasible, approximately eight samples will be collected from the deeper clays and potentially Eagle Ford Shale material in the three borings located north of the Class 2 Landfill and analyzed for selenium and sulfate to evaluate the naturally-occurring concentrations of these compounds in this material. As described in the groundwater monitoring plan for the Class 2 landfill, one of the borings located on the north side of the landfill will be converted to a monitoring well to be included in the groundwater monitoring network for the landfill. This well will be sampled as part of the revised APAR investigation.
2. Landfill Cap Surface Soil Samples: Surface soil samples will be collected from the existing landfill cap on the closed cells on an approximately 200-foot grid cell pattern. These samples will be collected of the existing cap material from the 0.0-0.5 and 0.5-1.0 foot depth intervals and will be analyzed for arsenic, cadmium, lead and selenium. In addition, a field inspection of the existing cap condition will be performed with particular attention paid to potential erosion features and/or desiccation cracks, if any. Cap construction documentation will also be reviewed to evaluate available information regarding the cap construction details (thickness, permeability testing, etc.).
3. Solar Evaporation Pond Evaluation: Multiple groundwater monitoring wells were installed

in the generally downgradient direction and near vicinity of the solar evaporation pond, including: (1) monitoring well MW-28, which was installed directly downgradient (southwest) of the solar evaporation pond and sampled as part of the Former Operating Plant (FOP) APAR ; and (2) monitoring wells VCP-MW-5 and VCP-MW-6, which were installed west (VCP-MW-6) and south (VCP-MW-5) of the solar evaporation pond as part of the APAR for the adjacent Undeveloped Buffer Properties (UBF). Arsenic, cadmium, lead, and selenium concentrations were all below the detection limit in the groundwater samples collected from all three of these monitoring wells (the VCP-MW-5 and VCP-MW-6 data will be added to the FOP APAR in response to this comment). As noted previously in the response to General Comment No. 4, Exide proposes to evaluate the Solar Evaporation Pond liner integrity through a combined approach consisting of: (1) a visual inspection of the condition of visible areas of the liner during the time of the APAR performance; (2) a review of any available Exide operational/maintenance information relevant to the liner performance; (3) a discussion with former Exide plant personnel regarding liner performance; (4) a review of groundwater monitoring data for downgradient monitoring wells; and (5) a detailed inspection of the liner condition at the time of pond closure after the pond contents have been removed. This approach and information will be described in the revised APAR. The pond will also be inspected for the presence of sediments within the pond. If sediments are observed, an attempt will be made to collect a sample of the pond sediments for total arsenic, cadmium, lead and selenium analyses.

20. **TCEQ Comment**: *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.*

Response: As discussed in Section 4.2.10, the western portion of the Bale Stabilization Area lies on top of the North Disposal Area (NDA). As such, no attempt was made to delineate the vertical extent of COC concentrations in surface soil samples in this area since it is known that COC-containing waste is located below these samples. As shown on Figure 4A, boring location 2012-BSA-3A is located within the boundary of the NDA. As such, vertical delineation of the extent of contamination below the surface sample at this location will be precluded by the presence of waste within the NDA, which is presumed to be present to the saturated zone.

With regard to other sample locations within the Bale Stabilization Area, three sample locations (2012-BSA-2, 2012-BSA-5, and 2013-BSA-7) are located outside of the NDA as shown on Figure 4A. Boring 2013-BSA-7 was sampled for soil pH only to address a TCEQ request for that information. As shown on Table 4D.1 and discussed in Section 4.2.10 of the APAR, vertical delineation to the RAL for lead and cadmium (meeting both Class 2 and Class 3 soil to groundwater criteria) was attained at 2012-BSA-2 in the 2-4 foot depth interval sample (Location 2012-BSA-2 was where the highest surface lead concentration was observed in the Bale Stabilization Area). Based on this assessment and subsequent discussions with the TCEQ, Exide believes that lead has been vertically defined in this area.

Regarding the comment on the lateral and vertical extent of fill material, the extent of the NDA (and SDA) was initially assessed during the 1993 Phase I RFI Addendum through the completion of extensive soil borings along the perimeter of the NDA (and SDA). Additional boring information

gathered during the SIR and APAR investigations were used to further evaluate and, in some instances, adjust the location of the boundaries of the disposal areas. On APAR Figure 1B, the 1993 Phase I RFI Addendum borings are designated as "NL" and "NB" for the NDA and "SL" and "SB" for the SDA. The "NL" and "SL" designations signify the initial borings completed during the investigation and the "NB" and "SB" designations signify subsequent borings completed to more precisely delineate the disposal areas (these designations do not signify the presence or absence of disposal area fill material). Lithologic descriptions of each of the borings were provided in tables included in the Phase I RFI Addendum. Copies of these tables were not included in the APAR, but as requested by the TCEQ and EPA, these tables and explanation will be provided in the revised APAR. Based on discussions with TCEQ staff, Exide understands that with the inclusion of this explanation and lithologic descriptions, further evaluation of the extent of fill material in the Bale Stabilization Area is not needed.

With regard to the missing borings noted in this comment, the boring logs for 2012-BSA-2, 2013-BSA-6 and 2013-BSA-7 were provided in Appendix 2 of the APAR (pages A2-28, A2-29 and A2-30, respectively).

21. **TCEQ Comment**: *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.*

Response: In response to this comment, Exide will install an additional monitoring well near the truck washing station between the flood wall and Stewart Creek. Subject to accessibility considerations, it is anticipated that this monitoring well will be located approximately 50 feet east of soil sample location SCC-3. The soil boring for this well will be sampled continuously for lithologic purposes. Soil samples will be collected for laboratory analyses for cadmium and lead from the 0 to 0.5 foot, 0.5 to 2 foot, and 2 to 4 foot depth intervals bgs, with analyses performed sequentially as needed to define the vertical extent of contamination. After development, a groundwater sample will be collected from this well for total and dissolved cadmium and lead concentrations.

With regard to additional soil samples, Exide proposes the following:

1. Administrative Building – Installation of 4 additional soil borings near the building perimeter: one boring south of existing location 2013-AD-1, approximately halfway between 2013-AD-1 and the building; one boring in the parking lot east of the building, approximately 50 feet east of the building; one boring south of the building, approximately halfway between existing location SCC-1 and the building; and one boring west of the building, approximately halfway between the building and the truck washing station. Soil boring locations may require adjustment based on accessibility constraints. Soil borings will be drilled to a depth of 4 feet and will be sampled continuously for lithologic purposes. Soil samples will be collected for laboratory analyses for cadmium and lead from the 0 to 0.5 foot, 0.5 to 2 foot, and 2 to 4 foot depth intervals below the ground surface, with analyses performed sequentially as needed to define the vertical extent of contamination at these locations.
2. Maintenance Building – Installation of 3 additional soil borings near the building perimeter: one boring on the south side of the building, approximately 50 feet from the building; one

boring on the east side of the building, approximately 50 feet from the building; and one boring on the north side of the building, approximately 50 feet from the building. Soil boring locations may require adjustment based on accessibility constraints. Soil borings will be drilled to a depth of 4 feet and will be sampled continuously for lithologic purposes. Consistent with the previously proposed analytical plan for maintenance building soil samples, soil samples will be collected from these borings for laboratory analyses for cadmium, lead and VOCs from the 0 to 0.5 foot, 0.5 to 2 foot, and 2 to 4 foot depth intervals below the ground surface, with analyses performed sequentially as needed to define the vertical extent of contamination at these locations.

22. **TCEQ Comment**: *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.

Response: In response to this comment, Exide will collect a groundwater sample from monitoring well B4R for analyses for total and dissolved lead concentrations. Surface soil samples will be collected from the existing South Disposal Area (SDA) cap on an approximately 100-foot grid cell pattern. These samples will be collected of the existing cap material from the 0.0-0.5 and 0.5-1.0 foot depth intervals and will be analyzed for cadmium and lead. Construction documentation and previous delineation boring data from the RFI will be reviewed to evaluate available information regarding the cap construction details (thickness, permeability testing, etc.). In addition, up to three soil borings will be completed through the cap to evaluate the thickness of the cap and to obtain cap soil samples for laboratory testing of the vertical hydraulic conductivity of the cap material. As documented in the July 5, 2013 South Disposal Area Cap Repair Report included as Attachment 2 to the APAR transmittal letter, field inspections of the cap condition were conducted by W&M in 2011 and 2013. Based on those inspections, repairs were made to discrete areas of the cap in 2013.

