b. Sample and requested analyses data are input into EPIC.

c. All samples received are logged into EPIC within one working day of receipt. Sample log in may be delayed due to client clarification of analysis needed, corrective actions for sample receipt non-conformance, or other unusual circumstances.

1. In accordance with NELAC and other analytical guidance documents, all samples will be assigned a unique ID code that is unequivocally linked to the field ID code.

d. Sample containers are labeled with the corresponding sample number.

7.5 WHEN SAMPLES ARE RECEIVED WITH NO DOCUMENTATION

7.5.1. If delivered by a client: Client is asked if previous arrangements were made for analysis (and with whom). The client completes a chain of custody and/or request for analysis, relinquishes samples to sample management personnel, and is given a copy of the COC.

7.5.2. If received by courier or shipping, the following steps are taken:

1. Client Services manager is consulted to determine the designated Pace Analytical project manager.
2. Information is requested from the Pace Analytical project manager.

7.5.3. If analysis information cannot be determined on the day of sample receipt, sample data entry personnel proceed to assign sample numbers and put samples on hold. Follow-up with project manager occurs until the analyses are determined and samples can be properly logged in.

Any additional specific procedures are documented in Sample Receiving SOP for each laboratory.

7.6 RESPONSIBILITIES FOR SAMPLE LOG IN

7.6.1. Sample Management Responsibilities

- Has the primary responsibility of ensuring that sample information is input into EPIC as described in the SOP. This information must be supplied by the project manager.

- Has the responsibility to make recommendations to the QAO for revising the SOP related to sample receipt.

7.7 SAMPLE STORAGE/STAGING

7.7.1. General Procedures

Samples are processed into the system immediately upon receipt for staging to prevent sample degradation.

7.7.2. Refrigerated Area Maintenance

All refrigerated areas are maintained at 4°C (+/- 2°C) The temperature is monitored and recorded each work day (certain programs may require more frequent monitoring). If the temperature fails outside the limits of 2°- 6°C, corrective action is taken as follows and appropriately documented.

1. Temperature is rechecked after an hour to verify temperature exceedance.
2. QAO and laboratory management are notified if the problem persists.
3. Every effort is made to relocate samples to a proper environment if temperature cannot be maintained after corrective actions are implemented.
4. Affected clients are notified.

7.7.3. Specific Procedures

1. <u>Volatiles</u>

   Samples for volatiles analysis are kept in designated volatile organic refrigerated areas. Where practical, soils and waters are segregated.

2. <u>Semi-Volatiles</u>

   Samples within a project are stored in a logical order such that specific samples may be readily retrieved.

3. <u>Hazardous Materials</u>

   Pure product or potentially heavily contaminated samples are tagged as "hazardous" or "lab pack" and stored separate from other samples.

4. <u>Foreign Soils</u>

   Foreign soils are soils which originate outside the United States, soils from U.S. territories are deemed foreign, or come from a quarantined area within the United States. Depending on the soil disposal practices of the laboratory, foreign soils may need to be stored separately since

the USDA requires these samples to be autoclaved or incinerated prior to disposal.

7.7.4. Responsibilities for Sample Storage/Staging

1. Sample management personnel are responsible for all samples upon receipt.

2. Sample management personnel or individual laboratory area personnel have the responsibility of daily sample storage area maintenance, disposal of old samples, managing holding blanks and providing space for incoming samples in routine storage areas.

3. Assigned individuals, including backup, are responsible for maintaining and documenting: (a) refrigerated storage area temperatures, and (b) corrective actions.

7.8 SAMPLE/DATA ACCESS AND INTERNAL CHAIN-OF-CUSTODY

7.8.1. General Policies and Procedures

Pace Analytical has implemented standard operating procedures to assure the integrity of samples and data so that they are not degraded or available to unauthorized personnel. In order to ensure that this policy is maintained, the laboratory facilities are operated under controlled access. Only employees are allowed into the laboratory facilities. Visitors must register at the front desk and be properly escorted.

Samples are removed from their proper location by designated personnel and returned to a storage area, if necessary, immediately after the required sample quantity has been taken. This procedure minimizes unnecessary time spent searching for samples and helps prevent matrix degradation from prolonged exposure to room temperature. After the final report is sent and clients are allowed adequate time to review the results, the samples are properly discarded or returned to the client.

Upon client request, additional and more rigorous chain-of-custody protocols for samples and data can be implemented. For example, for projects for which the "secure area" designation is not sufficient, analysts and technicians follow strict internal chain-of-custody procedures to further ensure the security of samples. All samples are signed out in a sample custody log book when they are removed for analysis. The sample ID, date, time, analyst, and lab of analysis is recorded in the sample custody log (Figure 7.4) or equivalent. Samples are signed back in noting date, time, and storage location, upon return.

7.9 SUBCONTRACTING ANALYTICAL SERVICES

Every effort is made to perform chemical analyses for Pace Analytical clients within a company laboratory.

When subcontracting to an external laboratory becomes necessary, a preliminary verbal communication with an appropriate laboratory is undertaken. Work performed under specific protocols may involve special consideration. The contact and preliminary arrangements and terms of agreement are made between the Pace Analytical Project Manager and the appropriate subcontract laboratory personnel (i.e., Laboratory Manager, customer services contact, or the appropriate laboratory section manager). The specific terms of the subcontract laboratory agreement includes the requirement for provision of the following (when applicable):

- Method (EPA or otherwise) of analysis
- Number and type of samples expected
- Project specific QA/QC requirements
- Deliverables required
- Laboratory certification requirement
- Price per analysis
- Turn around time requirements

Chain-of-Custody forms are generated for samples which require subcontracting to other laboratories. The sample management personnel repackage the samples for shipment, create a transfer chain-of-custody form and record the following information:

- Pace Analytical Laboratory Number
- Matrix
- Requested analysis
- Special instructions (quick turn around, required detection or reporting limits, unusual information known about the samples or analytical procedure).
- Signature in "Relinquished By"

All subcontracted sample data reports are sent to the Pace Analytical Project Manager Any Pace Analytical work sent to other labs within the Pace Analytical network is handled as subcontracted work.

7.10 SAMPLE DISPOSAL

Samples not consumed during the analyses are returned to the client or disposed of by Pace Analytical's licensed contractor.

After completion of sample analysis and submission of the analytical report, unused portions of samples are retained by the laboratory for a minimum of 30 days unless otherwise stated by the project contract or client request. After this period expires, samples will be disposed according to the nature of the samples.

<u>For In-House Sample Disposal</u>

All preserved water -Non-hazardous-Neutralize/sewer

Unpreserved water-Non-hazardous/sewer

Soil/Sludge-Non-hazardous-Refuse Disposal

All VOA's-Non-hazardous-Neutralize/sewer

Samples Extracts/Digestates-Non-hazardous--Neutralize/sewer

7.10.1 Hazardous Material/Waste Sample Disposition Option

The preferred method for disposition of hazardous samples is to return the excess sample to the client. It may not be feasible to return samples in all cases or the client may require Pace Analytical to dispose of excess samples. Pace Analytical will dispose of excess samples when required and may charge a disposal fee to recover costs for management and disposal.

7.11 LOCATION SPECIFIC SOPS FOR SAMPLE CUSTODY

Information included in this document is intended to provide a general description of procedures followed by all Pace Analytical laboratories. SOPs are in place at each Pace Analytical laboratory which provide specific information for that facility regarding sample custody.

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

538493

Page: of

Section A — Required Client Information

Company:
Address:
Phone: Fax:

Section B — Required Client Information

Report To:
Invoice To:
P.O.:
Project Name:
Project Number:

Client Information (Check quote/contract):
Requested Due Date: TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.
Turn Around Time (TAT) in calendar days.

Section C — To Be Completed by Pace Analytical and Client

Owner Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

Section D — Required Client Information

Valid Matrix Codes:

MATRIX	CODE
WATER	WT
SOIL	SL
OIL	OL
WIPE	WP
AIR	AIR
TISSUE	TS
OTHER	OT

ITEM #	SAMPLE ID (One character per box. (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE)	MATRIX CODE	DATE COLLECTED (mm / dd / yy)	TIME COLLECTED (hh:mm a/p)	# Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Remarks / Lab ID
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Sample Condition		Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:									
Received on ICE:	Y / N								
Sealed Cooler:	Y / N								
Samples Intact:	Y / N								

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed: (MM / DD / YY)

SEE REVERSE SIDE FOR INSTRUCTIONS

Pace Analytical Services, Inc. Form COC01 02/00

Example
Figure 7.1
Pace Analytical Services, Inc. CHAIN-OF-CUSTODY FORM

FIGURE 7.2
SAMPLE I.D. AND CONDITION FORM
(Format and content may vary by location)

Client:_____
Project No.:_____
Date Received:_____

SAMPLE CONDITION UPON RECEIPT CHECKLIST

Complete checklist (A) during sample receipt. If any items are marked "NO," complete section (B) of this form. Otherwise, go to record samples.

			YES	NO
(A)	1.	Are there custody seals or tapes on the shipping container?	___	___
	2.	Are custody seals on the shipping container intact?	___	___
	3.	Is there a completed Chain-Of-Custody (C-O-C)?	___	___
	4.	Do the numbers of samples received and the sample matrices agree with C-O-C?	___	___
	5.	Are there tags attached to each sample?	___	___
	6.	Are sample tags, sample containers and C-O-C all in agreement?	___	___
	7.	Is the C-O-C complete with requested analyses?	___	___
	8.	Are the samples preserved correctly?	___	___
	9.	Is there enough sample to do all analyses?	___	___
	10.	Do the samples have the proper temperature?	___	___
	11.	Are the sample containers intact (e.g., not broken, leaking)?	___	___
	12.	Are VOA vials head-space free?	___	___
	13.	Are all samples within the holding times for requested analyses?	___	___
	14.	Is pH recorded for non-VOA's?	___	___

(B) Explain "NO" item here:_____
_____
_____

Send a copy of this form to Project Manager with Discrepancy Report Form. Copy of both forms remain in the QC file.

Custodian Signature: _____

FIGURE 7.3

Pace Analytical Services, Inc.
DISCREPANCY REPORT FORM
(Format and content may vary by location)

Urgency Level: 1(___) Requires immediate attention
2(___) Requires attention today
3(___) Requires attention this week

Initiator _____ Client _____
Date: _____
Project # _____

Sample(s) #_____

_____

_____

Discrepancy (if more space needed, use the back of this form):_____

_____

_____

To QC Manager:_____ Date: _____

Client Notified? YES ( ) NO ( ) Date & Time:_____

Project Manager Notified? YES ( ) NO ( ) Date & Time:_____

QC Response:_____

_____

Project Manager Response:_____

_____

_____

Cause and Resolution (proposed or carried out): Completed by:_____

_____

_____

Manager's Initials:
PM Signature: _____ Date:_____

QC Signature: _____ Date:_____

cc: Project File

FIGURE 7.4

Pace Analytical Services, Inc.
Internal Chain of Custody
(Format and content may vary by location)

Project _____
Date Created _____
Initials _____

RELEASED _____
SDG CLOSED _____

Fractions Available
_____
_____
_____
_____
_____
_____

Potentially Radioactive? r Yes r No

SAMPLES				
A	F	K	P	U
B	G	L	Q	V
C	H	M	R	W
D	I	N	S	X
E	J	O	T	Y

SAMPLES	OUT Initials Date/Time	Which Fraction	Where is it Going?	IN Initials Date/Time	Any Totally Consumed?	Comments

FIGURE 7.5

SAMPLE DISPOSITION FORM
(Format and content may vary by location)

Date removed: _____
Initials: _____

Date shipped: _____
Initials: _____

RE: Client Project ID: _____

Pace Project No.: _____

Sample ID

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

Dear :

All requested analyses of the samples for the above referenced project have been completed. Enclosed are the remaining portions of the samples which are being returned to you for final disposition.

If you have any questions, please call me.

Sincerely,

Project Manager

FIGURE 7.6

HAZARDOUS SAMPLE DISPOSAL OPTION FORM
(Format and content may vary by location)

Pace Project # _____

Project Manager _____

Pull Sample Date _____

Sample #	Matrix	Location	Disposal Method	Charge

Remarks: 1 = Return to Client C = Clean
2 = In House Disposal D = Dirty

Removed from Refrigerator (initial/date) _____

Returned to Client (initial/date) _____
Disposed of Samples (initial/date _____

8.0 CALIBRATION PROCEDURES AND FREQUENCY

Equipment/instrumentation is calibrated before each use to ensure proper functioning. All calibrations are performed by an experienced analyst at scheduled intervals against certified standards which are traceable to recognized national standards or against reference standards whose values have been statistically validated. Equipment/instrumentation or a component, thereof, which gives suspect results, cannot be calibrated to specifications, or is otherwise defective is taken out of service and clearly labeled as "defective" or "out-of-service" until it has been repaired and tested to meet specifications. Equipment/instrumentation must be performing its function within the stated specifications before being placed back into service. In the event that recalibration of a piece of test equipment casts doubt on the validity of test results already transmitted to the client, the client is notified promptly by the laboratory. Equipment/instrumentation found to be consistently out of calibration is either repaired and positively verified or replaced.

The discussion presented here is general in nature, because the requirements for calibration are instrument (or equipment) and method specific. Details of calibrations can be found in the Pace Analytical Standard Operating Procedures, analytical methods, and instrument operations manuals. In addition to the summary calibration information pertaining to general analysis categories contained in the following subsections, Table 8.1 lists detailed calibration information for representative methods and applications most frequently performed at Pace Analytical.

8.1 STANDARDS AND TRACEABILITY

Analytical standards are prepared from quality grade reagent compounds, are purchased as neat chemicals or diluted standard solutions from vendors who can provide a certificate of analysis. They are used to prepare calibration and spiking standards. Each laboratory section is responsible for the preparation, storage and disposal of its standards. The preparation information is recorded into section specific Standards Notebooks in order to document traceability of prepared standards to their source material(s).

Each standard is given an internal identification number. The preparation of all stock standards is documented in a Standards Notebook which is used to record the date of preparation, analyst's initials, the source of the reference material, standard components, amounts used, final volume, final concentration(s), solvent used, expiration date of prepared standard, and the serial reference number of that stock solution, if applicable. All standards are labeled with the standard serial reference number and expiration date, pertinent hazard classification information and if space permits, the name, concentration, date of preparation and initials of preparer. All diluted working standards not consumed during an analytical session are also labeled as indicated above.

If no expiration date has been assigned by the manufacturer, then an expiration date of one year from the date of preparation (or the date first opened in the case of sealed ampules) is recorded unless degradation prior to this date is observed. In no case should the expiration date of a prepared standard exceed that of the parent standard.

Before any set of standards can be utilized in a calibration curve they must be verified either externally by the standard supplier or internally by a secondary source process:

- Analysis of qualified QC Check Sample, or
- Analysis of an independently prepared check standard prepared either from a different manufactured lot for the same vendor supplying the calibration standard or from a second supplier.

The verification standard criteria are established based on the method and are contained in the SOPs.

8.2 GENERAL CALIBRATION PROCEDURES

Calibration standards for each parameter are chosen to bracket the expected concentrations of those parameters in the sample and to operate within the linear response range of the instrument. Samples with analytical results that fall outside the calibration range are diluted until bracketed by the calibration standards. A low level standard is routinely analyzed to verify the reporting limit. Calibration standards are prepared typically at a minimum of three concentration levels, usually chosen at two to five times, five to ten times, and up to twenty times the estimated method detection limit plus a calibration blank, with the exception of most organic analyses which do not require a calibration blank. Any specific method requirement for number and type of calibration standards supercedes the general requirement. Three point standardization of ICP is acceptable if linear range is performed annually. Either an internal standard or external standard quantification technique can be utilized. The reporting limit is verified by analysis of a standard at the reporting limit.

Instrumental responses to calibration standards for each parameter are subjected to an appropriate statistical test of fitness (least squares linear regression, quadratic equation, or relative standard deviation of response factors) or as required by the method or QAPP. The calibration must reflect an acceptable correlation of data points or linearity to be acceptable. In cases where the calibration data are outside these criteria, the analyst must rerun the calibration standards (meeting the same criteria) and/or prepare a new curve, changing instrumental conditions as necessary.

During the course of analysis, calibration standards are routinely analyzed to ensure that the instrumental response has not changed. The calibration verification criteria stipulated in each method or SOP are used by the analyst to determine whether the instrument is acceptable to analyze samples. Concentration of continuous calibration verification standards are varied periodically to evaluate the entire calibration range.

The accuracy of prepared standards is periodically checked by comparison with a standard from an independent source.

Certain equipment such as balances, pH meters, and turbidity meters are normally calibrated with NIST traceable standard reference material.

8.2.1 Analytical Balances

Every 12 months, calibration of the entire analytical range is checked by a qualified service technician. The calibration of each balance is checked each day the balance is used with weights traceable to NIST. Calibration weights are ASTM

Class 1 (replaces Class S designation) and are re-certified at a minimum of every two years. Some accrediting agencies may require checks more frequently. If balances are calibrated by an external agency, verification of their weights must be provided. All information pertaining to balance maintenance and calibration is recorded in the individual balance logbook and/or is maintained on file in the QA department.

8.2.2 Thermometers

Certified, or reference, thermometers are maintained for checking calibration of working thermometers. Reference thermometers are provided with NIST traceability for initial calibration and are re-certified, at a minimum, yearly with equipment directly traceable to the NIST.

Working thermometers are compared with the reference thermometers every 12 months; digital thermometers are verified for accuracy monthly. Each thermometer is tagged and individually numbered. In addition, working thermometers are visually inspected by laboratory personnel prior to use.

Calibration temperatures and acceptance criteria are based upon the working range of the thermometer and the accuracy required for its use. Laboratory thermometer inventory and calibration data are maintained in the QA department or designated area.

8.2.3 pH/Electrometers

The meter is calibrated before use each day, and once after each four hours of continuous use, using fresh buffer solutions.

8.2.4 Spectrophotometers

During use, spectrophotometer performance is checked at established frequencies in analysis sequences against initial calibration verification (ICV) with continuing calibration verification (CCV) standards.

8.3 GC/MS CALIBRATION PROCEDURES

The minimum operations necessary to satisfy analytical requirements associated with the determination of organic compounds in water and soil/sediment samples are listed below. The following operations are performed routinely in the laboratory:

- Documentation of GC/MS mass calibration and abundance pattern
- Documentation of GC/MS response factor stability
- Internal standard response and retention time

Prior to initiating data collection, it is necessary to establish that a given GC/MS meets the standard mass spectral abundance criteria. This is accomplished through the analysis of decafluorotriphenylphosphine (DFTPP) for base/neutral and acid (BNA) compounds or p-

bromofluorobenzene (BFB) for volatile compounds. Each GC/MS system used for analysis of volatile or semivolatile organic compounds is tuned to meet method or program specific ion abundance criteria before analysis of standards, blanks, or samples can proceed.

Prior to the analysis of samples and after tuning criteria have been met, the GC/MS system is initially calibrated using multiple concentrations to determine the linearity of response. The number of concentration points used for calibration depends on the specific method criteria and/or client project requirements. USEPA criteria specify both the concentration levels for initial calibration and the specific internal standard to be used on a compound-by-compound basis for quantitation. The response factor (RF) for each compound at each concentration level is calculated using the following Equation 8.1:

$$RF = \frac{A_x}{A_{is}} * \frac{C_{is}}{C_x} \qquad (8.1)$$

Where:
A_x = area of the characteristic ion for the compound to be measured
A_{is} = area of the characteristic ion for the specific internal standards
C_{is} = concentration of the internal standard
C_x = concentration of the compound to be measured

Using the average RF from the initial calibration, the percent relative standard deviation (%RSD) for compounds identified as Calibration Check Compounds (CCCs) is calculated using Equation 8.2:

$$\%RSD = \frac{s}{\bar{x}} \times 100 \qquad (8.2)$$

Where:
RSD = relative standard deviation
s = standard deviation of initial five response factors (per compound).
$\bar{x}$ = mean of initial five response factors (per compound).

RSD <30% for RFs of CCCs (if RSD of any compound is greater than 15%, use a least squares regression if correlation coefficient ≥0.995) RF ≥ 0.050 (SPCCs)

A calibration check standard containing all compounds of interest, as well as all required surrogates, is performed each day of analysis. The RF data from the standard is compared each day against the average RF from the initial calibration for a specific instrument. If the response to a calibration check standard differs from the initial calibration by more than ±20% or as specified by the method, then investigation and corrective action is performed, including a complete re-calibration if necessary.

Continuing Calibration is checked as described in Pace Analytical SOPs or methods.

8.4 NON GC/MS CHROMATOGRAPHY CALIBRATION PROCEDURES (i.e., GC and HPLC)

Initially, a five point calibration curve, consisting of all compounds of interest (plus a calibration blank for certain analyses such as VOCs), is established to define the usable range of the instrument. Calibration is accomplished as best-fit line, quadratic equation, or average response factors (RF). The curve is determined to be linear if the correlation coefficient is $\geq$ 0.995 unless otherwise stated in the method. Linearity may also be determined using calibration factors or response factors. Response factors are calculated for each compound at each concentration level. These RFs are averaged to generate the mean RF for each compound over the range of the standard curve. The curve is determined to be linear if the RSD of the response factors is <20%, or as specified by the method. The mean response factor is used to calculate the sample concentration of the compound of interest.

$$\text{Calibration Factor (CF)} = \frac{\text{Peak area (or Height) of the Compound in the Standard}}{\text{Concentration of the Compound Injected}}$$

$$\text{Response Factor (RF)} = \frac{A_s \times C_{is}}{A_{is} \times C_s}$$

A_s = Peak Area (or Height) of the analyte or surrogate
A_{is} = Peak Area (or Height) of the internal standard.
C_{is} = Concentration of the internal standard.
C_s = Concentration of the analyte or surrogate

When sample responses exceed the range of the standard curve, the sample is diluted to fall within the range of the standard curve and reanalyzed. Full calibration is not necessary if a calibration check standard validates the initial calibration curve. If the response to a calibration check standard differs from the initial calibration by more than $\pm$15% for any analyte being quantitated or as specified by the method, then investigation and corrective action is performed, including complete re-calibration, if necessary.

Continuing Calibration is checked as described in Pace Analytical SOPs or methods.

8.5 CALIBRATION OF INDUCTIVELY COUPLED ARGON PLASMA SPECTROMETER (ICP) AND ATOMIC ABSORPTION SPECTROPHOTOMETER (AAS)

The ICP and AAS are standardized for the metal analyte of interest by the analysis of a set of calibration standards prepared by diluting a stock solution of known concentration. Working standards are prepared by dilution of the stock standard. For the AAS, the concentration of the calibration standards is chosen so as to cover the working range of the instrument. Subsequently, all sample measurements are performed within this working range. After the working standards have been prepared, they are analyzed on the ICP or AAS and the instrument response is calibrated to provide a direct readout in concentration.

The calibration is accomplished by entering the metal concentration equivalent to the readout in absorbance units (or emission intensity) during analysis of the working standards.

After the initial calibration, the analysis of the working standards is repeated during sample analysis to standardize instrument response during analysis and to confirm the calibration settings. A typical analysis sequence is presented below.

- Working standards are prepared by dilution of a stock standard solution of the metal analyte of interest.
- A calibration curve within the working range of the instrument is established by analysis of three to five working standards. Two point ICP standardizations are allowed if linear range studies are performed annually.
- An independent standard is analyzed to confirm the calibration settings. If the calibration settings do not confirm, the instrument is re-calibrated.
- Interference check standards, as specified by the method, are analyzed.
- The samples are analyzed for the metal analyte of interest.
- During sample analysis, a check standard is analyzed to monitor instrument stability. If the analysis indicates that instrument calibration has changed by more than ±10% for ICP or more than ±20% for AAS, the instrument is re-calibrated and the analysis is repeated.
- Following completion of the sample analyses, the check standard and interference check standard are reanalyzed to confirm calibration settings. If calibration settings are confirmed, the analysis is completed. However, if the calibration settings are not confirmed, the problem is corrected, and the analyses are repeated.

Written records of all calibrations are filed with the raw data.

TABLE 8.1 Summary of Calibration Requirements

Instrument	Calibration Standards Used, Initial and Daily Minimum	Acceptance Limits	Corrective Actions
GC/MS Semivolatile	Tune: DFTPP (every 12 hours) (May be combined with calibration verification.)	Meets method criteria	Re-tune instrument Repeat DFTPP analysis
	Initial: 5 levels minimum	RSD <30% for RFs of CCCs (If RSD of any compound is greater than 15%, use a least squares regression if correlation coefficient ≥0.995.) RF ≥ 0.050 (SPCCs)	Repeat Calibration Evaluate system Repeat Calibration
	Daily Verification: Mid level (every 12 hours)	% Difference <20% of the average five-point RF (CCCs) RF ≥ 0.050 (SPCCs)	Evaluate system Take corrective action Repeat Calib. Check; see Lab Supervisor
GC/MSVolatile	Tune: BFB (every 12 hours) (May be combined with calibration verification.)	Meets method criteria.	Re-tune Instrument Repeat BFB Analysis
	Initial: 5 levels minimum	RSD <30% for RFs of CCCs (If RSD of any compound is greater than 15%, use a least squares regression if correlation coefficient ≥0.995.) RF ≥ 0.100 (0.30 for Chlorobenzene and 1122-Tetrachloroethane-(SPCCs)	Repeat Calibration Evaluate System Repeat Calibration
	Daily Verification: Mid-level (every 12 hours)	% Difference <20% of the average five-point RF (CCCs) RF ≥ 0.100 (0.30 for Chlorobenzene and 1122-Tetrachloroethane-)(SPCCs)	Evaluate System Take Corrective Action Repeat Calib. Check; See Lab Supervisor

TABLE 8.1 Summary of Calibration Requirements (continued)

Instrument	Calibration Standards Used, Initial and Daily Minimum	Acceptance Limits	Corrective Actions
Gas Chromatograph (8081A)	Initial: 5 level (conc. based upon instr. response)	Std curve or calibration factor (CF) if % RSD ≤ 20	Make new standards or establish new calibration curve.
	Mid level DDT/Endrin standard	DDT/Endrin breakdown < 20%	Rerun standard once Perform col. maint.
	Daily: 1 level of check standard (midrange)	CF < ± 15% of initial calibration	Repeat initial calibration
	Std check every 10 samples	CF ± 15% of daily calibration (< ± 20% for confirmation). Retention times within retention time windows.(For methods using retention time windows.)	Reanalyze samples that were analyzed after standard that failed criteria and before next standard that passes criteria
Inductively Coupled Plasma Emission Spectrometer (6010B)	Initial: high standard + blank Daily: Instrument check standard and calibration std. & blank every 10 samples	ICV: < 90-110% CCV: < 90-110%	Recalibrate. Repeat twice; if outside control limit, then recalibrate making new standards if necessary
Atomic Absorption Spectrophotometer (7000A)	Initial: 3-5* levels + blank Daily: 1 check standard (midrange) & blank per 10 samples	Linear regression correlation coefficient ≥0.995; ICV: 90-110% CCV: 80-120%	Make new standards or establish new calibration curve
pH Meter	Daily: 2 levels	+0.05 pH unit Bracket sample range	Clean or replace electrode; recalibrate

TABLE 8.1 Summary of Calibration Requirements (continued)

Instrument	Calibration Standards Used, Initial and Daily Minimum	Acceptance Limits	Corrective Actions
UV-Visible Spectro-photometer	Initial: multi-levels (varies by method) + blank Daily: check standard	Linear regression correlation coefficient > 0.995; ICV: 90-110%	Recalibrate services
Analytical Balance	Daily: Sensitivity (with ASTM Class "1" weight)	±0.001 gm (varies by method)	Adjust sensitivity, re-level
Thermometers	Annually; Calibrate in constant temperature baths at two temperatures against precision thermometers certified against an NIST thermometer	±0.1 to ±0.5 C (depending upon method)	Tag and remove from service, replace

9.0 ANALYTICAL PROCEDURES

Pace Analytical laboratories are capable of analyzing the full range of environmental samples from all media, including surface and groundwater, soil, sediment, tissue, and waste. Methodologies are employed with guidance from federal agencies such as EPA, ASTM, USGS, NIOSH and, in certain instances, state regulatory agencies. Table 9.1 is a representative listing of general analytical protocol references. In some situations, Pace Analytical develops and validates methodologies which may be more applicable to a specific problem or objective.

Analytical procedures are detailed descriptions of any and all sample processing, preparation and analysis of samples in the laboratory. All analytical procedures are conducted in strict adherence with written Standard Operating Procedures developed from the references in Table 9.1 which have been reviewed and approved by the Laboratory Operations Manager, the QAO and the General Manager. Additional SOPs may be adapted from other sources or generated in-house as project needs require.

9.1 ANALYTICAL METHODS

Numerous sources of information are available to offer guidance in analytical methods. Selection of the appropriate method is dependent upon data usage and the regulatory requirements during the analysis. Tables 9.1 and 9.2 describe the analytical and QA/QC references routinely used by Pace Analytical. Pace Analytical may modify existing methods based on the following considerations:

- To meet project specific objectives
- To incorporate modifications or improvements in analytical technology
- To comply with changing regulations and requirements
- To address unusual matrices not covered in available methods

Pace Analytical discloses to its clients and regulatory agencies any instances in which modified methods are being used in the analysis of samples.

9.2 PROCEDURE DOCUMENTATION AND DOCUMENT CONTROL

All processes involved with the production and reporting of analytical data is documented through the use of Standard Operating Procedures (SOPs).

Pertinent information required to accurately define the procedures followed are delineated in the SOP, or by reference to other controlled documents from the SOP. External references may include, instrument or equipment manuals or operating instructions, bench instructions, or published methods.

9.2.1 Elements of the SOP

Each SOP describing analytical methods performed in the laboratory is prepared as specified in the Pace Analytical Standard Operating Procedure for Preparation of Standard Operating Procedures (ALL P 001).

The SOPs are logically organized according to procedure designations commonly known to laboratory personnel. Signatures indicating approval are provided by a supervisor or manager of the applicable section, the Quality Assurance Officer and the General Manager for that particular facility. Approval indicates agreement with the appropriateness and feasibility of the described procedures, and the completeness of the SOP compared to the required elements of the method.

9.2.2 Review, Revision and Distribution

All SOPs undergo an annual, documented review . Revisions due to published method changes or procedural changes are reflected in the SOP prior to implementation of the change. Retired SOPs are maintained by the Quality Office with the date of retirement to demonstrate procedures for any given time period. Review dates and applicable signatures for SOPs which do not require changes are maintained with the original document.

9.2.3 Document Control

All SOPs and subsequently referenced documents (published methods, bench instructions, equipment manuals, original forms) are maintained by the Quality Office as controlled documents. Required information for each document includes:

- The range of effective dates
- The number and location of controlled copies
- A revision number or designation which can be used to demonstrate continuity

Any revision of a controlled document necessitates:

- Retirement and maintenance of the previous version
- Replacement of all controlled copies and destruction of retired version copies
- Notification of all affected personnel that a revision has been issued

As an alternative to the hard copy system of control, secured electronic copies of controlled documents may be maintained on the local or wide-area network. These document files must be read-only for all personnel except the Quality Department and system administrator. Other requirements for this system include:

- Ready accessibility to all laboratory staff
- A complete description of the computerized aspects, including security
- A provision to explicitly indicate that all printed copies are uncontrolled and expire on the date which they were printed

Controlled copies of SOPs are issued to, and maintained in each applicable section. A complete set of SOPs is maintained in the Quality Assurance Office and is made available to all facility personnel.

9.3 METHOD VALIDATION

When non-promulgated methods (i.e. methods other than EPA, NIOSH, ASTM, AOAC, etc.) are required for specific projects or analytes of interest, or when the laboratory develops a method, the laboratory establishes the validity of the method prior to applying it to client samples. Method validity is established by meeting certain criteria for precision and accuracy as established by the data quality objectives specified by the end user of the data.

9.4 METHOD DETECTION LIMITS

Pace Analytical Services performs and documents detection limit studies for each instrument. If an instrument is utilized for more than one method, a detection limit is performed for each method on that instrument. The protocol utilized for the detection limit determination for analyses performed on samples analyzed for the Safe Drinking Water Act (SDWA) and the Clean Water ACT (CWA) is based on the protocol defined in 40 CFR 136, Appendix B. The matrix for the CWA and the SDWA samples is analyte free spiked deionized water. Detection limits for Resource Conservation Recovery Act (RCRA) samples are determined based on the protocol defined in SW 846, Third Edition, Chapter One, Volume 1A. The detection limit protocol for CWA and SDWA samples is also acceptable for RCRA program samples.

Detection limits are updated based on one or more of the following criteria: annually; when there is a change in test method that affects how the test is performed; or when a change in instrumentation occurs that affects the sensitivity of the analysis. The relationship of the detection limits to the reporting limits insures that the reporting limit is always supported by a current detection limit.

Standards are analyzed at one half the reporting limit on a quarterly basis to verify identification and quantitation.

IT IS IMPERATIVE TO NOTE THAT METHOD DETECTION LIMITS ARE HIGHLY MATRIX DEPENDENT. LIMITS DETERMINED BY PACE ANALYTICAL MAY NOT BE ACHIEVABLE IN ALL MATRICES.

9.5 COMPLIANCE

Compliance is the proper execution of recognized, documented procedures which are either approved or required. Adherence to these procedures is required in order to provide data products acceptable to a regulatory body of competent jurisdiction in a specific regulatory context. Compliance is separate from, but not inconsistent with, technical scientific quality. Pace Analytical accepts compliance as part of the Pace Analytical corporate definition of quality: "Quality is the *fulfillment of expectations and needs* in all activities, demonstrated by the satisfaction of those we serve." Pace Analytical

understands that the expectations of our clients commonly include the assumption that data and reports will satisfy a regulatory purpose and will be found acceptable *and compliant* with regulatory requirements for the performance of tests and generation of data.

9.5.1 Understanding the Regulatory Framework - Compliance is not likely to be achieved in the absence of an understanding of the regulatory framework. Pace Analytical will attempt to ascertain, prior to beginning a project, what regulatory jurisdiction (USEPA, NJDEPE, etc.) pertains to a project; within the regulatory jurisdiction, what body of regulation is meant to be satisfied (RCRA, SDWA, 21E, etc.); and finally, within this context, what protocols are required/expected (CLP, AFCEE, NFESC, ASP, etc.). Pace Analytical interacts with its clients to come to a mutual understanding of all requirements.

9.5.2 Resolving Compliance Contradictions and Hierarchies - It is a common occurrence that multiple regulatory jurisdictions overlap in a specific case. This causes uncertainty or even contradictions to arise in a work plan. Pace Analytical makes every effort to detect such inconsistencies, and communicates them to clients so that an informed decision is made by the client regarding execution of the project. Similarly, methods and protocols will often be prescribed in a scope of work or QAPP which either will not achieve stated or implied DQOs or which are in conflict with the regulatory requirements. Pace Analytical attempts to detect these inconsistencies, and upon detection, disclose same to our client. Pace Analytical voluntarily accepts a responsibility to provide advice to clients, however, **the primary decision responsibility for this issue remains with the client.**

9.5.3 Disclosure of Noncompliance - It is Pace Analytical policy to disclose in a forthright manner any detected noncompliance that may effect the usability of data produced by Pace Analytical. It is not within our expertise to predict the manner in which a specific regulator or regulatory body will interpret the rules governing analysis; therefore, Pace Analytical is unable to guarantee compliance. It is Pace Analytical policy that our responsibility begins with a bona fide and competent attempt to evaluate potential compliance issues and ends with disclosure of any findings that may be useful to our client in their making the final judgment.

TABLE 9.1

ANALYTICAL PROTOCOLS

- "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act." Federal Register, 40 CFR Part 136, October 26, 1984.
- "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846. Most current edition and update.
- "Methods for Chemical Analysis of Water and Wastes", EPA 600/4-79-020, 1979 Revised 1983, U.S. EPA.
- U.S. EPA Contract Laboratory Program Statement of Work for Organic Analysis,
- U.S. EPA Contract Laboratory Program Statement of Work for Inorganic Analysis,
- "Standard Methods for the Examination of Water and Wastewater",. Current Edition APHA-AWWA-WPCF.
- "Annual Book of ASTM Standards", Section 4: Construction, Volume 04.04: Soil and Rock; Building Stones, American Society for Testing and Materials, 1987.
- "Annual Book of ASTM Standards", Section 11: Water and Environmental Technology, American Society for Testing and Materials, 1987.
- "NIOSH Manual of Analytical Methods", Third Edition, 1984, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health.
- "Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water", U.S. EPA, Environmental Monitoring and Support Laboratory - Cincinnati (September 1986).
- New York State Department of Environmental Conservation. Analytical Services Protocol, September, 1989 (revised December 1991).

Table 9.2

References

1. Handbook for Analytical Quality Control in Water and Wastewater Laboratories, U.S. EPA 600/4-79-019, March, 1979.

2. Federal Register, 40 CFR Part 136, October 26, 1984.

3. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition & Final Updates One and Two , U.S. EPA, revised Sept., 1994 and current promulgated editions.

4. Quality Assurance of Chemical Measurements, Taylor, John K.; Lewis Publishers, Inc. 1987.

5. Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WPCF: Current Edition.

6. NIOSH Manual of Analytical Methods, U.S. Department of Health, Education, and Welfare; Second Edition, 1977.

7. Methods for Non-conventional Pesticides Chemicals Analysis of Industrial and Municipal Wastewater, Test Methods, EPA-440/1-83/079-C.

8. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79--020, 1983.

9. The Determination of Inorganic Anions in Water by Ion Chromatography - Method 300.0 Test Method, EPA-600/4-84-017. March, 1984.

10. Environmental Measurements Laboratory (EML) Procedures Manual, HASL-300, US DOE, February, 1992.

11. Requirements for Quality Control of Analytical Data, HAZWRAP, DOE/HWP-65/R1, July, 1990.

12. Requirements for Quality Control of Analytical Data for the Environmental Restoration Program, Martin Marietta, ES/ER/TM-16, December, 1992.

13. Quality Assurance Manual for Industrial Hygiene Chemistry, AIHA, 1988.

14. National Environmental Laboratory Accreditation Conference. Constitution, Bylaws, and Standards, June 2000.

10.0 DATA REDUCTION, VERIFICATION AND REPORTING

Data reduction, verification and reporting are the processes that result in the delivery of quantitative analytical data to the data user. These processes include calculation of raw data into final concentration units, reviewing results for accuracy and assembly of the technical report contents for delivery to the data user.

All analytical data generated within the Pace Analytical laboratories undergo a well-defined, well-documented multi-tier review process before being reported to the client. The following describes procedures employed at Pace Analytical for translating raw analytical data into accurate, finished sample reports and describes data storage policies. The sample flow through the laboratory is shown in Figure 10.1

10.1 DATA REDUCTION

When "raw data" is manually generated by an analyst, it is recorded in either a bound notebook (run logbook), or copies of the computer printouts are appropriately labeled and stored. The term "raw data" can be a compilation of many items including, but not limited to, computer printouts, calculation sheets, charts or graphs, chromatograms, method number references, final results and analyst's initials and date of analysis. Logbooks and other bench records are kept in accordance with each laboratory's Standard Operating Procedure on documentation practices. The primary analyst is responsible for the initial reduction and review of the data. This includes entering analytical data into the EPIC Laboratory Information Management Systems; confirming compliance with required methodology; checking the calculations used; checking quality control data against known criteria; and noting any discrepancies that occurred both in the necessary logbooks and as a footnote or narrative in EPIC. The primary analyst then compiles the initial data packet for data verification. This compilation includes all relevant data; chromatograms or strip-chart recordings; other computer printouts, chain-of-custody copies if available; and logbook copies. Some agencies or clients require different levels of data reporting. For these special levels, the primary analyst may also need to compile additional project information such as initial calibration data or extensive spectral data before data package goes to verification step.

10.2 DATA VERIFICATION

Data verification is the process of examining data and accepting or rejecting it based on pre-defined criteria. This review step is designed to ensure that the reported data are free from calculation and transcription errors; that quality control parameters are evaluated; and that any discrepancies are properly documented. (The EPIC computer system refers to this verification as a **validation** step.)

Analysts performing the analysis and subsequent data reduction have the primary responsibility for the quality of the data produced. The primary analyst initiates the data validation process by reviewing and accepting the data, provided QC criteria have been met for the samples being reported. Data review checklists are used to document the data review process.

The completed data package is then sent to the Group Supervisor or designated reviewer. This reviewer provides a technical assessment of the data package and technical review for accuracy according to methods employed and laboratory protocols. This involves a quality control audit for use of the proper methodology and detection limits, compliance to quality control protocol and criteria, presence and completeness of required deliverables, and accuracy of calculations and data quantitation. Group Supervisors also review analyst generated calculations.

For data which are reduced via computer, calculations are checked by the analyst (or designee) assigned to this task at a frequency designed to assure that the data reductions are valid. The results are either manually transferred to a standard reporting form or reported via computer generation of forms.

Once the data have been technically reviewed and approved, authorization for release of the data from the analytical section is indicated by initialing and dating the data review checklist or otherwise initialing and dating the data.

The Operations or Project Manager examines the report for method appropriateness, detection limits and QC acceptability. Any deviations from the referenced methods are checked for documentation and validity, and QC corrective actions are reviewed for successful resolution.

The Operations Manager may delegate the final review and signing of reports as necessary.

Figure 10.2 provides a summary of staff responsibilities for data generation, review, verification and reporting.

Use of checklists ensure that all data are systematically handled and no steps are omitted. Checklists are reviewed and are retained and accessible should they need to be referenced at a later date.

10.3 DATA REPORTING

All data segments pertaining to a particular Pace Analytical Laboratory Project Number are delivered to the Client Services Department (Project Manager) for assembly into the final report format. All points mentioned during technical and QC review are included in a narrative if it is deemed to impact the quality of the data.

After verifying the report's completeness and accuracy, the Project Manager signs the cover letter or authorization line within the report indicating acceptance of the report.

Final reports are prepared according to the level of reporting required by the client. A standard Pace Analytical final report consists of the following components:

1. A title which designates the report as "Final Report", "Laboratory Results", "Certificate of Results", etc.
2. Name and address of laboratory (or subcontracted laboratories, if used)

3. Phone number and name of laboratory contact where questions can be referred
4. A unique number for the report (project number). The pages of the report shall be numbered and a total number of pages shall be indicated (usually in the cover letter.
5. Name and address of client and name of project (if applicable).
6. Unique identification of samples analyzed (including client sample numbers)
7. Identification of any sample which did not meet acceptable sampling requirements (from NELAC or other governing agency), such as improper sample containers, holding times missed, sample temperature, etc.
8. Date and time of collection of samples, date of sample receipt by the laboratory, dates of sample preparation and analysis, and times of sample preparation and analysis when the holding time for either is 72 hours or less.
9. Identification of the test methods used
10. Identification of sampling procedures, if sampling was conducted by the laboratory
11. Deviations from, additions to, or exclusions from the test methods. These can include failed quality control parameters, deviations caused by the matrix of the sample, etc. and can be shown as a case narrative or as defined footnotes to the analytical data.
12. Identification of whether calculations were performed on a dry or wet-weight basis
13. Reporting limits used
14. Final results or measurements, supported by appropriate chromatograms, charts, tables, spectra, etc.
15. If required, a statement of the estimated uncertainty of the test results
16. A signature and title of person accepting responsibility for the content of the report (can be an equivalent electronic identification) and date report was issued
17. If necessary, a statement clarifying that the results of the report relate only to the samples tested or to the samples as they were received by the laboratory
18. If necessary, a statement indicating that the report must not be reproduced except in full, without the written approval of the laboratory
19. Identification of all test results provided by a subcontracted laboratory or other outside source
20. Identification of results obtained outside of quantitation levels.

Any changes made to a final report shall be designated as a "Supplement" or equivalent wording. For higher levels of data reporting, a copy of all raw data is sent to the client along with a final report of results. When possible, the Pace Analytical laboratory will provide electronic data deliverables (EDD) as required by contracts or upon client request.

10.4 DATA ARCHIVE

All records pertaining to Pace Analytical labs are maintained, stored and secured by the Quality Assurance Officer or by a designated Data Archivist. These records can include client data reports, certificates pertaining to calibration and maintenance of equipment, raw data from instrumentation, quality control documents, and logbooks. These records are retained in order to provide for possible historical reconstruction of data. Records are archived and maintained by the laboratory for a period of time determined by the specific state, federal, contractual and accreditation requirements. Access to archived data is kept to a minimum, with the Data Archivist maintaining the archive documentation in a secure, fireproof (if possible) location. Some laboratories archive

their data in an off-site facility and the data archivist will keep a record of this archival as well. Records that are computer generated have either a hard copy or electronic backup copy.

In the event of a change in ownership, accountability or liability, reports of analyses performed pertaining to accreditation will be maintained by the acquiring entity for a minimum of five years. In the event of bankruptcy, laboratory reports and/or records will be transferred to the client and/or the appropriate regulatory entity.

10.5 RESPONSE TO COMPLAINTS

The Pace Analytical laboratory which conducted analyses for the client recognizes the importance of its timely response to inquiries regarding the laboratory's work for samples and projects. The laboratory will respond to inquiries as rapidly as possible as part of its corrective action plan. The Pace Analytical laboratory which originally received samples from the client is considered the primary contact for all data inquiries when subcontract or other Pace Analytical laboratories are used for analyses.

FIGURE 10.1
Laboratory Sample Flow Schematic

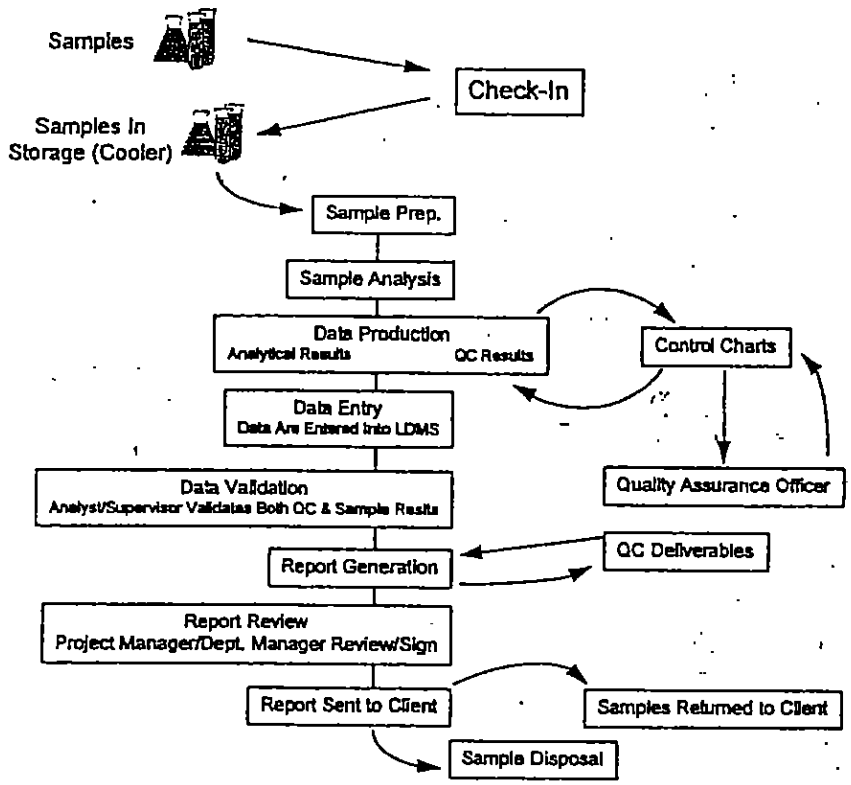

FIGURE 10.2
Analytical Data Review Process, Pace Analytical Services, Inc.

	Responsibilities
Analyst	· Analytical data entry into LDMS* · Data review - 1st level (bench) · Control charting - real time · Narrative notes · Discrepancy initiation · Provide copies of log books, as necessary · Assemble data review package
Supervisor	· Oversee daily analytical activities · Review control chart comments daily · LIMS data entry and data verification · Draft and review of narrative · Supervise contractual and technical compliance · Discrepancy review · Review quality control daily (calibrations, etc.)
Manager	· Sign-off case narrative (or designee) · Ensure program compliance · Review discrepancies requiring manager resolution · Technical conference calls with client
Quality Assurance Office	· 10 percent compliance review (data packages) - Custody when required - Calculations - Methods criteria - QC criteria - Forms - Control charting
Project Manager	· Review narratives for completeness and accuracy · Review packages for completeness and quality · Cover letter · Client/laboratory liaison · Deliver package to client

*Laboratory Data Management System (EPIC)

11.0 QUALITY CONTROL PROCEDURES

A quality control (QC) program is a systematic process that controls the validity of analytical results by measuring the accuracy and precision of each method and matrix, developing performance-based control limits and, using these limits to detect errors or out-of-control events, and requiring corrective action measures to prevent or minimize the recurrence of these events. QC procedures are implemented to ensure that sample data meet the quality objectives of the laboratory and the client.

This section addresses the specific QC procedures applied to representative analytical methods performed at Pace Analytical.

11.1 LABORATORY QUALITY CONTROL SAMPLES AND MEASUREMENTS

The results of quality control samples created in the laboratory represent estimates of accuracy and precision for the preparation and analysis steps of sample handling. This section describes the types of quality control samples used to assess the quality control procedure. The necessary SOPs are followed for preparing reagents or solutions for these QC measures.

11.1.1 Method Blank

A method blank, or laboratory reagent blank is a volume of deionized or distilled laboratory water for water samples, or a purified solid matrix for soil/sediment samples, carried through the entire analytical procedure. Blank analysis allows any method interferences caused by contaminants in solvent, reagents, glassware or sample processing hardware to be examined and verified. The volume or weight of the blank must be approximately equal to the sample volume or weight processed. Optimally, a method blank should contain no greater than five times (5X) the method detection limit, or reporting limit where applicable, for common laboratory solvents and phthalate esters; less than the detection (or reporting) limit for all other parameters unless otherwise specified in the method or project QA plan. Method blank results are maintained with other QC data and included in the final report at the client's request.

Method blank frequency is as follows:

Organic: The laboratory prepares and analyzes one method blank per analytical batch of 20 samples or less or every time samples are extracted, whichever is more frequent.

Inorganic: At least one method blank prepared and analyzed with every group of 20 samples, or with each batch (a group of samples prepared at the same time, e.g. daily) of samples digested, extracted, prepared or directly analyzed, whichever is more frequent.

11.1.2 Laboratory Control Spikes/Laboratory Control Spike Duplicates (LCS/LCSD)

The LCS consists of an aliquot of deionized/distilled laboratory water for liquid matrices and purified solid matrix for soils. If no such soil is available, laboratory pure water is substituted. The aliquot is injected with a known concentration of all the analytes of interest. They are prepared at a rate of at least one per analytical batch.

The LCS provides an estimate of bias based on recovery of the compounds from a clean matrix. These QC measures provide evidence that the lab is performing the method within accepted guidelines without matrix interferences.

An LCS/LCSD pair is substituted when sufficient sample volume is not available to prepare an MS/MSD pair.

11.1.3 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Matrix spikes are similar to LCSs except that the analyte spikes are added to a second and third separate aliquot of the same client sample within an analytical batch. This enables the lab to assess matrix effects and field conditions. MS/MSDs are routinely prepared at a frequency of 5% (one set per twenty samples) when adequate sample volume is provided.

11.1.4 Surrogates

Surrogates are added to all organic samples, method blanks, LCS and MS prior to extraction and analysis. They provide an estimate of bias based on recovery of chemical compounds similar to target analytes but not occurring in nature. This aids in detecting any effects from the sample matrix and/or field conditions.

11.1.5 Internal Standards

Internal standards are analytes having surrogate characteristics but are added to each sample within a batch just prior to analysis. These are primarily used for quantitation. It corrects for bias or change in instrument performance from sample to sample, incorporating matrix effects associated with the analytical process only.

11.1.6 Sample Duplicate

A sample duplicate is prepared by homogenizing and splitting the sample into two equal portions before the sample preparation process. It measures precision associated with preparation through analysis and is prepared and analyzed at a rate of one per analytical batch. The MS/MSD may fulfill this function and provide a measure of overall precision.

11.1.7 Accuracy Measurements

Accuracy reflects the degree to which the measured value approximates the actual or "true" value for a given parameter and reflects the influence of systematic biases in the measurement. It is expressed as % Recovery. For the LCS, surrogates, and method blanks, the calculation is as follows:

$$\%Recovery = (SR / SA) * 100$$

Where: SR = the determined concentration
SA = the spiked concentration

For MS/MSD, the percent recovery is calculated as:

$$\%Recovery = (SSR-SR)/SA * 100$$

Where: SSR = the spiked sample determined result
SR = original sample determined result
SA = the spiked concentration

11.1.8 Precision Measurements

Precision measures the randomness associated with an analytical measurement and reflects the inherent variability in that measurement system.

The comparison of the values determined for a sample and its duplicate (MS/MSD) is expressed as relative percent difference (RPD). This calculation is as follows:

$$RPD \quad \frac{|S-D|}{[(S+D)/2]} * 100$$

Where S = original sample result
D = duplicate result

11.2 SAMPLE COLLECTION QUALITY CONTROL SAMPLES

Quality control is an integral part of sample collection as well as laboratory operations. Sample collection protocols must include checks to ensure that the sample collected is representative of the field site and free from sampling-related contamination or biases. Although different laboratory procedures will be used to analyze for the various parameters of interest, certain general QC procedures (described below) are applicable to most sampling methods. The types and frequency of collection for each of these field QC samples are detailed in each project's sampling and analysis plan.

11.2.1 Field Blanks

Field blanks are QC samples consisting of blank water that are prepared in the field. This serves to check for potential contamination that may be present in the environment where field samples are collected.

11.2.2 Trip Blanks

Trip blanks are similar to field blanks except that they are prepared in the laboratory before the sampling event. These blank samples accompany the other sample containers to the field and then accompany the collected samples back to the laboratory. Trip blanks serve to check for potential contamination that samples and sample containers may be exposed to during transport to and from the field.

11.2.3 Equipment Rinsate Blanks

Equipment rinsate blanks serve to check the adequacy of equipment cleaning between successive sample collections. These rinsates use blank water provided by the laboratory. Inadequate cleaning of sampling equipment after sample collection could result in the contamination of subsequent samples.

11.2.4 Matrix Spike/Matrix Spike Duplicate Samples (MS/MSD)

The field sampling personnel must collect a replicate set of samples such that one set is collected per twenty samples. The duplicate analyses provide information regarding homogeneity, handling, transportation, storage, and analyses.

Laboratory operations must make a conscious effort to request or collect, as part of a field sampling event, a sufficient amount of sample to satisfy the method requirements. Samples selected for MS/MSD which contain limited volume or quantity should be evaluated based on the type of analyses to be performed This information should be used in conjunction with client interaction to establish whether modifications could be made to the method.

11.3 STANDARDS

The term "standard" applies to any analyte solution of known concentration, which is traceable to a certified reference material. This includes calibration standards and spiking solutions.

Upon receipt, all purchased standard reference materials (neat and stock) are recorded into section-specific standard logbooks or databases. The standard logbook or database entries include Pace Analytical's unique ID, the name of the neat compound or solution, manufacturer, manufacturer's lot numbers, certified purity, receipt date and expiration date. Subsequent preparations of stock, intermediate, and working solutions are also documented in a standard preparation logbook. These entries must include all discrete measurements made during

preparation, sources of materials, solvent(s), solvent lot number, preparation date, expiration date, preparer's initials, and a Pace Analytical standard ID number.

The standard vial should have a reference label affixed containing the following information (if space permits):

- Standard ID #
- Standard name
- Preparation date
- Preparer's initials
- Solvent and lot number
- Concentration
- Expiration date

All primary reference standards and standard solutions are purchased from reliable commercial sources. NIST-traceable standards are preferred when available. ASTM or equivalent specifications are acceptable when NIST-traceable are not available. Certification records of all standards received are retained.

Second-source reference standards and standard solutions are purchased from a different supplier than the primary standard. If a second supplier is not available, the second source standard can be prepared from a different lot number of the sample composition from the same supplier.

Prior to utilization, newly prepared standard solutions (surrogate, calibration, spiking) are verified against another known standard prepared from another source. The verification data is maintained on file in the respective area.

11.4 CONTROL CHARTS

Control charts are quality control tools graphically displaying certain QC parameters over time. Accuracy and precision control charts are generally maintained for each method; however, for certain methods, tabulated control limits are used to monitor acceptability of quality control measurements.

11.4.1 Limits

Control limits express the outer limits of accepted method variability. Control limits are reviewed periodically against performance. Based on statistical considerations, an evaluation is made to determine whether the control limits need to be revised.

Unless otherwise stipulated in a particular method or program, control limits are statistically derived from laboratory-generated data. They are based upon ± 3s from the mean (i.e. 99% confidence interval).
The use of hard-coded limits not statistically derived from current laboratory-generated data (e.g., CLP limits) is limited to programs which specifically permit their application.

Control limits are updated annually (at a minimum) or once every 20 data points (at a maximum). Tabulated control limits are available and followed by all analysts performing the associated test. However, control charts are the preferred mechanism for monitoring quality control measurements on a real-time basis.

11.4.2 Accuracy Control Charts

Accuracy charts are maintained for surrogate and LCS recovery. Each sample is identified by its Pace Analytical sample number and the date it was analyzed. This is plotted onto a graph with the sample ID and percent recovery serving as the X and Y-axis, respectively.

11.4.3 Precision Control Charts

In cases where precision charts are maintained, the relative percent difference is plotted on the graph with the number of data points on the X-axis and the RPDs on the Y-axis. These are identified by the analysis dates and Pace sample ID number.

11.4.4 Control Chart Evaluation

Plotting and connecting successive data points on control charts enables the laboratory to detect many types of suspicious and out-of-control situations. These events can be determined by monitoring the following: outliers, runs, trends and periodicity. Outliers require immediate corrective action, whereas runs, trends and periodicity are indicators of circumstances that could lead to out of control conditions.

Outliers: A point that falls outside the control limits is classified as an out-of-control event. Whenever an analyte is outside the control limits, corrective action is performed. All calculations are checked, the integrity of the spiking solution is verified, and the instrument and operating conditions are checked to preclude the possibility of malfunction or operator error. After the systems problems have been resolved and control has been re-established, all samples in the analytical batch are reanalyzed for the out-of-control analytes.

Runs: A run is defined as a series of points that line up on one side of the central line (the mean). Any run that has a length of seven points is indicative of a potential abnormality in the process. A run can suggest several potential problems such as a system leak, elevated contamination, or incorrect standard dilution.

Trends: A trend is defined as a series of points that are marked by a continuous rise or fall. Any trend with a length of five points (may vary up to seven points) is classified as a suspicious event. A trend may indicate a change in instrument sensitivity due to conditions, such as a dirty source or injection port or standard degradation.

12.0 QUALITY ASSURANCE AUDITS AND PERFORMANCE EVALUATIONS

Integral to Pace Analytical's quality assurance program is a program of audits designed to provide feedback about the effectiveness and completeness of the various quality control and quality assurance systems in the laboratory. This section describes the types of audits conducted at Pace Analytical and discusses the roles and responsibilities of Pace Analytical personnel related to these audits.

12.1 INTERNAL AUDITS

12.1.1 Quality Assurance Officer

The QAO is responsible for designing and/or performing QA performance and systems audits. Since QA audits represent an independent assessment of laboratory functions, the auditor must be functionally independent from laboratory operations to ensure objectivity. The auditor must be familiar enough with the objectives, principles, and procedures of laboratory operations to be able to perform a thorough and effective evaluation. The auditor's ability to identify components of systems that are critical to overall data quality is especially important.

Internal audits are typically conducted by the laboratory QAO, who may be assisted by other laboratory personnel. The QAO reports directly to the Laboratory General Manager, and therefore is independent of laboratory operations. The QAO evaluates audit observations and verifies the completion of corrective actions. The Corporate Director of Quality, Safety and Training may also actively participate in the internal audit process.

12.1.2 Scope and Frequency of Internal Audits

Internal systems audits are conducted yearly. The scope of these audits includes the examination of the operations of a specific analytical department or focuses on the evaluation of a specific quality-related system as applied throughout the laboratory.

Examples of system-wide elements which can be audited include:

- Standard operating procedures, including system of review, issue, filing, maintenance, training, understanding, documentation of deviations and implementation of SOPs.
- Adherence to standard operating procedures, the Quality Manual and regulations.
- Personnel and training files, including job descriptions, resumes, documented training and training file maintenance.
- General laboratory safety, including appropriate clothing, waste disposal, health and safety plan review, obvious safety concerns.
- Labeling of reagents, solutions, standards, and associated documentation.

- Equipment and instrumentation documentation, calibration/ maintenance records, operating manuals.
- Sample handling, storage and disposal including storage locations, security, tracking/chain-of-custody, disposal practices and records, labeling and retention.
- Documentation of sample analysis, methodologies, quality control requirements.
- Documentation of discrepancy reports and corrective action.
- General procedures for data security, review, documentation, reporting and archiving.

When the operations of a specific department are evaluated, a number of functions are reviewed including:

- Documentation of technical training and analyst proficiency
- Method detection limit studies
- Internal chain-of-custody documentation
- Nonconformance documentation
- Documentation of standard preparations
- Instrument maintenance documentation
- Standard operating procedures
- Control charts
- Documentation of sample preparation and analysis
- Documentation of data review

As required on specific projects, internal audits are performed to ensure laboratory conformance to site workplans, sampling and analysis plans, QAPP, etc. Project audits include review of the following items:

- Sample log-in and chain-of-custody records
- Sample storage procedures and records
- Sample preparation and analysis procedures
- Method validation (where applicable)
- Conformance to QAPP
- Control charts (if applicable)
- Precision and accuracy assessment
- Method blanks, reagent blanks, duplicates, check samples, fortifications, surrogates, etc.
- Calibration
- Data packages
- Analyst qualifications
- Data validation and reporting

12.1.3 Internal Audit Reports and Corrective Action Plans

A full description of the audit, including the identification of the department or operation audited, the date(s) on which the audit was conducted, the specific systems examined, and the observations made during the course of the audit, are

summarized in an internal audit report. Although other personnel may assist with the performance of the audit, the QAO writes and issues the internal audit report.

The QAO identifies which audit observations are deficiencies that require corrective action.

Once completed, the internal audit report is issued jointly to the laboratory general manager and the manager(s)/supervisor(s) of the audited department(s) or operation(s). The responsible manager(s)/supervisor(s) responds with a plan to correct all of the deficiencies cited by the due date specified in the audit report. Each response must include timetables for completion of all proposed corrective actions.

The QAO reviews and accepts the audit responses. If the response is accepted, the QAO uses the action plan(s) and timetable(s) as a guideline for verifying completion of the corrective action(s). If the QAO determines that the audit response does not adequately address the correction of cited deficiencies, the response will be returned for modification.

To complete the audit process, the QAO performs a re-examination of the areas where deficiencies were found to verify that all proposed corrective actions have been implemented. An audit deficiency is considered closed once implementation of the necessary corrective action has been verified. If corrective action cannot be verified, the associated deficiency remains open until that action is completed.

12.2 EXTERNAL AUDITS

Pace Analytical is audited as required by regulatory agencies to maintain laboratory certifications, and by various commercial clients.

Audit teams external to the company review the laboratory to assess the existence of systems, implementation of the systems, and degree of technical expertise. QA staff host the audit team and assist in facilitation of the audit process. Generally, the auditors will prepare a formalized audit report listing deficiencies observed and follow-up requirements for the laboratory. In some cases, items of concern are discussed during a debriefing convened at the end of the on-site review process. The laboratory staff and supervisors develop corrective action plans to address any deficiencies with the guidance of the QAO. The laboratory manager provides the necessary resources for staff to develop and implement the corrective action plans. The QAO collates this information and provides a written report to the audit team. The report contains the corrective action plan and expected completion dates for each element of the plan. The QAO follows-up with the laboratory staff to ensure that corrective actions are implemented.

12.3 PERFORMANCE EVALUATION/PROFICIENCY TESTING PROGRAM

12.3.1 NELAP Proficiency Testing Program

Pace Analytical laboratories participate in the NELAP-defined proficiency testing program. Proficiency Test (PT) are obtained from NIST-approved providers and analyzed and reported at a minimum of two times per year for the relevant fields of testing.

For PT quantitations evaluated as being outside the acceptance ranges, investigations are performed by the responsible Manager(s)/Supervisor(s) and reports are completed. The reports are reviewed by the QAO, then forwarded to the various accreditation agencies, as required, for their review.

12.3.2 Other Performance Evaluation (PE) Studies

Other PE samples may be performed by Pace Analytical in conjunction with a specific program or contract.

13.0 PREVENTIVE MAINTENANCE

The objectives of Pace Analytical's preventive maintenance program are twofold: to establish a system of instrument care that maintains instrumentation and equipment at required levels of calibration and sensitivity and to minimize loss of productivity due to repairs. The program includes a system for documenting all routine and non-routine instrument maintenance and repairs.

13.1 MAINTENANCE RESPONSIBILITIES

The Laboratory Operations Manager and department Manager/Supervisors are responsible for providing technical leadership to all staff including serving as a technical resource to help solve equipment and method problems, evaluating and recommending investments in new technologies, improving efficiency, and coordinating instrument repair and maintenance. The analysts have a primary responsibility to perform routine maintenance.

13.2 MAINTENANCE SCHEDULES

To minimize downtime and interruption of analytical work, preventive maintenance is routinely performed on each analytical instrument. SOPs are written for each instrument that cover basic operation, maintenance procedures, and maintenance schedules.

13.3 MAINTENANCE DOCUMENTATION

All routine and non-routine instrument maintenance is documented in maintenance logbooks assigned to each instrument. These records include the following:

1. The name of the equipment
2. The manufacturer's name, type, and serial number
3. Approximate date received and date placed into service
4. Current location in the laboratory
5. Condition when received (new, used, etc.)
6. Copy of any manufacturer's manuals or instructions
7. Dates and results of calibrations and next scheduled calibration (if known)
8. Details of past maintenance activities, both routine and non-routine
9. Details of any damage, modification or major repairs

When maintenance is performed to repair an instrument problem, the entry includes a description of the symptoms that precipitated the maintenance action. Depending on the initial problem, demonstration of return to control may be satisfied by the successful analysis of a reagent blank or continuing calibration standard. The entry must include a summary of the results of that analysis and a verification by the analyst that the instrument has been returned to an in-control status. In addition, each entry must include the initials of the analyst making the entry, the dates the maintenance actions were performed, and

the date the entry was made in the maintenance logbook, if different from the date(s) of the maintenance.

13.4 SPARE PARTS

An adequate inventory of spare parts is required to minimize equipment downtime. This inventory includes those parts and supplies that:

- are subject to frequent failure,
- have limited useful lifetimes, or
- cannot be obtained in a timely manner should failure occur.

Department Manager/Supervisors are responsible for maintaining an adequate inventory of necessary spare parts for all major instruments and equipment items.

14.0 CORRECTIVE ACTION

This section describes the portion of the quality assurance system at Pace Analytical, that is implemented to address the documentation and correction of problems encountered during sample handling and analysis. The accurate and timely communication of sample handling and analysis problems to laboratory Managers/Supervisors, Project Managers, and the QAO can mean the difference between a situation that is corrected with little or no impact to sample data quality and one that results in re-sampling. Laboratory Managers/Supervisors must initiate corrective action whenever QC results for control parameters fail to stay within acceptance limits.

When errors, deficiencies, unusual occurrences, or out-of control situations exist, the QA program provides systematic procedures, referred to as "corrective actions", to resolve problems and restore proper functioning of the analytical system. Within Pace Analytical, a distinction is made between "out-of-control events" and "unusual occurrences" for the purposes of requiring corrective actions.

An out-of-control event is any event where the evaluation criteria are beyond the acceptance limits established for laboratory operation by Pace Analytical SOPs, EPA methods, or client specific contracts or protocols. This can be due to data which are outside of the accepted bounds for accuracy and/or precision because of method contamination or improper instrument calibration or maintenance.

An unusual occurrence is a one-time event such as storm events impacting power. Both out-of-control events and unusual occurrences are formally documented. Within Pace Analytical, the formal documentation reports are currently identified with different designations including, Corrective Action Report (CAR); Quality Action Log (QA Log); Non-conformance Report (NCR); Remedial Action Record (RAR); or Discrepancy Report (DR). Each of these reports serves the purpose (because of this, the names are used inter-changeably) of documenting whenever either type of event is noted. Collectively these reports are referred to as Discrepancy documents.

14.1 DISCREPANCY DOCUMENTATION

Discrepancy documentation may be initiated by an analyst, laboratory Manager/Supervisor, Project Manager, or other laboratory personnel. The Discrepancy documentation is used to document a specific problem or deficiency noted during sample handling or analysis. Depending on the specific problem or deficiency, corrective actions may be taken by the analyst, laboratory Manager/Supervisor, Project Manager, or other laboratory personnel. Since problems encountered with sample analysis often have the potential to impact data quality, appropriate corrective action is frequently determined in communications between the laboratory Project Manager and the client.

Each Discrepancy documentation requires the initials of the person documenting the problem as well as those of any person documenting additional information or corrective action. Each record is then reviewed and initialed by the department

Manager/Supervisor. If the deficiency or problem impacts client sample data, the department Manager/Supervisor passes the documentation directly to the QAO and appropriate Project Manager for their review and follow-up.

The documentation describes the actions taken at each step of the review process. Evidence of return to control must also be documented. Once documentation of the problem, corrective action, and return to control is complete, the documentation is forwarded to the QAO for review. QA review is documented with the QAO's initials and the completed original record is either passed back to the appropriate Project Manager to be filed in the client project file or is filed in the QA files, depending on the nature of the nonconformance.

14.2 OUT-OF-CONTROL-EVENTS

Out-of-control events associated with the statistical analysis and review of data are straight forward to identify. The analyst generating the data is responsible for checking the results against the established limits. Any deviations are immediately addressed. If data are outside accepted limits, the analyst immediately notifies the responsible Manager/Supervisor. If the situation can not be corrected to prevent an out-of-control condition, the Supervisor/Manager shall notify the Operations Manager and the Quality Assurance Officer. The Operations Manager and department Managers/Supervisors are responsible for identifying the source of the problem and initiating corrective action. Completion of corrective action is evidenced by the return of the procedure to prescribed acceptable limits.

Events which do not cause an immediate obvious effect on data quality are more difficult to identify. Such events could be samples stored at an incorrect temperature or held beyond prescribed holding times, or improper maintenance of records. Everyone in the laboratory is responsible for reporting "system" problems. Analysts must report out-of-control events to their Manager/Supervisor, who should then in turn report the situation to the Operations Managers and Quality Assurance Officer. Corrective action is again the ultimate responsibility of the Operations Manager and the department Managers/Supervisors. They review and approve the action taken.

If an out-of-control event does occur during analysis, for instance an LCS recovery falls outside the expected range, the analyst must describe, on the corrective action report, the event, the investigative and corrective actions taken, the cause of the event, and notify the QAO . In some cases, investigation of an out-of-control event will reveal no problems. In such cases, only the event and the investigative action is recorded.

The investigative action taken is somewhat dependent on the analysis and the event. However, listed below is a progression of steps which are taken to find the cause of an out-of-control event:

- Check calculations to ensure there are no errors
- Check standard and spiking solutions for degradation or contamination
- Check instrument performance

If the problem is determined to be the standards or instrument performance, the analyst must recalibrate or retune the instrument before reanalyzing the sample extracts affected. If the out-of-control condition is still not remediated, the samples may require reextraction and reanalysis or data qualification.

It is occasionally necessary to qualify data when the accompanying quality control data are not within established performance criteria. The qualifying of data alert the data end user to the fact that the precision and accuracy of the data produced may not fulfill the data quality objectives (DQOs) for that particular project.

14.3 QUALITY ASSURANCE PROJECT PLAN EXCEPTIONS

Due to the unknown nature of environmental samples prior to analysis, Pace Analytical has minimal control over analytical and quality control complications which arise from unique sample matrix conditions. These conditions may include such items as: highly concentrated samples containing target compounds of interest and/or non-target components; extremes in sample pH, viscosity, and solubility; and high organic content (both natural and synthetic). Each of these conditions presents a variety of challenges to the laboratory.

Most often these extremes in sample matrix composition necessitate the laboratory to employ dilution techniques in order to change the sample concentration so that it can be analyzed by the desired protocol. Unfortunately, dilution techniques raise reporting limits (RLs) and often adversely impact the surrogate standard and matrix spiking acceptance criteria.

The laboratory has the responsibility to clearly identify cases where matrix interferences preclude the generation of "compliant" data. This is done by demonstrating through reproducibility (i.e., reanalysis of the affected sample) that the quality control measurement failure resulted from unique sample matrix conditions beyond the control of laboratory, and not as a result of laboratory error. For example, in situations where the surrogate standard recoveries fall outside of control limits, samples are re-extracted and/or re-analyzed. Similar "non-compliant" results in the reanalysis indicate that it is something inherent to the sample which prevented the laboratory from reporting results deemed method compliant under data validation criteria.

Analytical projects containing particularly "dirty" samples (i.e., highly contaminated) will often fail to meet pre-established QA completeness goals (set forth in the QAPP) when prior site history does not reveal the potential for excessive values. Again, while the laboratory performs all analytical testing by the prescribed protocols, the results obtained may not meet validation criteria as a result of elevated RLs or the frequency at which surrogate and matrix spikes failed to meet acceptance limits. In cases where the laboratory is unable to meet QC criteria because of sample matrix complications beyond their control, results which are flagged "qualified" or "rejected" by data validation guidelines are often still "useable" by the end user of the data.

Pace Analytical is committed to adhering to method requirements and program quality control applications as established clients and regulatory agencies and will work

rigorously to provide data which is of the highest quality possible. However, the uncertainties associated with environmental samples do not allow Pace Analytical to assume responsibility for conditions beyond our reasonable control which directly impact the "validity" versus the usability of the associated analytical data generated.

15.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

An objective of the Pace Analytical quality assurance program is to ensure that an operational system is in place which enables management to determine the quality of all data produced within the laboratory system. An essential component of the system are the communication pathways and feedback mechanisms which ensure that management obtains quality information promptly and consistently. To achieve this objective, Pace Analytical employs informal and formal reporting processes. This information enables Pace Analytical to take corrective action promptly when required. Reporting occurs at the following frequency.

- Daily meetings at the operations level to discuss possible quality assurance problems and proposed solutions.
- Weekly meeting involving upper management to discuss laboratory performance, upcoming audits, certification programs, and past audit performances.
- Monthly meetings involving all Pace Analytical QAO's and the Corporate Director of Quality.
- Quarterly written status reports to upper management including all quality assurance concerns and pertinent laboratory issues.
- As required, internal departmental audit reports with observations and suggested corrective action procedures.

The Quality Assurance Officer is responsible for preparing reports to management indicating effectiveness of the laboratory Quality Assurance Program.

15.1 MANAGEMENT REVIEW

The Quality Assurance Officer will issue a report of QA activities and findings on a regular basis to the General Manager. The status report will include:

- Results of internal systems or performance audits
- Corrective Action activities
- Discussion of QA issues raised by laboratory users
- Results of third party or external audits
- Status of laboratory certifications
- Other significant events
- Performance Evaluation/Proficiency Test Sample Results
- Results of internal laboratory review activities
- Results of internal data review activities
- Results of Proficiency Evaluation studies
- Results of state certification applications
- Summary of holding time exceedence and data qualification
- Method detection limit study status

- Training activity summary
- SOP review/revision summary

At anytime, any laboratory employee, through the Laboratory Operations Manager, may present recommended changes to the Quality Assurance Officer.

15.2 QUARTERLY QUALITY SYSTEMS REPORTS TO MANAGEMENT

Quarterly reports are provided by the Quality Assurance Office staff to the Corporate Quality Office and the General Manager. The report summarizes quality assurance activities including details of corrective actions recommended or implemented, internal and external audit results, status of performance evaluation samples, certification status, training activities and SOP revision status.

GULF COAST
ANALYTICAL LABORATORIES, INC

QUALITY ASSURANCE PROGRAM PLAN

FOR

Gulf Coast Analytical Laboratories
7979 GSRI Avenue
Baton Rouge, Louisiana 70820

Revision 20
March 14, 2001

Approval Signatures:

3/15/01
Date
President

3/15/01
Date
Operations Manager

3/15/01
Date
QA/QC Director

TABLE OF CONTENTS

	PAGE
1.0 Quality Assurance Policy Statement	4
2.0 Corporate Ethics Policy	6
3.0 Quality Assurance Management	8
3.1 Quality Assurance Responsibilities	8
3.2 Quality Assurance System	9
3.2.1 Personnel Training	9
3.2.2 Procurement and Inventory Control	10
3.2.3 Standards for Analysis	11
3.2.4 Instrument Operation, Calibration, and Maintenance	11
3.2.5 Reporting and Recording Data	13
3.3 Quality Assessment	14
3.3.1 Processing of Quality Control Data	14
3.3.2 Statistical Quality Control	16
3.3.2.1 Precision	17
3.3.2.2 Accuracy	17
3.3.3 Data Validation	17
4.0 Administrative Organization	19
5.0 Facility Description and Capital Equipment	21
5.1 Laboratory Facility	21
5.2 Capital Equipment	21
6.0 Preventive Maintenance	22
7.0 Corrective Action	24
8.0 Laboratory Evaluation and Audits	26
8.1 Performance Audits	26
8.2 System Audits	26
9.0 Subcontracting of Analysis	27

TABLE OF CONTENTS

	PAGE
10.0 Analytical Methodology	28
10.1 Arrangement Ensuring Laboratory Review of New Work	28
11.0 Standard Operating Procedures	41
11.1 Sample Custody and Integrity	43
11.2 Chain of Custody	44
11.3 Custody Transfer	44
11.4 Sample Kits	44
11.5 Shipping Requirements	45
11.6 Cleaning Procedures	45
11.7 Data Generation, Reduction, and Validation	46
12.0 Sampling Handling Guidelines	48
13.0 Sample and Waste Disposal	51
13.1 Sample Disposal	51
13.2 Waste Disposal	51
13.3 Bulk Waste	51
13.4 Chemical Disposal	51
14.0 Safety Procedures	52
14.1 Basic Safety Rules	52
14.2 Arrangement of Furniture and Equipment	52
14.3 Hoods and Ventilation	52
14.4 Spills	52
14.5 Emergency Equipment	53
14.6 Protective Equipment	53
14.7 Storage of Laboratory Materials	54
14.8 Chemical and Sample Handling	54
14.9 Labeling	54
15.0 Confidentiality	55

Appendix A
Appendix B
Appendix C
Appendix D
Miscellaneous
Certifications

1.0 QUALITY ASSURANCE POLICY STATEMENT

Quality Assurance consists of a planned system of activities necessary to provide confidence in the results of laboratory analytical determinations. The principal objective of Gulf Coast Analytical Laboratories (GCAL) is the production of high quality analytical data through the use of measurements that are accurate and reliable for the intended purpose. We are dedicated to providing analytical data and services that conform to all of the requirements specified and expected by our clients. This Quality Assurance Program Plan details facilities, personnel and equipment necessary for accomplishing this objective along with general procedures and practices which will be followed to maintain adherence to the objective.