23. **TCEQ Comment**: *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).*

Response: In response to this comment, Exide will perform an inspection of the Crystallization Unit to identify areas where potential leaks could have occurred, such as beneath piping and valves. Based on this inspection, Exide will identify potential locations for soil sample collection, recognizing that areas directly below all locations may not be accessible. At the identified locations (or the nearest accessible area for inaccessible locations) soil borings will be drilled to a depth of 4 feet and will be sampled continuously for lithologic purposes. Soil samples will be collected for

laboratory analyses for cadmium and lead from the 0 to 0.5 foot, 0.5 to 2 foot, and 2 to 4 foot depth intervals below the ground surface, with analyses performed sequentially as needed to define the vertical extent of any impacts at these locations.

With regard to PCBs, Exide did not use PCBs as part of the secondary lead smelting process or associated operations (as indicated in the response to TCEQ Specific Comment No. 2). Exide will review information regarding the PCB-containing drums observed by the TCEQ inspector and any other information regarding potential management of PCB-containing materials in the Crystallization Unit area. The results of Exide's review will be included in the revised APAR. Based on the information provided by TCEQ and obtained by Exide, Exide proposes to complete one soil boring to approximately 4 feet bgs in the vicinity of the noted drums containing PCBs. Soil samples will be collected from 0-2 and 2-4 feet bgs and analyzed for lead, cadmium, and PCBs, as necessary, to investigate this area.

Regarding comments on sulfate concentrations in soil, it is noted that limited sulfate sampling was performed in the Crystallization Unit and Raw Material Storage Area as part of the 2012 SIR per the EPA-approved Work Plan for that work. Additional soil sampling for sulfate was performed in 2013 for the APAR. The cumulative sulfate soil results are provided in Table 4E of the APAR. As indicated therein, the sulfate concentrations for samples from the Crystallization Unit were highly variable ranging from 56.7 mg/kg to 8,710 mg/kg, with those concentrations not inconsistent with the other data for the Raw Material Storage Area where concentrations ranged from 1,030 mg/kg to 6,700 mg/kg. Thus it is unclear why this comment concludes that the levels of sulfate in soils surrounding the Crystallizer unit are much higher than in other areas. We believe the highly variable levels are consistent with data from other areas.

In any event, as noted in the response to Comment No. 10 above, elevated naturally occurring sulfate concentrations are common in clayey north Texas soils that are derived from weathering of the Eagle Ford Shale material. As noted in the response to that previous comment, the local presence of potentially elevated sulfate concentrations in Eagle Ford Formation-derived clays is recognized in the City of Frisco's Engineering Standards (City of Frisco, 1999), which include stabilization requirements for Eagle Ford clays with sulfate concentrations greater than 25,000 ppm sulfate, a concentration much higher than observed in samples from the Crystallization Unit. Although Exide believes the sulfate concentrations in these soils are naturally occurring, Exide will collect surface water samples from Stewart Creek for sulfate analyses as requested.

24. **TCEQ Comment:** *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.*

Response: As noted in the response to TCEQ Specific Comment No. 3, Exide will install two monitoring wells along the north bank of the North Tributary to serve as point of exposure wells for groundwater potentially discharging to the North Tributary. These wells may be co-located with the soil samples discussed in the response to TCEQ Specific Comment No. 3.

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

TCEQ Comment (continued): *In the South Woods, the lateral extent of soil contamination surrounding soil sample EC0-7 and EC0-7A needs to be evaluated to determine if lead contamination exists off-site in this area, and between EC0-3 and EC0-2 to further delineate the eastern boundary of this PCLE zone. It also appears that boring logs for EC0-1, EC0-2, EC0-4, EC0-5, and EC0-10 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 EC0-9 is indicative of the eastern boundary of the South Disposal Area.*

Response: Additional soil data collected from the adjacent parcel referred to as the J-Parcel will be included in the revised APAR to address the issue of off-site COCs in the vicinity of ECO-7, ECO-7A and potentially other samples in this vicinity where RAL exceedances (based on the exceedances of the soil to groundwater PCL for Class 2 groundwater for lead) were identified. If accessible, additional borings will be installed east of ECO-1 and ECO-2, and south and east of ECO-4 to further delineate the boundary of this PCLE zone (based on the exceedances of the soil to groundwater PCL for Class 2 groundwater for lead). Due to accessibility issues in this area, the boring will likely be completed using a hand auger, or similar hand held sampling device. The boring will be completed to 2 feet bgs and samples will be collected at 0-0.5 and 0.5-2 feet bgs and analyzed for lead and cadmium, as necessary, to delineate to RALs.

Boring logs are not available for the referenced "ECO" samples because these samples were surface or very shallow, near-surface samples. Borings were not completed at these locations.

The sand/fill zone in ECO-9 is not indicative of material from the South Disposal Area. No slag or battery case chips were observed at this location. The designation of the material in this boring as potential fill is based on the presence of fragmented and unconsolidated shale at 1-1.4 feet bgs and the presence of unconsolidated sand at 1.4-5.0 feet bgs, which is uncharacteristic of other borings in the area, such as ECO-6 and ECO-8, which both consisted entirely of clay from 0 to 5 feet bgs.

25. **TCEQ Comment**: *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.*

Response: As previously noted in the response to TCEQ Specific Comment No. 5, Exide will assume that the groundwater at the site is a Class 2 groundwater resource for purposes of the revised APAR submittal and, accordingly will re-evaluate previously collected groundwater data against applicable Class 2 groundwater PCLs.

TCEQ Comment (continued): *Please note that groundwater samples for total selenium in the vicinity of the Class 2 Landfill from monitoring well MW-9, measured at 0.491mg/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.*

Response: The groundwater monitoring plan for the Class 2 landfill, submitted to the TCEQ on July 31, 2013, proposes that quarterly groundwater samples from the landfill monitoring network will be analyzed for selenium.

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

TCEQ Comment (continued): *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.*

Response: The referenced potentiometric contour will be corrected in the revised APAR.

TCEQ Comment (continued): *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.*

Response: See response to Specific Comment No. 10. The revised APAR will include a discussion of sulfate concentrations in groundwater and potential sources of sulfate.

TCEQ Comment (continued): *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 10ft.*

Response: The objective of the monitoring well sampling program for the APAR investigation was to evaluate COCs in groundwater within the uppermost groundwater-bearing unit. As to not exclude any potentially contaminated saturated zones, monitoring wells were typically screened from the depth of saturation (observed during the installation of the well) to the top of the Eagle Ford Shale (i.e., the lower confining unit). The majority of screened intervals were 10 feet in length or shorter. All monitoring well screen lengths were 15 feet in length or shorter, except for MW-30, which was screened from 12 to 32 feet bgs. Groundwater sampling was performed using low-flow sampling techniques, which minimizes mixing of the water column within the well, and generally limits the effective sampling interval to the immediate vicinity of the sample intake depth.

TCEQ Comment (continued): *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.*

Response: The ground elevation was inadvertently used instead of the top of casing elevation to determine groundwater elevations at several monitoring wells in the APAR, including at wells LMW-5, LMW-8, LMW-9, and MW-30. The appropriate elevations will be used in the revised APAR, and the groundwater potentiometric surface maps will be adjusted accordingly. Draft versions of the updated maps have been prepared, and based on these maps, the general groundwater gradient direction is not significantly different from that presented in the APAR; however, the cone of depression as depicted in the APAR at LMW-5 is no longer apparent on the adjusted groundwater potentiometric surface maps.

TCEQ Comment (continued): *The Monitor Well Development and Purging Data provided in*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

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.