There is a commitment and dedication by all laboratory staff to produce data of known and documented quality. This commitment and dedication to quality is fully supported from the bench level to upper management in order to meet the objectives of our laboratory and best serve our clients.

GCAL's approach to Quality Assurance starts with the General Manager who delineates policy and sets goals in conjunction with senior management personnel. Policies are implemented by management staff and laboratory personnel. All departments are involved in the process by providing assessment of operating procedures along with recommendations for improvements or corrections. The QAPP and the appropriate Standard Operating Procedures are distributed to all laboratory personnel. All personnel are required to read and comply with this program.

The Quality Assurance/Quality Control Director , who reports directly to the General Manager, oversees prevention, assessment, and correction procedures for the analytical laboratory and various associated departments within the organization. These three functions; prevention, assessment, and correction, comprise the foundation of the laboratory's approach to Quality Assurance.

Prevention covers positive actions taken before or during analyses to insure that the analytical systems are functioning properly. Prevention includes such things as instrument calibration and maintenance, frequent standardization, personnel training and quality control planning.

Assessment is a component of quality control that includes monitoring of performance to determine precision and accuracy. Examples include duplicate and spike analyses, check samples, peer review of calculations and validation of methodology.

Correction is action taken to determine the causes of quality defects and to restore proper functioning of the analytical system. This may involve trouble shooting to correct instrument malfunctions, or retraining of personnel.

All quality assurance activity requires constant monitoring and documentation to provide evidence of consistent, valid analytical data. GCAL keeps records of such activities in order to have available for its clients documented assurance that the data they receive quantitatively reflect the parameters requested.

The policies and practices of quality assurance/quality control presented in this plan are set forth as minimums. Additional quality assurance/quality control measures may be required for a specific project.

GULF COAST
ANALYTICAL LABORATORIES, INC.

QUALITY ASSURANCE PROGRAM PLAN

FOR

Gulf Coast Analytical Laboratories
7979 GSRI Avenue
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TABLE OF CONTENTS

	PAGE
1.0 Quality Assurance Policy Statement	4
2.0 Corporate Ethics Policy	6
3.0 Quality Assurance Management	8
3.1 Quality Assurance Responsibilities	8
3.2 Quality Assurance System	9
3.2.1 Personnel Training	9
3.2.2 Procurement and Inventory Control	10
3.2.3 Standards for Analysis	11
3.2.4 Instrument Operation, Calibration, and Maintenance	11
3.2.5 Reporting and Recording Data	13
3.3 Quality Assessment	14
3.3.1 Processing of Quality Control Data	14
3.3.2 Statistical Quality Control	16
3.3.2.1 Precision	17
3.3.2.2 Accuracy	17
3.3.3 Data Validation	17
4.0 Administrative Organization	19
5.0 Facility Description and Capital Equipment	21
5.1 Laboratory Facility	21
5.2 Capital Equipment	21
6.0 Preventive Maintenance	22
7.0 Corrective Action	24
8.0 Laboratory Evaluation and Audits	26
8.1 Performance Audits	26
8.2 System Audits	26
9.0 Subcontracting of Analysis	27

TABLE OF CONTENTS

	PAGE
10.0 Analytical Methodology	28
10.1 Arrangement Ensuring Laboratory Review of New Work	28
11.0 Standard Operating Procedures	41
11.1 Sample Custody and Integrity	43
11.2 Chain of Custody	44
11.3 Custody Transfer	44
11.4 Sample Kits	44
11.5 Shipping Requirements	45
11.6 Cleaning Procedures	45
11.7 Data Generation, Reduction, and Validation	46
12.0 Sampling Handling Guidelines	48
13.0 Sample and Waste Disposal	51
13.1 Sample Disposal	51
13.2 Waste Disposal	51
13.3 Bulk Waste	51
13.4 Chemical Disposal	51
14.0 Safety Procedures	52
14.1 Basic Safety Rules	52
14.2 Arrangement of Furniture and Equipment	52
14.3 Hoods and Ventilation	52
14.4 Spills	52
14.5 Emergency Equipment	53
14.6 Protective Equipment	53
14.7 Storage of Laboratory Materials	54
14.8 Chemical and Sample Handling	54
14.9 Labeling	54
15.0 Confidentiality	55

Appendix A
Appendix B
Appendix C
Appendix D
Miscellaneous
Certifications

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All quality assurance activity requires constant monitoring and documentation to provide evidence of consistent, valid analytical data. GCAL keeps records of such activities in order to have available for its clients documented assurance that the data they receive quantitatively reflect the parameters requested.

The policies and practices of quality assurance/quality control presented in this plan are set forth as minimums. Additional quality assurance/quality control measures may be required for a specific project.

2.0 ETHICS POLICY

Gulf Coast Analytical Laboratories utilizes a clearly stated ethics policy in the form of the following Ethics and Data Integrity Statement. This agreement is discussed with all new employees during orientation and is then signed and retained with the employee's training file. Violation of the agreement is basis for termination of employment.

GULF COAST ANALYTICAL LABORATORIES, INC.

ETHICS AND DATA INTEGRITY AGREEMENT

I, _____, state that I understand the high standards of integrity required of me with regard to the duties I perform and the data I report in connection with my employment at GULF COAST ANALYTICAL LABORATORIES. Our core values are honesty, success, service and integrity, I understand that it is critical for our long-term success that each and every employee align with all company core values.

I agree that in the performance of my duties for GULF COAST ANALYTICAL LABORATORIES and its clients, I shall conform to the following ethics standards and will report immediately to the Quality Assurance Manager and the appropriate supervisor any information concerning misrepresentation of analytical data that includes, but is not limited to:

1) Altering an instrument computer or clock for any inappropriate purpose;

2) Altering the contents of logbooks and/or data sheets to misrepresent data;

3) Misrepresenting an analyst's identity;

4) Changing raw data documents with correction fluid;

5) Preparation and submittal of "fake" data packages;

6) Inappropriate calibration techniques such as peak shaving, setting fraudulent integrator parameters, or use of computer macros that alter QC results.

7) Changing reported results without proper documentation and approval;

8) Altering injection volumes for calibration and misrepresenting the true values;

9) Failure to comply with standard operating procedures or methods without proper documentation and approval;

10) Any attempt to misrepresent data or events as they actually occur in the course of data

production, review or reporting;

11) Disposing of or deleting electronic data files or hardcopy of raw data;

12) Engaging in any practice that ultimately misrepresents data or narratives in any way.

I will not knowingly participate in any such activity and will not tolerate unethical practices by others. I understand that confidentiality will be strictly enforced by GULF COAST ANALYTICAL LABORATORIES when dealing with these matters. As a further extension of my commitment to this program, I am responsible for seeking approval to report data resulting from techniques or procedures that may deviate from standard operating procedures, methods, or industry standard practices. Any such reporting of data will include a laboratory narrative that must be approved by the appropriate supervisor and the QA Manager.

If I am unsure of how to properly handle data generated by me, I am responsible for seeking advice and approval from the Quality Assurance Manager and the appropriate supervisor. I agree to inform the Quality Assurance Manager and the appropriate supervisor of any accidental reporting of non-authentic data by myself or others within 24 hours of discovery.

I understand that if I knowingly participate in any such prohibited activity, I will be subject to serious disciplinary action that may include termination by GULF COAST ANALYTICAL LABORATORIES. I also understand that I face individual suspension and debarment from all Federal programs should I be convicted of such practices. I understand that suspension and debarment from all Federal programs affects my ability to work in the environmental field, as well as, any other professions where government funding or loans may be involved. I understand the most serious consequence of unethical conduct can be imprisonment if convicted.

However, it is not the company's intent to punish anyone for an accidental mistake or oversight. Employees will not face disciplinary actions in this case. Repeated careless or neglectful behavior will be subject to corrective action. Covering up a mistake or oversight is not acceptable behavior and will result in termination. Mistakes or oversights should be immediately reported to the Quality Assurance Manager and the appropriate supervisor.

My signature affirms my understanding of the consequences of violating this "ETHICS AND DATA INTEGRITY AGREEMENT" and my commitment to its intent. My signature further affirms that I have received formal training on this topic.

_____
(Signature)

_____
(Date)

3.0 QUALITY ASSURANCE MANAGEMENT

3.1 Quality Assurance Responsibilities

The direct and ultimate responsibility for assuring data quality at Gulf Coast Analytical Laboratories rests with the General Manager. The General manager develops policies and general quality assurance strategies in collaboration with the Operations Manager, QA/QC Director, and Department Supervisors (GCMS-SVOA, GCMS-VOA, GC, Metals, Sample Preparation/Extractions, General Chemistry, Sample Management).

GCAL has clearly defined staff Quality Assurance (QA) responsibilities. The first level of QA lies with the laboratory analyst, who is responsible for performing the work properly, documenting it, and obtaining peer review to assure that it meets scientific standards. To accomplish this, the analyst must have a clear understanding of the analytical techniques and procedures used and the factors which affect the quality of the results. Analysts' capabilities are verified prior to conducting analyses and reviewed periodically thereafter.

Analysts must have a working knowledge of the QA policies, including data quality objectives for laboratory control standards, duplicates, and spikes; an understanding of detection limits and standard calibration requirements; and a knowledge of preventive maintenance techniques.

The second level of quality assurance lies with the management staff which includes Department Supervisors. Management is responsible for the proper training of analysts and stresses the importance of accuracy and reliability of results. Management is responsible for the quality of all analytical data produced. This responsibility includes routine review and approval or disapproval of all data and inspection of the QC records associated with the data. If the data are not adequately substantiated, corrective action is taken.

The QA/QC Director supports the entire process of the QA/QC program. This includes administration of the program as outlined in this manual, maintenance of QA records including this QAPP and preparation of reports to management covering QA activities. The QA/QC Director performs periodic audits of the QA procedures and staff, and coordinates all performance audits (e.g. check sample programs). The QA/QC Director will also assist in the preparation of QA programs to fit specific needs of clients, or for bid proposals.

3.2 Quality Assurance System

3.2.1 Personnel Training

It is the policy of GCAL to hire employees with an educational background and/or experience in an analytical field. On-the-job training takes place for all new employees based on needs identified by the job description and tasks of the position.

Training begins with the understanding of the official test methods to be performed and the corresponding QA/QC methodology. The Department Supervisor plays a significant role during this phase. Manuals for various methods are readily available to supplement the Standard Operating Procedure (SOP) for each analysis. Among the manuals are current copies of the EPA Test Methods for Evaluating Solid Waste (SW846), Chemical Analysis for Water and Wastes, Standard Methods and applicable ASTM methods.

The analyst must demonstrate that he/she is able to perform the tests with the accuracy and precision required. This is verified by analysis of laboratory control standards, matrix spikes, matrix spike duplicates, standards as knowns and check samples. Additionally, the trainee must demonstrate a strict adherence to the required quality control mandates set forth by the various regulatory agencies. This program accomplishes two things, (1) it educates the trainee and (2) it validates the trainee for specified tests. GCAL maintains a standard operating procedure detailing the certification process.

Training is also necessary for an employee whose performance does not meet standard requirements. This deficiency may be identified in a performance appraisal or through the occurrence of problems.

GCAL also recognizes development training as a means to increase the effectiveness of the employee and the organization. Therefore, GCAL utilizes other applicable training methods along with on-the-job training. Examples of this are seminars, specialized training by instrument manufacturers, and encouraging the employees to take related college courses.

New employees are hired for a probationary period of three months. At the end of three months the employee's records are reviewed and evaluated for performance and productivity and a decision is made whether to continue employment.

Periodic reviews are given to all personnel. The purpose of these reviews is to give recognition for good work and outline personnel and departmental objectives, suggestions for improvement and clarification of responsibilities. Other topics which concern either employee or employer are also discussed at this time.

3.2.2 Procurement and Inventory Control

Chemical reagents, solvents, gases, glassware and general chromatographic supplies are ordered as needed to maintain sufficient quantities on hand for use. Purchase orders are maintained as an inventory control of materials ordered by the laboratory. All orders are processed through central receiving and routed to the appropriate departments. Routine supplies are maintained on site in an inventory control stock room.

The grade or purity ordered varies depending on the analytical requirements. All reagents and standards must meet A.C.S. (American Chemical Society) Reagent Grade specifications or better. Chemical reagents and standards are dated when received and/or prepared in the laboratory and stored according to manufacturers suggestions. Flammable cabinets are available for hazardous reagents. Several refrigerators are in use to prevent contamination or deterioration. Incompatible reagents are stored separately. Prepared reagents and standards also must include names and concentrations. Primary reference standards are obtained from commercial or government sources as certified standards.

In organics, standards and reagents will be compared to the response for the most recent standard. In Inorganics, an independent source standard is used for verification with each analytical run.

It is the responsibility of the analyst to maintain the integrity of all chemicals used and notify the head of purchasing when standards or reagents do not meet specification so that corrective action can be taken. It is also the responsibility of the analyst to contact purchasing ahead of time before supplies are actually needed.

The purchase of analytical instrumentation is based on anticipated sample volume and the need to maintain superior quality data. Specifications are carefully examined to be sure new instrumentation meets current and anticipated needs. Warranty and service contract information is gathered at the time bids are reviewed and this information is considered in making the final selection. An extensive performance check-out before the instrument is accepted is mandatory. New equipment must undergo a rigorous method validation before being put into production. Operators of new instruments are sent to training courses if necessary.

Inventory records are maintained for all major capital equipment. Major suppliers of consumable items are:

Allometrics Fisher Scientific Company TRI-Gas Supelco VWR

3.2.3 Standards for Analysis

Preparation of standards for calibration must be made from pure materials (of known purity, 98% or better preferred) or from purchased concentrates certified by NIST, EPA, or other acceptable agencies.

All solvents used for preparation of standards for GC, GCMS, and HPLC are of pesticide grade. All standards, reagents, and solvents used for trace metal analysis must be trace-metal grade.

Stock standards can be kept up to one year if no expiration date is indicated by the manufacturer. All standards must be stored under conditions which provide the best protection against contamination and deterioration. Upon preparation of the standard, the following items must be recorded on the bottle containing the standard: date prepared, initials of the analyst preparing the standard, contents, concentration, and expiration date. All other information regarding the standard including solvent used, lot number(s) of solvent used, the analyte source, purity and lot number, expiration date, concentration, dilution procedure, analyst's initials, and date prepared must be entered in the log book (see Miscellaneous Forms at the end of this manual).

Preparation of intermediate standard solutions is strongly recommended for all analyses. These working standards include calibration standards, spiking solutions of analytes, surrogates, etc., and must be stored as required when not in use. Working standards for the analysis of volatile organic constituents must be prepared at least once in two weeks. Working standards for the analysis of semi-volatile organic constituents and pesticides must be prepared as needed or every six months.

Working standards for trace metal analysis should be prepared at least once a month for concentrations of 1 mg/L and less. Calibration standards for mercury and graphite furnace must be prepared daily.

The identification of each standard prepared must be unique and all documents related to sample analysis in which the standard was used must contain this unique identification. The document should be such that all of the standard information could be traced from the raw data for the sample.

Standards must be stored in separate refrigerated areas away from samples and extracts.

3.2.4 Instrument Operation, Calibration and Maintenance

Equipment is defined as any non-disposable mechanical and/or electronic device used in the generation or measurement of data.

Calibration is defined as adjusting equipment with reference standards to assure that any

measurement performed is quantitatively accurate. The reference standards should be traceable to primary standards (e.g., NIST or other certified standards). If traceable chemical standards are not available, standards may be prepared according to the laboratory quality control procedures or the project's requirements. Calibrations for each of the common laboratory instruments are outlined in Table 1. Specific requirements for each instrument may differ from method to method. This table illustrates the minimum acceptable criteria unless superseded by particular method criteria.

TABLE 1

	CALIBRATION CALIBRATION CURVE TOTAL POINTS	LINEARITY REQUIRED
HPLC	5 POINT	<20 % RSD
GC-VOA	5 POINT	Average<20 % RSD
GC-SEMIVOA	5 POINT	Average <20 % RSD
GC IH	5 POINT	<20 %
GCMS	5 POINT	Average <15 % RSD
LACHAT	5 POINT/10 POINT	0.995 CORRELATION COEFFICIENT
TOX	1 POINT	N/A
TOC	4 POINT	0.995 CORR. COEFF.
ICP	4 POINT/2 POINT	0.995 CORR. COEFF.
GRAPHITE FURNACE	4 POINT	0.995 CORR. COEFF.
FLAME	4 POINT	0.995 CORR. COEFF.
PS200 Hg ANALYZER	6 POINT	0.9995 CORR. COEFF.
GPC	1 POINT	N/A

1. Equipment for the generation, measurement or determination of data shall be adequately calibrated.

2. Equipment shall have adequate procedures for operation, calibration, maintenance and quality control which shall:
   -Be prepared in written form as an SOP
   -Be congruent with the manufacturer's recommendations
   -Reflect actual use patterns for the equipment

-Establish frequency intervals particular to the equipment

3. Equipment shall be calibrated and maintained in accordance with the procedures and schedules detailed in the equipment SOP.

4 Calibration and maintenance intervals begin from the date of last calibration or service.

5. Equipment maintenance shall be documented and the records retained in accordance with the logging requirements of the SOP, in the respective equipment file.

The Operations Manager and/or the Department Supervisor shall:
- Identify, compile and write the SOP
- Make pertinent SOP's available to the appropriate staff (This is to be coordinated with the QA Manager)
- Maintain instrument SOP's with the instruments. Operation manuals shall also be available in the immediate work area. The Department Supervisor is responsible for verifying that the manufacturer's manuals are kept up-to-date by replacing obsolete information with updates provided by the manufacturer.
- Ensure that the logbooks are initiated and maintained in accordance with the SOP's
- Review records for completeness and accuracy, which indicates the equipment, is in proper working order.
- Monitor and assure compliance with the SOP.

The Quality Assurance Department shall:
-Coordinate SOP preparation.
-Coordinate review/revision of SOP's.
-Reproduce and issue SOP's.
-Retain current and historical copies of the SOP's.
-Maintain distribution list of issued SOP's. Recall superseded copies.
-Verify compliance (via inspections).

Maintenance is defined as cleaning and/or replacing equipment components to assure that the equipment has been properly and periodically serviced and is in satisfactory condition.

All measurements must be within the instrument linear range where correction factors are valid. It is the responsibility of the analyst to verify that the instrument configuration and operating conditions used satisfy the analytical requirements and to maintain quality control data confirming instrument performance and analytical results.

All analyses requiring calibration of instrumentation follow strict procedures. Space restrictions in the QA manual limit detailing all instrument calibration procedures.

3.2.5 Reporting and Recording Data

All raw data is recorded in bound books and/or by instrument printout. This includes such information as standard curves, matrix spikes, duplicates, reagent blanks, calculations and any

notations concerning a given analysis. All preventive maintenance information is recorded in a logbook assigned to each instrument.

When analyses are complete, the information is transferred to the proper worksheets and is entered into the LIMS. The data is then reviewed and authorized by the Department Supervisor. The final report is then printed. The final report will include detection limits and references for each analyte. A batch quality control report will also be included with each report. Additional quality control data may be included if requested by the client. The data validation manager or his designee will review the data. Only after the reports have been authorized and signed by the Operations Manager or his designee are they released to the client.

The laboratory will retain all records related to sample analysis including raw test data, calculations, derived data, calibrations and copies of test reports. These records will be stored in systematic manner for a minimum of five years. Longer periods of storage may be arranged at the time of a project initiation. If the laboratory is going out of business, clients will be notified at least 60 days (if time permits) prior to closure of the laboratory and will receive a final report for all submitted samples.

Additional information is kept in-house for documentation of control. This includes performance evaluation reports, equipment and supplies inventory, control charts for matrix spikes and duplicates, quality assurance audits, standards as knowns, standards as blinds and method validations. This information is used by management to track the progress and needs of the corporation.

3.3 Quality Assessment

Quality assessment is accomplished by monitoring the accuracy, completeness, and precision of the quality control data, such as blanks, calibration curves, duplicates, spikes, internal standards or surrogates. Additionally, system audits, standards as knowns and standards as blinds may be used to validate the correctness of numerical computations. Other tools are preventive maintenance charts, performance evaluations and chain-of-custody procedures. By proper maintenance of these tools, the entire system of data production is verified.

3.3.1 Processing of Quality Control Data

This section describes the analytical treatment of the data resulting from the quality control samples through specific routine procedures used to assess data precision and accuracy.

A reagent and/or method blank is prepared and analyzed with each set of samples. Field blanks (if provided by the client) are analyzed to determine possible sample contamination during collection and shipment to the laboratory. Trip blanks are applicable to volatile organics analysis (VOA) where volatile contaminants can be introduced from ambient air on site, during shipment, and in the laboratory.

Each instrument is calibrated according to the TABLE 1 on page 12. If the standard curve is known to be stable, the standard curve can be verified daily by the analysis of a midpoint standard.

One sample is to be analyzed in duplicate for each matrix and each batch of samples (Inorganics), but no less than one for each twenty samples. One sample in every batch of samples or for each matrix, but no less than one every twenty samples, is to be spiked. A matrix spike duplicate (Organics) will also be prepared for each sample selected for spiking.

Semi-annually, the Quality Assurance Manager introduces a double-blind sample unknown to the analyst. These samples are submitted to each analytical department within the laboratory.

Standard Reference Materials (SRMs) are introduced periodically into the testing scheme by the QA Manager to evaluate the testing procedure and the analyst's performance.

A Laboratory Control Standard consisting of deionized water spiked with the parameter(s) of interest is analyzed. Laboratory Control Standards are routinely used for most analyses.

Every sample is spiked with the appropriate surrogate standards prior to extraction and analysis for all organic compounds analysis. Internal standards are added to all samples for GC Volatiles and GC/MS Semi-volatiles testing prior to analysis.

When the analysis of a sample set is completed, the results will be reviewed and evaluated to assess the validity of the data set. Review is based on the following criteria:

Reagent Blank Evaluation - The reagent and/or method blank results are evaluated for high readings characteristic of background contamination. If high blank values are observed, laboratory glassware and reagents should be checked for contamination and the analysis halted until the system can be brought under control before further sample analysis proceeds. The concentration of an analyte in a reagent blank should be below the reporting limit for most methods.

Field Blank Evaluation - Field blank results are evaluated for high readings similar to the reagent and/or method blanks described above. If high field blank readings are encountered, the procedure for sample collection, shipment, and laboratory analysis should be reviewed. If both the reagent and/or method blanks and the field blanks exhibit significant background contamination, the source of contamination is probably within the laboratory. In the case of VOAs, ambient air in the laboratory and reagents should be checked as possible sources of contamination.

Calibration Standard Evaluation - The calibration curve is evaluated to determine linearity through its full range, and that sample values are within the range defined by the low and high standards. If the curve is not linear, sample values must be corrected for nonlinearity by deriving sample concentrations from a graph or by using an appropriate algorithm to fit a nonlinear curve to the standards.

Replicate Sample Evaluation - Duplicate sample analysis for the sample set is used to determine the precision of the analytical method for the sample matrix. The duplicate results are used to calculate the precision as defined by the relative percent difference (RPD). The precision value, RPD, should be plotted on control charts for the parameter determined. If the precision value exceeds the control limits, the sample set may be reanalyzed for the parameter in question.

Matrix Spike Evaluation - The observed recovery of the spike versus the theoretical spike recovery is used to calculate accuracy as defined by the percent recovery. The accuracy value, the percent recovery, should be plotted on a control chart for the parameter determined. If the accuracy value exceeds the control limits for the given parameter, the LCS is reviewed to verify the analytical system is in control. The failure may be a result of an error or the matrix. If the accuracy value exceeds the control limit, the sample set may be reanalyzed for the parameter in question.

Reference Standard Evaluation - Standard Reference Materials analyses are compared with true values and acceptable ranges. Values outside the acceptable ranges require corrective action to determine the source of error. All sample analyses should be halted pending this evaluation. Following correction of the problem, the SRM should be reanalyzed.

Laboratory Control Standard Evaluation - The results of check standard analyses are compared with the true values and the percent recovery of the check standard is calculated. If correction is required, the check standard should be reanalyzed to demonstrate that the corrective action has been successful.

Surrogate Standard Evaluation - The results of surrogate standard determinations are compared with the true values spiked into the sample matrix prior to extraction and analysis. The percent recoveries of the surrogate standards must be determined.

Additional data validation is accomplished by participation in performance evaluations such as those sponsored by EPA approved suppliers and ASI (Analytical Standards, Inc.) which provide further review for in-house QA/QC procedures.

3.3.2 Statistical Quality Control

As part of the analytical quality control program, the precision and accuracy for each parameter analyzed is determined. Initially, when these data are compiled, the evaluation is applied over a broad concentration range. As more data are accumulated, precision and accuracy determinations will be updated and criteria developed to define precision and accuracy over specific concentration ranges.

Control charts may be established for all major analytical parameters. A minimum of twenty measurements of precision and accuracy are required before control limits can be established. In general, control limits of ±three standard deviations shall be utilized. Once established, control limits are updated as additional precision and accuracy data become available.

3.3.2.1 Precision

Precision is the measure of how closely multiple analyses of a particular sample agree with each other. To determine the precision of the method and/or laboratory analyst, a routine program of replicate analyses is performed. The results of the replicate analyses are used to calculate the relative percent difference (RPD), which is the governing quality control parameter for precision.

The relative percent deviation (RPD) for replicate analyses is defined as 100 times the difference (range) of each replicate set, divided by the average value (mean) of the replicate set.

3.3.2.2 Accuracy

In addition to the evaluation of analytical precision, GCAL evaluates accuracy. When a program for evaluation of analytical accuracy is established, the evaluation is applied over the entire range of spiking concentrations. As more data are accumulated, the evaluation procedure is refined to define the analytical accuracy of the method over specific concentration ranges. To determine the accuracy of an analytical method and/or the laboratory analyst, a periodic program of sample spiking is conducted. The results of sample spiking are used to calculate the quality control parameter for accuracy evaluation, the Percent Recovery (%R).

The %R is defined as 100 times the observed concentration, minus the sample concentration, divided by the true concentration of the spike.

Control charts are developed to predict trends (positive or negative) in the analytical processes and to determine when an analysis is out of control.

Examples of situations which may show up in control charts are:

- Shift in mean - this may be caused by incorrectly prepared standards or reagents, contamination of sample, problems in instrument calibration, or analyst error.
- Trend of mean upward - this may be caused by deterioration of standards or reagents.
- -Trend of mean downward - this may be caused by concentration of standard due to evaporation of solvent or deterioration of reagents.
- Increase in variability - this may be caused by poor technique by the analyst or deviation from procedure.

3.3.3 Data Validation

Data validation is performed to check data integrity and to verify that the data is correct and of an acceptable quality. Data integrity involves reviewing all documentation for errors and mistakes. It includes review for correct documentation of sample ID's, verification that

holding times were met, transcription errors, correct calculations, complete records, and for acceptable chain of custody documentation. A review of the data is performed to verify the results and to assure that all QC is within acceptable criteria. The data is reviewed according to the criteria that applies to the particular analysis and according to the client specific project requirements. The reviewer will identify unacceptable data and initiate the appropriate corrective actions.

Data validation begins with the processing of data. Data processing can be performed by the analyst who obtained the data or by another analyst. Validation continues with checking that the data processing has been done correctly. This step can be performed by an independent analyst or the Department Supervisor. At this time a member of the QA/QC Department may review the data processing. All those who review data processing shall indicate this by signature and date on the documents validated or reviewed.

In general, data will be processed by an analyst in one of the following ways:

- Manual computation of results directly on the data sheet or on calculation pages attached to the data sheets
- Input of raw data for computer processing
- Direct acquisition and processing of raw data by a computer.

If data is manually processed by an analyst, all steps in the computation shall be provided including equations used and the source of input parameters such as response factors, dilution factors, and calibration constants. The analyst shall sign and date in ink each page of calculations. For data that are input by an analyst and processed using a computer, a copy of the input shall be kept and uniquely identified with the sample numbers and other information as needed. The samples analyzed shall be evident and the input signed and dated by the analyst. If data are directly acquired from instrumentation and processed, the analyst shall verify that the following are correct: sample numbers, calibration constants and response factors, output parameters such as units, and numerical values used for detection limits. The analyst shall sign and date the resulting output.

The Department Supervisor or his representative will validate the data entered into the LIMS. The data is then released to the Report Generation department for generation and preparation of a final report. Data reports must be reviewed to verify that information reported by GCAL corresponds with processed analytical results. The final report is reviewed by the Data Validation department prior to transmission of the report from the laboratory. The laboratory Operations Manager or his designee signs the final report. The client will be notified in writing if there were any difficulties encountered while performing the analysis.

4.0 ADMINISTRATIVE ORGANIZATION

Gulf Coast Analytical Laboratories is organized along clear lines of authority to provide our clients with service that is efficient and reliable. The organizational structure of the laboratory is shown in Appendix A. To assure communication between the departments, key personnel meet weekly, or more frequently as needed to discuss and coordinate the activities in the laboratory. The laboratory personnel also meet daily with project management to discuss key issues for that day. Resumes of key personnel are attached in Appendix A.

It is the policy of the laboratory that at each management and operational level a designated deputy or deputies will maintain continuity of service and other functions in the event of absence of key staff.

Each department within the laboratory has specific roles and responsibilities in terms of producing a product of known quality. All laboratory personnel are expected to have a working knowledge of the Quality Assurance Program Plan.

The General Manager bears the primary responsibility for data quality at the laboratory. The General Manager directs the functional areas of marketing, finance and administration for the laboratory.

The Operations Manager is responsible for coordinating the activities of analysts and technicians. The Operations Manager assures the commitment of sufficient resources for the timely generation of data of a known quality. The technical operation of the laboratory is the responsibility of the Operations Manager.

The Technical Services Manager is responsible for coordinating the activities of the sample administration department, client services, and administrative support personnel.

The Information Technology Director manages the implementation and development of information technology tools. He is also responsible for the automated data collection systems used by the laboratory. He performs strategic planning for IT projects based on projected needs of the Laboratory. Interacts with clients to determine IT requirements such as electronic deliverables.

The QA/QC Director is responsible for the preparation and maintenance of the laboratory Quality Assurance Program Plan. The QA/QC Director acts as the official laboratory contact for audits, performance evaluation studies, and project-specific quality control issues. The QA/QC Director approves and confirms the implementation of corrective actions. The QA/QC Director is responsible for the approval and distribution of controlled documents. The QA/QC Director has the authority to intercede in all areas where quality related problems exist. No work will be released until the related quality deficiency has been corrected and approval has been given to proceed forward.

Department Supervisors are responsible for the overall flow of work and data through the

laboratory. They are responsible for the maintenance of accurate SOP's. Further responsibilities include general management of all activities within their department, ensuring that all instrumentation and equipment meet performance criteria and calibration requirements, and training of laboratory staff. The Supervisor is responsible for validating data released from the department. Department Supervisors inform the Operations Manager or Technical Services Manager of project status and capacity issues.

Project Managers act as liaisons between the laboratory and the client. Responsibilities include sample scheduling, communicating project-specific requirements to laboratory personnel, review of log-in summaries, notifying the client of any sample receipt or analytical problems, monitoring the progress of analytical work, and providing data to clients in a timely manner. Project Managers document client complaints.

At the bench level, analysts are responsible for the generation of data by analyzing samples according to written SOP's. They are also responsible for ensuring that all documentation related to the analysis is accurate and complete. The analyst should inform the Department Supervisor of quality problems immediately. The analysts have the authority to accept or reject data based on compliance with QC acceptance criteria. Analysts are responsible for initial review of all data.

The Data Validation Manager is responsible for review of final reports. Any discrepancies found in the data is reported to the appropriate Department Supervisor for review and correction if necessary.

5.0 FACILITY DESCRIPTION AND CAPITAL EQUIPMENT

5.1 LABORATORY FACILITIES

Gulf Coast Analytical Laboratories is a full service environmental laboratory . The laboratory was established in 1979 with a staff of two and has grown to its present size of over 60 employees operating in a modern laboratory space of 20,000 square feet.

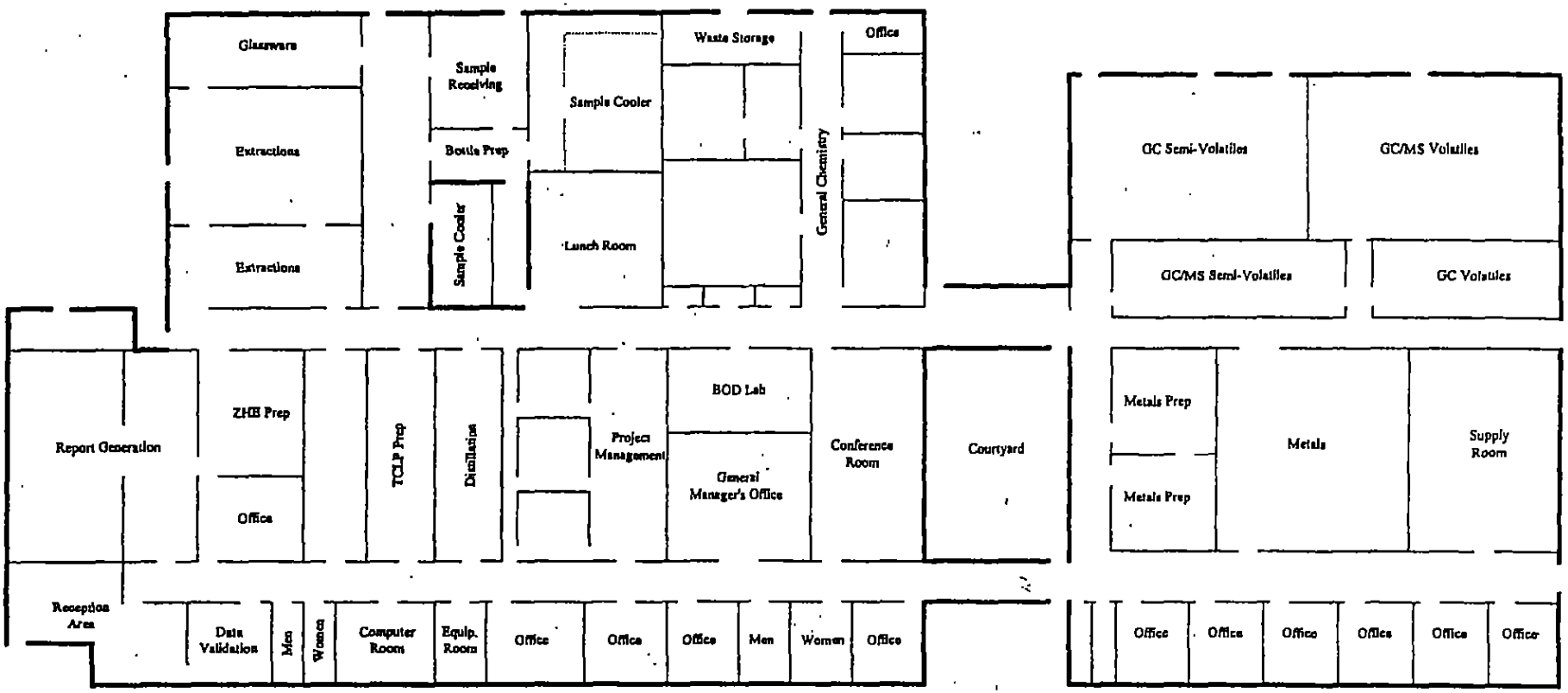
The laboratory's working areas are subdivided into areas for instrumental analysis, wet chemistry and sample preparation . These areas are designed to allow for a safe and comfortable working environment with special attention having been given to ventilation, air flow patterns and environmental controls. Administrative and Marketing areas are located for optimization of supervision and to allow for efficient handling of paperwork and results. The laboratory is protected by an electronic security system. A floor plan of the facility is included in this document.

5.2 CAPITAL EQUIPMENT

Laboratory equipment and instrumentation are maintained in compliance with instrumentation manuals. All equipment is kept in working condition to allow for conformity to each approved method. The key instrumentation such as Gas Chromatography, Mass Spectrometers/Gas Chromatographs, ICP and Atomic Absorption Spectrometers have maintenance contracts with their respective suppliers. A list of instrumentation and equipment is included in Appendix D.

GULF COAST
ANALYTICAL LABORATORIES, INC.

Facility Floor Plan



Approximate Square Footage: 19,600 Sq. Ft.

Scale: 1 in. = 25 ft.

Sample Receiving/Cooler:	1320	GCMS Volatiles:	906
Extractions/Prep:	2913	GCMS Semi-Volatiles:	394
General Chemistry:	2025	GC Volatiles:	323
Metals:	840	GC Semi-Volatiles:	906
Metals Preparation:	450	Report Generation:	713
Supply Room:	616	Offices/Storage:	8200

Drawing: flrpln2.vsd
Revised: 11/10/99

6.0 PREVENTIVE MAINTENANCE

In order to prevent system down time, minimize corrective maintenance cost and to help insure data validity, GCAL uses a system of preventive maintenance.

Specific operator manuals are used to pinpoint steps in the preventive maintenance scheme for individual instruments. All routine maintenance is performed as recommended by the manufacturer. These manuals also assist in identification of commonly needed replacement parts so that an inventory of these parts can be properly maintained.

Maintenance contracts are purchased for most instruments. This insures periodic preventive maintenance visits by factory authorized service representatives and immediate service for corrective actions if required.

An instrument log, found in Appendix C, is associated with each instrument. Notation of the date and preventive maintenance activity is recorded when performed. This includes routine service checks by laboratory personnel as well as factory service calls. Instrumentation logs are periodically reviewed by the QA manager and the information contained in them is used to help identify long and short term equipment needs of the laboratory. This log also provides a written source for future use in preventive maintenance. A preventive maintenance SOP details the frequency and type of routine maintenance required for laboratory instrumentation.

Maintenance logs are also used for ovens, refrigerators, incubators, etc. The log is to ensure that every facet in the operation of this lab is correctly documented.

Calibration curves, verification standards and internal standards insure that an instrument produces acceptable results. If calibration values do not conform to the expected results, calibration is repeated. An operator may perform routine maintenance at this point if problems persist. Some examples of these tasks would be the replacement of a nebulizer, adjusting an uptake level, cleaning a mixing chamber or replacing a column. Intensive maintenance is performed by authorized representatives of the instrument manufacturer.

All balances are serviced by an external certified service engineer semi-annually. Analytical balances are calibrated daily, using Class S weights. The Class S weights are re-certified annually. Daily temperature logs are also kept for other instrumentation to insure reliable analytical data. All liquid-in-glass thermometers used for recording temperatures are calibrated against a NIST-traceable thermometer yearly. The calibration of dial-type thermometers and temperature probes are checked quarterly against a NIST-traceable thermometer.

When a piece of equipment is deemed defective, it is taken out of service and identified with an orange "OUT OF SERVICE" label. For support equipment such as balances, ovens, coolers, and pipettors, the QA/QC Department is notified so that proper servicing and repair can be scheduled. Routine and preventive maintenance for major instrumentation is performed by the analysts. If outside service is necessary, it is scheduled by the Department Supervisor with

approval from the Operations Manager. Satisfactory instrument performance must be verified prior to returning to service any repaired equipment.

7.0 CORRECTIVE ACTION

Corrective actions are a continual part of GCAL's plan for quality assurance in sample analysis. When errors, deficiencies, or out-of-control situations develop, corrective action is taken.

Every attempt is made by the laboratory staff to comply with the requirements set forth in the methodology, Standard Operating Procedures, and the Quality Assurance Program Plan. If departures are needed due to client requests they will be reviewed by the Operations Manager and the QA/QC Director. If departures from specified requirements occur due to unforeseen circumstances , the occurrence will be documented. If samples are affected by the departure the client will be notified and a case narrative will be included with the report. Corrective action will be initiated if necessary

On-the-spot or immediate action usually applies to spontaneous, or generally non-recurring problems, such as an instrument malfunction. Long-term corrective action is used to eliminate unsatisfactory conditions in order to improve overall data quality.

On-the-spot Corrective Action Procedure: Any staff member who detects/suspects nonconformance to previously established criteria or procedure in equipment, instruments, data, methods, etc. shall immediately notify the appropriate department supervisor and/or Operations Manager. In many cases, the staff member will be able to correct the problem.

When a situation results in a change in data reported, a corrected report shall be prepared and submitted to the client. The corrected report file copy shall then be attached to the top of the original report file copy so that sample analytical data is complete and accurate.

If a large quantity of data is affected, or if any of the analyses conducted during the suspect period were of a critical nature, or if the program involved is one which requires documented corrective action, the long-term corrective action procedure is to be followed.

Long-term Corrective Action Procedure: Any staff member who detects a recurring or unresolved quality assurance problem shall advise the Operations Manager and the QA/QC Director. The QA/QC Director shall notify the Operations Manager and the Department Supervisor if applicable, and prepare and route a Corrective Action Form (CAF), and advise GCAL management by copy of the CAF (See Miscellaneous Forms).

As determined appropriate, the staff member, Department Supervisor, Operations Manager, QA/QC Director, and GCAL management shall consult to determine a suitable corrective action plan and report same on the CAF. The corrective action shall be initiated, documented and results forwarded to QA/QC Director. The QA/QC Director shall investigate to verify resolution. The QA/QC Director shall close the CAF or plan for follow up if determined necessary before CAF may be considered closed. If the corrective action was unsuccessful, the above procedure is to be repeated.

In the event that data reported to clients has been affected/corrected, they will be contacted in writing by the QA/QC Director, informing them of the circumstances and that a corrected report will be issued to them.

Corrective action forms will also be used to document and investigate customer inquiries and complaints.

8.0 LABORATORY EVALUATION AND AUDIT

8.1 Performance Audits

As a check on the laboratory's accuracy and precision, as well as to demonstrate performance for certification, GCAL participates in several inter- and intra-laboratory check sample programs. The intra-laboratory check sample program includes the submission of blind samples (duplicates and spikes) by the QA/QC Director. These samples are analyzed as routine samples by normal procedures with no additional priority or care by the analyst. In this way, a normal laboratory analysis is completed and reviewed by the QA/QC Director to monitor the control of test procedures and analysts.

On a semi-annual basis, double-blind QC samples are obtained from Analytical Standards, Incorporate (ASI) covering various parameters of water and wastewater. The results for these samples are compared to the true value or statistically determined values. ASI provides a complete report for each study along with the laboratory evaluation. This study is used to assess overall laboratory performance.

We participate in the following programs to demonstrate analytical proficiency or to provide proof of acceptable performance for certification by outside agencies.

- Water Pollution Performance Evaluation Studies
- ERA Soil Studies

8.2 System Audits

System audits are performed to determine if all aspects of the QA program are operational.

The following elements of the program are reviewed by the QA/QC Director:

Sample handling, including custody and storage procedures
Sample analysis
Records
Preventive maintenance
Check sample programs (proficiency testing)
Training

Through use of a check list, the QA/QC Director reviews all information pertaining to QA at this time, summarizes the situation and notes any deficiencies. A report is prepared based on the audit and is distributed to management in a timely manner. The report is also discussed with laboratory personnel so that a concerted effort can be made to correct any deficiencies as well as provide positive feedback.

The QA/QC department conducts a review of 5% of all final reports. The review includes a complete audit of the raw data and the report.

9.0 SUBCONTRACTING OF ANALYSIS

Sub-contracting laboratories will be reviewed with an emphasis on their overall quality control practices and compliance to Gulf Coast Analytical Laboratories quality assurance requirements. Any laboratory used for subcontracting must be approved by the QA/QC Department and must submit a copy of their Quality Assurance Manual, certification list and relevant proficiency study results. The certification list will be used to verify the sub-contract lab has the certifications required for the particular project. A list of approved subcontracting laboratories will be maintained. If testing is subcontracted to another laboratory, the client will be notified in writing.

10.0 ANALYTICAL METHODOLOGY

GCAL utilizes methods of analysis that provide evidence of analyte identification, separation from interfering substances, limits of measurement appropriate to that of analyte concentration and reasonable measures of precision and accuracy of the data obtained. Depending upon the analysis requested and the sample matrix, the methods used may be official, standard or reference, screening, or modified. Analyses will be performed in accordance with the methods cited herein unless specific project requirements or needs dictate adoption of an alternate method or modification of the cited methods.

If analysis is performed in an alternate manner, the method shall be documented. Documentation is dependent upon the specific instrumentation and data collection and reduction methods used within the lab. Methods used directly from official or standard procedures are referenced as such. Routinely used procedures are available in each department and are also available in an electronic data base on the laboratory computer network. Official protocols are used when required or requested.

The methods indicated in the following tables are typical and for information purposes only. Additional methods are available, including industrial hygiene methods.

GCAL has the capability to provide many levels of reporting formats. An outline of these formats is attached in Appendix B.

10.1 Arrangements Ensuring Laboratory Review of New Work

For the laboratory to perform additional work within its scope or to expand its scope of testing a thorough review must be undertaken. Laboratory management considers available resources and current and pending workload prior to accepting new work.

It is the responsibility of the Laboratory Operations Manager, with input from the department supervisors and General Manager, to assess the ability of the laboratory to accept new work.

ORGANICS

PARAMETERS	METHOD	REFERENCE
Halogenated Volatile Organics	8021B	2
Aromatic Volatile Organics	8021B	2
Phenols	604 8041	6 2
Organochlorine Pesticides	608 8081A	6 2
PCB's	8082	2
Total Organic Carbon (TOC)	415.1 5310B 9060	1 3 2
Total Organic Halides (TOX)	450.1 9020B 5050/9056	1 2 2
TPH-IR	418.1	1
TPHG	8015BM	2
TPHD	8015BM	2
GRO	8015BM	2
DRO	8015BM	2

ORGANICS

PARAMETERS	METHOD	REFERENCE
Chlorinated Hydrocarbons	8121	2
Organophosphorus Pesticides	8141A	2
Chlorinated Herbicides	8151A	2
Dissolved Gases	RSK175	9
GC/MS Volatile Organics	624 8260B	6 2
GC/MS Semivolatile Organics	625 8270C	6 2
GC/MS SIM	8270C	2
HPLC-PAHs	8310	2
Solvents	8000	2
Alcohols	8000	2
Extractions and Preparations		
TCLP	1311	2
Liquid-Liquid	3510C 3520C	2 2
Ultrasonic	3550B	2
Waste Dilution	3580A	2
Soxhlet	3540C	2

ORGANICS

PARAMETERS	METHOD	REFERENCE
Extractions and Preparations		
Purge & Trap	5030B	2
Closed System Purge & Trap & Extraction for VOA in Solids and Wastes	5035	2

METALS

PARAMETERS	METHOD	REFERENCE
Aluminum		
-ICP	200.7	7
	6010B	2
Antimony		
-GFAA	204.2	1
	7041	2
-ICP	200.7	7
	6010B	2
Arsenic		
-GFAA	206.2	1
	7060A	2
-ICP	200.7	7
	6010B	2
Barium		
-ICP	200.7	7
	6010B	2
Beryllium		
-ICP	200.7	7
	6010B	2
Boron		
-ICP	200.7	7
	6010B	2
Cadmium		
-GFAA	213.2	1
	7131A	2
-ICP	200.7	7
	6010B	2
Calcium		
-ICP	200.7	7
	6010B	2

METALS

PARAMETERS	METHOD	REFERENCE
Chromium		
-GFAA	218.2	1
	7191	2
-ICP	200.7	7
	6010B	2
Chromium (Hexavalent)		
-colorimetric	7196A	2
Cobalt		
-ICP	200.7	7
	6010B	2
Copper		
-GFAA	220.2	1
	7211	2
-ICP	200.7	7
	6010B	2
Iron		
-ICP	200.7	7
	6010B	2
Lead		
-Flame	239.1	1
	7420	2
-GFAA	239.2	1
	7421	2
-ICP	200.7	7
	6010B	2
Magnesium		
-ICP	200.7	7
	6010B	2
Manganese		
-ICP	200.7	7
	6010B	2
Mercury		
-Cold vapor	245.1	1
	7470A	2
	7471A	2

METALS

PARAMETERS	METHOD	REFERENCE
Molybdenum		
-ICP	200.7	7
	6010B	2
Nickel		
-ICP	200.7	7
	6010B	2
Potassium		
-Flame	258.1	1
	7610	2
-ICP	200.7	7
	6010B	2
Selenium		
-GFAA	270.2	1
	7740	2
-ICP	200.7	7
	6010B	2
Silver		
-Flame	272.1	1
	7760A	2
-GFAA	272.2	1
	7761	2
-ICP	200.7	7
	6010B	2
Sodium		
-Flame	273.1	1
	7770	2
-ICP	200.7	7
	6010B	2
Strontium	200.7	7
	6010B	2

METALS

PARAMETERS	METHOD	REFERENCE
Tin		
-ICP	200.7	7
	6010B	2
Titanium		
-ICP	200.7	7
	6010B	2
Vanadium		
-ICP	200.7	7
	6010B	2
Zinc		
-ICP	200.7	7
	6010B	2
Zirconium		
-ICP	200.7	7
	6010B	2
Sample Preparation Methods		
- Acid Digestion – Aqueous FLAA & ICP	200.7	7
	3010A	2
- Acid Digestion – Aqueous GFAA	200.0, 2XX.X	1
	3020A	2
- Acid Digestion – Solids	3050B	2
- Microwave Assisted Acid Digestion – Solids & Organic Matrices	3051	2
	3052	2
- TCLP	1311	2
- SPLP	1312	2

INORGANICS

PARAMETERS	METHOD	REFERENCE
Acidity	305.1/305.2	1
	2310B	3
Alkalinity	310.1	1
	310.2	1
	2320B	3
Asbestos	NIOSH 7400	
BOD	405.1	1
	5210B	3
Bromide	320.1	1
	300.0	1
	9056	2
BTU	D240-92	4
Cation Exchange Capacity	9080	2
COD	Hach 8000/8328	5
Corrosivity	1110	2
	9040	2
	9045	2
Chloride	325.3	1
	300.0	1
	9056	2
	9250	2
Residual Chlorine	330.3	1
	4500-CLG	3

INORGANICS

PARAMETERS	METHOD	REFERENCE
Coliform		
-Fecal	9222D	3
Color	110.2	1
	2120C	3
Conductivity	120.1	1
	2510B	3
	9050	2
Cyanide		
-Free	335.3	1
-Total	335.2/335.3	1
	9012A	2
-Amenable to Chlorination	335.1/335.3	1
Density	2520C	3
Fluoride	340.2	1
	300.0	1
	9056	2
Hardness		
-Calculation	2340B	3
Ignitability	1010	2
Oven Moisture	2540B	3
Nitrogen		
-Ammonia	350.3	1
	4500NH3BE	3
-Kjeldahl	357.4	1
	4500-NO,NH3E	3
-Nitrate	353.2	1
-Nitrite	353.2	1

INORGANICS

PARAMETERS	METHOD	REFERENCE
Odor	140.1	1
	2150B	3
Oil & Grease	1664A	8
	9070	2
	9071A	2
Oxygen, Dissolved	360.1	1
	4500-OC	3
Phenolics	420.1/420.2	1
	9066	2
pH	150.1	1
	9040A	2
	9045A	2
Phosphorus		
-Orthophosphate	365.2	1
	4500PBE	3
-Total Phosphorus	365.1	1
Reactivity		
-Cyanide	7.3.3.2	2
-Sulfide	7.3.4.2	2
Silica, Dissolved	370.1	1
	4500-SiDE	3
Solids		
-Total Dissolved	160.1	1
	2540C	3
-Total Suspended	160.2	1
	2540D	3
-Total Solids	160.3	1
	2540B	3
-Total Volatile Solids	160.4	1
	2540E	3

INORGANICS

PARAMETERS	METHOD	REFERENCE
Specific Gravity	2710F	3
Sulfate	375.4	1
	300.0	1
	9038	2
	9056	2
Sulfide	376.1	1
	9034	2
Sulfite	377.1	1
	4500-503B	3
Surfactants		
-Ionic (MBAS)	5540C	3
-Non-Ionic (CTAS)	5540D	3
Turbidity	180.1	1
	2130B	3
Viscosity	D2196	4
Sample Preparation Procedures		
- Alkaline Digestion – Cr^{+6}	3060A	2
- Bomb Prep Method for Solid Waste	5050	2
- Distillation – Sulfides	9030B	2
- SPLP	1312	2

METHOD REFERENCES

1) EPA 600 4-79-020, Methods For Chemical Analysis of Water and Wastes, 1983, second printing.

2) EPA SW-846, Test Methods for Evaluation Solid Waste, 3rd Edition, Update I dated 7/92, Update II dated 9/94, Update IIA dated 8/93, Update IIB dated 1/95, Update III dated 12/96.

3) APHA/AWWA/WPCF, Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.

4) ASTM, American Society for Testing & Materials.

5) Hach Company, EPA Approved Procedures for Water and Wastewater, 1986.

6) 40 CFR Part 136 Appendix A, Test Procedures for Analysis of Organic Pollutants

7) Method 200.7, Determination of Metals and Trace Elements in Water and Wastes By Inductively Coupled Plasma-Atomic Emission Spectrometry, Revision 4.4, EMMC Version, May 1994.

8) EPA-821-R-98-002, USEPA Office of Water Analytical Methods; Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, February 1999.

9) EPA Standard Operating Procedure

11.0 STANDARD OPERATING PROCEDURES

GCAL employs standard procedures for all work performed. These standard procedures insure that work is completed in a professional and timely manner and that all contractual obligations are met.

The standard operating procedures cover (1) sample receipt and handling, (2) data generation, reduction and validation, and (3) sample and waste disposal.

Standard safety procedures are also part of GCAL Standard Operating Procedures. Confidentiality and security agreements on all work performed are strictly enforced.

The following procedures are used at GCAL in order to obtain dependable analytical results and to ensure compliance with regulations.

1) To protect yourself and others, the Laboratory Safety Manual must be followed completely. Each provision is to be read and understood thoroughly prior to working in the laboratory.

2) Sample integrity is a vital part of Quality Assurance. Samples being submitted should be logged in immediately. If there must be a delay, log-in should be aware of those samples requiring refrigeration, and store them accordingly until they can be logged in. Any sample that is suspected of being contaminated, improperly stored or preserved, or improperly prepared, should be reported to the group leader immediately. No sample is to be analyzed if there is a question as to its integrity.

3) Always return a sample to its place of origin after use. This not only aids in the preservation of sample integrity, but also in better sample tracking.

4) No sample, reagent or standard is to be left open unattended. If a samples preparation must be interrupted, the contents of the containers will be properly covered to prevent contamination and evaporation.

5) Sample homogeneity is very important in the analysis of all parameters. Liquid samples are to be shaken sufficiently. Soil samples are to be combined efficiently prior to analysis.

6) New standards and reagents are to be maintained according to procedural guidelines for each parameter. These standards are to be labeled with the date of preparation and properly stored. Pre-prepared standards and reagents are labeled with the date of receipt and properly stored. Before an analysis is performed the standards and reagents used should be checked for quality.

7) Only primary standard reagents are to be used in the preparation of laboratory

standards. The standard is to be prepared according to the method specifications including appropriate drying times.

8) Calibration requirements are to be followed for all methods. If the standard does not authenticate the initial calibration curve, a new calibration curve is necessary.

9) Each group of samples being analyzed will be accompanied by a reagent or method blank (RB). These blanks are only valid if carried through the exact chemical processes involved in analyzing the samples and quality control data. Failure to include blanks will cause data from that particular set of samples to be invalid. If a set of data is determined invalid, it must be re-analyzed.

10) Each analyst is responsible for his/her own tests. This means that they must first read and understand the official procedures. The analyst must also prove that he is able to perform the test with the precision and accuracy required. It is the duty of the group leader to work with each analyst to improve their understanding of the analysis and their ability to produce precise and accurate data. All methods used must be approved and accepted by this laboratory. Modifications on any method must be reported to the QA/QC Department to determine the reliability and accuracy of the modification.

11) All quality control data is to be calculated at the time of analysis. The appropriate corrective action must be taken for failures.

12) Quality Control data for inorganic parameters is maintained on a 5% minimum basis for all parameters analyzed in a given day.

13) Quality Control data for organic analysis is maintained daily to give a 5% minimum daily average.

14) A record of all analyses is recorded in a notebook. Preparation log sheets are stored in binders in sequential order. All raw data is filed for future reference.

15) All logbook entries are labeled, dated and signed.

16) Chromatograms are filed for future reference. All filing systems in use must be made readily available for viewing.

17) It is the responsibility of the analyst who operates a particular instrument to perform all required maintenance according to the schedule defined in the instrument manual. A record of the date and activity performed during preventive maintenance, daily services and service representative visits must be maintained.

18) Temperature and calibration checks are to be performed daily. All refrigerators,

water baths and ovens are to be checked by the analyst using them. If there are any changes made to regulate the temperature it is to be noted on the temperature record.

19) At the completion of a project, the Department Supervisor reviews the data obtained. If it is determined that the results meet the previously described criteria for acceptance of the data, the Department Supervisor initials and dates the worksheet. Results that are not approved in this manner are not accepted.

11.1 Sample Custody and Integrity

GCAL utilizes a Laboratory Information Management System (LIMS) that was specifically developed for the needs of GCAL. The MULTI-LIMS, developed by Advanced Systems Management, Inc. tracks samples and analytical data throughout the laboratory. Results are available from the LIMS package in a variety of hard copy formats. Furthermore, computer terminals can be provided to clients who wish to view their data via modem. A built in security system prevents a client from viewing any data other than their own.

The following is an example of some of the information that is entered into the system:

1. Sample number (unique to this sample)
2. Job number (unique to this job or set of samples)
3. Date received
4. Time received
5. Date analytical results due
6. Sample description
7. Identifying marks
8. Customer's name
9. Customer's address
10. Group number
11. Storage location
12. Notation of any special handling instructions or priority assignments
13. Billing information - purchase orders

14. Analyses requested

The Sample Administration Department also maintains an electronic log of all samples received. The log includes basic information concerning the samples including; date of receipt, client, matrix and tests assigned. The information is stored with the final report.

GCAL understands that sample integrity is a vital part of Quality Assurance. Samples submitted to the laboratory should be logged in immediately. If there must be a delay in this process, log-in should be aware of those samples requiring refrigeration and store them accordingly. Any sample that is suspected of being contaminated, improperly stored or preserved, or improperly prepared, should be reported to the client immediately. Storage blanks located in the volatiles refrigerators are analyzed every two weeks. Records of these analyses are maintained in the GC and GC/MS Volatiles laboratories. No sample is analyzed if there is a question concerning its integrity.

After the sample analyses are complete and the final report is issued to the client, samples are held for 60 days from receipt before disposal. Samples may be held longer per the customer request. All customers are encouraged to take possession of their remaining sample after analysis.

11.2 Chain of Custody

A complete chain of custody is maintained by GCAL. Each sample when submitted to our laboratory is accompanied by a Chain of Custody form (Figure 3). These forms contain pertinent information about the sample including specific analytical requests, sampling notes, sample condition, customer name and address.

Additionally, information concerning the site name, field identification marks, date and time of collection, sampler signature, and preservation data is recorded.

Samples are tagged, preserved if necessary and stored appropriately (i.e. refrigerator, freezer or shelf). Samples to be analyzed for volatile organic compounds are stored in refrigerators located in the volatiles analytical laboratories.

11.3 Custody Transfer

If a sample requires additional work to be performed by a qualified outside laboratory, a chain of custody form is completed and submitted with a representative portion of the sample. A copy of this form is maintained on file along with similar information located in a logbook. The chosen laboratory must sign and date the form upon receipt and return it, along with any unused sample, upon completion of analysis.

11.4 Sample Kits

Occasionally, a customer will request a sampling kit (bottles, vials, etc.) with which to collect samples. Chain of Custody forms are always sent along with the kit to insure proper sample

custody. This form is completed at the time of sample collection and is returned with the samples.

11.5 Shipping Requirements

Insulated shipping containers with freezer forms are provided upon request. The Department of Transportation (DOT) regulations shall be used for packaging and quantities of shipment. Shipping containers shall be secured using nylon strapping tape. Copies of the signed Chain of Custody (COC) forms must be delivered with the containers. Any samples being split with another party must be properly labeled, contain a COC, and be packed and shipped according to DOT regulations.

A laboratory file is maintained listing sample kits prepared for clients. It contains the client name, address, form of delivery, preservative (if requested), sample bottle distribution, and analyses to be performed. Additionally, the date the kit is requested, sent and expected arrival date is included, along with any pertinent miscellaneous information.

11.6 Cleaning Procedures

The method of cleaning is determined by the substances to be cleaned and the analysis to be performed. All bottles are purchased pre-cleaned. Accepted disposable glassware is also utilized to prevent contamination.

Water soluble substances can be washed with hot water and the vessel finally rinsed with small amounts of deionized water. Other substances may require the use of a detergent, organic solvent, chromic acid cleaning solution, nitric acid or aqua regia.

For trace metal analysis, the glassware shall be soaked in a 1:1 nitric acid bath. Rinse thoroughly with successive portions of deionized water. Chromic acid should not be used for cleaning of glassware for trace metal analysis or BOD bottles.

Glassware used for phosphate determinations should be thoroughly rinsed with tap water and then deionized water. Detergents containing phosphates should not be used for cleaning this glassware.

For ammonia and Kjeldahl nitrogen determinations, the glassware must be rinsed with ammonia-free water.

Glassware should be cleaned in the following manner:

- Wash with detergent and water
- Rinse three times with warm tap water
- Rinse three times with Type I water

- Rinse three times with acetone (reagent grade or better). (For organic glassware)
- The preceding procedure is programmed into the laboratory dishwasher which is used for most glassware. The acetone rinse step is replaced with a high heat drying step.
- Glassware used for metals analysis is soaked in an acid bath a minimum of 4 hours and then rinsed with deionized water.
- Periodically glassware may be soaked in a chromic acid cleaning solution. (Except for metals glassware and BOD bottles)
- Prior to sample preparation or analysis, the glassware is rinsed one time with the solvent to be used in the method.

11.7 Data Generation and Reduction

Initial data reduction is the responsibility of the analyst who performs the analysis and/or operates an instrument.

Each analyst records all manually generated data in a log book associated with the analysis or type of analysis being performed. The spike recoveries and precision for duplicates are calculated and recorded in the logbook.. The analyst verifies that all sample identifications are accurate.

Data reduction includes all activities that convert instrument/computer responses into reportable results. This may involve calculations, compound identification, and QC sample calculations. Final results are obtained by direct reading from the instrument or calculations based on instrument readings, output, or responses. Manual data reduction is performed by calculating results with the appropriate formula. Manually entered information such as the sample ID is reviewed for accuracy on the hard copy. Computer data reduction requires that the analyst verify information used in final calculations is entered accurately. The analyst must also review the raw data for properly identified components, possible interferences, confirmation requirements, and acceptable readings for multiple integrations.

The analyst must verify that all data is accurately transcribed into a logbook or on a form. Organic final results are recorded on forms. Inorganic data is recorded in the logbooks. All data is manually posted in the LIMS.

Instrumentation run logs generated by the Unix/Target software for organic analysis are placed in a three ring binder that serves as the logbook for the applicable instruments. The run log identifies the file number for retrieving hard copy or electronic data. Other organic data run logs are documented in a logbook. The associated file number for retrieval of hard copy or electronic data is recorded. Additional information such as instrument ID, detector and column type, standard ID's, and other applicable information may also be recorded. Inorganic data results are entered in a logbook. The hard copy is retrievable based on the

analytical date and time.
All raw data is maintained in files by the individual departments.

All associated quality control samples are documented or referenced in the logbooks along with the sample analytical data or a file number which represents the appropriate hard copy or electronic data. The recoveries are documented on the raw data or in the logbook.

Data validation is performed to check data integrity and to verify that the data is correct and of an acceptable quality. Data integrity involves reviewing all documentation for errors and mistakes. It includes review for correct documentation of sample ID's, verification that holding times were met, transcription errors, correct calculations, complete records, and for acceptable chain of custody documentation. A review of the data is performed to verify the results and to assure that all QC is within acceptable criteria. The Data is reviewed according to the criteria which applies to the particular analysis and according to the client specific project requirements. The reviewer will identify unacceptable data and initiate the appropriate corrective actions. The Department Supervisor or his representative will review the data entered into the LIMS. Validated data is released to the Report Generation Department. Hard copies of the final reports are reviewed by the Data Validation Department.

12.0 SAMPLE HANDLING GUIDELINES

Inorganic and Conventional Parameters

Parameters	Method*	Container	Recommended Quantity (mL)	Preservative	Holding Time
Acidity	305.1, 2310B	P,G	100	4°C	14 days
Alkalinity	310.1, 310.2, 2320B	P,G	100	4°C	14 days
Ammonia-N	4500NH3BE, 350.3	P,G	500	4°C, H_2SO_4 to pH <2	28 days
Biochemical Oxygen Demand (BOD)	405.1, 5210B	P,G	1000	4°C	48 hours
Bromide	300.0, 9056	P,G	200	None	28 days
Chemical Oxygen Demand (COD)	HACH 8000	P,G	100	4°C H_2SO_4 to pH <2	28 days
Chloride	325.3, 9251, 9056	P,G	200	None	28 days
Chlorine, Residual	330.3, 4500 CLG	P,G	200	None	Immediately
Coliform, Fecal	9222D	P,G (sterile)	100	4°C, $Na_2S_2O_3$	6 hours
Color	2120C, 110.3	P,G	100	4°C	48 hours
Cyanide	335.1, 335.2, 335.3 9012A	P,G	1000	4°C, ascorbic acid, NaOH to pH > 12	14 days
Ferrous Iron	3500FED	P,G	100	2mHCl/100mL	Immediately
Flashpoint	1010	P,G	100	None	Not specified
Fluoride	300.0, 9056, 340.2	P	500	None	28 days
Hardness	130.2 2340B	P,G	100	HNO_3 to pH < 2	6 months
Nitrogen, Kjeldahl (TKN)	4500NH, 351.4	P,G	500	4°C, H_2SO_4 to pH < 2	28 days
Nitrate-N	353.2	P,G	100	4°C	48 hours
Nitrite-N	353.2	P,G	100	4°C	48 hours
Nitrate-Nitrite as N	353.2	P,G	200	4°C, H_2SO_4 to pH < 2	28 days
Oil and Grease	1664	G	1000	4°C, H_2SO_4 or HCl to pH < 2	28 days
Phenols	420.1, 420.2, 9066	G	1000	4°C, H_2SO_4 to pH < 2	28 days
Phosphorus, Total	365.1	P,G	200	4°C, H_2SO_4 to pH < 2	28 days
Phosphorus, Ortho	365.2, 4500PE	P,G	200	4°C	48 hours
pH	150.1, 9040B, 9045C	P,G	100	None	Immediately
Radiochemisrty					
Alpha, Beta, Radium	900 & 9000 series	P,G	2000	HNO_3 to pH < 2	6 months
Tritium		P,G	100	None	6 months
Radon, I-131		P,G	1000	HNO_3 to pH < 2	14 days
Reactivity	SW846 7.3.3.2, 7.3.4.2	G	100g	4°C	Not Specified
Silica	370.1, 4500Si D	P, PFTE, Quartz	100	4°C	28 days
Solids, Dissolved (TDS)	160.1, 2540C	P,G	100	4°C	7 days
Solids, Suspended (TSS)	160.2, 2540D	P,G	500	4°C	7 days
Solids, Volatile (TVS)	160.4, 2540E	P,G	100	4°C	7 days
Solids, Total (TS)	160.3, 2.540B	P,G	100	4°C	7 days

Inorganic and Conventional Parameters

Parameters	Method*	Container	Recommended Quantity (mL)	Preservative***	Holding Time**
Specific Conductance	120.1, 9050	P,G	100	4°C	28 days
Specific Gravity	2710F	P,G	100	4°C	28 days
Sulfate	375.4, 9056, 9038	P,G	200	4°C	28 days
Sulfide	376.1, 376.2, 9034	P,G	500	4°C, Zn acetate, NaOH to pH > 9	7 days
Sulfite	4500S03B	P,G	200	None	Immediately
Surfactants (MBAS)	425.1, 5540C	P,G	250	4°C	48 hours
Total Organic Carbon (TOC)	415.1, 9060	P,G	100	4°C, HCl to pH < 2	28 days
Total Organic Halogens (TOX)	9020B	G-TLC (amber)	100	4°C, H_2SO_4 to pH <2	28 days
Total Petroleum Hydrocarbon (TPH)	418.1	G-TLC	1000	4°C, H_2SO_4 or HCl to pH < 2	28 days
Turbidity	180.1, 2130B	P,G	100	4°C	48 hours
Viscosity	D2196	P,G	500	None	Not Specified

Solid and waste samples: Quantity 1-100g, preservative 4°C.
Organic Nitrogen = TKN – Ammonia-N

Metals

Parameters	Method*	Container	Recommended Quantity (mL)	Preservative	Holding Time
Metals (except Hexavalent Chromium and Mercury):					
Aqueous					
Total	6010B, 200.0, 7000 series	P,G	500	HNO_3 to pH < 2	6 months
Dissolved	6010B, 200.0, 7000 series	P,G	500	Filter on site HNO_3 to pH < 2	6 months
Solid					
Total	6010B, 200.0, 7000 series	P,G	100g	4°C	6 months
Hexavalent Chromium:					
Aqueous	7196A	P,G	500	4°C	24 hours
Solid	3060A/7196A	P,G	100g	4°C	30/7 days
Mercury:					
Aqueous					
Total	245.2/7470	P,G	500	HNO_3 to pH < 2	28 days
Dissolved	245.2/7470	P,G	500	Filter on site HNO_3 to pH < 2	28 days
Solid					
Total	7471	P,G	100g	4°C	28 days

Metals – Boron must be collected in a polyethylene container.
CrIII=Total Cr-Hexavalent Cr

Organic Parameters
Volatile Organics

Sample Matrix	Method*	Container	Minimum Quantity	Preservative	Holding Time
Concentrated Waste Samples	8021B, 8260B, 8015M	G-TLC or G-TLS	2 x 40mL vials or 2-oz wide mouth	4°C	14 days
Aqueous Samples	8021B, 8260B, 8015M, 624	G-TLS	2 x 40mL vials	4°C, HCl to pH < 2, $Na_2S_2O_3$ if residual chlorine present	14 days, 7 days if not acid preserved
Solid Samples	8021B,8260B, 8015M	G-TLS or G-TLC	2 x 40mL vials or 2-oz wide mouth	4°C, HCl to pH <2	14 days *

*Solid samples collected in EnCore™ samplers must be transferred to a soil sample vial within 48 hours.

Semivolatile Organics, Pesticides/PCBs, Herbicides, PAHs, Diesel

Sample Matrix	Method*	Container	Minimum Quantity	Preservative	Holding Time
Concentrated Waste Sample	8270C, 8081, 8082, 8015M, 8151A, 8141A	G-TLC (Amber)	2 x 1 Liter	None	14 days until extraction, 40 days after extraction
Aqueous Samples	8270C, 8081, 8082, 8015M, 8151A, 8141A, 8310,608, 625	G-TLC (Amber)	2 x 1 Liter	4°C	7 days until extraction, 40 days after extraction
Solid Samples	8270C, 8081, 8082, 8015M, 8151A, 8141A, 8310	G-TLC(Amber)	2 x 1 Liter	4°C	14 days until extraction, 40 days after extraction

Parameter	Method*	Container	Recommended Quantity	Preservative	Holding Time
Dioxins and Furans**	613, 8280A, 8290, 1613	G-TLC(Amber)	2 x 1 Liter	4°C	30 days until extraction, 45 days after extraction

**Concentrated wastes and soil samples are collected in 2 oz. to 1 Liter amber glass jars with TLC.

TCLP/SPLP Parameters

Parameters	Holding Time from Collection to TCLP Extraction (days)	Holding Time from TCLP Extraction to Preparative Extraction (days)	Holding Time from TCLP/Preparative Extraction to Analysis (days)	Total Time
Volatiles	14	NA	14	28
Semivolatiles	14	7	40	61
Mercury	28	NA	28	56
Metals	180	NA	180	360

Reference. 40CFR Part 136 Tables IA, IB, IC, ID & IE and Table II., SW846 Table 4-1 and Table 3-1. SW846 Method 1311 8.5,

*The methods listed are from typical EPA references

Acronyms Definitions: (Teflon is a registered trademark of E.I. DuPont)

CLP: EPA Contract Laboratory Program
G: Glass
G-TLC: Glass with Teflon®-lined cap
G-TLS: Glass with Teflon®-lined septum
NA: Not Applicable
P: Polyethylene

13.0 SAMPLE AND WASTE DISPOSAL

13.1 Sample Disposal

Samples are stored in the appropriate cooler for 60 days after receipt. After 60 days, samples are moved to a waste cart. The samples are scanned out for disposal on the LIMS. The samples are then stored in the waste staging area until disposal into appropriate drums.

Hazardous samples are combined if possible and stored in specially marked waste drums until sufficient quantities are accumulated which require disposal of the drums. Hazardous samples are returned to the client whenever possible to be disposed of along with the larger quantities of that material the client needs to dispose of.

13.2 Waste Disposal

Waste generated within the laboratory is always considered hazardous. Waste management and sample disposal are performed in accordance with EPA regulations.

13.3 Bulk Waste

Generated waste is transferred to appropriate bulk waste containers until such quantities are generated that warrant drum disposal. When sufficient quantities of waste are collected the containers are prepared for shipment to approved disposal sites. Bulk waste includes oil waste, acid waste, caustic waste, PCB waste and solvent waste.

Separately labeled drums are kept for collection of chemical waste. They are labeled as follows:

Metals waste water - Contains aqueous acidic wastes
Acidic waste water - contains aqueous acidic waste
Waste water - contains aqueous waste water
Caustic waste water - contains aqueous basic or alkaline waste.
Flammable - contains organic solvents, alcohols and hydrocarbons.
Chlorinated solvents - contains organic waste known to be chlorinated.
PCB - contains oils and waste solvents containing PCB's.
Non - regulated solids - crushed glass and nonhazardous samples
Hydrocarbon waste - oils and waste solvents
Hazardous solids - Hazardous solid samples

13.4 Chemical Disposal

Properly dispose of any unused chemicals. Do not return any chemicals to original containers once removed.

All chemicals are disposed of in proper bulk waste containers.

14.0 SAFETY PROCEDURES

GCAL has a comprehensive safety program outlined for all employees. A safety manual is distributed to each employee followed by a training seminar to familiarize the employee with the safety procedures at GCAL.

14.1 Basic Safety Rules

1. All injuries are promptly reported to a supervisor.
2. All hazards are promptly reported to a supervisor.
3. Running and horseplay are not permitted in the laboratory.
4. Smoking is not permitted in the laboratory.
5. Laboratory glassware is not to be used for eating or drinking.
6. Laboratory reagents such as sucrose or sodium chloride should not be used for food.
7. Eating on the premises is confined to designated areas.

14.2 Arrangement of Furniture And Equipment

Furniture is arranged for maximum use of available space while providing working conditions that are efficient and safe.

Aisles are kept at least 4 feet wide to provide for safe passage of personnel and equipment, and are kept free of obstructions.

Stepladders or footstools are supplied for reaching high objects and are kept out of the way when not in use.

Eyewash stations, safety showers and fire extinguishers are located centrally and care is taken to avoid blocking access to them.

14.3 Hoods And Ventilation

Adequate hood facilities are installed and used where toxic or flammable materials are used. Hood windows provide physical protection and greater control of fumes.

14.4 Spills

Spilled materials are cleaned up promptly. All spills should be handled as if corrosive or dangerous unless definitely known to be harmless. Spill Kits are located in the laboratory.

Corrosive or toxic materials are not placed in waste cans in the laboratory. When in doubt a supervisor is consulted.

Broken glass is swept up immediately and discarded so as to avoid any injury or cuts.

14.5 Emergency Equipment

Fire extinguishers are located in each room of the laboratory. The paths to these are kept free and clear at all times.

An extinguisher which has been used shall not be returned to its holder until it has been recharged and checked.

Any fire that appears to be too large to extinguish immediately is reported to the fire department at once. All fires, regardless of size are to be reported to a supervisor. Causes shall be determined and necessary steps to prevent a similar accident shall be taken.

Eye washes are located in the laboratories for irrigation of the eyes if corrosive liquids should be splashed into them. Tubing attached to faucets in the sink may also be used to wash the eyes if necessary.

A safety shower is centrally located in the laboratories and is be used whenever corrosive materials are spilled on an analysts' skin or clothing.

All safety equipment is periodically checked to be sure everything is in working order and is easily accessible.

General first aid kits are located throughout the laboratory. These kits contain first aid products for the treatment of minor cuts and bruises, burns or abrasions,and personal discomfort.

14.6 Protective Equipment

Lab coats and aprons are supplied for all employees of GCAL. Protective clothing is always available to prevent damage to clothing and persons.

Shoes must be worn at all times and must be closed-toe, high heels or sandals are not acceptable.