Response: Exide believes this comment may result from confusion regarding two different types of information provided in Appendix 3 of the APAR, which includes both groundwater *sampling* forms and monitoring well *development* forms (the groundwater *sampling* forms are provided on the first 55 pages of the appendix and the monitoring well *development* forms are provided thereafter, as shown by the form type designated in the title block of each form). As indicated on the well development forms, no wells were developed using a peristaltic pump (a peristaltic pump was used only for sampling). The monitoring wells installed during the SIR and APAR investigations were developed using a combination of surging and pumping with either a submersible pump, a Waterra surge and pump system, or bailers. Well development procedures included surging the well to release fine-grained sediment from the filter pack and well skin, and pumping or bailing the well to remove the fine-grained sediment from the water column. These well development procedures utilized during the SIR and APAR investigations were consistent with ASTM Guide D 5521.

The comment regarding specific conductivity and turbidity appear to be referring to the field measurements collected during groundwater sampling and not during well development. The well development forms provided in Appendix 3 of the APAR indicate that those parameters generally decreased (turbidity) or stabilized (specific conductivity) as development activities progressed, thus indicating effective well development. In the revised APAR, Appendix 3 will be updated with page numbers and a table of contents displaying the start pages for the groundwater sampling forms and wells development forms.

26. **TCEQ Comment:** *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.*

Response: Exide recognizes TCEQ's recent reclassification of Stewart Creek and the changes will be made accordingly. Subsequent to receipt of the October 8 APAR comment letter, Exide has been advised by TCEQ that the North Tributary retains the intermittent classification.

27. **TCEQ Comment:** *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.

Response: The PCLs summarized in Tables 7A and 7B will be revised accordingly per the change to Stewart Creek from intermittent to perennial status. As noted above, Exide understands that TCEQ has determined that the North Tributary will remain classified as an intermittent stream. Section 7 will be revised to include a discussion of the slag and battery case fragments indicated in Appendix 18. Figure 11A will be revised to include areas where slag and battery case fragments were noted in the W&M report. W&M did inspect the eastern portions of Stewart Creek as part of its site-wide (operating area) inspections earlier this year. The results of that inspection are part of the March 28, 2013 letter report included as Appendix 18 to the APAR. Also as described in Section 7 of the APAR, sediment samples were previously collected in this area during the SIR and APAR investigations.

There appears to be a misconception in the TCEQ's review of the historic sediment tables in Appendix 17 of the APAR. As presented in the *Notes* section at the bottom of Table A17-3A, shaded cells indicate sediment samples that are located in areas that have undergone remediation through dredging, and do not represent in-place sediment within the creek. As shown on sediment Tables A17-3A and A17-3B in this appendix, historical sediment samples from non-remediated areas of Stewart Creek had lead concentrations that were less than the contact recreation PCL presented in the APAR of 500 mg/kg.

In response to this and previous comments, Exide will perform the requested further investigation to evaluate the extent of COCs above applicable human health and ecological assessment levels in downstream Stewart Creek sediments. Please see the response to General Comment No. 2 for more information on the assessment of downstream sediments.

28. **TCEQ Comment:** *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.*

Response: See responses to the SLERA comments provided by the TCEQ ecological risk assessor, which are provided separately.

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

29. **TCEQ Comment:** *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.

Response: As noted in the response to Comment No. 11, the MSDS for lead acid batteries indicates that antimony is a minor battery component, only 0.4% by weight and far less than the lead component percentage (54 – 62% by weight). Antimony was screened out based on this significantly lower constituent percentage; however, in response to this comment, Exide will include antimony analyses in the analytical suite for a subset of soil samples (primarily those samples located near potential source areas) to be collected in response to TCEQ and EPA comments on this APAR.

The first statement in the second part of this comment warrants clarification for accuracy. First, as indicated in Table 4D.5, there were no detections of either benzidine or n-nitrosodimethylamine in any of the ten soil samples (most in the RMSB) for which they were analyzed. As described in Section 10 of the APAR, although all results for these compounds were non-detect, they could not be screened out from PCL development under the criterion that allows screening when all results are non-detect [30 TAC 350.71(k)(3)] because the sample quantitation limits (SQLs) for these two compounds are greater than their respective RALs. Thus, as described in Section 10.4, these compounds were screened in accordance with 30 TAC 350.71(k)(4), which requires that: (1) the COC is not known or is not reasonably anticipated to be associated with historical or current activities conducted at the on-site property; and (2) is not detected in any sample in the environmental medium. Exide notes the TCEQ comment that some battery cases were made out of rubber; however, it is unclear how that observation and TCEQ research indicating that benzidine or n-nitrosodimethylamine *could* have been used in dying and compounding rubber leads to the conclusion, required under 30 TAC 350.71(k)(4), that these compounds "are reasonably anticipated to be associated with historical or current activities conducted at the on-site property." While Exide historically recycled rubber cased, lead-acid batteries at the facility, Exide never dyed or compounded rubber at the facility. In Exide's considerable experience in the investigation of battery recycling sites, neither of these compounds has ever been identified as a COC.

30. **TCEQ Comment:** *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 Appendix7- Groundwater Classification, below.*

Response: Exide acknowledges this comment and will modify Section 11 and Appendix 9 as appropriate based on an assumed Class 2 groundwater classification. Exide also recognizes that a change in these PCLs will require the collection and analysis of additional soil samples to attain delineation to the revised RAL.

31. **TCEQ Comment**: *Appendix 7* ***Updated Groundwater Resource Classification.*** *The TCEQ's*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

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.

Response: Exide believes that aquifer test data and lithologic data from the site and surrounding area indicate that a large portion of the site, including the central and eastern portions of the former production area and the areas south of Stewart Creek, meets TRRP-8 criteria for saturated soils ($K < 1 \times 10^{-5}$ cm/s) and reserves the right to submit data and documentation to support such demonstration at a future date after submittal of the APAR. The extensive coverage of these saturated soils, the confining nature of the structural bowl in which the site lies, and the apparent limited hydrogeological extent of the more transmissive sand/gravel and clayey gravel zones in the northern and western portions of the site were key considerations in classifying the entire site as a Class 3 groundwater resource in the APAR. Although Exide believes that the uppermost groundwater-bearing unit is saturated soil or a Class 3 groundwater resource, Exide will assume groundwater as Class 2 in the revised APAR.

TCEQ Comment (continued): *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.

Response: The TCEQ's guidance regarding saturated thickness in TRRP-8 addresses the simple situation where a single hydrostratigraphic unit is being tested. TRRP-8 does not provide clear guidance on the situation present at the affected property where a well screens multiple hydrostratigraphic units with distinct hydraulic properties.

One of the underlying assumptions in aquifer test analyses is that the aquifer being tested is homogeneous and isotropic. At the Exide site, many of the wells are screened across distinct hydrostratigraphic units, including clays, clayey gravels, and gravels or sands. In these instances, it takes an experienced hydrogeologist and a thorough understanding of the site hydrogeology and test methodology to assign input parameters (i.e., aquifer thickness, saturated thickness, effective well screen length, etc.) that will most accurately reflect the true hydraulic conductivity and transmissivity of the aquifer being tested.

It is PBW's professional opinion and experience that if a slug test is done on a well screened across two hydrostratigraphic units with significantly different hydraulic properties, such as gravels and clays, the slug test is almost exclusively testing the more permeable unit (gravels), with little if any influence from the less permeable unit (clays). In these instances, it is more appropriate to set the aquifer unit thickness and saturated unit thickness equal to the more permeable unit, which is what PBW has done at this site. In instances where the tested well consisted of only one saturated unit (i.e., clay), PBW set the aquifer thickness and saturated thickness equal to the entire saturated thickness of the clay unit.

Table 1 in Appendix 7 of the APAR provides results of the aquifer tests performed at the site. As noted in Table 1, the hydraulic conductivity results for the monitoring wells screened in clay only were generally several orders of magnitude less than the hydraulic conductivity results for the monitoring wells screened across both clay and gravel/sand zones or clay and clayey gravel zones. Furthermore, the geometric mean of the hydraulic conductivity results for the monitoring wells screened only in the clay met the TRRP-8 criteria for saturated soils ($K < 1 \times 10^{-5}$ cm/s), while the geometric mean of the hydraulic conductivity results for the monitoring wells screened across both the clay and gravel/sand zones or the clay and clayey gravel zones were three to four orders of magnitude higher. These data indicate that the contribution of the clay zones to overall well recovery (during slug tests), and thus to the calculated hydraulic conductivity results, is small in comparison to the contribution of the sand/gravel and clayey gravel zones in monitoring wells screened across both the clay and sand/gravel zones or the clay and clayey gravel zones.