Eye Protection is mandatory for all personnel working in the laboratory. Safety glasses or goggles should be worn by analysts to protect the full eye area.

Various types of gloves are provided for employees: Insulated gloves are provided for use when handling hot or cold items; Heavy rubber gloves are to be used when handling corrosive liquids or unknown substances; Lightweight disposable gloves are provided for use with toxic or irritating substances.

Air purifying respirators are available for use when working with organic vapors and/or acid fumes. These respirators should be worn whenever contact with irritating concentrations of these fumes are encountered.

Coverall suits made of chemically resistant material are provided for wear whenever sampling at

a hazardous waste site or in potentially dangerous or unknown situations. These suits are disposable and provide protection for clothing and personnel.

14.7 Storage of Laboratory Materials

All chemicals, reagents and glassware are stored in such a manner that they are easily located and do not present a danger. Heavy items are kept near the floor.

Flammable solvents are stored in special cabinets or in solvent bunker. Only quantities required for immediate use are stored in analytical areas.

Reagents are grouped to prevent danger from hazardous combinations. Acids and bases are stored separately.

Compressed gases are stored away from heat and open flames. They are always contained by chains or belts to prevent rolling or toppling. A special cart is used to transport replacement cylinders and empties.

14.8 Chemical And Sample Handling

If there are questions about proper chemical handling the MSDS (Material Safety Data Sheet) is used as reference.

Samples are always treated as if they were hazardous chemicals.
Rubber pipet bulbs are used.
Procedures which produce flames or toxic vapors are performed under a hood.
Chemicals are returned to their proper storage area after use.
All prepared solutions are properly labeled..
Acids are always poured into water when diluting.
Large amounts of alkali are never added to water at one time.
Glass-stoppered containers are not used for storing alkaline solutions.
Labels for Acid and Caustic solutions will note the concentrations.

14.9 Labeling

All sample and chemical solutions are clearly labeled with chemical name and concentration or sample number. Label should note any danger associated with the solution, date of preparation, laboratory assigned ID, initials of analyst, and expiration date.

15.0 CONFIDENTIALITY

GCAL understands that it must retain in confidence all information obtained through the analysis of samples or the information disclosed to GCAL in order to adequately perform and interpret analyses.

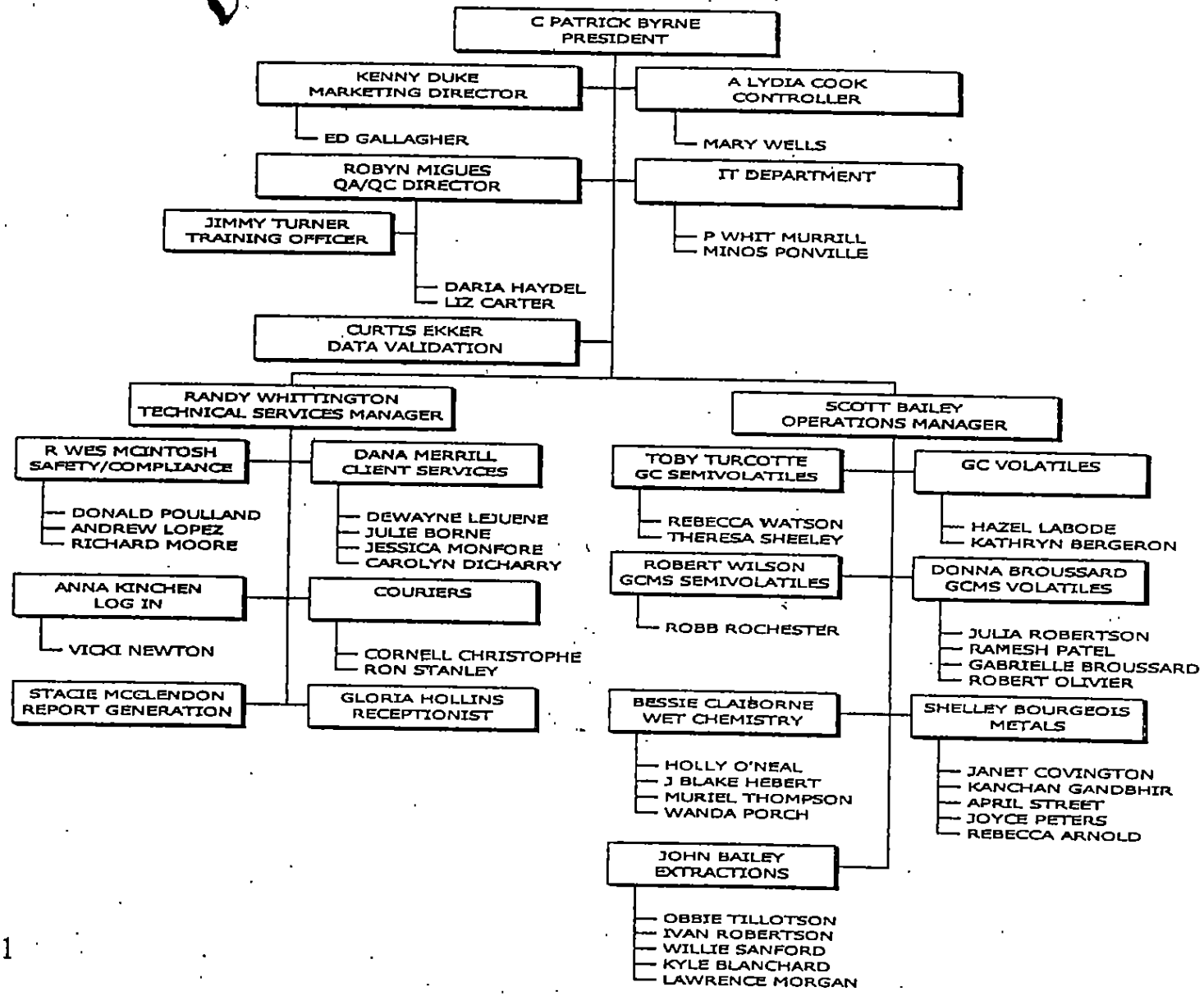
GCAL will maintain the secrecy and confidentiality of any proprietary information it receives or generates.

Only the party who requested the analytical work or consultation, and who will receive the final report (and invoice) will be informed of any findings.

Results of analyses will not be disclosed to anyone other than the contracting party without unequivocal authorization by the contracting party.

GULF COAST
ANALYTICAL LABORATORIES, INC.

ORGANIZATIONAL CHART



03/12/01

SCOTT A. BAILEY

Current Position:

Operations Manager, Gulf Coast Analytical Laboratories, Baton Rouge, LA January 1997 - Present

Responsible for coordinating the overall activities of the analytical laboratories on a daily basis and providing long-term direction. Responsibilities include monitoring the scheduling of analytical testing and releasing testing data and results.

Previous Experience:

Operations Manager, Inchcape Testing Services-Environmental Laboratories, Baton Rouge, LA September 1995 - January 1997

Responsible for coordinating the overall activities of the analytical laboratories on a daily basis and providing long-term direction. Responsibilities include monitoring the scheduling of analytical testing and releasing testing data and results.

Organics Manager, Inchcape Testing Services, Baton Rouge, LA, October1993 - September 1995

Responsible for the management of the GC, GCMS, and the extraction departments of the laboratory. Duties also included supervision of the report generation department.

Division Manager, National Environmental Testing, Baton Rouge,LA March 1992 - October 1993

Directed the functional areas of marketing, finance, chemistry, and administration for the Baton Rouge facility. Additional duties included contract administration, scheduling, and client consultation.

Operation Manager, Environmental Testing & Certification Corporation, Baton Rouge, LA , December 1989 - January 1992

Directed the functional areas of marketing,f inance,chemistry, and administration for the Baton Rouge facility. Additional duties included contract administration, scheduling, and client consultation.

Previous Experience: **Analyst, ETC, Baton Rouge, LA, December 1983 - December 1989**

Education: BS, Environmental Health, Louisiana State University, Baton Rouge, LA, December 1991

Inchcape Managerial Training Skills Workshop, 1994

Inchcape Testing Services - Environmental Laboratories, Baton Rouge, Manager and Supervisor Training Retreat - June 1996

UCLA Inchcape Executive Development Program - August 1996

STEPHEN K. BAILEY

Current Position:

Extractions Supervisor, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 - Present

Responsible for the supervision and training of personnel in organic extraction department, metals preparation department, and inorganic distillation and digestion department, directing technicians in the preparation and extraction and cleanup of water, soil, sludge, and other matrices according to SW846 and 600 series methodologies, sample scheduling, supplies inventory, and standard preparation. Oversees spiking of quality control samples. Reviews preparation bench sheets and updates preparation information in the LIMS.

Previous Experience:

Extractions Supervisor, Inchcape Testing Services - Environmental Laboratories, Baton Rouge, LA, February 1992 - January 1997

Responsible for the supervision and training of personnel in organic extraction department, metals preparation department, and inorganic distillation and digestion department, directing technicians in the preparation and extraction and cleanup of water, soil, sludge, and other matrices according to SW846 and 600 series methodologies, sample scheduling, supplies inventory, and standard preparation. Oversees spiking of quality control samples. Reviews preparation bench sheets and updates preparation information in the LIMS.

Organic Sample Preparation Team Leader, Environmental Testing and Certification, Baton Rouge, LA., January 1990 - February 1992

Responsible for directing technicians in the preparation, extraction and cleanup of water, soil, sludge, and other matrices according to USEPA CLP, SW846 and 600 series methodologies, sample scheduling, staff coordination, maintaining inventory, and problem solving. Oversee preparation, documentation, and spiking of standards. Responsible for the generation of organic sample preparation data sheets via computer and also maintaining internal sample chain of custody documentation. Experienced with the analysis of environmental samples for pH, solids, oil and grease, chemical oxygen demand, chlorides, phenols, TPH/IR, mercury, and cyanide. Assisted with sampling kit preparation, field sample collection, sample log-in, and collection and disposal of laboratory waste.

Previous Experience:

Sample Preparation Technician, ETC/Toxicon, Baton Rouge, LA., February 1988 - December 1989

Performed extractions according to USEPA CLP, SW846 and 600 series methodologies. Performed environmental wet chemical parameters including but not limited to pH, solids, chemical oxygen demand and other inorganic constituents. Prepared all sample data sheets, both incoming and outgoing.

Education:

Motivational Management Training, 1990

Conflict Management Training, 1991

Inchcape Management Training Skills Workshop - 1994

Inchcape Testing Services - Environmental Laboratories, Baton Rouge, Manager and Supervisor Training Retreat - June 1996

SHELLEY BOURGEOIS

Current Position:

Metals Supervisor, Gulf Coast Analytical Laboratories , Baton Rouge, LA, May 1998 - Present

Responsible for the management and supervision of the Metals Laboratory. Duties include the management and training of personnel, scheduling of sample workloads, supervision of metals sample preparation, analysis of samples by various analytical instrumentation, coordination of laboratory QA/QC projects, and maintenance of procedures to QA/QC guidelines. In addition, responsibilities include comprehensive data review and validation for the laboratory as well as the coordination of higher level QA data packages.

Previous Experience:

Metals Analyst, Gulf Coast Analytical Laboratories, Baton Rouge, LA, December 1997 – May 1998

Responsible for analysis of samples by various instruments including GFAA, Flame AA, ICP and the mercury analyzer. Additional responsibilities included data reduction and posting in the LIMS.

Head Technician, American Radiation Services, Baton Rouge, LA, November 1996 - December 1997

Responsible for coordinating sample analysis and field services. Supervised sample receipt, preparation, analysis, and report generation.

Analyst, Inchcape Testing Services, Baton Rouge, LA, July 1996 - November 1996

Education:

BS/Microbiology - Louisiana State University, Baton Rouge, LA, December 1995

Perkin Elmer Atomic Spectroscopy Workshop, Baton Rouge, LA, April 1998

Perkin Elmer Optima Instrument Series ICP training, Atlanta, GA, June 1998

DONNA BROUSSARD

Current Position:

GC/MS Supervisor, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 2000 - Present

Responsible for management of several GC/MS systems used for analyzing soil and water samples using EPA methodologies including 8240, 8260, 8270, 624, 625, 1311. Duties include instrument operation and maintenance, training and supervision of analysts, instrument download of data to the LIMS, validation of data, and preparation of data packages .

GC/MS-SV Supervisor, Gulf Coast Analytical Laboratories, Inc., August 1998 – January 2000

Responsible for GC/MS semi-volatile analysis of water, soil, and organic samples by EPA methodologies 8270 and 625. Duties include instrument operation and maintenance; sample preparation, analysis, and interpretation; report writing, tracking, and validation; and overall laboratory maintenance.

Previous Experience:

GC/MS SV Analyst, Gulf Coast Analytical Laboratories, Inc., July 1998 - August 1998

Responsible for GC/MS semi-volatile analysis of water, soil, and organic samples by EPA methodologies 8270 and 625. Duties include instrument operation and maintenance; sample preparation, analysis, and interpretation; report writing, and tracking; and overall laboratory maintenance.

Education:

BS Secondary Math Education, Louisiana State University, Baton Rouge, LA, May 1989

HP Column Troubleshooting Seminar – October 1997

Gulf Coast Analytical Laboratories, Introduction to Mass Spectrometry – October 1998

Gulf Coast Analytical Laboratories, Laboratory Skills Training Program – January 1999

HP Techniques of GC-MS – November 1999

CHARLES P. BYRNE

Current Position:

President and General Manager, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 - present.

Responsible for all operations within the facility including laboratory, administrative, financial and marketing functions. Responsible for long range planning and structuring of future business operations.

Previous Experience:

Vice-President and General Manager, Inchcape Testing Sevices-Environmental Laboratories, Baton Rouge, LA, September 1993 - January 1997.

Corporate officer in charge of all operations within the facilit including laboratory, administrative, financial and marketing functions. Responsible for long range planning andstructuringof future business operations.

Laboratory Manager, West-Paine Laboratories, Inc. Baton Rouge, LA, June 1992 - September 1993.

Responsible for the profit and loss of the Baton Rouge facility. Directly supervise all operations of the laboratory including staffing, budgeting and production.

Organic Manager, West-Paine Laboratories, Inc., Baton Rouge, LA., August 1991 - June 1992.

Responsible for supervision of analysts functioning in the areas of Sample Extraction, Residue Analysis via GC, Purgeables and Extractables via GC-MS. Troubleshoots and interfaces with GC-MS System Management, consisting of five HP GC-MS with RTE-6-VM and RTE-A Operating Systems. Performs method development and reviews data. Previous positions included GC/MS manager and GC manager.

Previous Experience:

GC/MS Analyst, ETC/Toxicon, Baton Rouge, LA., August 1989 - June 1991.

Operator of two Finnigan MAT 4510B Gas Chromatography/Mass Spectrometry Systems conducting the analysis of volatile organic compounds using USEPA Contract Laboratory Program (CLP) methodology, including data reduction and report production using QA Formaster software. Operation of HP 5890 Gas Chromatograph (ECD, FID), performing the analysis of chlorinated pesticides and PCB's usingCLP methodology. The analysis of raw data and the production of data packages using QA Formaster software.

President/Owner, Smith, Byrne and Associates, Inc., 1983 - 1991.

Operator of family owned sales firm, representing various industrial sheet metal fabrication facilities. Responsible for contacting Louisiana clients and negotiating the purchase of various heat transfer units.

Education:

BS Microbiology, Louisiana State University, Baton Rouge, LA, 1990.

Member ACS

Inchcape Managerial Training Skills Workshop - 1993, 1994

Cornell Inchcape Executive Development Program - 1994, 1995

Government Intstitutes Inc., RCRA Regulations, Air Toxics - 1993, 1994

Introduction to Mass Spectrometry, Basic Mass Spectrometry Interpretation - 1991

Inchcape Testing Services - Environmental Laboratories, Baton Rouge, Manager and Supervisor Training Retreat - June 1996

Louisiana State University Fire and Emergency Training Institute- HazMat Technician Refresher - 8 Hr. - June 17, 1998

Bank One Managing and Financing Independent Business - 16 Hours - October 1998

ALPHA LYDIA COOK

Current Position:

Controller and Human Resources Director, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 - present

Responsible for supervision of the Accounts Receivable, Purchasing and Accounts Payable Departments. Included are responsibilities for payroll, collections, and cash management. Additional responsibilities include preparation of capital expenditure requests and reconciliation of the requests with the budget. Shares the budget preparation duty with the General Manager. Maintains the General Ledger and Accounts Payable on AccPac Accounting System on a Novell Network. Human Resources responsibilities include advertising for positions, interviewing applicants, and employee benefits.

Previous Experience:

Controller, Inchcape Testing Services - Environmental Laboratories, Baton Rouge, LA, June 1990 -January 1997
Human Resources Director, Inchcape Testing - Environmental Laboratories, Baton Rouge, LA, 1993 - January 1997

Responsible for supervision of the Accounts Receivable, Purchasing and Accounts Payable Departments. Included are responsibilities for payroll, collections, and cash management. Prepares monthly reports for Corporate office and prepares Capital Expenditure requests and reconciles requests to the budget. Budget preparation is a joint duty of the Controller and the Chief Operations Officer. Maintained the General Ledger and Accounts Payable on an automated function run on the HP3000 and on AccPac Accounting System on the Novell Network. Human Resources responsibilities include advertising for positions, interviewing applicants, and employee benefits.

Director of Business & Operations Services, University Relations and Development, Louisiana State University, Baton Rouge, LA., May 1985 - June 1990

Department handles all phases of accounting and computer work in the division. Operate an IBM System 36 computer which was upgraded in 1986 to accommodate the new programs and data base being maintained. Installed a general ledger system which is now in use by all areas of this division.

Previous Experience:

Corporate Controller, B. Olinde and Sons, Inc., Baton Rouge, LA., October 1980 - May 1985

Responsible for all phases of the accounting for the multifaceted business. Responsible for installation of a general ledger package which would integrate with the packages in place and began automating the general ledger.

Education:

BS, Microbiology, Louisiana State University, 1986

MS, Food Science/Experimental Statistics, Louisiana State University, 1974.

CPA Preparatory Program, Louisiana State University, 1978

CPA Certificate, October 1979

Cornell - Inchcape Executive Development Program - August 1991

Inchcape Managerial Training Skills Workshop - 1993, 1994

Inchcape Testing Services Environmental Laboratories - Baton Rouge, Manager and Supervisor Training Retreat, June 1996

Member - Society of Louisiana Public Accountants

Member - American Institute of Certified Public Accountants

CAROLYN A. DICHARRY

Current Position:

Project Manager, Gulf Coast Analytical Laboratories, Baton Rouge, LA,

Responsible for management of client projects and project management activities within the laboratory. Served as the interface between client and laboratory management to achieve client satisfaction with delivery of analytical results on schedule and to the requested level of quality.

Previous Experience:

QA/QC Assistant, Gulf Coast Analytical Laboratories, Baton Rouge, LA, July 1998 - Present

Responsible for assisting in implementing and monitoring the laboratory Quality Assurance Program Plan, conducting monthly internal audits, calibrating thermometers and mechanical pipets, and updating employee training files.

Supervisor, Asbestos Laboratory and Industrial Hygiene Laboratory Director, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 – July 1998

Responsibilities include management, supervision, staffing, and training all asbestos personnel. Client relation, writing contracts and bids, court consultants, and business development. Formulating all QA/QC manuals, operations, analyses and procedures which adhere to EPA protocol for PLM and PCM. Ordering, designing, and maintenance of analytical equipment and laboratory facilities. Organization of intra and inter laboratory proficiency. Additional responsibilities include the administration of the industrial hygiene laboratory.

Supervisor, Asbestos Laboratory, Inchcape Testing Services - Environmental Laboratories, Baton Rouge, LA, December 1991 - January 1997.

Responsibilities include management, supervision, staffing, and training all asbestos personnel. Client relation, writing contracts and bids, court consultants, and business development. Formulating all QA/QC manuals, operations, analyses and procedures which adhere to EPA protocol for PLM and PCM. Ordering, designing, and maintenance of analytical equipment and laboratory facilities. Organization of intra and inter laboratory proficiency.

Geologist/Microscopist, West-Paine Laboratories, Inc., Baton Rouge, LA., January 1991 - December 1991.

Responsibilities include Phase Contrast Microscopy Analysis (PCM), Polarized Light Microscopy Analysis (PLM), Scanning Electron Microscopy Analysis (SEM) and Inter-Laboratory Quality Control Program for PCM and PLM analysis.

Lab Technician, Kemron Environmental Services,, Baton Rouge, LA., May 1989 - December 1989.

Responsibilities included Polarized Light Microscopy Analysis and Phase Contrast Analysis.

Education:

Secondary Education Degree, Nicholls State University, Thibodaux, LA., 1987

BS, Geology, Nicholls State University, Thibodaux, LA., 1984

Sampling and Evaluating Airborne Asbestos Dust - NIOSH 585 - May, 1989

Inchcape Testing Services - Environmental Laboratories, Laboratory Skills Training Program, August -1995

Inchcape Managerial Training Skills Workshop - 1993,1994

Inchcape Testing Services - Environmental Laboratories , Baton Rouge, Manager and Supervisor Training Retreat - June 1996

Executrain Microsoft Excel 5.0 Beginning For Windows - July, 1996

CURTIS A. EKKER

Current Position:

Data Validation Manager, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 - Present

Responsible for validation of final reports. This includes correlation of data between departments, review of chain of custody, review of reported QC, verification of correct reporting level, and review of narratives.

Previous Experience:

Data Validation Manager, Inchcape Testing Services - Environmental Laboratories, Baton Rouge, LA, September 1993 - January 1997

Responsible for validation of final reports.

General Chemistry Supervisor, Inchcape Testing Services - West Paine Laboratories, Baton Rouge, LA, June1989 - September 1993

Responsible for supervising the work of 11 analysts. This includes training all new employees to follow EPA Protocol in work and to bring their proficiency up to an acceptable level of productivity. Ensure all analytical work is performed and reported with customer time requirement. Ensure that new and infrequently analyzed parameters are properly analyzed. Involved in setting up new analytical methods for Wet Lab. Responsible for generation, implementation, and maintenance of Standard Operating Procedures.

General Chemistry Laboratory Technician, West-Paine Laboratories, Baton Rouge, LA., June 1988 - June 1989

Responsible for preparation and analysis of samples by wet chemistry methods. Instrumentation included flashpoint tester amd HACH spectrophotometer. Additional responsibilities included initial review of data and associated QC and entry into the LIMS.

Education:

BS Chemistry, Southeastern Louisiana University, Hammond, LA, 1988.

Inchcape Managerial Training Skills Workshop - 1993, 1994

Education:

Dionex Ion Chromatography Training Course - 1991

Data Validation - ACS Short Course - March, 1995

Inchcape Testing Services - Environmental Laboratories, Baton Rouge, Manager and Supervisor Retreat - June 1996

ExecuTrain Microsoft Excel 5.0 Beginning For Windows - July 1996

Member - ACS

DANA MERRILL

Current Position: **Senior Project Manager, Gulf Coast Analytical Laboratories, November 2000 - Present**

Act as the main point of contact for the client in the laboratory. Provide technical information to clients and keep them informed of project progress. Coordinate and schedule projects with various departments within the laboratory according to the customers analytical and turnaround requirements. Review chains of custody, login reports and final reports.

Previous Experience: **Project Manager, Gulf Coast Analytical Laboratories, August 1994 - March 1999**

Act as the main point of contact for the client in the laboratory. Provide technical information to clients and assist with analytical needs. Review client C-O-C's and reports. Generate client invoices. Create project and site codes to allow for better handling of client samples. Disseminate information internally regarding projects and specific client needs. Document all communications with client.

GC/MS Analyst, American Analytical & Technical Services, March 1992 - July 1994

Responsibilities included analysis of environmental samples for volatile and semi-volatile constituents utilizing GC/MS systems (HP Series 5970, 5971, and 5972, with RTE-A and Chem Station Data Systems). Responsibilities also involved the creation of CLP and SW846 data packages using EPA approved methodologies and protocols including but not limited to: Methods 500, 600, 8000 series. Daily duties involved sample management, routine maintenance of analytical equipment and the preparation of calibration and quality control standards.

Previous Experience: **GC/MS Group Leader, Inchcape Testing Laboratories, January 1989 - February 1992**

Coordination and scheduling of projects according to priority, hold times and work load. Review and validate data and generate quantitative analysis reports for release to clients. Responsibilities included analysis of environmental samples for volatile and semi-volatile constituents utilizing GC/MS systems (HP Series 5970, RTE-E and RTE-A Data Systems). Responsibilities also involved the creation of CLP and SW846 data packages using EPA approved methodologies and protocols including but not limited to: Methods 500, 600, 8000 series. Daily duties involved sample management, routine maintenance of analytical equipment and the preparation of calibration and quality control standards. Also responsible for training of department personnel. Supervision of 4 employees.

Organic Extraction/GC Group Leader, West Paine Laboratories, August 1987 - January 1989

Responsible for scheduling and inter-laboratory coordination of projects. Review and validate GC data and generate quantitative analysis reports for release to clients. Daily duties involved sample management, routine maintenance of analytical equipment and the preparation of calibration and quality control standards. Also responsible for training of department personnel. Supervision of 6 employees.

GC Operator, West Paine Laboratories, November 1986 -August 1987

GC operations for the purpose of analyzing extractable constituents. Review GC data and generate quantitative analysis reports for review prior to release to clients.

Lab Technician, West Paine Laboratories, May 1986 -November 1986

Prepared environmental samples for GC and GC/MS according to SW846 methodology.

Education: Mary Carroll High School
Corpus Christi, TX 1966 Graduate
Mathematics and Science Curriculum

Hewlett Packard Short Course, Introduction to MS Interpretation, May 1991

ROBYN B. MIGUES

Current Position:

QA/QC Manager, Gulf Coast Analytical Laboratories Baton Rouge, LA, January 1997 - Present

Responsible for implementing and monitoring the laboratory Quality Assurance Program Plan, conducting internal audits, reviewing reports, investigating problem areas, control-chart generation, establishing data-quality criteria, verifying corrective actions are being taken when necessary, and monitoring performance evaluation studies. Additional duties include providing reports concerning QA matters to management.

Previous Experience:

QA/QC Manager, Inchcape Testing Services - Environmental Laboratories, Baton Rouge, LA October 1994 - January 1997

Responsible for implementing and monitoring the laboratory Quality Assurance Program Plan, conducting internal audits, reviewing reports, investigating problem areas, control-chart generation, establishing data-quality criteria, verifying corrective actions are being taken when necessary, and monitoring performance evaluation studies. Additional duties include providing reports concerning QA matters to management.

General Chemistry Supervisor, ITS, Baton Rouge, LA, June 1994 - October 1994

Responsibility includes the management and training of personnel conducting inorganic analysis using EPA methodologies. Duties include data validation, QC review, instrument maintenance and method set up.

Metals Supervisor, ITS, Baton Rouge, LA, October 1993 - June 1994

Responsible for the management and supervision of the Metals section which includes supervision of metals sample preparation, supervision and training of analysts, scheduling sample workload, analysis of samples by various analytical instrumentation and reviewing and validating all data.

Previous Experience:

Research Associate, Louisiana State University, Agronomy Department, Baton Rouge, LA, September 1990 - March 1993

Prepared and analyzed samples by ICP, maintained ICP and other laboratory equipment, assisted associate Professor of soil andenvironmental chemistrywithlaboratory courses and research projects and supervised student workers. Computer experience includes Quattro Pro and Wordperfect.

Spectroscopy and Water Departments Supervisor, James Laboratories, Lafayette, LA, February 1987 - September 1990
Laboratory Technician

Prepared and analyzed samples by ICP, Flame Atomic Absorption & Emission, Mercury Hydride System and Graphite Furnace. Performed quality control coordination, trained laboratory technicians, maintained equipment including ion meters, EC meters, TOC analyzer and spectroscopy instruments. Prepared and analyzed wastewater, sludge, soil and hazardous waste criteria samples by accepted sampling and testing procedures and handled customer correspondence.

Education:

BS Geology, University of Southwestern Louisiana, Lafayette, LA, May 1985.

Member - American Society for Quality Control

Perkin Elmer Spectroscopy training course - 1987

Basic Statistics - Pittsburgh Conference Continuing Education Program - March 1995

Quality Management/Quality Assurance in Industry and in the Laboratory - ACS Short Course - March 1995

Inchcape Managerial Training Skills Workshop - 1994

Inchcape Testing Services - Environmental Laboratories, Baton Rouge, Manager and Supervisor Training Retreat - June 1996

Executrain Microsoft Excel 5.0 Beginning For Windows - July, 1996

JAMES D. TURNER

Current Position:

Training Officer, Gulf Coast Analytical Laboratories, Baton Rouge, LA , January 2000 – present

Responsibilities include development of a company training program that will efficiently train employees to ensure compliance with the internal SOP's and the analytical methods. The officer will be responsible for initial training of new employees as well as ongoing training for all employees. The officer will also maintain the training records and the analyst certification program.

Previous Experience:

General Chemistry Supervisor, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 - Present

Responsible for the supervision and training of personnel, conducting inorganic analysis using EPA methodologies, correlation and validation of data, maintenance of Standard Operating Procedures (SOPs) and instrumentation, method set up and day-to-day management of the general chemistry laboratory.

General Chemistry Department Group Leader, Inchcape Testing Services -Environmental Laboratories, Baton Rouge, LA, August 1996 - January 1997

Responsible for analyst training, instrument maintenance, and scheduling daily work loads.

General Chemistry Laboratory Technician, Inchcape Testing Services - Environmental Laboratories, Baton Rouge, LA, November 1992 - August 1996

Responsible for preparation and analysis of standards and samples for most wet chemistry tests. Experience on instrumentation includes Lachat Quick Chem Analyzer, TOC, TOX, HACH Spectrophotometer, IC, HPLC, GCMS, and GPC. Additional responsibilities included initial review of data and associated QC and entry into the LIMS.

Previous Experience:

Chemist, La-Mar-Ka Chemical, Baton Rouge, LA, November 1991 - November 1992

Responsible for preparation and standardization of chemical solutions. Instrumentation experience included D.L. 40 Auto Titrator and Moisture Analyzer.

General Chemistry Laboratory Technician, Enviromed Laboratories, Baton Rouge, LA, June 1988 - November 1991

Experience includes preparation and analysis of samples by wet chemistry methods and preparation of samples by organic extraction procedures. Introduced to GC/MS. Assisted with sample collection and waste disposal.

Education:

BS, Microbiology, Louisiana State University, Baton Rouge, LA, May 1999
Minor-Chemistry

OSHA 40 hour Hazardous Waste Training Course - August 1991

Inchcape Testing Services - Environmental Laboratories, Laboratory Skills Training Program - August 1995

Inchcape Testing Services - Environmental Laboratories, Basic Gas Chromatography Theory - May 1996

RANDY K. WHITTINGTON

Current Position:

Technical Services Manager, Gulf Coast Analytical Laboratories, Baton Rouge, LA, January 1997 - Present

Responsible for the management and supervision of Sample Management, Project Management, and Report Generation. Duties include implementing systems for increased productivity in all three sections. Also coordinates communication among these departments and other areas of the laboratory and marketing.

Previous Experience:

Technical Services Manager, Inchcape Testing Services - Environmental Laboratories, BatonRouge, LA, October 1996 - January 1997

Responsible for the management and supervision of Sample Management, Client Services, and Report Generation. Duties include implementing systems for increased productivity in all three sections. Also coordinates communication among these departments and other areas of the laboratory and marketing.

Project Manager and Data Validation Manager, Terra Consulting Group, Baton Rouge, LA, 1993 - 1996

Performed organic data validation for CLP and RCRA data packages for pesticides, PCBs, volatile and semi-volatile analytical fractions. Responsible for the design and implementation of the analytical aspects needed to generate legally defensible data for a Remedial Feasibility Investigation (RFI) at various large chemical plants. Ensured data validation issues were addressed in the day-to-day operations of the investigation.

Gas Chromatography Supervisor, West-Paine Laboratories, Baton Rouge, LA, 1991-1993

Directly responsible for the supervision of the organics laboratory in environmental and hazardous waste matrices following current SW-846, 500 and 600 series methodologies. Responsibilities include coordinating and managing of QA/QC for all Gas Chromatography data from sample log-in, extraction, analysis, review and preparation of computerized reports.

Previous Experience:

Gas Laboratory Manager, ETC/Toxicon, Baton Rouge, LA, 1988-1991

Supervised the Gas Chromatography laboratory in the analysis of Organochlorine and Organophosphorus Pesticides, PCBs, Herbicides, PNAs, VOA and Semi-VOAs; supervised all aspects of the GC laboratory including analysis, data interpretation, report preparation, instrument maintenance, method development, and problem solving. In 1990 temporarily relocated to Edison, New Jersey to restructure the Gas Chromatography division while also implementing USEPA CLP and Finnigan QA Formaster; maintained efficiency of twenty-two various Gas Chromatographs.

Education:

BS, Environmental Engineering , Columbia Southern University

Inchcape Managerial Training Skills Workshop - 1993

Finnigan QA Formaster Training

Restek Chromatography Class

LEVELS OF REPORTABLES

GENERAL INFORMATION	LEVEL I	II	III	IV*
Sample ID	X	X	X	X
Client ID	X	X	X	X
Sampled Date	X	X	X	X
Sampled Time	X	X	X	X
Chain of Custody(s)	X	X	X	X
Sample Results	X	X	X	X
Detection Limits	X	X	X	X
Analysis Date	X	X	X	X
Analysis Time	X	X	X	X
Analyst	X	X	X	X
Method	X	X	X	X
Prep Date	X	X	X	X
Sample Summary Information (Cross Reference)	X	X	X	X
Method References	NA	NA	NA	X
Narrative	**	X	X	X
ORGANIC DATA				
Surrogates	X	X	X	X
Laboratory Control Sample	NA	NA	NA	X
Method blank (Chromatograph)	NA	X	X	X
Method blank (Summary Form)	NA	NA	X	X
Quantitation Reports	NA	NA	NA	X
Tune Information	NA	NA	NA	X
Initial/Continuing Calibrations	NA	NA	NA	X
Internal Standards	NA	NA	NA	X
Sample Chromatographs	NA	NA	X	X
Sample Prep Sheets	NA	NA	NA	X
Batch QC				
Matrix Spike	X	X	NA	NA
Matrix spike duplicate	X	X	NA	NA
Client Specific QC				
Matrix spike	NA	NA	X	X
Matrix spike duplicate	NA	NA	X	X
INORGANIC DATA				
Method Blank	NA	X	X	X
Laboratory Control Sample	X	X	X	X
Initial/Continuing Calibration	NA	NA	X	X
Additional ICP QC	NA	NA	X	X
Sample Prep Sheets	NA	NA	NA	X
Batch QC				
Matrix Spike	X	X	NA	NA
Duplicate	X	X	NA	NA
Client Specific QC				
Matrix spike	NA	NA	X	X
Matrix spike duplicate	NA	NA	X	X
Duplicate	NA	NA	X	X

*Level IV - CLP like deliverable package

**Narrative included in Level I as required

Revised 01/22/97 levelpkg.xls

EQUIPMENT MAINTENANCE LOG

Department:	Date of Receipt:
Instrument:	Model No.:
Serial Number:	Service Telephone #:

Date	Description of Maintenance/Service	Initials

Revised 05/13/93 EQUIPLOG

GULF COAST ANAL[illegible]AL EQUIPMENT LIST

EQUIPMENT	MAKE/MODEL	SERIAL NUMBER
[illegible]	[illegible]	[illegible]
GCMSSV 1	HP 5890 SERIES II	3336A54720
	HP 5971 A	3050A01785
GCMSSV 2	HP 5890 SERIES II	3336A53261
	HP 5972	3341A01343
GCMSSV 3	HP 5890 SERIES II	3310A47202
	HP 5972	3307A00395
GCMSV 0	HP 5890 SERIES II	3336A58851
	HP 5972	
GCMSV 1	HP 5890 SERIES II	2905A12032
	HP 5970	2905A12032
GCMSV 2	HP 5890 SERIES II	3029A29908
	HP 5972	3449A02093
GCMSV 3	HP 5890 SERIES II	3114A13122
	HP 5970	
GCMSV 4	HP 5890 SERIES II	3033A31455
	HP 5970.	3034A12865
PURGE/TRAP(GCMSV-0)	TEKMAR-LSC 2000	91162010
PURGE/TRAP(GCMSV-1)	TEKMAR-LSC 2000	91162010
PURGE/TRAP(GCMSV-2)	TEKMAR-LSC 2000	92114001
PURGE/TRAP(GCMSV-3)	TEKMAR-LSC 2000	93118004
PURGE/TRAP(GCMSV-4)	TEKMAR-LSC 3000	99076013
AUTOSAMPLER(GCMSV-0)	TEKMAR ALS 2016/2032	91113002
AUTOSAMPLER(GCMSV-1)	TEKMAR-PRECEPT II	99195008
AUTOSAMPLER(GCMSV-2)	TEKMAR-PRECEPT II	98364003
AUTOSAMPLER(GCMSV-3)	TEKMAR-PRECEPT II	99082001
AUTOSAMPLER(GCMSV-4)	TEKMAR-PRECEPT II	98211007
FUME HOOD	LABCONCO (#20) GCMSV	
FUME HOOD	LABCONCO(#19)	
COOLER	TRUE(#22)	1330620
REFRIG/FREEZER	SEARS (V0A 2)	983108619
FREEZER	FRIGIDAIRE, MODEL #MFU17F3GW6 (#12) GCMSV	WB02927861
REFRIGERATOR	WPAINE 0570(C6) GCMSV	
GCSV 1	HP 5890 SERIES I	2843A19501
GCSV 2	HP 5890 SERIES II	3133A37433
GCSV 3	HP 5890 SERIES II	3108A34124
GCSV 4	HP 5890 SERIES II	3029A29801
GCSV 5	HP 5890 SERIES II	3033A30601

GULF COAST ANALYTICAL EQUIPMENT LIST

EQUIPMENT	MAKE/MODEL	SERIAL NUMBER
GCSV 6	HP 5890 SERIES II	3140A38274
GCSV 7	HP 5890 SERIES II	3126A36260
GCSV 8	HP 5890 SERIES II	3336A53945
GCSV 9	PERKIN ELMER	
GCSV 10	PERKIN ELMER	
GCSV 11	HP 5890 SERIES II	3033A30303
GCSV 12	HP 5890 SERIES II	3033A33730
GCSV 13	HP 5890 SERIES II	3336A54138
EASY FLASH	TDX(GCSV#11)	997776
EASY FLASH	TDX(GCSV#7)	983302
FUME HOOD	LABCONCO(#33)	
GCV 1	TRACOR 540	
GCV 2	HP 5890 SERIES II	901838
GCV 3	HP 5890 SERIES II	
GCV 4	HP 5890 SERIES II	
GCV 5	HP 5890 SERIES II	3033A33621
GCV 6	HP 5890 SERIES II	3203A41268
GCV 7	HP 5890 SERIES II	3223A43525
PURGE/TRAP	LSC 2000 (NOT IN USE)	90163023
PURGE/TRAP	LSC 2000	90211015
PURGE/TRAP	LSC 2000	9503902
PURGE/TRAP	LSC 2000	
AUTOSAMPLER	TEKMAR ALS 2016	92157004
AUTOSAMPLER	TEKMAR ALS 2032	91150012
AUTOSAMPLER	TEKMAR ALS 2032	90233008
AUTOSAMPLER	TEKMAR ALS 2016	93130001
AUTOSAMPLER	TEKMAR ALS 2032	92268005
REFRIG/FREEZER	SEARS (#19)	
REFRIG/FREEZER	MASTERBILT (#18)	254034
BALANCE	SARTORIUS ISO 9001	
REFRIG/FREEZER	WHITE WESTINGHOUSE (#25)	BA32307660
REFRIG/FREEZER	SEARS (#11)	BA01000875
REFRIG/FREEZER	KENMORE (#14)	BA04391055
REFRIG/FREEZER	KENMORE (#15)	BA04391057
REFRIG/FREEZER	KENMORE (#17)	BA03100524
FREEZER	WHITE WESTINGHOUSE (#26)	WB83724994
[illegible]	[illegible]	[illegible]
ICP	PERKIN-ELMER OPTIMA 3000XL	069N4051802