PBW's approach is consistent with the historic pumping test analyses done at LMW-17, where the aquifer thickness was set equal to the thickness of the gravels and did not include the thickness of the overlying saturated clays (see Attachment D of APAR Appendix 7). Including the saturated clay thickness in the transmissivity calculations would have overestimated aquifer yield.

As discussed in the response above, Exide will use an assumed Class 2 groundwater classification in the revised APAR.

TCEQ Comment (continued): *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 (0.1gpm) 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.

Response: As described in response to Comment 25, Appendix 3 of the APAR includes field groundwater sampling forms and monitoring well development forms. The groundwater sampling forms are provided on the first 55 pages of Appendix 3 and the monitoring well development forms are provided after that (the form type is designated in the title block of each form). Regarding the use of a peristaltic pump, it is assumed that the TCEQ is referring to the groundwater sampling forms in their comment above, as none of the monitoring well development forms indicate that a peristaltic pump was used for development purposes. As described in the monitoring well development records, the monitoring wells installed during the SIR and APAR investigations were developed using a combination of surging and pumping with either a submersible pump, a Waterra surge and

pump system, or bailers. Well development procedures included surging the well to release fine-grained sediment from the filter pack and well skin, and pumping the well to remove the fine-grained sediment from the water column. Well development procedures used during the SIR and APAR investigations were consistent with ASTM Guide D 5521.

As discussed in the response above, Exide will use an assumed Class 2 groundwater classification in the revised APAR.

32. **TCEQ Comment**: *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.

Response: Exide does not believe that a drinking water standard is appropriate for potential exposure to surface water in Stewart Creek. The TCEQ provides contact recreational exposure assumptions for exposure such as those encountered in Stewart Creek (ingestion of 50 mL per day for 39 days per year). Exide believes that such exposure is more appropriate here than the TCEQ drinking water PCL that assumes 800 mL of water ingestion per day for 350 days of the year (it should be noted that the lead drinking water standard was developed by EPA and EPA generally assumes an ingestion rate of 2 liters per day for drinking water exposure). However, based on this comment, Exide will use the drinking water standard for lead for the contact recreation PCL for surface water.

33. **TCEQ Comment**: *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)*

Response: Exide acknowledges this comment and will modify Appendix 9 as appropriate assuming a Class 2 groundwater classification. Exide also recognizes that a change in these PCLs will require the collection and analysis of additional soil samples to delineate to the revised RAL.

34. **TCEQ Comment**: *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.*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT APAR

Response: As noted in the French Drain Construction Report provided in Appendix 19, W&M inspected the French drain and flood wall on three occasions after the French drain construction was completed, and on all three occasions no evidence of recent seepage was observed and the drain and sumps appeared to be functioning as designed. The French Drain Construction Report will be revised to include information regarding those specific post-installation inspections, including available photographs. Information regarding those specific inspection dates and photographs from those inspections will be added. In addition, Exide will develop and implement a program to monitor the effectiveness of the French drain/flood wall and will include details of that program in Appendix 19 of the revised APAR.

ATTACHMENT 2

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT APAR

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

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

   Response: Although not part of the specified APAR format provided in TCEQ guidance, a list of acronyms/abbreviations will be added after the Executive Summary.

2. **EPA Comment**: *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.*

   Response: The reference noted in the comment should have been 350.51(d)(1) instead of 351.51(d)(1). Before finalizing the revised APAR submittal, the document will again be carefully reviewed for typographical errors and to confirm regulatory citations.

3. **EPA Comment**: *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.*

   Response: It is unclear what information presented in the APAR provides the basis for this comment; soil from the Lake Parcel was not used for constructing the clay liner in the Class 2 landfill. Recently, Exide was considering use of native clay soils from the Lake Parcel in the construction of the clay liner for the Class 2 landfill expansion, but ultimately secured clay material from another off-site source. As a result, no borrow pits were constructed in the Lake Parcel and thus no pit backfilling has been performed.

4. **EPA Comment**: *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.*

   Response: The transmittal letter for the revised APAR will include the date of signature and the title of the Exide official signing the transmittal. Vanessa Coleman, the Exide signatory to the letter, held the title of "Site Manager", which for Exide is equivalent to "Plant Manager" at a shutdown facility such as the Frisco former operating plant. Ms. Coleman has since left Exide. A duly authorized representative of Exide will be the signatory to the transmittal letter of the revised APAR.

5. **EPA Comment**: *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.*

   Response: The latitude and longitude presented on the APAR Cover Page will be updated in the revised APAR to correspond with the location of the FOP property.

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

6. **EPA Comment**: *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.*

   Response: The initial APAR submittal did not include the downstream portions of Stewart Creek but recognized the need to address downstream portions of Stewart Creek as well as the expectation that there would be additional stakeholders involved in this assessment process and the desirability of a collaborative assessment effort with those stakeholders. This includes consideration of existing downstream Stewart Creek sediment sample data collected by the City of Frisco in connection with its proposed development projects, a sampling effort which was ongoing at the time of the required submittal of the APAR.

   In response to this comment and comments from TCEQ, Exide will include assessment of downstream portions of Stewart Creek in the revised APAR submittal and will perform further investigation of downstream Stewart Creek sediments.

7. **EPA Comment**: *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.*

   Response: As noted in the response to Comment No. 6 above, an evaluation of downstream Stewart Creek sediments will be included as a component of the revised APAR instead of as part of separate assessment process with the additional stakeholders as previously anticipated.

8. **EPA Comment**: *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).*

   Response: Exide believes that the uppermost groundwater-bearing unit is saturated soil and/or a Class 3 groundwater resource. However, for purposes of the APAR work and the revised APAR submittal, Exide will assume a Class 2 groundwater classification for the GWBU at the FOP.

9. **EPA Comment**: *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.*

   Response: As noted in the response to TCEQ Specific Comment No. 8, the French drain system was installed as an interim remediation system. As such, a post-installation inspection/monitoring program was not contemplated in the EPA-approved November 2011 Sampling and Analysis Work Plan that proposed the French drain installation. As described in the French Drain Construction Report provided in Appendix 19 of the APAR, W&M inspected the French drain and flood wall on three occasions after the French drain construction was completed and on all three occasions no evidence of recent seepage was observed and the drain

and sumps appeared to be functioning as designed. The French Drain Construction Report will be revised to include information regarding those specific post-installation inspections, including available photographs. In addition, Exide will develop and implement a program to monitor the effectiveness of the French drain/flood wall and will include details of that program in Appendix 19 of the revised APAR.

10. **EPA Comment**: *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.*

    Response: As noted on Page xii, the specific response actions and thus the remedy standard to be used will be specified in the RAP as they are not yet known. However, it is anticipated that a Remedy Standard B approach will be implemented for the Site. This additional information will be added to the Executive Summary section of the revised APAR.

11. **EPA Comment**: *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).*

    Response: Exide will review the historical site documents listed in Table 1C of the APAR and prepare a summary table of the information contained in those documents that pertains to this comment. This new summary table will be added to Section 1 of the APAR. Fill material under the facility is not necessarily considered a potential source except where slag and/or battery case fragments were identified or where sample concentrations exceed the applicable critical PCL. A discussion of areas identified that contain fill with slag and/or battery case fragments or that exceed applicable PCLs will be added to Section 1.2 of the revised APAR.

12. **EPA Comment**: *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..."*

    Response: As requested, a narrative describing planned future operations will be added to the revised APAR.

13. **EPA Comment**: *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.*

    Response: The requested information will be added to the revised APAR.

14. **EPA Comment**: *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.

Response: Available information on the historic wastewater operations at the FOP will be added to the revised APAR.

15. **EPA Comment**: *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 operation ;and determine if more investigation is required.*

Response: Available information on the historic storm water control features will be added to the revised APAR.

16. **EPA Comment**: *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?*

Response: The sentence is referring to calculated linear velocities, and will be clarified accordingly in the revised APAR.

17. **EPA Comment**: *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.*

Response: Exide will include EP (Extraction Procedure) in the list of acronyms to be provided after the Executive Summary as indicated in the response to Comment No. 1. Additional discussion will be added to Section 1.2.3 explaining that the EP Toxicity procedure was the required procedure for leaching evaluation purposes at the time the work was performed (1986).