GULF COAST ANALY[illegible]AL EQUIPMENT LIST

EQUIPMENT	MAKE/MODEL	SERIAL NUMBER
ICP	PERKIN-ELMER OPTIMA 4300DV	077N0050202
GFAA	PERKIN-ELMER ZEEMAN 5100/HGA 600	139460
GFAA	PERKIN-ELMER 4100ZL	6421
FLAME AA	PERKIN-ELMER 3100	143298
HG ANALYZER	LEEMAN LABS PS200	1008-A
HG ANALYZER	PERKIN ELMER/FIMS 400	4515
FUME HOOD	FISHER 93-608Q(#23)	
FUME HOOD	FISHER 93-608Q(#24)	
[illegible]	[illegible]	[illegible]
MICROWAVE	CEM MARS5	DS-6208
DIGESTION BLOCKS(3)	CPI MOD BLOCK	
FUME HOOD (4)		
BALANCE	SARTORIUS BASIC B310S	40030070
BALANCE	METTLER AE163	C05693
[illegible]	[illegible]	[illegible]
FUME HOODS (18)		
FREON RECYCLER	ENVIROSAVE 22 (NOT IN USE)	
GLASS WASHER	AMSCO 400	36911195001
SHAKER (4)		
MILLIPORE(2)		
VACUUM PUMP	WELCH 1397	
GPC (2)	ABC AP-100	9161SI/AS007-9114-9114
CENTRIFUGE	IEC HN-SII	
OVEN	FISHER	11000184
TCLP/ZHE ROTATOR (7)	ASSOCIATED DESIGN	
ZHE EXTRACTORS (27)	ENVIRONMENTAL EXPRESS	
WATER BATH (3)		
SONICATOR (4)	MISONIX	
BALANCE	METTLER PM 3000	M33557
BALANCE	SARTORIUS U4600 P+	36090160
BALANCE	METTLER PG 3001 S	1117331005
PH METER	ORION SA520	QT20A
PH METER	ORION 720A	003964
PH METER	ORION 720A	001350
PH PROBE	ORION	917006
PH PROBE	ORION	9107BN
COOLER	TRUE (#5)	1334961
REFRIG/FREEZER	WHITE WESTINGHOUSE (#8)	LA10903763

GULF COAST ANALYTICAL EQUIPMENT LIST

EQUIPMENT	MAKE/MODEL	SERIAL NUMBER
REFRIG/FREEZER	WHITE WESTINGHOUSE (#9)	BA04391056
REFRIG/FREEZER	KENMORE (#6)	E52036581
FREEZER	WHITE WESTINGHOUSE (#23)	WB40802629
[illegible]	[illegible]	[illegible]
HPLC	HP 1050	
HPLC	HP 1049A	331450G644
HPLC	HP1046A	3137G02313
TOX (2)	MITSUBISHI TOX-10E	
TOC (3)	SHIMADZU TOC-5050	30N28473/33829608
AUTOANALYZER	LACHET QUICK CHEM AE	200-474
IC(2)	DIONEX 4500I	900915
COD REACTOR (2)	HACH COD REACTOR	910404575/920800007697
TURBIDIMETER	HACH 2100A	
SPECTROPHOTOMETER	HACH DR/3000	920800003638
VISCOMETER	BROOKFIELD DVII	32587
WATER BATH	BROOKFIELD TC-200	
CLOSED CUP FLASH PT	PRECISION SCIENTIFIC	10BR-12
AMMONIA PROBE	ORION 95-12	
OXYGEN BOMB CAL	PARR	6616
CONDUCTIVITY METER	AMBER SCIENCE 604	9206030
COLIFORM BATH(2)	PRECISION SCIENTIFIC INCUBATOR	
PH METER	ORION 720A	WP# 0805
PH METER	ORION 420A	
PH PROBE	ORION 8165BN	
PH PROBE	SENOREZ S200C	
AUTOCLAVE	AMSCO EAGLE TEN (NOT IN USE)	
DO METER	YSI MODEL 59/5905 PROBE	93A01946
DO METER	YSI MODEL 5100	99M0821-AF
OVENS (3)		
FURNACE	THERMOLYNE 1500	
DESSICATORS (7)	DRY KEEPER	
INCUBATOR	FISHER SCIENTIFIC(#3)	WB93928030
BALANCE	OHAUS AS200	3994
BALANCE	AND ER-182A	4703338
BALANCE	SARTORIUS A200S	36120024
FUME HOODS (4)		
REFRIG/FREEZER	WHITE WESTINGHOUSE (#2)	WB 11908435
REFRIG/FREEZER	WHITE WESTINGHOUSE (#1)	WB10507478

GULF COAST ANALYTICAL EQUIPMENT LIST

EQUIPMENT	MAKE/MODEL	SERIAL NUMBER
[illegible]	[illegible]	[illegible]
FUME HOOD (1)		
COOLER	TRUE (#2)	708391
COOLER	TRUE (#3)	790111
WALK-IN COOLER (2)		
REFRIG/FREEZER	KENMORE (#4)	BA01902878
ELECTRONIC THERMOMETER	RAYNGER ST2L RAYTEK	
FREEZER	FRIGIDAIRE(#12) MFU17F3GW6	WB03102969
MISCELLANEOUS	[illegible]	[illegible]
BALANCE	AND FX-300 WEST-PAINE 0640	5015502
BALANCE	SARTORIUS B120S	40030105

GULF COAST
ANALYTICAL LABORATORIES, INC.

CORRECTIVE ACTION REQUEST

Date: _____ Group #: _____
Client: _____ Sample # _____
Contact: _____ Phone#: _____
Initiated By: _____ FAX#: _____

Correction Needed: _____

ROUTING: Initial/Date when completed

QA/QC					
Operations Mgr					
Rpt Gen			Metals		
Invoicing			Wet Lab		
Extractions			Asbestos		
GC/MS VOA			Log in		
GC/MS SVOA					
GC VOA					
GC SemiVOA			IT Director		

Return to QA/QC By: _____

*Resolution: _____

Follow Up Action: _____

Temporary: _____ Permanent _____

QA/QC Review: _____ Data Val Review: _____

Date Mailed: _____ Copy to Initiator: _____

*Verify all corrections are made to posting sheets, logbooks, raw data & LIMS.

7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402 • Phone (504) 769-4900 • Fax (504) 767-5717
Email: gcal@premier.net

CORRECTIVE ACTION REQUEST/CLIENT INQUIRY REQUEST

Group #: _____

Client: _____ Initiated By/Date: _____

REASON FOR INITIATION OF CORRECTIVE ACTION

RESOLUTION

Section	Action Taken

Narratives to be added:

Report Generation

Date	Action Taken

Correction Reviewed By: _____ Date Completed: _____

STANDARD PREPARATION LOGBOOK

STANDARD NAME	STD#	STOCK STD	SUPPLIER	LOT#/ EXP DATE	WT/VOL g/ml	FINAL VOL(ml)	FINAL CONC	SOLVENT/ LOT#	INIT	DATE PREPARED	EXP DATE

REFRIGERATOR TEMPERATURE
LOGBOOK

CONTROL LIMITS: 4°C +/- 2

Date	Temperature	Action taken:	Initials

Revised 07/19/94 REFTEMP_2

pH LOGBOOK

Date: _____

Slope Limits: 92–108

	Calibration		Calibration Levels				QC Check	
	Time	Analyst	1	2	3	Slope	Actual	Found
1								
2								
3								
4								
5								
6								

pH RESULTS

	Client	Sample ID	Time	Analyst	Sample wt (g)	ml DI	Result
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Revised 09/11/96 PHS

DATE: _____ TCLP EXTRACTIONS ANALYST: _____

Sample Number:							
Sample Description							
1. VISUAL SAMPLE EVALUATION							
100% solid (Skip to 3) (✓)							
Sample is <100% Solid (✓)							
2. FILTRATION (Pressure Filtration is Required if Solids are ≥10%)							
Filter Weight (F)							
Filtrate Vessel Weight (V)							
Subsample Weight (X)							
Weight of Dried Solids + Filter (S)							
Weight of Filtrate + Vessel (L)							
Weight of Filtered Solids = *X-(L-V) -F* (FM)							
% Filter Solids = [X-(L-V) x 100] ÷ X (%FS)							
% Dry Solids = [S-F x 100] ÷ X (%DS)							
3. EXTRACTION FLUID DETERMINATION							
Particle Size Reduced (1mm max.) (✓)							
Actual weight of subsample (5.0 ± 0.1g)							
Actual volume of water (96.5 ± 1 mL)							
Initial pH (After 5 min. mixing) "pH-1"							
If pH >5, ✓ if 3.5 mL 1N HCl added							
✓ If heated and held at 50°C for 10 minutes							
Second pH (at room temperature) "pH-2"							
If pH-1 or pH-2 < 5.0 use Fluid I (✓)							
If pH-2 > 5.0 use Fluid II (✓)							
4. PREPARATION FOR EXTRACTION PROCEDURE *							
Particle Size Reduced (9.5 mm max) (✓)							
Weight of Solids to be Extracted = FM (X)							
Filtrate Vessel Weight (V)							
Weight of Filtrate + Vessel (L)							
Amount of Fluid Needed = 20 x (X-L-V)							
5. TCLP ROTATION (Rotate for 18 ± 2 hours at 23 ± 2°C and 30 ± 2 rpm) Temp: _____							
Start Time							
Stop Time							
6. FINAL TCLP EXTRACT							
Volume Extract Obtained in Step 5 V1							
Volume Compatible Filtrate from Step 4 V2							
Volume Non-Compatible Filtrate from Step 4 V3							
pH Combined Extract/Filtrate (V1 + V2)							
Compatible Phase Ratio = (V1+V2) ÷ (V1+V2+V3)							
Non-Compatible Phase Ratio = (V3) ÷ (V1+V2+V3)							

*If sample is [illegible] 5 %FS; or <0.5 %DS; Filter Sample, collect filtrate and skip to 6. If sample is 100% solid, use 100 grams sample and 2000 mLs fluid.

LOGIN DISCREPANCY

CLIENT	CLIENT NUMBER	GROUP NUMBER

Comments/Discrepancies noted by: _____ Date: _____

Comments/Corrective Action by: _____ Date: _____

GULF COAST ANALYTICAL LABORATORIES
CERTIFICATIONS

- Louisiana Department of Environmental Quality, Environmental Laboratory Accreditation Program, Certificate Number 01955 (Expiration 6/30/2001)

- Oklahoma Department of Environmental Quality, Laboratory Certification Program, ID # 9403 (Expiration: 8/31/2001)

- State of Arkansas, Department of Pollution Control and Ecology, Laboratory Certification Program (Expiration: 11/06/2001)

- State of Florida, Department of Environmental Protection, Quality Assurance Approval, QA plan # 970026 (Expiration: 07/08/2001)

- State of California Environmental Laboratory Accreditation Program, Certificate Number 2242 (Expiration: 5/31/2001)

- U.S. Army Corps of Engineers (USACE) validated laboratory (Expiration: 10/19/2002)

GCAL is currently performing work in the following states which do not have environmental certification programs:
Texas
Mississippi
Alabama
Georgia

APPENDIX 5

INSPECTION PLAN AND SCHEDULE

INSPECTION PLAN
AND SCHEDULE

EXIDE TECHNOLOGIES
BATON ROUGE SMELTER
BATON ROUGE, LOUISIANA

EPA ID NUMBER: LAD 008184137

May 2003

INTRODUCTION

The Exide Baton Rouge smelter is a secondary lead smelter and recycler that recycles inorganic lead-bearing materials including spent lead acid batteries. Exide was issued a Hazardous Waste Operating Permit (LAD008184137) by the Louisiana Department of Environmental Quality (LDEQ) on September 30, 1993. The permit lists inspection schedules for three permitted storage units and one permitted treatment unit. Exide submitted a Class 3 permit modification to add the Containment Building to the Operating Permit.

Exide has developed this plan and schedule to meet the requirements specified in LAC 33:V.1509 and 40CFR264.15. Exide will inspect the smelter for any malfunctions and deteriorations, operator errors, and discharges that may cause a release of hazardous waste or a threat to human health.

TYPES OF INSPECTIONS

Daily Inspections

The Environmental Manager or his designate performs daily inspections of the material storage areas, the loading and unloading docks, the wastewater treatment area, and the leachate collection systems. These inspections are required by Exide's Hazardous Waste Permit and Best Management Practices/Stormwater Pollution Prevention Plan (SWPPP). The results of this inspection are documented on the form included in Appendix A and kept in the environmental files.

The Environmental Manager or his designate will perform daily opacity inspections and baghouse operation inspections. These inspections are required as a part of Exide's Air Permit. The results of the inspections are documented on the forms included in Appendix B and kept in the environmental files.

Routine visual inspections of onsite tanks and transfer equipment are performed on a daily basis as required by the Spill Prevention Control and Countermeasure Plan (SPCC Plan).

Weekly Inspections

The Environmental Manager or his designate conducts a weekly inspection of all permitted hazardous waste units.

The Truck/Trailer area is a permitted storage area where spent lead-acid batteries are stored on pallets in trucks prior to recycling. This unit will be inspected to insure that the container and trailers are structurally sound with covers or tops in place, there are no cracks on the base or pooled water in the sump, the warning signs are in place and that the runon-runoff system is working. The contents of any trailer judged to be structurally unsound will be immediately transferred to another trailer or recycled.

The Whole Battery Storage area is a permitted storage area where spent lead-acid batteries are stored on pallets prior to recycling. This unit will be inspected weekly to be sure that the containers are structurally sound, there are no cracks or gaps in the base, and that the warning sings are in place. Any cracked or broken batteries will be either over-packed or recycled.

The K069 Container storage area is a permitted storage area were drums containing K069 and D008 wastes are stored on pallets. Drums containing 90-day nickel-cadmium batteries will also be inspected. The drum storage areas will be inspected for structurally sound containers with covers in place, that the container are on pallets, there is no accumulated water in the storage area, and the containers are properly labeled. Any unsound container will be replaced or recycled as soon as possible, but no later than five calendar days after detection. Any uncovered container will be covered immediately.

The Slag Stabilization area is a permitted waste treatment unit that crushes and chemically stabilizes spent blast furnace slag. This unit will be inspected for warning signs in place, no cracks or gap in the base, no visible air emissions, no spills, and that the runon-runoff system is working. Any air emissions will be terminated immediately. Any repairs or upgrades will be accomplished in the shortest possible time. The Environmental manager will also be sure that all permit required TCLP and air monitoring samples have been collected, analyzed and are on file.

The Containment Building will be inspected for free liquids, visible emissions, tracking, and release of hazardous waste. Additionally, the leak detection system, the liquid collection system, the heights of the stored materials will be checked and the air handling system. Any corrective action necessary will be completed at the earliest possible time.

The Used Oil Tank will also be inspected weekly as indicated in the Used Oil Plan.

These weekly inspection results are documented on the forms included in Appendix C and kept in the environmental files.

Monthly Inspections

A monthly inspection of the closed hazardous waste cells and associated monitoring wells, the fire protection systems, the telephone and alarm systems and the special respirators is conducted by the Environmental Manager or his designate. The results of this inspection are documented on the form included in Appendix C and kept in the environmental files.

Quarterly Inspections

Additional inspections performed at the Baton Rouge smelter include, quarterly tank and associated piping inspections as required by the facility SPCC plan and continuous in-coming material inspections required by the Waste Analysis Plan. Documentation of these additional inspections is kept in the Environmental Departments files.

INSPECTION SCHEDULE

As stated above, daily weekly and monthly inspections are performed at the Baton Rouge smelter. The inspection schedule is detailed below:

- Daily inspection of the wastewater treatment area, the leachate collection system, the unloading areas, and the material storage area. Along with baghouse functions and opacity.
- Weekly inspections of all of the permitted hazardous waste storage areas, the Truck/Trailer storage area, the Whole Battery Storage area, the K069 storage area, the Slag Stabilization unit, the Containment Building, and the NiCad Battery storage.
- Monthly inspections are conducted at the two closed hazardous waste cells, the plant alarm and fire protection equipment, and the special respirators.
- Quarterly inspections are conducted for tanks.
- Continuous inspections of in-coming materials.

These inspections may be performed on a more frequent basis depending on operating conditions or other circumstances.

TYPES OF PROBLEMS

The types of problems that are expected to be encountered can include equipment malfunctions, spills, material handling, labeling and notification problems, or container deterioration. The Weekly and Monthly Inspection Form in Appendix C lists common, expected problems for each area. The Daily Inspection Form in Appendix A simply lists the areas. The inspector will check those areas for any problems, such as leaks, spills, hazardous waste stored in a non-permitted area, warning signs in place, and structural integrity of the unit.

If any problems or malfunctions are noted during the inspection, Exide will immediately correct the problem and remedy the situation. Exide will note repairs and corrective action on the inspection forms.

INSPECTION LOG DOCUMENTATION

Exide will record the daily, weekly, monthly and quarterly inspections in inspection logs. These inspection logs will be kept in the Environmental Departments files for at least three years from the date of inspection. The inspection records will include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs for remedial actions.

APPENDIX A
Exide Technologies
Baton Rouge Smelter
Daily Hazardous Waste Inspection Schedule and Log

Date	Time	Inspector	Material Storage	HW Unloading & Unloading Area	Wastewater Treatment	Leachate Collection
3/1/2003						
3/2/2003						
3/3/2003						
3/4/2003						
3/5/2003						
3/6/2003						
3/7/2003						
3/8/2003						
3/9/2003						
3/10/2003						
3/11/2003						
3/12/2003						
3/13/2003						
3/14/2003						
3/15/2003						
3/16/2003						
3/17/2003						
3/18/2003						
3/19/2003						
3/20/2003						
3/21/2003						
3/22/2003						
3/23/2003						
3/24/2003						
3/25/2003						
3/26/2003						
3/27/2003						
3/28/2003						
3/29/2003						
3/30/2003						
3/31/2003						

APPENDIX B
Exide Technologies
Baton Rouge Smelter
Daily Opacity Inspection

Date	Time	Inspector	B/H #1	B/H #4	B/H #5	B/H #6	B/H #7	CX Filter Vent
3/1/2003								
3/2/2003								
3/3/2003								
3/4/2003								
3/5/2003								
3/6/2003								
3/7/2003								
3/8/2003								
3/9/2003								
3/10/2003								
3/11/2003								
3/12/2003								
3/13/2003								
3/14/2003								
3/15/2003								
3/16/2003								
3/17/2003								
3/18/2003								
3/19/2003								
3/20/2003								
3/21/2003								
3/22/2003								
3/23/2003								
3/24/2003								
3/25/2003								
3/26/2003								
3/27/2003								
3/28/2003								
3/29/2003								
3/30/2003								
3/31/2003								

X = No visible Emissions from stack

APPENDIX C
EXIDE TECHNOLOGIES - BATON ROUGE SMELTER
HAZARDOUS WASTE INSPECTION SCHEDULE
MONTHLY AND WEEKLY

DATE/TIME										
INSPECTOR										
STATUS	OK	NO	OK	NO	OK	NO	OK	NO	OK	NO
SLAG STABILIZATION										
1. There are no cracks, gaps, or pooled water on base or in sump.										
2. Warning signs are in place.										
3. There are no visible air emissions.										
4. The runon-runoff system works.										
5. There are no spills on base.										
6. TCLP and Air Monitoring Samples have been tested at the appropriate frequency.										
CONTAINMENT BUILDING										
1. Containment of materials and height of stored material.										
2. No free liquids.										
3. Runon-runoff barriers working.										
4. Leak detection sump.										
5. Liquid collection system.										
6. No visible emissions.										
7. Decon areas operational and No tracking.										
8. Warning signs are in place.										
9. Release of any hazardous waste from the Continnment Building										
NI-CD BATTERIES										
1. Containers are structurally sound with covers in place.										
2. Containers are labeled. Date on label is less than 90 days.										

APPENDIX C
EXIDE TECHNOLOGIES - BATON ROUGE SMELTER
HAZARDOUS WASTE INSPECTION SCHEDULE
MONTHLY AND WEEKLY

DATE/TIME										
INSPECTOR										
STATUS	OK	NO	OK	NO	OK	NO	OK	NO	OK	NO
TRUCK/TRAILER AREA										
1. Containers and trailers are structurally sound with covers or tops in place.										
2. There are no cracks, gaps or pooled water on the base nor accumulated water in sump.										
3. Warning signs are in place.										
4. Runon-runoff system works.										
WHOLE BATTERY CONTAINER AREA										
1. Containers are structurally sound with covers in place.										
2. Proper aisle space and stacking height.										
3. There are no cracks, gaps or pooled water on the base nor accumulated water in sump.										
4. The warning signs are in place.										
K069 CONTAINER AREA										
1. Containers are structurally sound with covers in place.										
2. Proper aisle space and stacking height.										
3. The containers are on pallets and above any liquid on the floor.										
USED OIL TANK										
1. Tank is structurally sound with no leaks.										

DATE AND NATURE OF REPAIRS OR ACTIONS: _____

_____

MONTHLY

1. Closed area, Security, Monitoring Wells;

Date_____ Time _____ Inspector _____

	OK	Other
a. No apparent clay cap erosion.		
b. Leachate collection system operating properly.		
c. No ants, termites, or burrowing animals detrimental to clay cap.		

APPENDIX C
EXIDE TECHNOLOGIES - BATON ROUGE SMELTER
HAZARDOUS WASTE INSPECTION SCHEDULE
MONTHLY AND WEEKLY

Seal around monitoring well is unbroken.
e. No holes or breaks in monitoring well casing /covers.
f. Warning signs, security fences in place.
2. Safety Communication Equipment;

Date_____ Time _____ Inspector _____

OK	Other

a. Each fire hose, extinguisher is operable and accessible.
b. Telephone and alarm system is operable.
c. Special respirator is operable.
d. Spill Control materials (adsorbent, acid neutralizer)
e. First Aid equipment

DATE AND NATURE OF REPAIRS OR ACTIONS: _____

_____

APPENDIX 6

RCRA CONTINGENCY PLAN AND EMERGENCY RESPONSE PLAN

RCRA CONTINGENCY PLAN

AND

EMERGENCY RESPONSE PLAN

EXIDE TECHNOLOGIES
BATON ROUGE SMELTER

2400 BROOKLAWN DRIVE
BATON ROUGE, LOUISIANA

Phone- 225-775-3040 Fax 225-775-3057

REVISED 4/18/03

In Compliance with OSHA Emergency Response Plan (29 CFR 1910.120) and RCRA Contingency Plan (40CFR 262, 264 and 265) requirements.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
1.1	Purpose	1
1.2	Authority to Invoke Plan	1
1.3	Training	1
1.4	Background	2
1.5	Arrangements with Local Authorities	2
1.6	Record Keeping	2
1.7	Facility Hazards	2
2.0	ASSIGNMENT OF DUTIES	3
2.1	Chief Officer	3
2.2	Assistant Chief Officer	4
2.3	Safety Officer	4
2.4	Communications Officer	4
2.5	Utilities Officer	5
2.6	Liaison Office	5
2.7	Fire Officer	6
2.8	First Aid Officer	6
2.9	Maintenance Office	6
2.10	Guard Officer	7
2.11	Evacuation Wardens	7
3.0	EMERGENCY RESPONSE	8
3.1	Order of Notification	8
3.2	Plant Communications	8
	3.2.1 Communication Center	8
	3.2.2 Communications Failure	8
	3.2.3 Emergency Telephone Numbers	8
3.3	Evacuation and Assemble Areas	9
	3.3.1 Evacuation	9
	3.3.2 Medical Evacuation	10
	3.3.3 Assembly Areas	10
3.4	Rescue	10
3.5	Emergency Equipment	10
3.6	Control of Access to Damaged Areas	11
3.7	Public Relations	11
3.8	Decontamination	11
4.0	TYPES OF EMERGENCY SITUATIONS	11
4.1	Natural Disasters	12
	4.1.1 Hurricanes	12
	4.2.1 Tornadoes	12

TABLE OF CONTENTS (Continued)

		Page
4.2	Chemical Emergencies	12
	4.2.1 Acid	12
	4.2.2 Hazardous Material Releases	13
4.3	Fire	13
	4.3.1 Flammable Gases	14
	4.3.2 Fire Prevention	14
4.4	Explosion	14
4.5	Bomb Threat Procedure	14
5.0	PLANT OR UNIT SHUTDOWN	15
5.1	General	15
5.2	Blast Furnaces	15
5.3	Reverberatory Furnace	15
5.4	Baghouses	16
5.5	Natural Gas	16
5.6	Electrical Power Supply	16
5.7	Water Supply	16
5.8	Mobil Equipment	16
6.0	ALARM SYSTEM	16

LIST OF TABLES

Table 1 - Employee Emergency Notification Telephone List
Table 2 - Emergency Services Telephone List

LIST OF FIGURES

Figure 1 - Site Location Plan
Figure 2 - Emergency Response Organizational Chart
Figure 3 - Locations of Emergency Equipment

LIST OF APPENDICES

Appendix A - Arrangements with Local Authorities
Appendix B - Tier Two Report
Appendix C - MSDS Sheets for Products Produced at the Baton Rouge Smelter
Appendix D - List of Emergency Equipment

1.0 INTRODUCTION

1.1 Purpose

The Exide Technologies, Baton Rouge smelter is located in Baton Rouge, East Baton Rouge Parish, Louisiana. This facility is a secondary lead smelter and refinery that recycles spent lead-acid batteries and inorganic lead-bearing wastes into product lead.

This RCRA Contingency Plan and Emergency Response Plan (herein referred to as "the Contingency Plan") has been formulated in order to minimize personal injury and property damage in the event of a plant emergency or natural disaster. This plan meets the regulatory requirements specified in 29 CFR 1910.120, 40CFR 262, 264 and 265, and LAC 33:V.1513. Section 2.0 of the plan lists the assignment of duties for all Contingency Plan officers, and provides an organization chart designating responsibility. Section 3.0 of the plan documents emergency response procedures such as assemble areas and communications. Types of emergency situations and how to deal with these situations are detailed in Section 4.0 of the plan. Section 5.0 of the plan describes the plant and unit emergency shutdown procedures and Section 6.0 presents the alarm system.

Copies of this plan will be distributed to local and state law enforcement agencies, area hospitals, local fire and rescue units and the East Baton Rouge Emergency Planning Commission. This plan will be reviewed annually and updated as necessary to reflect changes in emergency procedures or equipment, site hazards or emergency personnel.

Transportation emergencies and over-the-road spill response are addressed in Exide's Transporter Contingency Plan.

1.2 Authority to Invoke Plan

The Chief Officer or his alternate will act as the Emergency Coordinator with full authority to implement the plan. If an incident occurs when the Chief Officer is not present, the plan will be invoked by the senior supervisor present. If a supervisor is not readily available and an emergency situation occurs, any employee is authorized to request the guard to sound the alarm if necessary to minimize hazards to human health and the environment in obvious emergency situations. Table 1 of this plan presents a list of the names and telephone number of all Contingency Plan Offices. To report emergencies, any employee can use the portable radios in the plant or the in-plant telephone system.

1.3 Training

All Exide employees will receive initial training on the Contingency Plan and follow-up refresher training at least once per year. The training is given in the form of classroom instruction and on the job training. The training includes review of the Emergency Response Organization, the plant alarm system, the assembly areas and evacuation routes. The emergency telephone contact list is discussed and the locations of facility chemicals and MSDS sheet binders is reviewed. A copy of the most recent Tier II submittal is included in the plan and that list is reviewed and discussed with the

employees. The emergency equipment list is discussed with all employees during the training sessions, including where emergency equipment is kept and the capability of the equipment. Additionally, all facility supervisors have first aid and CPR training and certification from the Baton Rouge Safety Council.

Any employee that has a specific duty or responsibility in the plan will receive additional training detailing their specific responsibilities. Training will be conducted when an employee's responsibilities or designated actions under the plan change and whenever the plan is changed or updated.

1.4 Background

The Exide Baton Rouge smelter is located at 2400 Brooklawn Drive, in East Baton Rouge Parish, Louisiana. This facility is a secondary lead smelter and refinery which recycles inorganic lead-bearing materials into lead pig and block ingots, which are sold to customers for use in making batteries, weights, bearings, ammunition, and chemicals. The facility has been in operation since the 1960s. Figure 1 shows the facility and surrounding area.

Spent lead acid batteries are delivered to the facility in trucks or trailers and are unloaded at the loading dock. The batteries are fed into the battery breaker unit, and are processed into individual components. Other lead-bearing materials are stored in feed-stock piles in the Containment Building. The facility operates one blast furnace (the No. 1 blast) and one reverberatory furnace (the No. 3 reverb) that are used to smelt the lead-bearing raw materials. The molten lead is refined and then cast into bars or blocks. The finished lead is loaded into trucks and transported off-site for reuse.

1.5 Arrangements with Local Authorities

Exide has made arrangements with local fire departments, emergency response first aid and ambulance services, law enforcement, HAZMAT services and hospitals. The list of emergency telephone contact numbers is included in Table 2 of this Plan. Appendix A contains documentation of the arrangements.

1.6 Recordkeeping

Exide will maintain all records pertaining to the Contingency Plan in the facilities Environmental Health and Safety files. The records include detailed incident reports documenting each time the Plan is invoked, along with follow-up reports and root cause analysis. Additional records include fire extinguisher inspection reports, training records, emergency drills, updated MSDS and Tier II submittals and emergency equipment and emergency alarm inspections.

1.7 Facility Hazards

The Baton Rouge smelter recycles lead-acid batteries and other lead bearing materials. Some of the materials received are classified as hazardous wastes or hazardous materials. Hazardous waste

storage areas shown on Figure 3 include the Whole Battery Storage Area, the Truck Trailer Storage Area, the K069/D008 Storage area and the Containment Building. Additionally, some of the chemicals used at the Baton Rouge smelter are hazardous, flammable or explosive. The Baton Rouge smelter does not have any PCBs or organic lead.

Appendix B contains the latest copy of Exide's Tier Two report that lists all of the hazardous chemical used on site along with the location that the chemicals are stored. Material Safety Data Sheets (MSDS) are kept in the Safety Office, in the Control Rooms and at the Guard House. The MSDS binders are updated by Exide when new chemicals are received. MSDS sheets for all of the products that the Baton Rouge smelter produces are included in Appendix C.

Some of the areas that could pose a danger during an emergency or natural disaster include:

- the phosphorus storage area where red phosphorus is kept,
- the sulfuric acid tanks, two 15,000 gallon tanks that contain battery acid (sulfuric acid at concentrations of approximately 15%-20%),
- the chemical warehouse, where most refining chemicals are kept including metallic calcium, metallic selenium, metallic arsenic, sulfur, and sodium nitrate,
- the chlorination unit that contains two 105 lb. cylinders of chlorine gas for treating potable water,
- the gasoline tank (1,000 gallons) and diesel tank (2,000 gallons) near the smelter entrance,
- the maintenance shop where acetylene and oxygen gas cylinders are stored in racks,
- two caustic (sodium hydroxide slurry) tanks, each with a capacity of 10,000 gallons,
- the oxygen plant, where liquid oxygen is stored,
- the battery breaker unit which has acid storage tanks, peroxide and treatment chemicals,
- the production area, where the furnaces are operated and molten lead is refined and cast.

2.0 ASSIGNMENT OF DUTIES

The Organizational Chart, shown on Figure 2, lists each Contingency Plan officer and presents the chain-of-command that will be followed in the event of an emergency. Since emergency situations can happen at any time, the Organizational Chart lists an assistant position for each Contingency

Plan officer, in the event that the primary officer in not available. Table 1 presents a list of emergency telephone numbers for all Contingency Plan Officers.

2.1 Chief Officer

The Chief Officer has overall responsibility for all emergency actions and will act as the emergency coordinator during any emergency situations. The plant manager will fill the role of the Chief Officer. He is qualified to act as the Emergency Coordinator as defined by the applicable LDEQ and EPA regulations. The Chief Officer (Emergency Coordinator) at the Baton Rouge smelter is:

Mr. Joseph Acker Jr. – Plant Manager

Address – Plant	Address - Home
2400 Brooklawn Drive	13410 E. Lakeshore Dr
Baton Rouge, LA 70807	Prairieville, LA 70769
(225) 775-3040 – Office	(225) 673-6187

The Chief Officer will direct this Contingency Plan from the scene of the affected area. After the emergency or disaster is under control, he will direct salvage and re-establishment of operations. Whenever there is an emergency or natural disaster, the Chief Officer will identify the character, source amount and areal extent of any released material. The Chief Officer will meet with all of the Contingency Plan officers to assess all possible hazards caused by the emergency situation.

In the absence of the Chief Officer, the Assistant Chief Officer will assume the duties of the Chief Officer.

2.2 Assistant Chief Officer

The Assistant Chief Officer will advise and assist the Chief Officer and, in the absence of the Chief Officer, will direct the plan. The Production Manager, Mr. Craig Simpson, will act as the Assistant Chief Officer. He will be assisted by the Plant Superintendent, Mr. Larry Myers. The Assistant Chief Officer will be responsible for the safe shutdown of the smelter and other facilities, where necessary, as well as continued operation of unaffected facilities. The Assistant Chief Officer will also ascertain evacuation of hazardous areas by operating personnel when such evacuation is considered necessary.

The following are some of the assigned duties of the Assistant Chief Officer:

- Assist the Chief Officer and other Contingency Plan officers as needed.
- Advised the families of any injured employees.
- Prepare necessary press release for approval of the Chief Officer. He will have the Communications Officer transmit these to the press.
- Compile a headcount list for the Chief Officer.

In the event that a Contingency Plan Officer and his assistant are absent, the Assistant Chief Officer, Mr. Craig Simpson will assign a qualified person to carry out the appropriate duties.

2.3 Safety Officer

The Safety Officer will assist the Chief Officer in all aspects of emergency planning, preparedness, response and training. The Health and Safety Coordinator, Ms. K.C. Lashley will act as the Safety Officer. She will report to the Chief Officer in the event that this plan is invoked and will directly assist in emergency response efforts. The Safety Officer will inspect all required emergency equipment and document that all equipment and supplies are in a state of readiness. She will be aware of all emergency needs and work constantly toward providing a safe work place. The Safety Officer will plan in advance to meet any emergency situation that may present itself.

2.4 Communications Officer

The Communications Officer will maintain an up-to-date list of home telephone numbers of all key employees. The company controller, Mr. Tommy Payne, will act as the Communications Officer and will be assisted by the plant telephone operator and the payroll clerk. In the event the Communications Center must be moved, the list will be taken to the new Communications Center. Some of the duties of the Communications Officer will be:

- Notify all Contingency Plan Officers as expeditiously as possible of any changes in location of the Communications Center from its normal location at the front office.
- Dispatch two men to report to the Chief Officer to serve as messengers.
- Monitor telephone communication so that only essential calls are permitted. Assign priority to calls if necessary.
- Release injury information to families at the direction of the Chief Officer or his Designee.
- Give press releases, as directed by the Chief Officer.

2.5 Utilities Officer

The Utilities Officer is responsible for the oversight and control of power, water, natural gas and oxygen. The senior plant engineer, Mr. Pat Roy, will act as the Utilities Officer. The Plant Electrician, Mr. Johnny Turner, will assist the Utilities Officer. The duties of the Utilities Officer include:

- Arrange for emergency shutoff of utilities as necessary.
- Arrange for emergency water and electric power in areas that require it.

- Work with the Maintenance Officer in arranging for auxiliary equipment.

Additionally, the Utilities Officer will be responsible for advising other Contingency Plan Officers and outside assistance groups such as the Fire Department or law enforcement on special hazards associated with the emergency. These hazards may include toxicity and flammability of released products or byproducts likely to be formed in a reaction. The Utilities Officer will advise the Guard Officer to evacuate or block traffic into affected areas.

The Utilities Officer or his alternate will make an on-site inspection of the affected area to:

- Assess the situation and determine possible hazardous conditions.
- Evacuate affected areas where advisable (contact the Chief Officer first, if practical).
- Make notes of any complaints from neighbors.

2.6 Liaison Officer

The Liaison Officer will work with the Chief Officer in familiarizing all smelter personnel with Emergency Contingency Plan and ascertain that each person knows his duties and responsibilities. The Environmental Manager, Mr. Steve Krul, will act as the Liaison Officer. He will be assisted by the Environmental Superintendent. The following are some of the duties of the Liaison Officer:

- Maintain and control smelter and private transportation.
- Work with the Utilities Officer in obtaining emergency water and electric power.
- Prepare press releases and advise families, as required, in the absence of the Assistant Chief Officer.

Additionally, the Liaison Officer will notify the proper Louisiana Department of Environmental Quality administrative authority and other appropriate federal, state and local authorities that the facility is in compliance with all regulations before operations are resumed in the affected areas.

Immediately after an emergency has been brought under control, the Liaison Officer will provide for the treatment, storage and disposal of recovered waste, contaminated soil or surface water or any other material that results from a release, fire, or explosion at our facility. All materials will be managed in accordance with all applicable regulatory requirements.

2.7 Fire Officer

Fire Officer will be responsible for supervision of all fire fighting activities. The Maintenance Supervisor, Mr. Mike Ashford, will act as the Fire Officer. The CX Production Manager, Mr. Robert Delmore, will assist the Fire Officer. The Baton Rouge smelter does not have an onsite fire brigade.

In the event of a fire the Fire Officer or his designate will coordinate efforts of local and City of Baton Rouge Fire Departments.

In the event that the emergency is other than fire, the Fire Officer and his personnel will automatically come under direction of the Utilities Officer.

2.8 First Aid Officer

The First Aid Officer will direct first aid, as necessary, and request doctors and/or ambulances, as required. The Personnel Director, Ms. Jo Wood, will act as the First Aid Officer. She will be assisted by the Laboratory Supervisor, Mr. Jason Bankston. An ambulance will be called immediately if there is any probability of need. The First Aid Officer will be responsible for insuring that any injured person transported off-site has been properly decontaminated and is not wearing contaminated clothing. The First Aid Officer will notify the Assistant Chief Officer of the names of injured persons and the extent of injury to best of her ability.