18. **EPA Comment**: *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.*

Response: Data from these tests were provided in Appendix 7 of the APAR. Exide believes based on consideration of this and other information presented in Appendix 7 that the uppermost groundwater-bearing unit is saturated soil and/or a Class 3 groundwater resource, However,

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

Exide is assuming Class 2 groundwater classification for purposes of the revised APAR.

19. **EPA Comment**: *Page 1-7. Section1.2.3 - 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?*

    Response: Descriptions/definitions of slag and lead buttons will be added to Section 1.2.3 of the revised APAR. These materials have the potential to be characteristic hazardous waste but such determination depends upon the time such material was placed (i.e., pre- or post-RCRA), whether, if the material was placed pre-RCRA, it will be excavated, and the results of TCLP testing. Untreated slag from secondary lead smelting generally but not always meets the criteria for classification as hazardous waste as determined via TCLP testing. This explanation will also be added to Section 1.2.3 of the revised APAR.

20. **EPA Comment**: *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.*

    Response: The referenced sentence will be updated in the revised APAR to indicate that Stewart Creek is not confined to the site boundaries.

21. **EPA Comment**: *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.*

    Response: The floodwall acts as both a retaining wall to contain surface runoff within the former production area and as a floodwall to protect against flooding from Stewart Creek. Clarification regarding this dual function of the floodwall will be added to Section 1.2.4.2 of the revised APAR.

22. **EPA Comment**: *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.*

    Response: COCs were laterally and vertically delineated on-site to the RAL in this area, but lead in soil was not vertically delineated to background concentrations. TRRP requires that

COCs be delineated to the higher of method quantitation limits (MQLs) or background concentrations if a representative groundwater sample is not collected to assess potential impacts to groundwater. Exide proposes to complete one additional boring to 10 feet bgs at 2013-CUFT-7 to vertically delineate lead and cadmium to the higher of MQLs or background in this area. The affected property at this location has already been vertically delineated to 2 feet bgs, so soil samples will be collected at 2-4, 4-6, 6-8, and 8-10 feet bgs, and analyzed for lead and cadmium, as necessary, to complete vertical delineation to the higher of MQLs or background. As noted in the response to TCEQ Specific Comment No. 4, Exide acknowledges that additional data are needed in this area to further delineate the affected property zone based on the Class 2 soil to groundwater PCL.

23. **EPA Comment**: *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.*

Response: The purpose of this section is to discuss the surface water hydrology in the area, with Stewart Creek and the North Tributary being the two surface water bodies present at the facility. The primary source of water in Stewart Creek appears to be urban runoff and storm water based on observations at the site and surrounding area. Upstream of the FOP a portion of Stewart Creek is a neighborhood fountain that effectively provides a near constant supply of water to the creek. Upstream of that fountain, the creek is often dry. We believe that the on-site portion of Stewart Creek would be expected to be dry on some occasions during the year if it were not for this feature. Anecdotal reports from long-time Exide employees indicate that historically the creek did go dry for periods of time. A study of biological communities within Stewart Creek in 1991 (Resource Consultants, 1991, Stream Investigation Stewart Creek, Collin County, Texas, February) concluded that at that time (prior to much of the current upstream urban development) the biological community upstream of the former City of Frisco's Stewart Creek Wastewater Treatment Plant "is representative of a stream with only limited periods of flow." A subsequent study by Resource Consultants in 1992 (Resource Consultants, 1992, Stream Investigation Stewart Creek, Collin County, Texas, December) concluded that at that time "Stewart Creek is an intermittent stream based on the structure of the biological community and the flow regime." The North Tributary is often dry, which suggests that discharge from the upper GWBU is not the likely primary source of water to this portion of the creek. It should be noted that upstream of the FOP, the North Tributary is dammed to form a pond in Oak Creek Park, and the source of this water appears to be from surface runoff from sprinkler systems, rainwater, and other landscaping features. As indicated in other TCEQ comments on the APAR, the TCEQ has reclassified Stewart Creek as a perennial stream. Subsequent to receipt of TCEQ's October 8 TCEQ APAR comment letter, Exide has been advised by TCEQ that the North Tributary retains the intermittent classification. The APAR and SLERA will be revised to reflect this information.

24. **EPA Comment**: *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.

Response: The disposal area boundaries demarcated on Figure 1B were primarily based on the Phase I RFI Addendum borings designated as "NL", "NB", "SL" and "SB", but were adjusted based on field observations made in SIR and APAR borings. The delineation of the disposal area boundaries was completed using lithological descriptions from the borings (e.g., the noted presence or absence of fill material on the boring logs). The source of the Phase I RFI Addendum boring information was referenced in the APAR, but copies of the pages with that information were not reproduced in the APAR. Copies of the relevant Phase I RFI Addendum pages will be provided in the revised APAR.

25. **EPA Comment**: *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 TCEO, and EPA representatives in a meeting on December 1, 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 274.51mg/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*

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

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 $K \leq 1x10^{-5}$, 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*

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

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.

Response: Exide believes that aquifer test data and lithologic data from the site and surrounding area indicate that a large portion of the site, including the central and eastern portions of the former production area and the areas south of Stewart Creek, meets TRRP-8 criteria for saturated soils ($K < 1 \times 10^{-5}$ cm/s). The extensive coverage of these saturated soils, the confining nature of the structural bowl in which the site lies, and the apparent limited hydrogeological extent of the more transmissive sand/gravel and clayey gravel zones in the northern and western portions of the site were key considerations in classifying the entire site as a Class 3 groundwater resource in the APAR. As previously noted, however, Exide will use an assumed Class 2 groundwater classification the revised APAR.

26. **EPA Comment**: *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).*

Response: In response to this comment, the following sentence will be inserted after the first sentence in the first paragraph of Section 2.6: "In addition, shallow fill soils present as base material below paved areas in the former production area, and infilled areas of former creek channels could have the potential to serve as pathways for COC migration to soil, groundwater and surface water and thus were identified as potential pathways for evaluation in this APAR."

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

Response: "NA" will be defined in Table 2C of the revised APAR.

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

28. **EPA Comment**: *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).*

    Response: A discussion of potential preferential pathways associated with buried utilities and infilled portions of the former paths of Stewart Creek and the North Tributary was provided in Section 3.2.5 of the APAR. This discussion will be expanded to include an evaluation of the potential for shallow fill material under the concrete structures/pavements to serve as a preferential conduit. As part of that evaluation, this discussion will include new data from soil borings and perched water zone monitoring wells requested by the TCEQ in their comments on the APAR. As noted in the response to TCEQ APAR-Specific Comment No. 12, additional documentation and details will be provided in the revised APAR regarding timing of the placement of fill material within the former production area.

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

    Response: Fill material was assessed using the same methods as those used for the assessment of native soils (i.e., visual classification). A statement will be added to the referenced section in the revised APAR to indicate that information within that section pertains to base/fill material as well as to native soils.

30. **EPA Comment**: *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 EC0-01(0-0.5), EC0-02(0-0.5), EC0-03(0-0.5) had lead concentrations 431mg/kg, 396 mg/kg and 1,740 mg/kg, respectively; yet the RAL Exceedance Zone line of 500 mg/kg is much closer to EC0-03(0-0.5) than EC0-01(0-0.5) and EC0-02(0-0.5). Please verify and amend the boundary of the Soil RAL Exceedance Zone with all analytical results from the soil sample locations.*

    Response: Although this comment refers to Figure 4-3, it is assumed that it is intended to refer to Figure 4A based on the figure title reference. Exide agrees that the RAL exceedance zone boundary in this part of the figure should be drawn further to the east, nearer to the ECO-1 and ECO-2 locations. This line will be adjusted as requested, recognizing that additional soil data collected in response to other comments, including the assumed classification of groundwater as Class 2, may also result in adjustments to the location of the RAL exceedance zone boundary. This change will also affect other figures, such as Figure 1B, that show the affected property boundary.

31. **EPA Comment**: *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.*

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

Response: The "?" symbol is defined in the *Notes* section located at the base of the cross section figures (see Note No. 9 on Figures 4C.2 and 11C). The cross sections provided in the APAR were developed using discrete data points (boring log data); thus, the depicted boundaries inherently contain spatial uncertainty. The "?" symbol was used in areas where we felt the uncertainty associated with the depicted location of particular boundaries warranted special attention. The other cross sections on this figure will be reviewed and "?" symbols added as appropriate.

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

Response: As previously noted, Exide will use an assumed Class 2 groundwater classification, in the revised APAR. Section 5.0 will be revised as necessary based on use of a Class 2 classification.

33. **EPA Comment**: *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.*

Response: The referenced potentiometric contours on APAR Figure 5A.1 (and Figure 5A.2) were not connected due to the absence of available water level data in that area on the date of measurement, particularly at monitoring well VCP-MW-8, which had not yet been installed. These potentiometric contour lines were connected on Figure 5A.3, which includes data from monitoring well VCP-MW-8.

The ground surface elevation was inadvertently used instead of the top of casing elevation to determine groundwater elevations in several monitoring wells in the APAR, including wells LMW-5, LMW-8, LMW-9, and MW-30. The appropriate elevations will be used in the revised APAR, and the groundwater potentiometric surface maps will be adjusted accordingly. Draft versions of the updated maps have been prepared, and based on these maps, the general groundwater gradient direction is not significantly different from that presented in the APAR. However, the cone of depression as depicted in the APAR at LMW-5 is no longer apparent on the corrected groundwater potentiometric surface maps.

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

Response: It is assumed that the reference to Comment No. 31 in this comment was intended to refer to Comment No. 33. With that assumption, the response to Comment No. 33 would also apply to this comment.

35. **EPA Comment**: *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.*

Response: The groundwater potentiometric contours on Figure 5A.3 will be corrected in the revised APAR.

RESPONSES TO EPA COMMENTS ON FORMER OPERATING PLANT (FOP) APAR

36. **EPA Comment**: *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.

    Response: The APAR used TCEQ's December 2012 classification of Stewart Creek for the basis of the evaluation. The revised APAR will reflect TCEQ's reclassification of Stewart Creek to a perennial stream as indicated in TCEQ comments on the APAR. Subsequent to receipt of TCEQ's October 8, 2013 APAR comment letter, Exide has been advised by TCEQ that the North Tributary will retain an intermittent classification. The APAR and SLERA will be revised accordingly based on this information.

37. **EPA Comment**: *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.*

    Response: Based on TCEQ comments and subsequent TCEQ input, Stewart Creek will be evaluated as a perennial freshwater stream and the North Tributary will be evaluated as an intermittent stream. Per TCEQ Specific Comment No. 9, chronic-aquatic life, benthic, contact recreation, and incidental fishery surface water PCLs will be used for Stewart Creek. Per TCEQ Specific Comment No. 32 the PCL to be used for lead for the contact recreation scenario will be the drinking water standard for (0.015 mg/L). The discussion of these PCLs will be added to Section 6 of the APAR.

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

    Response: No changes are anticipated to the sediment PCL due to the reclassification of the stream since Exide conservatively included the ecological-based sediment PCL in the APAR despite TCEQ's intermittent classification of Stewart Creek at that time. However, an assessment endpoint specific to the protection of the sediment benthic community will be added

to Section 3.3 of the SLERA.

39. **EPA Comment**: *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.*

Response:

(a) As discussed with the TCEQ, the most prevalent source of COCs in the areas of ecological habitat resulted from historical aerial deposition and, as such, using surface data to represent the soil horizon for ecological exposure is conservative and supported by the data in these areas. Exide will use existing and additional subsurface data collected in response to other comments to evaluate exposure to these for each ecological soil exposure area.

(b) Groundwater data from wells that represent the groundwater-to-surface water pathway will be evaluated in the SLERA using the chronic surface water criteria adjusted for segment hardness and the application of the TCEQ's default dilution factor. Monitoring wells have not been sampled quarterly. While four quarters of groundwater monitoring results will not be available before submittal of the revised APAR, all available data from these wells will be used in the SLERA.

(c) As noted previously, Exide will perform the requested further investigation to evaluate the extent of COCs above applicable human health and ecological assessment levels in downstream Stewart Creek sediments, including sediment hot spot areas. Data from this investigation will be included in the revised SLERA.

(d) The soil data set to be used for the SLERA will include all of the surface (0-6 inches) and subsurface (6 inches to 5 feet) soil COC detections in ecologically relevant areas. COC detections in soil that are greater than human health based soil PCLs will not be removed from the data set. Additionally, an evaluation substituting a value equal to the human health based soil PCL for those concentrations greater than the PCL may be completed and presented as an alternate assessment in the uncertainty section. If sediment hot spots are defined, an alternate assessment may be presented in the uncertainty section with the data from the hot spot removed. Note that battery case chip or slag samples will not be included in the SLERA as they do not meet the TCEQ definition for environmental media and are not believed to be bioavailable. As discussed above, additional surface water samples will be collected and compared to the chronic surface water criteria. Groundwater data collected from wells that are representative of the groundwater-to-surface water interface will be evaluated in the SLERA.

40. **EPA Comment**: *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.*

Response: Consistent with TRRP requirements and APAR instructions, Figure 11A was constructed using soil sample data to show areas where COC concentrations in soil samples

exceed their respective critical PCLs. It is Exide's understanding that the sample referred to in this comment (Floodwall Comp-01) was a composite sample of waste material (white crystalline substance) with entrained soil collected by EPA from multiple locations on the creek side of the floodwall near the floodwall. The specific locations where the subsamples used to construct this composite sample were collected was not previously provided to Exide but has been requested. It is also Exide's understanding that this sample was analyzed for TCLP concentrations, but was not analyzed for total COC concentrations that could be compared to their respective PCLs.

Notwithstanding the above information regarding the Floodwall Comp-01 sample, Exide recognizes the overarching request in this comment and TCEQ Specific Comment No. 12 that areas where waste has been observed should be included within the boundaries of the soil PCLE zone on Figure 11A and will make the requested revisions to this figure in the revised APAR.

With regard to the last part of this comment, the area on the creek side of the floodwall was included as part of the Stewart Creek corridor habitat area in the SLERA. As such, the potential impacts of COC concentrations in soils in this area to ecological receptors will be evaluated in the SLERA (as revised based on TCEQ comments).

ATTACHMENT 3

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT SLERA

October 29, 2013

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT SLERA

General Screening Level Ecological Risk Assessment (SLERA) Comments

1. **TCEQ SLERA Comment:** *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.*

   Response: Exide recognizes that the TCEQ has reclassified Stewart Creek as a perennial stream but has been advised by TCEQ that the North Tributary retains the intermittent classification. Additional field work necessitated by TCEQ's reassessment and reclassification of Stewart Creek will be conducted and the SLERA and APAR will be revised to reflect this reclassification and additional field work. As a result of the change in classification, the evaluation of Stewart Creek surface water data will be revised to include comparison to chronic surface water criteria, adjusted for hardness (with the North Tributary remaining an intermittent stream, North Tributary data will continue to be evaluated relative to acute surface water criteria).

   For groundwater discharging to Stewart Creek, the dilution factor of 0.15 will be applied to detected concentrations in groundwater sampled from monitoring wells representing the groundwater-to-surface water interface per TRRP-24 (Determining PCLs for Surface Water and Sediment, December 2007). Appropriate justification for the use of the 0.15 dilution factor, consistent with TRRP-24 guidance, will be provided in the revised APAR.

   Surface water samples taken in 2012 and 2013 showed that concentrations of cadmium and lead were below the detection limit in all 10 samples from the North Tributary and in 11 out of the 13 samples from Stewart Creek. These samples were analyzed using EPA method 6010B, which is the appropriate method when using acute surface water criteria. However, the EPA method 6010B detection limits are greater than the chronic surface water criteria. Exide will collect three additional Stewart Creek surface water samples from locations on-site to verify the previous non-detect results and analyze these samples using EPA method 6020, which is the appropriate method when using chronic surface water criteria. The North Tributary, which remains an intermittent stream, will not be resampled. An additional ten samples will be taken upstream of the affected property to investigate potential urban contribution of COCs into Stewart Creek. [These samples will be analyzed using EPA method 6020.] Benthic PCLs will be applied to the SLERA as was done in the previous SLERA; however, an assessment endpoint specific to the protection of the benthic invertebrate community will be added to Section 3.3 and benthic PCLs for cadmium and lead will be added to Table 2.