First aid operations will be set up in the First Aid Room. If larger accommodations are necessary, the conference room will be used. Injured personnel will be taken to these areas. In event the First Aid Room cannot be used, an alternate First Aid Room will be set up near the gate. A minimal supply of first aid materials will be maintained in an Emergency Bag to be dispatched where needed. The First Aid Officer will notify all Contingency Plan Officers, through the Communications Center, of the change in normal location of the First Aid Room.

2.9 Maintenance Officer

The Maintenance Officer's primary responsibility is to perform emergency maintenance work necessary to prevent injury to personnel and minimize damage to property, product or materials. The Maintenance Supervisor, Mr Mike Ashford, will act as the Maintenance Officer. He will be assisted by the Maintenance Superintendent.

The Maintenance Officer will direct his personnel to assist the fire crew as directed by the Fire Officer; assist any rescue operations with heavy equipment as necessary; and assist in restoration of communications, utilities, and roadways.

2.10 Guard Officer

The Guard Officer is responsible for plant security, protection of plant property and traffic flow. The Guard Officer will prevent unauthorized persons from trespassing on Company property. He will also request assistance from The City of Baton Rouge Law Enforcement Agencies, if necessary.

Some of the duties of the Guard Officer will include:

- Direct evacuation of personnel.
- Restrict unauthorized Company personnel from the affected areas.

- Restrict unauthorized persons from Company property.
- Maintain a list of all plant personnel entering or leaving the smelter and their destination, including persons going to the hospital.
- Keep the smelter and adjacent thoroughfares clean of obstructions and unnecessary traffic.
- Direct the flow of traffic in smelter and direct incoming vehicles.
- Assist law enforcement personnel, as necessary.

The Guard Officer will place a guard at all gates of the smelter to restrict entry or open the gate either to admit authorized persons or for evacuation. The Purchasing Manager, Mr. Chris Butler, will act as the Guard Officer, he will be assisted by the contract Security Guard on duty at the time of the emergency.

2.11 Evacuation Wardens

The Wardens will be trained in the complete workplace layout and all of the escape routes and assembly areas, as shown on Figure 3. Sufficient Wardens will be available on each work shift. They will be aware of hazardous areas which should be avoided in an emergency, and will be familiar with any handicapped employees or any other employee problems which can hinder safe evacuation. Before leaving the evacuation area, Wardens are to check enclosed spaces, restrooms, isolated rooms and similar area for employees who may be trapped or otherwise unable to escape. After the desired degree of evacuation is completed, Wardens are to proceed to the assembly areas and account for or otherwise verify that all employees have safely evacuated. All shift leaders and area supervisors will be trained to act as Evacuation Wardens. The office receptionist will be responsible for head-count of all office personnel.

3.0 EMERGENCY RESPONSE

3.1 Order of Notification

If an emergency occurs during weekday hours, notification will follow the set up in the Organizational Chart (Table 1). During weekends, at night and holidays, the Shift Foreman and other supervision assigned are responsible for operation of the smelter. If an emergency occurs during off-hours, the Shift Foreman or supervisor will notify the Chief Officer and the Communication Officers. The Communication Officer will then proceed to contact all necessary personnel. Operating personnel on duty at the time of the emergency will be assigned duties by the foreman in charge until a supervisor arrives at the smelter.

3.2 Plant Communications

During an emergency, the telephone system, intercoms, and portable 2-way radios carried by employees will be used for in-plant communication. Should these systems be inoperative, runners will be sent to the effected departments. The plant telephone system has a battery back up, in the event of a power failure. If the battery backup unit also fails, the telephone jack, located by the front door of the main office, must be used since it is not connected to the plant electricity. Additionally, a pay phone is located in the lunchroom that is not connected to plant electricity. Also in the event of a power failure, the plant intercom and paging systems will not be operable, portable radios and runners must be used.

3.2.1 Communications Center

In the event of an emergency, the Communications Center will be located in the Plant Manager's office. Communication is critical in an emergency situation. The Emergency Contingency Plan depends on expeditious mustering of all personnel involved as well as effective maintenance of communication systems during an emergency period. Portable radios shall be used for field communications between the Contingency Plan Officers and the affected area.

In the event it should become necessary to move the communications center, an alternate location such as the Change House or the Employee Parking Lot will be used.

3.2.2 Communications Failure

If plant communications are disabled during the emergency, the Contingency Plan Officers will use portable radios to conduct in-plant communications. Messengers will be assigned to the Communications Officer for use as the situation warrants. In the event of a communications failure, the messengers may be sent off-site to contact help in reestablishing communications. If more messengers are needed, the Communications Officer will recruit messengers from personnel at the assembly points.

3.2.3 Emergency Telephone Numbers

A current up-to-date listing of employee emergency notification telephone numbers and emergency services telephone numbers will be maintained at the Plant Managers office, in the Shift Foreman's office, in the CX Control Room and at the Scale House. Table 1 of this plan presents a copy of the Employee Emergency Notification Telephone list. Table 2 of this plan presents a copy of the Emergency Services Telephone List.

3.3 Evacuation and Assembly Areas

The criteria for evacuation will determined by the Chief Officer or his designate. If there is an immediate threat to the employees, the area will be evacuated. There are three types of personnel alert systems that will be used during an evacuation to communicate with employees. They are the telephone pager system, the plant alarm system and the two-way radios.

3.3.1 Evacuation

Evacuation of personnel from the plant is on order of the Chief Officer (or his designee) or, otherwise, when conditions obviously warrant. A windsock is useful in determining the direction of air movement in order to walk-out and evacuate "cross-wind," rather than into or down wind from escaped toxic gases. Figure 3 shows plant evacuation routes. The evacuation procedures are as follows:

1) WALK-OUT:

All persons will exit through the main plant entrance and then assemble in the designated assembly area as shown on Figure 3. Department Managers and Shift Supervisors will account for their people and report to the Assistant Chief Officer when all are present or accounted for. If there is a hazard or danger area enroute to the main entrance, employees will evacuate to the rear of the plant and assemble at the alternate assembly area, east the Battery Breaker unit, shown on Figure 3.

2) MOTOR CONVOY:

Personal vehicles. Employees evacuating by personal vehicle should use the same vehicle used to travel to and from work that day. Individual cars and car poolers will proceed to the prearranged destination (Sportsman Texaco, across from Brooklawn Driver), upon order of the Guard Officer. Dismissal will be ordered by the Guard Officer from the prearranged destination.

Company vehicles. Assigned drivers, as appointed by the Guard Officer, will assist loading of selected administrative records and special gear. When ordered by the Guard Officer, drivers of company vehicles will proceed to Sportsman Texaco, the prearranged evacuation destination with ample parking space. Dismissal will be only on order of the Guard Officer after appropriate storage arrangements have been made for plant records and special equipment.

3.3.2 Medical Evacuation

If a person is injured and requires treatment off-site, the First Aid Officer will request medical transportation, either in the form of an ambulance in emergency situations or by employee transportation. Any person requiring evacuation for medical treatment will first be decontaminated. This includes removing any contaminated clothing and showering or washing the individual. The only exceptions will be in critical or life-threatening situations. In the event that an air evacuation is necessary, a helicopter-landing site will be designated.

3.3.3 Assembly Areas

The Main Office Building will serve as the general headquarters during an emergency. In the event of an emergency, all Contingency Plan Officers will report to headquarters. If there is a delay in reporting, the officer will send a representative to headquarters and advise the Communications Center of their whereabouts. Employees have been assigned specific duties under this plan. These

personnel will be notified of their specific duties by the Contingency Plan Officer responsible and will immediately assume these duties in the event of an emergency.

During an evacuation, all employees that are not performing Contingency Plan functions will report to the designated assembly area, located outside the main plant gate, next to the Guard Shack. An alternate assembly area east the Battery Breaker unit has been designated to be used if an emergency occurs near the front portion of the smelter, blocking access to the above assembly points. These assembly areas are shown on Figure 3.

Department Managers and Shift Supervisors will immediately account for all personnel under their direct supervision. Each supervisor will appoint an alternate to make the head count in case of his absence or if he is busy with other duties. A head count report will be made to the Assistant Chief Officer.

3.4 Rescue

The majority of personnel at the Baton Rouge smelter do not have formal training in rescue operations. Therefore, rescue operations will be performed by professional fire and rescue units from the city or parish, (see Table 2 for Emergency Telephone Numbers). If necessary, smelter personnel will assist rescue crews.

3.5 Emergency Equipment

The Safety Officer maintains a list of all emergency equipment at this facility. A copy of this list is included as Appendix D. A 3M SCBA respirator with a 30-minute air tank is located in the Safety Office. Two Scott air-line respirators are located in the Change House. Absorbent material and DOT approved drums for spill control are located in the maintenance shop. Spills will be handled following the procedures specified in Exide's Spill Prevention Control and Countermeasure (SPCC) Plan.

Personal protective equipment, including respirators (equipped with combination HEPA particulate, organic vapor and acid gas filters), ear plugs, steel-toed boots, goggles, face shields, chemical resistant gloves and suits, are kept in the changehouse. An emergency locker, stocked with extra safety supplies is located in the maintenance shop. Exide maintains a stock of fall protection harnesses and lanyards in the safety office. Two air blowers that can be used to ventilate confined spaces are located in the maintenance shop. Fire protection equipment is kept in convenient locations around the smelter. A class D fire extinguisher is kept at the phosphorus building and at the chemical warehouse. All control rooms are equipped with CO_2 fire extinguishers. The No. 1 baghouse and No. 4 baghouse each have sprinkler systems that will be used in the event of a fire at the baghouse.

3.6 Control of Access to Damaged Areas

A special guard crew under the supervision of the Guard Officer will guard all disaster areas to minimize access. If access to a damaged or shut-down area needs to be controlled, the Chief Officer

will direct the Guard Officer to barricade the affected areas. Barricades will not be removed until the affected area is been deemed safe and has been decontaminated.

3.7 Public Relations

Prompt, intelligent handling of the press is always important for good public relations. This is particularly so in an emergency situation. The following outlines procedures to be followed in handling such matters. The Chief Officer and the Corporate Communications Officer, Mr. Tim Yost, will handle press inquiries. Furnish a simple, clear, and accurate story of the occurrences as soon as it can be determined. Statement should include such facts as:

1. A summary of the incident, giving a description of situation.

2. Indicate the part of smelter or process involved.

3. Estimated degree of damage if extensive.

4. Indicate precautions taken. Stress the previous good experience of the company and how damage was minimized or is being prevented from spreading as result of company's safety program and emergency control procedures.

5. Outline how all of the company personnel are cooperating with fire department, police or other municipal authorities and services that may be involved.

6. Furnish simple background information on the plant's operations and history.

Do not give an indication or opinion as to the cause of the incident since insurance and personal liability aspects may be involved. If asked, a simple statement should be made that "the cause of the incident has not yet been determined, but is already under investigation."

3.8 Decontamination

After the area affected by the emergency situation has been deemed to be safe, decontamination of the area will proceed. Decontamination will include containing any spilled waste material, segregating waste materials for disposal, either by recycling in one of the plant furnaces, in the plant wastewater treatment system or by offsite disposal. The affected area will washed down using a high-pressure washer or wash down hose. Wash down water will be treated at the water treatment unit. The Chief Officer will direct decontamination efforts. The Liaison Officer will ensure that decontamination is properly completed and that all decontamination byproducts and wash water are properly disposed of.

4.0 TYPES OF EMERGENCY SITUATIONS

This section describes the types of emergency situations likely to be encountered at the Baton Rouge smelter and presents procedures to be followed in the event of each situation. Copies of this

Contingency plan are kept on file in the Plant Safety Office, in the Plant Environmental Office, in the Plant Manager's office, in the Battery Breaker Control Room, in the Production Control Room, in the Guard House and in the facility onsite laboratory.

4.1 Natural Disasters

Natural disasters such as tornadoes and hail can affect the facility operations with little or no warning. With other natural disasters such as hurricanes and flooding there is usually some time prior to the event for planning. Exide maintains a state of constant readiness in the event of any severe weather. With the onset of possible severe weather, a current list of personnel onsite will be obtained from the supervisors and kept available if needed. The decision to shut-down the plant will be made by the Chief Officer. Evacuation orders may be given or the employees may be forced to take shelter at the smelter. Evacuations will follow the procedures listed in Section 3.3.

4.1.1 Hurricanes

Exide has a detailed hurricane preparedness program. The Baton Rouge smelter will track any hurricane or tropical storm that is present in the Gulf of Mexico. As a storm system approaches the Louisiana coastline, a phased shutdown will be initiated based on the probability of hurricane impact. Moveable objects will be secured, non-essential personnel will be dismissed and production areas will be idled. After the storm has passed, the idled facility will be brought online, any necessary storm repairs will be made and normal operations resume.

4.1.2 Tornadoes

In case of a tornado, office personnel will take shelter under their desk. Employees outside of the office building/changehouse will shelter in the nearest bathroom or concrete block building. If it is impossible to reach shelter, employees should lay flat in a ditch.

4.2 Chemical Emergencies

Toxic materials likely to be released, protective measures, and decontamination procedures are listed in this section. Exide maintains binders that contain MSDS for all chemicals used or stored at the smelter. One set of binders is located in the Safety Office, at set is located in lab, in the Battery Breaker Unit Control Room, the Production Area Control Room and in the Guard House. Areas affected, or likely to be affected, in and out of the smelter, must be evacuated and blockaded immediately should an accidental release occur. Steps to decontaminate any affected areas will begin as soon as it is safe to proceed.

4.2.1 Acid

Sulfuric acid is stored and recycled in the facility. There is a potential for accidentally release of acid in large quantities either from the two sulfuric acid tanks located by the North doorway. Such releases would affect only the immediate area and the hazard would be confined to contact of persons with liquid. The release of acid will be controlled by neutralization with sodium hydroxide,

or an application of a large volume of water to dilute the material. The fluids generated by response to an acid release will be treated at the smelter's wastewater treatment plant. Personnel responding to an acid release must wear protective equipment including rubber boots or overshoes, rain suits, face shield or, in extreme circumstances, coverall rubber suits.

4.2.2 Hazardous Material Releases

In the event of a sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil or surface water, the Chief Officer will identify the exact source, amount and areal extent of the release to the best extent possible. The release must be stopped immediately. Once the release has been stopped, the area in the vicinity of the release will be evaluated. Decontamination will begin once the area is deemed to be safe for activity. For employees, decontamination will include removal of contaminated clothing and showering to remove any residual lead. Equipment that has been impacted by spills will be taken to the wash rack area and pressure washed to remove any contamination. Areas or buildings requiring decontamination will be washed down, or cleaned using one of the onsite industrial sweepers.

The Liaison Office will insure that the proper regulatory authorities have been notified about the type and quantities of the release. The Baton Rouge Smelter maintains a SPCC Plan that describes in detail the spill protection, cleanup and reporting measures to be followed.

4.3 Fire

In the event of a fire, it is important to respond quickly and confine the fire to manageable limits before it progresses beyond control. Danger from debris, explosion, or building and equipment collapse can be adequately coped with by restricting employees from these areas. The Fire Officer will work with the Utilities Officer to see that plant utilities such as electricity, natural gas, and oxygen, are shut off as required. All employees have had training in incipient fire control. However, if the fire progresses to an uncontrolled stage, the local and regional fire departments will be called to respond. Exide has arrangements with the Alsen Fire Department as our first responder in a fire situation, additionally Exide has made arrangements with the Baker Fire Department as a secondary responder. Appendix A presents the local fire department arrangements.

Fire extinguishers are located though out the plant, as shown on Figure 3. All fire extinguishers are inspected and serviced monthly by the Louisiana Fire Extinguisher located in Baton Rouge, LA. Each control room is equipped with a CO_2 fire extinguisher, which should be used in the event of an electrical fire.

It is extremely important to identify the source of the fire. Flammable chemicals are used in most areas of the smelter. Many of the refining chemicals such as red phosphorus and metallic calcium are extremely flammable and fires involving such chemicals cannot be extinguished with water. Exide has Class D fire extinguishers at the phosphorus building and the chemical warehouse. A 55-gallon drum of sand is located at the phosphorus building, it should be used to smother a fire in that area. Additionally, a large sand pile is located next to the chemical warehouse. If a chemical fire

begins at the warehouse, a scoop or front end loader should use the sand to smother the fire before it spreads.

The two process baghouses (No. 1 and No. 4) each have a sprinkler system, designed to stop any fires that may occur at the baghouse. If there is a fire in one of the baghouse cells, a sensor will trigger the sprinkler system and the system will automatically start. The sprinkler is designed to quickly extinguish a fire in the baghouse and prevent the spread of fire to other areas. The systems are inspected on a weekly basis.

After a fire has been extinguished, the area must be monitored to make sure that the fire does not reignite. All fire equipment will be restored after use to a ready condition. Used fire extinguishers will be held in the maintenance shop until they are replaced. No used fire extinguishers will be returned to the plant for use.

4.3.1 Flammable Gases

Flammable gases, including acetylene, propane and natural gas, could be released in quantities sufficient to create a serious hazard in the plant area adjacent to the release. The primary hazards represented here is the danger of fire and explosion. In the event of a fire, emergency measures will be directed toward controlling the release, eliminating the ignition sources and evacuation of contaminated areas. Adjacent areas will be evacuated to prevent injury should released material ignite. Fires fed by released material should be extinguished by cutting off the source of the fuel.

4.3.2 Fire Prevention

The Baton Rouge smelter maintains a housekeeping program to minimize the accumulation of combustible, flammable and hazardous materials and residues, in order that they do not contribute to a fire. Smelter personnel are trained in the hazardous and flammable properties of the materials that are used in the processes and handle flammable chemicals with extreme caution. Access to flammable chemicals is strictly controlled.

4.4 Explosion

Explosions caused by mixing non-compatible chemicals, improper handling of explosive material or pressure buildup, can occur in several areas of the smelter. In order to prevent explosions, proper work practices and procedures must be followed by all Exide employees.

The Utilities Officers will immediately start an investigation of the cause of an explosion. Steps will be taken to prevent occurrences in any other similar vessel or piece of equipment. Any damaged lines or equipment will immediately be shut off or isolated. Affected valves and switches will be tagged out immediately.

4.5 Bomb Threat Procedure

Any person who receives a bomb threat call should get all details possible from the caller and record every word spoken by the person making the call. He will then notify the Chief Officer or the next person in order of notification as listed in this plan. If a bomb threat note is found the note is found indicating a bomb threat, the note should be taken to the Chief Officer and then forwarded to authorities.

The Chief Officer will immediately call **the State Police HAZMAT Unit, 925-6595**, who will respond. The Chief Officer will make a determination of which areas should be evacuated. The evacuation procedures described in Section 3.2 will be followed. The Plant gates will be closed and traffic controlled. Production units affected will be shut down as specified in the Section 5.0 and all flammable materials including natural gas will be cut off to these units.

Should a suspected bomb be discovered, DO NOT TOUCH THE BOMB OR DISTURB IT IN ANY MANNER. Notify the State Police HAZMAT Unit immediately.

5.0 PLANT OR UNIT SHUTDOWN

5.1 General

The Chief Officer or his delegate will decide whether or not a shutdown is required in any or all units. Set forth hereinafter is an outline of minimum steps required for an emergency shutdown. Detailed shutdown procedures are available in operating manuals in each control room, and in the Startup, Shutdown and Malfunction Plan.

In the event of a unit shutdown, proper lockout tagout procedures will be followed. Each production unit has a specific lockout tagout plan, and a lock station with locks, tag, hasps and other lockout supplies. The unit supervisor will first lockout the pieces of equipment necessary for a safe shutdown. Lock and tags will only be removed when the unit has been declared to be safe.

5.2 Blast Furnaces

1. Tap the remaining lead and slag,
2. Shut off the oxygen supply,
3. Pull down the air relief valve,
4. Shut down the roots blower,
5. Lower the crucible,
6. Clean shaft.

5.3 Reverberatory Furnace

1. Tap the remaining lead and slag,
2. Empty the feed belt, hopper, and dryer,
3. Switch the flue dust return,
4. Empty and shutdown the feed ram,
5. Shut down the burners,
6. Shut down the blowers for the burners.

5.4 Baghouses

When possible, it is important to delay shut down of the baghouse, since they provide a source of hygiene air aiding in protection to work force and community. If baghouse shutdown is necessary follow the procedures in the Start-up, Shutdown and Malfunction Plan:

1. Close the dampers and shut down baghouse fan,
2. Shut down the cleaning cycle and screw conveyors.

5.5 Natural Gas

The main gas shut-off valve location for the smelter is at the metering station located by the main entrance gate next to NPC's road. The Utilities Officer will be responsible for determining if natural gas needs to be shut off to a specific area of the smelter.

5.6 Electrical Power Supply

The Utilities Officers will work with the Utilities Company to restore power in the event that electricity goes down. The Maintenance Officer will arrange for motor-generator units to be placed in the most important area, if it is likely that power outage will be for considerable time. Dry cell lanterns are available from the Guard Officer to supplement the flashlights assigned to individuals. If electricity needs to be shut off or isolated from a certain portion of the smelter, the Utilities Officer will lockout and tagout the necessary circuits. Power will not be restored until the affected unit or area is cleared.

5.7 Water Supply

If an emergency situation arises that requires shutting off the plant water, the water supply main valve is located beneath the water tower. The Utilities Officer or his designate will be responsible

for shutting off water during the emergency and then restoring the water once the all clear has been given.

5.8 Mobil Equipment

During an emergency all mobile equipment will be removed from the danger area to a designated location. Keys will be located at maintenance shop during normal hours and at the guard station during off hours, holidays, and weekends.

6.0 ALARM SYSTEM

In the event of an emergency, the telephone pager system is to be used to alert employees to the emergency and to give instructions on what action is to be taken. The plant alarm siren will also be used to alert employees to the emergency. If the plant alarm siren is to be used the Chief Officer or his designate will instruct one of the Contingency Plan officers to go the laboratory and sound the alarm. Each employee should respond to instructions being given by the telephone page system. If the page system is inoperative or no instructions are given, employees are to check with their immediate supervisor for further instructions.

Siren Alarm System

BLAST	FREQUENCY	DESCRIPTION
1 LONG	CONTINUOUS	Low water alarm. Signal to supervision to check and take necessary corrective action to bring the water level in the water tower back up to operating levels.
1 SHORT	SCHEDULED BY TIMER	Notification to employees of work and break schedule.
2 SHORT	INTERMITTENT	**Emergency in office or changehouse areas.**
3 SHORT	INTERMITTENT	**Emergency in the Shop, Lunchroom, Lab or Yard areas.**
4 SHORT	INTERMITTENT	**Emergency at the Production, Baghouse or Warehouse areas.**
5 SHORT	INTERMITTENT	**Emergency at the Battery Breaker, Dust Reverb or Water Treatment areas.**
SHORT, LONG, SHORT, LONG	INTERMITTENT	Alarm signal to an emergency involving the **total plant** and calls for immediate evacuation of the plant. Employees are to follow supervisory instructions or report to front parking lot if no other instructions are given. The short/long blast are to be repeated several times to give notice to all employees.

Note: Alarm panel is located in the laboratory.

TABLE 1
EMPLOYEE EMERGENCY NOTIFICATION TELEPHONE LIST

NAME	POSITION	Phone #	Pager/Cell #
Joe Acker	**Plant Manager**	**673-6187**	**405-8190=Cell**
Craig Simpson	Production Manager	756-0921	405-8192=Cell
K.C. Lashley	Health and Safety Coordinator		939-9969=Cell
Tommy Payne	Controller	753-0445	505-7622=Cell
Pat Roy	Plant Engineer	638-6049	721-1402=Cell
Steve Krul	Environmental Manager	756-5866	
Michael Ashford	Maintenance Supervisor	344-6857	405-8193=Cell
Jo Wood	Personnel Director	664-3117	
Michael Krickel	Quality Manager	753-0089	
Chris Butler	Purchasing Manager	664-9787	938-7031=Cell
Larry Myers	Plant Superintendent	275-7269	978-2703=Cell
Jerry Williams	Yard Manager	774-6951	
Robert Delmore	CX Production Manager	927-1842	
Johnny L. Turner	Plant Electrician	778-1097	
Noel Barnes	Production Shift Supervisor	635-9103	
Ronnie Williams	Production Shift Supervisor	658-7777	
Ronnie Fisher	Production Shift Supervisor	(601) 888-7160	
Adam Brown	Production Shift Supervisor	687-6402	
Ron Fitzgerald	CX Supervisor	262-2325	
Jason Bankston	Lab Supervisor	647-9680	
Tyrone Perry	Shipping Supervisor	923-7698	

Note: All area codes are 225 except as noted.

TABLE 2
EMERGENCY SERVICES TELEPHONE LIST

CRITICAL	*911*
MEDICAL	
Richard Hill, M.D. (Hill Medical Associates)	275-7770
Primary Hospital	
Lane Memorial Hospital 6300 Main St. Zachery	658-4000
Burn Unit	
Baton Rouge General Hospital 3600 Florida Blvd.	387-7000
Secondary Hospital	
Baton Rouge General Hospital 8585 Picardy Ave.	763-4000
Secondary Hospital	
Our Lady of the Lake Hospital 5000 Hennessy Boulevard	765-6565
Primary Ambulance Service	
Acadian Ambulance Service (Non Critical Injuries)	267-1111
FIRE DEPARTMENTS	
Primary Responder	
Alsen Fire Department	774-3473
Secondary Responder	
Brownsfield Fire Department	778-0344
Baker Fire Department	775-3712
Baton Rouge Fire Department (Dispatch Center)	389-4617
LAW ENFORCEMENT	
East Baton Rouge Sheriff's Office	389-5000
Scotlandville Sheriff's Office	389-5105
State Police Troop A	754-8500
HAZMAT UNIT	**925-6595**

Note: All area codes are 225 unless specified.

TABLE 2 (Continued)
EMERGENCY SERVICES TELEPHONE LIST

OXYGEN SERVICE	
BOC (Errol Tisdale)	775-8075
Beeper	1-888789-7498
ELECTRICAL:	
A. ENTERGY: (Primary Service)	1-800-766-1648
Wayne Criswell - Service Rep. Beeper	1-800-264-2535 = 8356
Home	1 (504) 549-6905
B. HINCKLE & McCOY (Secondary Service)	654-2689 Home
Ronald Hopkins – Service Rep.	921-4896 Mobile
C. Red Simpson (Secondary Service)	504-733-2021
Randy Henry – Service Rep.	318-487-1074
NATURAL GAS	
Cypruss Gas	1-800-600-6240
MISCELLANEOUS	
Kansas City Southern Railroad	379-4241
Custom Security (Baker Warehouse)	927-5535
CHEMTREC (Over-the-Road Chemical Spills)	1-800-523-8954

Note: All area codes are 225 unless specified.

NOTE:

BASE MAP COMPRISED OF U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS, " WALLS, LA." DATED 1963, REVISED 1994 AND "SCOTLANDVILLE, LA." DATED 1963, REVISED 1994. IMAGE IS REFERENCED TO UTM NAD 27 ZONE 15.

BATON ROUGE SMELTER

BATON ROUGE, LOUISIANA

Scale: 1"=2000'	SITE LOCATION PLAN
Originated By: J.W.P.	
Drawn By: P.S.G.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Checked By: J.W.P.	
Project Mgr: P.G.S.	
Dwg No. 2003-1058-01-14	Project No. 2003-1058-01 — FIGURE: 1

APR 18 2003

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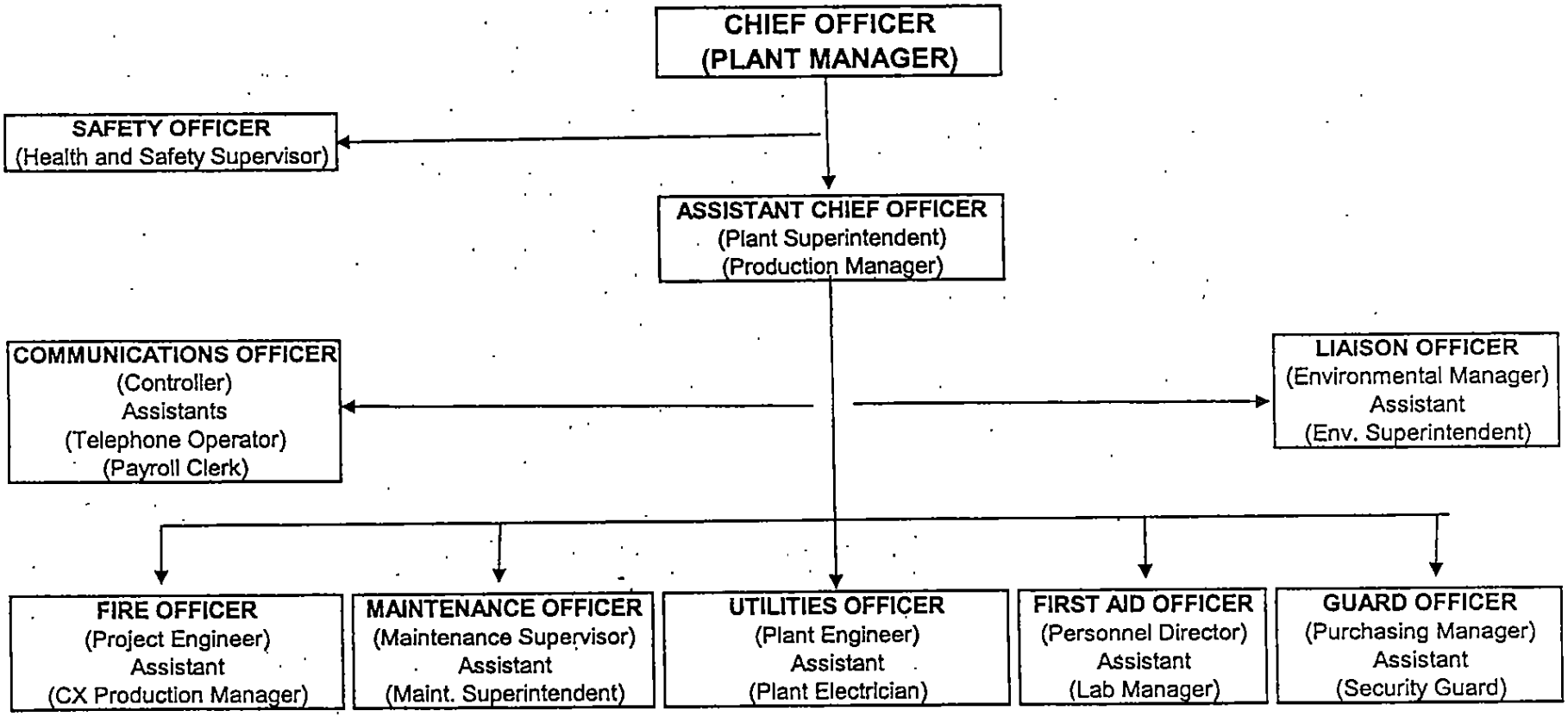
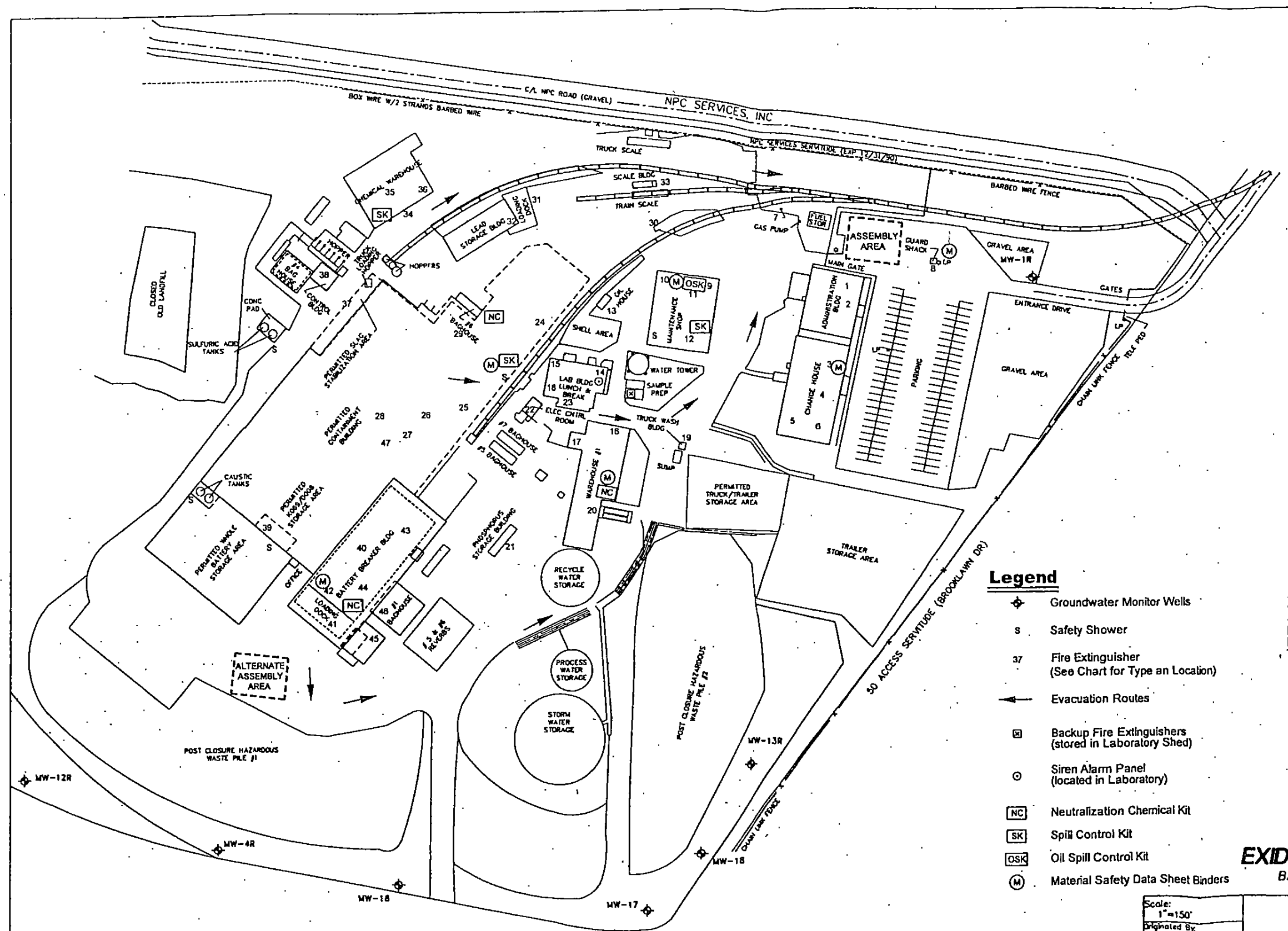
FIGURE 2

EMERGENCY RESPONSE ORGANIZATIONAL CHART





Fire Extinguisher

No.	Location	Type
1	Office Hallway	Class A
2	Office Kitchen	ABC
3,4	Changehouse Hall	ABC
5,6	Changehouse Shower	CO2
7	Fuel Station	ABC
8	Guard House	ABC
9	Spare Extinguishers - In the Shop Tool Room	ABC
10,11	Shop - Fabrication Area	ABC
12	Shop - Vehicle Repair Area	ABC
13	Oil House	ABC
14	Lab	Dry Chem
15	Lab AA Room	CO2
16	Electrical Warehouse	ABC
17	Compressor Room	ABC
18	Lunchroom	ABC
19	Wash Rack	ABC
20	Water Treatment Unit	ABC
21	Phosphorus Storage Room	Class D
22	No. 5 Baghouse Control Room	CO2
23	Outside Lunchroom	ABC
24	Kettle Floor - Kettle 11	ABC
25	No. 1 Blast Furnace	ABC
26	No. 1 Blast Furnace	CO2
27,28	Upstairs - Control Rooms	ABC
29	No. 1 Casting Machine	ABC
30	Mobile Equipment Storage	ABC
31	Lead Loading Dock	ABC
32	Lead Storage Warehouse	ABC
33	Rail Car Scale	ABC
34	Chemical Warehouse	Class D
35,36	Chemical Warehouse	ABC
37	Slag Crusher	ABC
38	No. 4 Baghouse Control Room	CO2
39	K069 Storage Area	ABC
40	CX Electrical Control Room	CO2
41	CX Flammable Storage Area	ABC
42	CX Control Room	CO2
43	CX Boiler Room	ABC
44	CX Office	ABC
45	No. 1 Baghouse Control Room	CO2
46	No. 1 Baghouse	ABC
47	No. 1 Blast Furnace	Class D

Legend

- Groundwater Monitor Wells
- S Safety Shower
- 37 Fire Extinguisher (See Chart for Type an Location)
- Evacuation Routes
- M Backup Fire Extinguishers (stored in Laboratory Shed)
- Siren Alarm Panel (located in Laboratory)
- NC Neutralization Chemical Kit
- SK Spill Control Kit
- OSK Oil Spill Control Kit
- M Material Safety Data Sheet Binders

Reference:

Base map comprised from drawing provided by Exide Corporation titled "Groundwater Report" dated 02/01/99.

EXIDE TECHNOLOGIES
BATON ROUGE, LOUISIANA

Scale: 1"=150'	LOCATIONS OF EMERGENCY RESPONSE EQUIPMENT
Originated By: J.W.P.	
Drawn By: P.S.G.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Checked By: J.W.P.	
Project Mgr: P.G.S.	
Dwg No. 2003-1058-01-13	Project No. 2003-1058-01
Approved: APR 18 2003	FIGURE: 3

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APPENDIX A

ARRANGEMENTS WITH LOCAL AUTHORITIES

EXIDE® TECHNOLOGIES

April 29, 2003 VIA HAND DELIVERY

Mr. Gary Lablanc
Right to Know Unit
Louisiana State Police
7901 Independence Blvd
Baton Rouge, LA 70806

RE: Exide Technologies, Baton Rouge Smelter
RCRA Contingency and Emergency Response Plan

Dear Mr. Lablanc:

Enclosed please find a copy of the revised RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

The Exide Baton Rouge facility is a secondary lead smelter that recycles spent lead acid batteries and other lead-bearing material and produces metallic lead for reuse in production of Exide batteries. This Contingency Plan lists the emergency response organization and programs that are in place at the facility along with facility hazards and chemicals that are present onsite.

The plan references the State Police Hazmat unit as our emergency responder in the event of a chemical emergency or bomb threat. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE Lynda Gettery DATE: 04/29/03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

EXIDE® TECHNOLOGIES

April 17, 2003

VIA HAND DELIVERY

Communications Officer
Baton Rouge General Hospital
3600 Florida Blvd.
Baton Rouge, LA 70818

RE: RCRA Contingency and Emergency Response Plan
Exide Technologies, Baton Rouge Smelter

Dear Sir or Madam:

Enclosed please find one copy of the RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

The Exide Baton Rouge facility is a secondary lead smelter that recycles spent lead acid batteries and other lead-bearing material and produces metallic lead for reuse in production of Exide batteries. This Contingency Plan lists the emergency response organization and programs that are in place at the facility along with facility hazards and chemicals that are present onsite.