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT SLERA

2. **TCEQ SLERA Comment:** *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.*

Response: As indicated in the draft APAR, Exide anticipated that this assessment would be undertaken separately in collaboration with other activities for the downstream area. As discussed below, Exide will instead complete the downstream assessment as part of the revised APAR. Accordingly, in response to this comment, Exide will perform the requested further investigation to evaluate the extent of COCs above applicable human health and ecological assessment levels in downstream Stewart Creek sediments. This investigation will include sediment data collected as part of studies of downstream areas, such as sediment data from the APAR for the Former Stewart Creek Wastewater Treatment Plant (FSCWWTP) and data collected by the City of Frisco consultants in 2011 and 2013 as well as evaluations of additional areas and potential additional sampling. The available existing reports or other documentation containing these data will be included as appendices in the revised APAR. Arsenic, cadmium and lead concentrations in the ten most downstream sediment samples collected from the City of Frisco studies (samples SC-SED-31 through SC-SED-40 collected by Southwest Geosciences (SWG) in June of 2013 and provided to Exide in August 2013 after submittal of the APAR) were all below the respective critical sediment PCLs for those compounds.

In its May 14, 2013 Interim Report – Visual Survey of Stewart Creek, SWG identified four observations of possible slag material downstream of these sample locations, but did not collect samples from these areas on USACE-owned property south of 4th Army Memorial Road. Exide understands that SWG was not able to secure the access required to collect samples from this area. Exide will attempt to obtain access to this area and once access is obtained, will evaluate this area for the possible presence of slag material and will collect sediment samples from this area if slag is found in this area.

Another stretch of Stewart Creek not sampled by SWG previously is downstream of Legacy Drive and upstream of SWG's SC-SED 43 2013 sampling location. Exide will attempt to obtain access to a reach of Stewart Creek downstream of Legacy Drive that to our knowledge has not been accessible to the City of Frisco for sediment sample collection. Once access to this area is obtained, collection of additional sediment samples will be performed within this reach.

Exide will survey the downstream creek area to further evaluate previous sample locations, assess areas for potential sediment deposition, and select appropriate additional sample locations based on that information. Possible sampling locations may also be adjusted based on the findings and implementation of the downstream battery case fragments investigation and recovery plan to be performed in response to TCEQ APAR General Comment No. 3. As feasible within the overarching

project schedule, Exide will review proposed sediment sample locations with TCEQ staff prior to sample collection.

In addition to collection of downstream sediment samples, Exide proposes to collect surface water samples from downstream areas. These surface water samples will be co-located with sediment samples at approximately 10% of the new sediment sampling locations. In addition, three independent surface water samples will be collected immediately downstream of the Former Operating Plant (FOP) as discussed in the response to TCEQ SLERA Comment 1. Exide will also seek access agreements with land owners for the evaluation of habitat as described in TCEQ SLERA specific Comment No. 6 below.

Exide will sample sediments from ten location upstream of the affected property to evaluate urban contributions of COCs to Stewart Creek.

3. **TCEQ SLERA Comment:** *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 receptors will continue to be exposed to lead concentrations at these locations so there is no reason to remove them from the dataset. Also, this SLERA does not develop lead ecological PCLs for soil, so there is no identified concentration below 1600 mg/kg to target in order to protect ecological receptors. It is recommended that the current level of ecological exposure be assessed by inputting the actual lead concentrations at these locations into the dataset, recalculating the exposure point concentrations, and rerunning the exposure calculations. As an additional exposure evaluation, inputting a value of 1600 mg/kg for each of these previously omitted locations could be explored, as long as an adequate rationale was provided; however, as discussed below, a hot spot evaluation for small-ranging receptors may still be needed. This comment also applies to the elevated concentration of cadmium identified near sample location SCC-11.*

   Response: The soil data set to be used for the SLERA will include all of the surface (0-6 inches) and subsurface (6 inches to 5 feet) soil COC detections in ecologically relevant areas. COC detections that are greater than human health based soil PCL will be included in the data set. Additionally, an evaluation substituting a value equal to the human health based soil PCL for those concentrations greater than the PCL may be completed and presented as an additional, alternate assessment in the uncertainty section. If hot spots are defined, an additional, alternate assessment may be presented with the data from the hot spot removed. Note that battery case fragments and/or slag samples will not be included in the SLERA as environmentally bioavailable media as they do not meet the TCEQ definition of environmentally bioavailable media.

4. **TCEQ SLERA Comment:** *Given that the lead (and cadmium) concentrations are elevated in some soil locations and that small-ranging receptors (e.g., robins and shrews) are likely present, it is recommended that a hot spot evaluation be*

considered. Although no TCEQ guidance is currently available on how best to conduct one, any hot spot evaluation should begin with a presentation of the COC concentrations on a map. Visualization of sample locations exhibiting elevated concentrations of COCs can be helpful in determining if these data points are spatially discrete and distinct from surrounding areas, or if the elevated concentrations are grouped together. In addition, the hot spot analysis should be presented in the uncertainty analysis. If it is determined that a hot spot evaluation is not warranted, a short justification or rationale should be presented. TCEQ will evaluate the adequacy of the hot spot analysis (or the justification for not performing a hot spot analysis) and comment as necessary if more detail or clarification is needed. TCEQ will also evaluate the conclusions of the hot spot analysis and the associated risk management recommendation, as appropriate.

Response: A hot spot analysis will be performed to identify hot spots and hot spot evaluation(s) for small-ranging receptors will be added to the SLERA if hot spots are identified. The analysis undertaken will be described in the SLERA.

5. **TCEQ SLERA Comment**: *As acknowledged in this SLERA, the Timber/Canebrake rattlesnake could potentially occur at the site. Currently, there is insufficient information provided to negate risk to this receptor. The SLERA states that risks would be minimal based on the assessment of birds and mammals. However, as a protected species, only the no observed adverse effect level (NOAEL) evaluation would be considered, and NOAEL-based risk was identified for the raccoon and fox. When protected species of reptiles are assumed to be present, but have little or no toxicity data, a toxicity reference value (TRV) for a bird with a similar diet can be used in combination with reptile life history information (e.g., body weight, food ingestion rate) to calculate a dose and a hazard quotient. Although an across-class extrapolation is not normally encouraged, it is preferable to having just a discussion of uncertainty when a protected species may occur at a site. Exposure factors for the reptiles should be documented and justified. When this approach is implemented, it is recommended that an uncertainty factor of 10 be used for the across-class extrapolation. All uncertainties associated with these assumptions should be discussed.*

   Response: A quantitative evaluation of exposure via ingestion of surface soils to snakes will be added to the SLERA; however, because of the significant uncertainties associated with this evaluation, eco-based PCLs will not be developed based on this receptor.

6. **TCEQ SLERA Comment**: *Since the assessment of Stewart Creek will continue downstream, the possibility exists that sediment may accumulate in locations that could support mollusks 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.*

Response: A site-specific habitat evaluation will be conducted on Stewart Creek to assess and address the potential that special status species (state or federal) may or may not be present. The formal report will be provided as an appendix to the SLERA and the findings summarized in the SLERA text. This scope of this evaluation will be dependent on obtaining access to the survey area.

7. **TCEQ SLERA Comment**: *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.*

   Response: The terrestrial areas will be combined in the revised SLERA into one exposure unit to evaluate wide-ranging receptors.

8. **TCEQ SLERA Comment**: *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.*

   Response: Comment noted.

9. **TCEQ SLERA Comment**: *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.*

   Response: Comment noted.

Specific TCEQ Comments on the SLERA

1. **TCEQ SLERA Comment**: *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.*

   Response: The Site history as it pertains to wastewater will be clarified.

2. **TCEQ SLERA Comment**: *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.*

Response: The definition of surface and subsurface soil will be amended. The source release is believed to be aerial deposition and therefore the surface soil data provides a conservative estimate of exposure; however, to address the subsurface soil as an exposure medium, the armadillo will be added as a receptor in the SLERA. Data from the 0-6 inch will be used to evaluate the food web exposure and an average between surface and subsurface will be used to assess the armadillo's incidental ingestion. Exide will use existing subsurface soil data and will augment this data set with additional samples for each ecological soil exposure area.

3. **TCEQ SLERA Comment:** *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.*

   Response: Based on TCEQ's recent reclassification, Stewart Creek will be evaluated as perennial and chronic surface water criteria will be applied. The chronic surface water benchmarks adjusted using hardness of 106 mg/L from Lake Lewisville Segment 0823 are: 0.256 µg/L for cadmium and 2.68 µg/L for lead. Note that the North Tributary will continue to be evaluated as intermittent and there will be limited re-sampling on site in Stewart Creek to verify the previous analyses performed using EPA Method 6010B.

4. **TCEQ SLERA Comment:** *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.*

   Response: An assessment endpoint specific to the protection of the benthic invertebrate community will be added to Section 3.3. Benthic PCLs for cadmium and lead will be added to Table 2.

5. **TCEQ SLERA Comment:** *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 of the discharge on federally-listed, aquatic-dependent species and not to the potential occurrence of these species. Additionally, this does not address State-listed species.*

   Response: Clarification based on this comment will be added to Section 3.3 of the SLERA.

6. **TCEQ SLERA Comment:** *P.18, **4.1 Cadmium, 1st paragraph**: The avian lowest observed adverse effect level (LOAEL) TRV used here (6.35 mg/kg-day) is higher than the one used in the SLERA for the Former Stewart Creek Wastewater Treatment Plant (5.63 mg/kg-day). All other NOAEL and LOAEL TRVs for cadmium and lead are the same for these two SLERAs. Either the lower LOAEL should be used or this SLERA should provide a justification for not doing so.*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT SLERA

Response: The avian LOAEL TRV for cadmium of 5.63 mg/kg-day used in the SLERA for the Former Stewart Creek Wastewater Treatment Plant was based on a single study with a growth endpoint and was chosen to establish a level to be within 5 times the avian NOAEL TRV. The LOAEL TRV for cadmium of 6.35 mg/kg-day in the SLERA for the Former Operating Plant was the geometric mean of all of the growth and reproduction LOAELs listed in EPA's Eco Soil Screening Level 2005 document. The derivation of the 6.35 mg/kg-day LOAEL is consistent with the EPA's derivation of the avian NOAEL of 1.47 mg/kg-day based on the geometric mean of the growth and reproduction NOAEL values.

7. **TCEQ SLERA Comment:** *P. 21, **5.1.2 Potential Risks to Benthic Invertebrates in Sediment**: The reference to the second effects level should be removed.*

   Response: Based on discussions with TCEQ staff on October 16, 2013, Exide understands that this comment has been withdrawn by TCEQ and no changes to address this comment will be required.

8. **TCEQ SLERA Comment**: *P. 22, **5.1.3 Potential Risks to Aquatic Life Organisms in Surface Water**, first full sentence: Based on these SLERA comments, this sentence may need to be modified. In addition, the remainder of this paragraph pertains to sediment and should be removed.*

   Response: The section will be updated to reflect the change in classification for Stewart Creek. However, using the chronic surface water criteria adjusted for hardness, all measured concentrations of dissolved cadmium and lead in Stewart Creek (three detected out of 13 samples for cadmium and 2 detected out of 13 samples for lead) and all detection limits exceed the chronic surface water criteria for both compounds. For the North Tributary all of the detection limits for cadmium and lead are below the acute surface water criteria adjusted for hardness and neither COC was measured at a concentration greater than the acute surface water criteria.

   Text beginning with "Other previous studies…" will be removed from this text section as described in the comment.

9. **TCEQ SLERA Comment**: *P. 22, **5.1.4 Potential Risks to Upper Trophic Level Receptors**: Some of the preceding comments will affect the inputs of the calculated risks such that it is not possible to concur with the conclusions here.*

   Response: Comment noted.

10. **TCEQ SLERA Comment**: *Table 2: The benthic sediment PCLs for cadmium and lead should be used in lieu of or in addition to the initial effects levels.*

    Response: The benthic sediment PCL will be added to Table 2.

11. **TCEQ SLERA Comment**: *Tables 3-5: The acute risk based exposure limits (RBELs) for cadmium and lead will need to be replaced with the chronic RBELs.*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT SLERA

Response: Chronic RBELs will replace acute RBELs for Stewart Creek, but acute RBELs will be retained for the North Tributary. The chronic surface water benchmarks adjusted using hardness of 106 mg/L from Lake Lewisville Segment 0823 are: 0.256 µg/L for cadmium and 2.68 µg/L for lead.

12. **TCEQ SLERA Comment**: *Table 4: In addition to using the chronic RBELs, the SWGW PCL should incorporate an approved dilution factor.*

    Response: For Stewart Creek, the ^{SW}GW PCL will incorporate a dilution factor of 0.15. Appropriate justification for use of this dilution factor, consistent with TRRP-24 guidance, will be provided in the revised APAR.

13. **TCEQ SLERA Comment**: *Figure 9. Reptiles and amphibians are likely present at this site and should be reflected in the conceptual site model. In addition, risk to these receptors should be qualitatively evaluated in the SLERA. The risk to reptiles could be tied to the evaluation of the Timber/Canebrake rattlesnake discussed previously and the risk to amphibians could be related to the evaluation of site surface water quality.*

    Response: Reptiles and amphibians will be represented on the conceptual site model included in the revised SLERA. Risk to reptiles will be addressed by an evaluation of the snake as a receptor and text will be added that addresses potential risk to amphibians using the site surface water quality assessment.

14. **TCEQ SLERA Comment**: *Table E-2: The fraction of arthropods in the diet of the robin exceeds 1 and should be corrected.*

    Response: The fraction of arthropods in the diet of the robin will be corrected: Arthropods = 0.46, Plants, Seeds, Vegetation = 0.08 and Earthworms = 0.46. The sum of these components equals 1.

15. **TCEQ SLERA Comment**: *Table E-5: The food ingestion rates for the hawk and robin and the soil ingestion rate for the robin are not plausible. All associated exposure calculations should be reevaluated and adjusted accordingly.*

    Response: The food ingestion rates for the hawk and robin and the soil ingestion rate for the robin will be corrected: Food Ingestion Rate for the red-tailed hawk = 4.5E-04 kg/day and for the American robin = 4.9E-05 kg/day, Soil Ingestion Rate for American robin = 2.52E-06. Risks will be revised based on these exposure parameters.

16. **TCEQ SLERA Comment**: *Tables E-5, E-11, and E-17: The TCEQ ERA Program has researched the home range of the robin and has determined that a value of 0.45 ha (1.12 acre) is appropriate. This value is consistent with the 0.12-0.84 ha range listed in U.S. EPA (1993) and is supported by more recent data (e.g., Dellinger et al., 2007). Older studies that reference a radius in distance or excursions from the nesting area rather than an actual home range are not considered defensible. All associated exposure calculations should be reevaluated and adjusted accordingly.*

RESPONSES TO TCEQ COMMENTS ON FORMER OPERATING PLANT SLERA

Response: The home range of the robin will be adjusted to 1.12 acres and associated exposure estimates will be revised accordingly.

ATTACHMENT 4

ANTICIPATED APAR REVISION SCHEDULE

October 29, 2013

Anticipated APAR Revision Schedule

Attached is the proposed schedule for submittal of the revised APAR, assuming that the only field work required will be the field work and other activities specified in Exide's response to TCEQ and EPA comments. As indicated, Exide estimates that 180 days will be required to implement this specific scope of work. As indicated, this scope of work only includes one additional investigation phase each for sediment, soil, and groundwater.

Based on project expectations, project results to date, and professional judgment, Exide believes that additional phases of investigation for one or more environmental media ultimately are likely to be necessary to meet TCEQ and EPA requirements for the APAR. Exide estimates the duration for additional phases for each of the media as follows: soil – 63 days; sediment/surface water – 45 days; groundwater – 63 days.

Exide will provide TCEQ monthly progress reports on the status of Exide's activities associated with the revised APAR. Exide will identify any schedule issues based on the need for additional phases of sampling, issues obtaining access to third party properties, and other events that may warrant additional time to complete the revised APAR.