The plan references the Baton Rouge General Hospital as one of the Emergency Medical facilities that may be used by Exide. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE: Cindy Dunn DATE: 4/23/03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

EXIDE® TECHNOLOGIES

April 17, 2003

VIA HAND DELIVERY

Communications Officer
Baton Rouge General Hospital
8585 Picardy Ave.
Baton Rouge, LA 70818

RE: RCRA Contingency and Emergency Response Plan
Exide Technologies, Baton Rouge Smelter

Dear Sir or Madam:

Enclosed please find one copy of the RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

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The plan references the Baton Rouge General Hospital as one of the Emergency Medical facilities that may be used by Exide. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE: Cindy Brewer DATE: 4/23/03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

EXIDE® TECHNOLOGIES

April 17, 2003

VIA HAND DELIVERY

Communications Officer
Our Lady of the Lake Hospital
5000 Hennessy Blvd.
Baton Rouge, LA 70818

RE: RCRA Contingency and Emergency Response Plan
Exide Technologies, Baton Rouge Smelter

Dear Sir or Madam:

Enclosed please find one copy of the RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

The Exide Baton Rouge facility is a secondary lead smelter that recycles spent lead acid batteries and other lead-bearing material and produces metallic lead for reuse in production of Exide batteries. This Contingency Plan lists the emergency response organization and programs that are in place at the facility along with facility hazards and chemicals that are present onsite.

The plan references Our Lady of the Lake Hospital as one of the Emergency Medical facilities that may be used by Exide. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE: _____ DATE: 4-23-03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

EXIDE® TECHNOLOGIES

April 17, 2003 VIA HAND DELIVERY

Fire Chief
Baker Fire Department
Groom Rd Station
Baker, LA

RE: RCRA Contingency and Emergency Response Plan
Exide Technologies, Baton Rouge Smelter

Dear Sir:

Enclosed please find a copy of the RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

The Exide Baton Rouge facility is a secondary lead smelter that recycles spent lead acid batteries and other lead-bearing material and produces metallic lead for reuse in production of Exide batteries. This Contingency Plan lists the emergency response organization and programs that are in place at the facility along with facility hazards and chemicals that are present onsite.

The plan references the Baker Fire Department as a secondary fire department responder in the event of a fire or emergency at Exide. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE: John Bracenton DATE: 4-24-03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

EXIDE® TECHNOLOGIES

April 17, 2003 VIA HAND DELIVERY

Fire Chief
Alsen Fire Department
Alsen Station
Baker, LA

RE: RCRA Contingency and Emergency Response Plan
Exide Technologies, Baton Rouge Smelter

Dear Sir:

Enclosed please find a copy of the RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

The Exide Baton Rouge facility is a secondary lead smelter that recycles spent lead acid batteries and other lead-bearing material and produces metallic lead for reuse in production of Exide batteries. This Contingency Plan lists the emergency response organization and programs that are in place at the facility along with facility hazards and chemicals that are present onsite.

The plan references the Alsen Fire Department as the primary fire department responder in the event of a fire or emergency at Exide. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE: Rodney B. Johnson DATE: 04-23-03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

EXIDE® TECHNOLOGIES

April 17, 2003.

VIA HAND DELIVERY

Communications Officer
Lane Memorial Hospital
6300 Main Street
Zachary, LA 70791

RE: RCRA Contingency and Emergency Response Plan
Exide Technologies, Baton Rouge Smelter

Dear Sir or Madam:

Enclosed please find one copy of the RCRA Contingency Plan and Emergency Response Plan of Exide Technologies (formerly Schuylkill Metals Corporation), Baton Rouge smelter.

The Exide Baton Rouge facility is a secondary lead smelter that recycles spent lead-acid batteries and other lead-bearing material and produces metallic lead for reuse in production of Exide batteries. This Contingency Plan lists the emergency response organization and programs that are in place at the facility along with facility hazards and chemicals that are present onsite.

The plan references the Lane Memorial Hospital as our primary Emergency Medical facility. If you have any questions about this plan or require additional information, please call me at (225) 775-3040, ext. 142.

Sincerely,
EXIDE TECHNOLOGIES

Steve Krul
Environmental Manager

CERTIFICATION OF RECEIPT:

SIGNATURE: Susan Sexton DATE: 4-24-03

P.O. Box 74040 • Baton Rouge, LA 70874
Phone: 225-775-3040 • FAX 225-775-3057

APPENDIX B

TIER TWO REPORT

TIER II Facility Report

LOUISIANA CHEMICAL NETWORK

Home | Facility Information | Help

Click your browser's "Print" icon to print this page.

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* * * Wed Feb 26 16:15:35 CST 2003 * * *

---

* * * Facility Identification * * *

Facility Name	EXIDE TECHNOLOGIES
Facility ID	365
Facility Type	Fixed
Physical Address	2400 BROOKLAWN DRIVE BATON ROUGE LA, 70807-2400 EAST BATON ROUGE PARISH
Mailing Address	PO BOX 74040 BATON ROUGE LA, 70874

Reporting Period	January 1 to December 31, 2002
Status	Active

SIC Code	3341
Dun & Bradstreet #	942384520

---

* * * Owner Information * * *

Company Name	EXIDE TECHNOLOGIES
Mailing Address	210 CARNEGIE CENTER SUITE 500 PRINCETON NJ, 08540
Phone	601-921-4015
Fax	601-921-4062
Email	

---

* * * Emergency Contact * * *

Name	JOSEPH ACKER
Title	PLANT MANAGER
Phone	225-775-3040 Ext. 127
24Hr Phone	225-775-3040
Pager	225-935-8117
Fax	225-775-3057
Cell Phone	
Email	

---

* * * Emergency Contact * * *

Name	STEVEN A KRUL
Title	ENVIRONMENTAL MANAGER
Phone	225-775-3040 Ext. 142
24Hr Phone	225-775-3040
Pager	225-935-8126
Fax	225-775-3057
Cell Phone	
Email	KRULSA@EXIDE.COM

---

* * * Filing Information * * *

Ready for filing	Yes

---

* * * Pure Chemical Description * * *

CAS #	74862
Proper Name	ACETYLENE
Chemical State	Liquid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Fire
	Sudden Release of Pressure
Health	Immediate (Acute)
Reportable Quantity	100 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	MAINTENANCE SHOP
Confidential Location	No

Container Type(s)	Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	UBIQUITOUS-PORTABLE UNITS
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7429905
Proper Name	ALUMINUM METAL
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999
Avg Daily Amount	999

Days On Site 365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Box
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7440360
Proper Name	ANTIMONY METAL
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Immediate (Acute) Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999999
Avg Daily Amount	999999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Box
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7440382
Proper Name	ARSENIC METAL
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute) Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	999

Days On Site 365

---

* * * Storage Types and Storage Locations * * *

Container Type(s) Steel Drum
Pressure Ambient
Temperature Ambient
Location CHEMICAL WAREHOUSE
Confidential Location No

---

* * * Pure Chemical Description * * *

CAS # 1327533
Proper Name ARSENIC TRIOXIDE
Chemical State Solid
EHS ? No
Last Reviewed Date 02/24/2003

---

* * * Hazards * * *

Physical -Not Provided-
Health Immediate (Acute)
Delayed (Chronic)
Reportable Quantity 5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount 999
Avg Daily Amount 999
Days On Site 365

---

* * * Storage Types and Storage Locations * * *

Container Type(s) Steel Drum
Pressure Ambient
Temperature Ambient
Location CHEMICAL WAREHOUSE
Confidential Location No

---

* * * Chemical Mixture Description * * *

Trade Name BATTERIES
Common Name BATTERIES, LEAD ACID
Chemical State Solid
Last Reviewed Date 02/24/2003

---

* * * EPA Information * * *

Trade Secret & Approved by EPA? No

---

* * * Mixture Components * * *

Proper Chemical LEAD
CAS# 7439921 53%

Proper Chemical ELECTROLYTE (SULFURIC ACID AND WATER)
CAS# 7664939 40% EHS

Proper Chemical POLY PROPYLENE
CAS# 9003070 6%

---

* * * Hazards * * *

Physical Fire
Reactivity
Health Immediate (Acute)
Delayed (Chronic)
Reportable Quantity 1000 Lbs.

---

* * * Inventory * * *

Max Daily Amount 9999999
Avg Daily Amount 9999999
Days On Site 365

---

* * * Storage Types and Storage Locations * * *

Container Type(s) Other
Pressure Ambient
Temperature Ambient
Location TRUCK/TRAILER STORAGE AREA
Confidential No
Location

Container Type(s) Other
Pressure Ambient
Temperature Ambient
Location WHOLE BATTERY STORAGE AREA
Confidential No
Location

Container Type(s) Other
Pressure Ambient
Temperature Ambient
Location CX BATTERY BREAKER BUILDING
Confidential No
Location

---

* * * Chemical Mixture Description * * *

Trade Name BATTERY FLUID
Common Name ELECTROLYTE
Chemical State Liquid
Last Reviewed Date 02/24/2003

---

* * * EPA Information * * *

Trade Secret & Approved by EPA? No

---

* * * Mixture Components * * *

Proper Chemical SULFURIC ACID
CAS# 7664939 25% EHS

Proper Chemical WATER
CAS# 7732185 85%

---

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	1000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999999
Avg Daily Amount	99999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Tank Inside Building
Pressure	Ambient
Temperature	Ambient
Location	TANKS-CX BATTERY BREAKER BUILDING
Confidential Location	No

Container Type(s)	Above Ground tank
Pressure	Ambient
Temperature	Ambient
Location	SULFURIC ACID STORAGE TANKS
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	10043524
Proper Name	CALCIUM CHLORIDE
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	1305620
Proper Name	CALCIUM HYDROXIDE (LIME)
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	999
Days On Site	365

* * * Storage Types and Storage Locations * * *

Container Type(s)	Tank Inside Building
Pressure	Ambient
Temperature	Ambient
Location	WATER TREATMENT UNIT
Confidential Location	No

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	WATER TREATMENT UNIT
Confidential Location	No

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	CX BATTERY BREAKER
Confidential Location	No

* * * Pure Chemical Description * * *

CAS #	7440702
Proper Name	CALCIUM METAL
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

* * * Hazards * * *

Physical	Fire

	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	99999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Steel Drum
Pressure	Ambient
Temperature	Ambient
Location	CONTAINMENT BUILDING
Confidential Location	No

Container Type(s)	Steel Drum
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7782505
Proper Name	CHLORINE
Chemical State	Gas
EHS ?	Yes
Last Reviewed Date	02/26/2003

---

* * * Hazards * * *

Physical	Sudden Release of Pressure
	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	10 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999
Avg Daily Amount	999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	CHLORINATION BUILDING AT WELL NO. 3
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	65996772
Proper Name	COKE, METALLURGICAL
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

* * * Inventory * * *

Max Daily Amount	99999
Avg Daily Amount	9999
Days On Site	365

* * * Storage Types and Storage Locations * * *

Container Type(s)	Other
Pressure	Ambient
Temperature	Ambient
Location	COKE HOPPER
Confidential Location	No

Container Type(s)	Other
Pressure	Ambient
Temperature	Ambient
Location	BINS IN CONTAINMENT BUILDING
Confidential Location	No

* * * Pure Chemical Description * * *

CAS #	7440371
Proper Name	COMPRESSED ARGON
Chemical State	Gas
EHS ?	No
Last Reviewed Date	02/24/2003

* * * Hazards * * *

Physical	Sudden Release of Pressure
Health	Immediate (Acute)
Reportable Quantity	100 Lbs.

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

* * * Storage Types and Storage Locations * * *

Container Type(s)	Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	LABORATORY
Confidential	No

Location

---

* * * Chemical Mixture Description * * *

Trade Name	DIESEL FUEL #2
Common Name	DIESEL FUEL
Chemical State	Liquid
Last Reviewed Date	02/24/2003

---

* * * EPA Information * * *

Trade Secret & Approved by EPA?	No

---

* * * Mixture Components * * *

Proper Chemical	CUMENE	
CAS#	98828	3%
Proper Chemical	BENZENE	
CAS#	71432	3%

---

* * * Hazards * * *

Physical	Fire
Health	Immediate (Acute) Delayed (Chronic)
Reportable Quantity	100 Lbs.

---

* * * Inventory * * *

Max Daily Amount	99999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Above Ground tank
Pressure	Ambient
Temperature	Ambient
Location	TANK EAST OF OFFICE BUILDING
Confidential Location	No

Container Type(s)	Above Ground tank
Pressure	Ambient
Temperature	Ambient
Location	TANK AT SLAG CRUSHER
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	10028225
Proper Name	FERRIC SULFATE
Chemical State	Liquid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	500 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Plastic or non-metallic drum
Pressure	Ambient
Temperature	Ambient
Location	CX BATTERY BREAKER BUILDING
Confidential Location	No

Container Type(s)	Plastic or non-metallic drum
Pressure	Ambient
Temperature	Ambient
Location	WATER TREATMENT UNIT
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	8006619
Proper Name	GASOLINE
Chemical State	Liquid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Fire
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	100 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Above Ground tank
Pressure	Ambient
Temperature	Ambient
Location	TANK EAST OF OFFICE BUILDING
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7647010
Proper Name	HYDROCHLORIC ACID
Chemical State	Liquid
EHS ?	No
Last Reviewed Date	02/24/2003

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	500 Lbs.

* * * Inventory * * *

Max Daily Amount	999
Avg Daily Amount	999
Days On Site	365

* * * Storage Types and Storage Locations * * *

Container Type(s)	Plastic or non-metallic drum
Pressure	Ambient
Temperature	Ambient
Location	WATER TREATMENT UNIT
Confidential Location	No

* * * Pure Chemical Description * * *

CAS #	7722841
Proper Name	HYDROGEN PEROXIDE
Chemical State	Liquid
EHS ?	No
Last Reviewed Date	02/24/2003

* * * Hazards * * *

Physical	Reactivity
Health	Delayed (Chronic)
Reportable Quantity	1000 Lbs.

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	999
Days On Site	365

* * * Storage Types and Storage Locations * * *

Container Type(s)	Steel Drum
Pressure	Ambient
Temperature	Ambient
Location	BATTERY BREAKER UNIT
Confidential Location	No

Container Type(s)	Steel Drum
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE

Confidential Location: No

---

* * * Pure Chemical Description * * *

CAS #	1309360
Proper Name	IRON PYRITE
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	69029523
Proper Name	LEAD DROSS
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999999
Avg Daily Amount	999999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Other
Pressure	Ambient
Temperature	Ambient
Location	CONTAINMENT BUILDING
Confidential	No

Location

---

* * * Pure Chemical Description * * *

CAS #	7439921
Proper Name	LEAD, METAL, INORGANIC
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Immediate (Acute) Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999999
Avg Daily Amount	9999999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Other
Pressure	Ambient
Temperature	Ambient
Location	CONTAINMENT BUILDING
Confidential Location	No

Container Type(s)	Other
Pressure	Ambient
Temperature	Ambient
Location	PRODUCT STORAGE WAREHOUSE
Confidential Location	No

---

* * * Chemical Mixture Description * * *

Trade Name	NATURAL GAS
Common Name	NON-LIQUID HYDROCARBON GAS
Chemical State	Gas
Last Reviewed Date	02/24/2003

---

* * * EPA Information * * *

Trade Secret & Approved by EPA?	No

---

* * * Mixture Components * * *

Proper Chemical	METHANE	
CAS#	74828	95%
Proper Chemical	ETHANE	
CAS#	74840	5%
Proper Chemical	PROPANE	

CAS# 74986 5%

---

* * * Hazards * * *

Physical	Fire
Health	Immediate (Acute)
Reportable Quantity	100 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Other
Pressure	Greater than ambient
Temperature	Ambient
Location	UBIQUITOUS IN PLANT
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7782447
Proper Name	OXYGEN
Chemical State	Gas
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Fire
	Sudden Release of Pressure
Health	Immediate (Acute)
Reportable Quantity	100 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999999
Avg Daily Amount	999999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Above Ground tank
Pressure	Greater than ambient
Temperature	Cryogenic
Location	OXYGEN UNIT WEST OF CHANGE HOUSE
Confidential Location	No

Container Type(s)	Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	MAINTENANCE SHOP
Confidential Location	No

Container Type(s) Cylinder

Pressure	Greater than ambient
Temperature	Ambient
Location	UBIQUITOUS PORTABLE UNITS
Confidential Location	No

Container Type(s)	Other
Pressure	Greater than ambient
Temperature	Ambient
Location	UBIQUITOUS PLANT PIPING
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	65997151
Proper Name	PORTLAND CEMENT
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute) Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999999
Avg Daily Amount	99999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Silo
Pressure	Ambient
Temperature	Ambient
Location	CEMENT HOPPERS
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	1310583
Proper Name	POTASSIUM HYDROXIDE
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Reactivity
Health	Immediate (Acute) Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	99999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Steel Drum
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	74986
Proper Name	PROPANE GAS
Chemical State	Gas
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	Fire Sudden Release of Pressure
Health	Immediate (Acute)
Reportable Quantity	100 Lbs.

---

* * * Inventory * * *

Max Daily Amount	99999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Above Ground tank Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	RACK AT MAINTENANCE SHOP
Confidential Location	No

Container Type(s)	Cylinder
Pressure	Greater than ambient
Temperature	Ambient
Location	RACK AT BATTERY BREAKER UNIT
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7723140
Proper Name	RED PHOSPHORUS
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

Last Reviewed Date 02/24/2003

---

* * * Hazards * * *

Physical	Fire
	Reactivity
Health	Immediate (Acute)
	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	99999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE
Confidential Location	No

Container Type(s)	Bag
Pressure	Ambient
Temperature	Ambient
Location	CONTAINMENT BUILDING
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	1344098
Proper Name	SODIUM SILICATE
Chemical State	Liquid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Immediate (Acute)
Reportable Quantity	500 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Tote Bin
Pressure	Ambient
Temperature	Ambient
Location	SLAG STABILIZATION AREA
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7757826
Proper Name	SODIUM SULFATE
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	999999
Avg Daily Amount	99999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Tank Inside Building
Pressure	Ambient
Temperature	Ambient
Location	CX BATTERY BREAKER UNIT
Confidential Location	No

Container Type(s)	Silo
Pressure	Ambient
Temperature	Ambient
Location	SALT SILO EAST OF CX UNIT
Confidential Location	No

Container Type(s)	Rail car
Pressure	Ambient
Temperature	Ambient
Location	RAIL SPUR
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	1313822
Proper Name	SODIUM SULFIDE
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	999

Days On Site 365

---

* * * Storage Types and Storage Locations * * *

Container Type(s) Bag
Pressure Ambient
Temperature Ambient
Location CHEMICAL WAREHOUSE
Confidential No
Location

---

* * * Pure Chemical Description * * *

CAS # 7704349
Proper Name SULFUR
Chemical State Solid
EHS ? No
Last Reviewed Date 02/24/2003

---

* * * Hazards * * *

Physical Fire
Reactivity
Health Immediate (Acute)
Delayed (Chronic)
Reportable Quantity 5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount 99999
Avg Daily Amount 9999
Days On Site 365

---

* * * Storage Types and Storage Locations * * *

Container Type(s) Bag
Pressure Ambient
Temperature Ambient
Location CHEMICAL WAREHOUSE
Confidential No
Location

---

* * * Chemical Mixture Description * * *

Trade Name TIN DROSS
Common Name TIN DROSS
Chemical State Solid
Last Reviewed Date 02/24/2003

---

* * * EPA Information * * *

Trade Secret & Approved by EPA? No

---

* * * Mixture Components * * *

Proper Chemical LEAD
CAS# 7439921 80%

Proper Chemical TIN

CAS#	7440315	12%
Proper Chemical	ANTIMONY	
CAS#	7440360	5%
Proper Chemical	COPPER	
CAS#	7440508	1%
Proper Chemical	ARSENIC	
CAS#	7440382	1%
Proper Chemical	SILVER	
CAS#	7440224	1%

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Steel Drum
Pressure	Ambient
Temperature	Ambient
Location	CONTAINMENT BUILDING
Confidential Location	No

---

* * * Pure Chemical Description * * *

CAS #	7440315
Proper Name	TIN, METAL
Chemical State	Solid
EHS ?	No
Last Reviewed Date	02/24/2003

---

* * * Hazards * * *

Physical	-Not Provided-
Health	Delayed (Chronic)
Reportable Quantity	5000 Lbs.

---

* * * Inventory * * *

Max Daily Amount	9999
Avg Daily Amount	9999
Days On Site	365

---

* * * Storage Types and Storage Locations * * *

Container Type(s)	Box
Pressure	Ambient
Temperature	Ambient
Location	CHEMICAL WAREHOUSE

APPENDIX C

MSDS SHEETS FOR PRODUCTS PRODUCED AT THE BATON ROUGE SMELTER

SCHUYLKILL METALS

A Division of Exide Corporation

MATERIAL SAFETY DATA SHEET

SOFT LEAD
GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM)	DATE ISSUED	DATE REVISED
Soft lead, corroding grade lead, pure lead	2-4-85	10-1-96

MANUFACTURER'S CONTACT
SCHUYLKILL METALS
P.O. Box 74040
Baton Rouge, Louisiana 70874

Telephone: 504-775-3040

INGREDIENTS

MATERIAL OR COMPONENT	C.A.S. #	WEIGHT %	PERMISSIBLE AIR LIMITS
Lead	7439-92-1	99.7+%	0.15 mg/meter^3* 0.05 mg/meter^3**
*ACGIH **OSHA			

PHYSICAL DATA

APPEARANCE AND ODOR	
Silver-gray metal, odorless. Various shapes and sizes.	
BOILING POINT Greater than 2700°F	MELTING POINT 621° F
SPECIFIC GRAVITY (H_2O = 1) 11.34	VAPOR DENSITY Not Applicable
SOLUBILITY IN WATER Insoluble	VAPOR PRESSURE Not Applicable
EVAPORATION RATE Not Applicable	% VOLATILES BY VOLUME Not Applicable

HEALTH HAZARD INFORMATION

ROUTES OF EXPOSURE

SKIN & EYES EXPOSURE
Direct contact or exposure may result in local irritation and possible dermatitis from repeated skin contact. Symptoms are more severe from prolonged over-exposure.

INJESTION & INHALATION EXPOSURE
Dust, fume or mist may be injested and absorbed through the digestive system or inhaled and absorbed through the respiratory track. Injestion or inhalation may cause irritation of the digestive system and respiratory track resulting in acute or cronic over-exposure.

ACUTE OR SHORT-TERM OVER-EXPOSURE

LEAD: Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbance, weight loss, anemia and pain in legs, arms and joints.

CHRONIC OR LONG TERM OVER-EXPOSURE

LEAD: Chronic or long term exposure to lead and its compounds may produce symptoms of short term exposure, central nervous system damage, fatugue, headaches, tremors, hypertension, hullucinstions, conoulsions, delerium, gastrointestinal desturbances, anemia and wrist-drop. Kidney dysfunction and damage is possible. Impairment of male and female reproductive organs has been implicated but unsubstantiated. Pregnant women should be protected from excessive exposure to prevent possible neurological disorders in new-borns.

FIRST AID

INHALATION:	Remove from exposure. Get medical attention if experiencing effects of overexposure.
INGESTION:	Get immediate medical attention.
EYES:	Flush with large quantities of water. Get immediate medical attention.
SKIN:	Wash thoroughly with soap and water.

FIRE AND EXPLOSION DATA

FLASH POINT	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR
Not Applicable	Not Applicable	Not Applicable

FIRE EXTINGUISHING MEDIA
Dry chemical or carbon dioxide should be used on surrounding fire. Do Not use water on fires where molten metal is present.

SPECIAL FIRE FIGHTING PRECAUTIONS
Use approved full-facepiece, self-contained breathing apparatus and full protective clothing if involved in a fire.

UNUSUAL FIRE AND EXPLOSION HAZARD
Molten metals produce fume, dust, or mist that may be toxic.

REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID	HAZARDOUS POLYMERIZATION
Stable	Not Applicable	Not Applicable

INCOMPATIBILITY
Contact with hydrogen peroxide may cause a violent reaction

HAZARDOUS DECOMPOSITION PRODUCTS
Temperatures above the melting point may produce lead oxide dust and/or fumes.

PERSONAL PROTECTION PRECAUTIONS

VENTILATION
Local exhaust ventilation shall be provided in areas where exposures are above the permissable limits or threshold limit values specified by OSHA or other local, state, and federal regulations.

RESPIRATORY PROTECTION
Use of approved (OSHA 29CFR1910.1025 (f))
respirators is required for applications
Where adequate ventilation cannot be provided.

EYES AND FACE
Face shields or vented goggles should be used around molten metal. Safety glasses should be used for operations generating flying pieces.

GLOVES
Gloves should be worn when handling the product

OTHER CLOTHING AND EQUIPMENT
Full protective clothing is required if the permissible exposure limit is exceeded. Hard hat, safety shoes, and other safety equipment should be worn as appropriate for the environment.

SPECIAL PRECAUTIONS/PROCEDURES

SPILL OR LEAK

Dust or particulate should be vacuumed, or wet swept where vacuuming is infeasible. Place material in dry, closed containers for disposal or recycling. Do not use compressed air or dry sweeping for cleaning. Use approved respiratory protection if dust/fume exposure possibility exists.

WASTE DISPOSAL METHOD

Material should be recycled if at all possible. Collection, transportation, and storage should be in accordance with federal state, and local laws.

STORAGE

Store in a dry area where accidental contact hydrogen peroxide is not possible.

OTHER SPECIAL PRECAUTIONS/PROCEDURES

Wash hands, face, neck, and arms thoroughly before eating or smoking. Eating and smoking should be confined to non-contaminated areas. Work clothes and equipment should remain in designated contaminated areas, and should never be taken home or laundered with personal clothing. Do not use compressed air for blowing dust off of clothes.

Before using the product consult the OSHA Federal Standard for Occupational Exposure to Lead 29CFR1910.1025.

ADDITIONAL INFORMATION

Lead and its inorganic compounds are neurotoxins which may produce periphesal neuropathy. For an overview of the effects of lead exposure, see OSHA 29CFR1910.1025, Appendix A.

Biological Limit	Lead	50	mg/100 grams whole blood
OSHA Action Levels	Lead	0.03	mg/m^3 (29CFR1910.1025)

*This product contains Toxic Chemicals subject to the reporting requirements of Section 313 of Title III of the SARA, 1986 and 40CFR372.

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EXIDE CORPORATION

MATERIAL SAFETY DATA SHEET

HARD LEAD
GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM)	DATE ISSUED	DATE REVISED
Hard Lead, Antimonial or Arsenical Alloy	2-4-85	12/1/99

MANUFACTURER'S CONTACT
EXIDE CORPORATION
P.O. Box 74040
Baton Rouge, Louisiana 70874

Telephone: 225 -775-3040
2400 BROOKLAWN DR.
BATON ROUGE, LA

INGREDIENTS

MATERIAL OR COMPONENT	C.A.S. #	WEIGHT %	PERMISSIBLE AIR LIMITS
Lead	7439-92-1	75-99	0.15 mg/meter^3* 0.05 mg/meter^3**
Antimony	7440-36-0	0-25	0.5 mg/meter^3* 0.5 mg/meter^3**
Arsenic	7440-38-2	0-5	0.02 mg/meter^3* 0.01 mg/meter^3**
Tin	7440-31-5	0-5	2.0 mg/meter^3* 2.0 mg/meter^3**

*ACGIH
**OSHA

PHYSICAL DATA

APPEARANCE AND ODOR	
Silver-gray metal, odorless. Various shapes and sizes.	
BOILING POINT Not Applicable	MELTING POINT 486 - 680 F
SPECIFIC GRAVITY (H_2O = 1) 9.6 - 11.3	VAPOR DENSITY Not Applicable
SOLUBILITY IN WATER Insoluble	VAPOR PRESSURE Not Applicable
EVAPORATION RATE Not Applicable	% VOLATILES BY VOLUME Not Applicable

HEALTH HAZARD INFORMATION

ROUTES OF EXPOSURE

SKIN & EYES EXPOSURE

Direct contact or exposure may result in local irritation and possible dermatitis from repeated skin contact. Small septic blisters and chemical burns may result from the arsenic and antimony content of the alloy. Symptoms are more severe from prolonged over-exposure.

INJESTION & INHALATION EXPOSURE

Dust, fume or mist may be injested and absorbed through the digestive system or inhaled and absorbed through the respiratory track. Injestion or inhalation may cause irritation of the digestive system and respiratory track resulting in acute or cronic over-exposure.

ACUTE OR SHORT-TERM OVER-EXPOSURE

LEAD: Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbance, weight loss, anemia and pain in legs, arms and joints.

ANTIMONY: Injestion of antimony and its compounds may cause dizziness, nausea, vomiting, severe diarrhea, muscular pain, liver and kidney damage. Inhalation of antimony dust may cause pulmonary edema. Stibine may be generated when antimony alloys contact acid solutions and should be considered as immediate life threatening. Stibine gas may cause rapid destruction of red blood cells, blood in urine, cessation of urine production and kidney failure. Signs of exposure are headache, nausea, back pain, and upper abdominal pains.

ARSENIC: Injestion of antimony and its compounds can cause gastrointestinal upset, abdominal pain, vomiting, muscle spasms, delerium, vertigo and coma. Death may follow. Inhalation of arsenic dust may cause shortness of breath, stomach pains, muscle spasms, vertigo, delerium and coma. Arsine gas may be generated when arsenic alloys contact acid solution and should be considered as immediate life threatening. Signs of exposure are severe shortness of breath, stomach pains, muscle spasms, vertigo, delerium, coma, bloody urine, possible delerium followed by coma and death. Severe kidney damage is common in acute poisoning.

CHRONIC OR LONG TERM OVER-EXPOSURE

LEAD: Chronic or long term exposure to lead and its compounds may produce symptoms of short term exposure, central nervous system damage, fatugue, headaches, tremors, hypertension, hullucinstions, conoulsions, delerium, gastrointestinal desturbances, anemia and wrist-drop. Kidney dysfunction and damage is possible. Impairment of male and female reproductive organs has been implicated but unsubstantiated. Pregnant women should be protected from excessive exposure to prevent possible neurological disorders in new-borns.

ANTIMONY: Injestion may cause headaches, dizziness, anemia, weight loss, bleeding gums and dermatitis. Inhalation may cause inflammation of the throat, bronchitis, pneumonia, anemia, headaches, weight loss, bleeding gums, nasal inflammation and possible septum perforation.

ARSENIC: Injestion and inhalation may cause anemia, weight loss, disorders of nervous, gastrointestinal and cardiousascular systems. Implicated causative agent of skin and lung cancer particularly in long-term over-exposure in occupational environment and increased among smokers.

FIRST AID

INHALATION:	Remove from exposure. Get medical attention if experiencing effects of overexposure.
INGESTION:	Get immediate medical attention.
EYES:	Flush with large quantities of water. Get immediate medical attention.
SKIN:	Wash thoroughly with soap and water.

FIRE AND EXPLOSION DATA

FLASH POINT	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR
Not Applicable	Not Applicable	Not Applicable

FIRE EXTINGUISHING MEDIA
Dry chemical or carbon dioxide should be used on surrounding fire. Do Not use water on fires where molten metal is present.

SPECIAL FIRE FIGHTING PRECAUTIONS
Use approved full-facepiece, self-contained breathing apparatus and full protective clothing if involved in a fire.

UNUSUAL FIRE AND EXPLOSION HAZARD
Molten metals produce fume, dust, or mist that may be toxic and/or respiratory irritants. The products, or the dust, can react vigorously with strong oxidizing agents.

REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID	HAZARDOUS POLYMERIZATION
Stable	Not Applicable	Not Applicable

INCOMPATIBILITY
Halogen gases, oxidizers or acids, or hydrogen peroxide may react violently. Under reducing conditions (strong acid or base and an active metal) or in the presence of nascent hydrogen, highly toxic stibine or arsine gas may be evolved.

HAZARDOUS DECOMPOSITION PRODUCTS
Temperatures above the melting point may produce heavy metal dust and/or fumes.

PERSONAL PROTECTION PRECAUTIONS

VENTILATION
Local exhaust ventilation shall be provided in areas where exposures are above the permissable limits or threshold limit values specified by OSHA or other local, state, and federal regulations.

RESPIRATORY PROTECTION
Use of approved (OSHA 29CFR1910.1025 (f), and 29CFR1910.1018 (h)) respirators is required for applications where adequate ventilation cannot be provided.

EYES AND FACE
Face shields or vented goggles should be used around molten metal. Safety glasses should be used for operations generating flying pieces.

GLOVES
Gloves should be worn when handling the product

OTHER CLOTHING AND EQUIPMENT
Full protective clothing is required if the permissible exposure limit is exceeded. Hard hat, safety shoes, and other safety equipment should be worn as appropriate for the environment.

SPECIAL PRECAUTIONS/PROCEDURES

SPILL OR LEAK

Dust or particulate should be vacuumed, or wet swept where vacuuming is infeasible. Place material in dry, closed containers for disposal or recycling. Do not use compressed air or dry sweeping for cleaning. Use approved respiratory protection if dust/fume exposure possibility exists.

WASTE DISPOSAL METHOD

Material should be recycled if at all possible. Collection, transportation, and storage should be in accordance with federal state, and local laws.

STORAGE

Store in a dry area where accidental contact with acids, bases, hydrogen peroxide, or halogen gases is not possible.

OTHER SPECIAL PRECAUTIONS/PROCEDURES

Wash hands, face, neck, and arms thoroughly before eating or smoking. Eating and smoking should be confined to non-contaminated areas. Work clothes and equipment should remain in designated contaminated areas, and should never be taken home or laundered with personal clothing. Do not use compressed air for blowing dust off of clothes.

Before using the product consult the OSHA Federal Standard for Occupational Exposure to Lead 29CFR1910.1025 and to Arsenic 29CFR 1910.1018.

ADDITIONAL INFORMATION

Lead and its inorganic compounds are neurotoxins which may produce periphesal neuropathy. For an overview of the effects of lead exposure, see OSHA 29CFR1910.1025, Appendix A.

Arsenic may be a pulmonary carcinogen. For an overview of the effects of arsenic exposure, see OSHA 29CFR1910.1018.

Antimony is a sever pulmonary irritant and may cause a metallic taste or damage to kidneys, liver, or nervous system. The chronic effects of antimony ingestion may resemble those of arsenic.

Tin (ic) Oxide has been shown to cause benign pneumoconiosis.

Biological Limit	Lead	50	mg/100 grams whole blood
Osha Exposure Limit	Stibine	0.10	ppm
	Arcine	0.05	ppm
OSHA Action Levels	Lead	0.03	mg/m^3 (29CFR1910.1025)
	Arsenic	0.005	mg/m^3 (29CFR1910.1018)

*This product contains Toxic Chemicals subject to the reporting requirements of Section 313 of Title III of the SARA, 1986 and 40CFR372.

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EXIDE CORPORATION

BATON ROUGE SMELTER
MATERIAL SAFETY DATA SHEET

ANHYDROUS SODIUM SULFATE
GENERAL INFORMATION

TRADE NAME:	DATE ISSUED:	DATE REVISED:
ANHYDROUS SODIUM SULFATE	01-15-97	10/20/97

MANUFACTURER'S CONTACT:

EXIDE CORPORATION
Baton Rouge Smelter
P. O. Box 74040
Baton Rouge, Louisiana 70874

24 Hour Emergency Phone: 1-504-775-3040

PRODUCT IDENTIFICATION

HMIS HAZARD RATINGS

HEALTH HAZARD 1 FIRE HAZARD 0 REACTIVITY 0

SARA/TITLE III HAZARD CATEGORIES

Immediate (ACUTE) Health: NO
Delayed (Chronic) Health: NO
Fire Hazard: NO
Reactive Hazard: NO
Sudden Release of Pressure: NO

CHEMICAL NAME: Anhydrous Sodium Sulfate **CAS NUMBER: 7757-82-6**
SYNONYMS/COMMON NAMES: Salt Cake
CHEMICAL FORMULA: Na2S04

PHYSICAL DATA

BOILING POINT @ 760 mm Hg: NA
Melting Point: NA
VAPOR PRESSURE: NA
BULK DENSITY: Loose 92-102 lb/cu. ft.
Tapped 95-105 lb/cu. ft.

SPECIFIC GRAVITY (H20 = 1): 2.7 @ 20 C
SOLUBILITY IN H20 % BY WT: ~15%
VAPOR DENSITY (Air = 1) NA:

APPEARANCE AND ODOR: Crystal, white; no odor
pH: 7

HEALTH HAZARD INFORMATION

EMERGENCY AND FIRST AID PROCEDURES

EYES:

IMMEDIATELY flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION.

SKIN:

Wash with plenty of soap and water. Wash clothing before reuse. SEEK MEDICAL ATTENTION IF IRRITATION OCCURS.

INHALATION:

If symptoms develop, get person out of contaminated area to fresh air.

INGESTION:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Have patient drink several glasses of water, then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. SEEK MEDICAL ATTENTION IMMEDIATELY.

ROUTES OF EXPOSURE

INHALATION:

May cause irritation of respiratory passages.

SKIN:

May cause minor irritation.

EYE CONTACT:

May cause irritation.

INGESTION:

May cause diarrhea.

EFFECTS OF OVEREXPOSURE

ACUTE:

May cause irritation of the eyes, skin or respiratory passages. Ingestion may result in diarrhea.

CHRONIC:

No known chronic effects.

TOXICOLOGY DATA:

Acute Oral LD50 (mouse) 5989 mg/kg

FIRE AND EXPLOSION DATA

FLASH POINT: NA AUTOIGNITION TEMPERATURE: Not combustible

FLAMMABLE LIMITS IN AIR. % BY VOLUME - UPPER: NA

LOWER: NA

EXTINGUISHING MEDIA:

This product is not combustible. Use agents suitable for materials in surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

None.

UNUSUAL FIRE AND EXPLOSION HAZARD:

None.

REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY:
None.
INCOMPATIBILITY:
None.
HAZARDOUS DECOMPOSITION PRODUCTS:
None.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:
Material not known to polymerize.

SPECIAL PROTECTION

VENTILATION REQUIREMENTS:
Engineering controls and local exhaust ventilation are required to ensure that worker exposure to this product is below the current TLV for nuisance dust
(TLV= 10 mg/m^3 TWA).

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY:
A NIOSH/MSHA approved respirator, following manufacturer's recommendation should be used where dust, fumes, mist, or spray may be generated.
EYE:
Wear safety glasses with side shields or chemical safety goggles. (ANSI Z87.1)
GLOVES:
Industrial grade rubber or plastic gloves should be worn.
OTHER CLOTHING AND EQUIPMENT:
Standard work clothing. Emergency shower and eyewash facility should be in close proximity. (ANSI Z358.1)

HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS:
Store in tightly closed containers away from sources of heat.

PRODUCT DISPOSAL:
Product should be completely removed from this container. Material that cannot be used or chemically reprocessed should be disposed of in a manner meeting government regulations.

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ENVIRONMENTAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

If a material is spilled, steps should be taken to prevent discharges to streams or sewer systems. Spills or releases should be reported, if required, to the appropriate local, state, and federal regulatory agencies.

WASTE DISPOSAL METHOD:

Clean-up action should be carefully planned and executed. Shovel or sweep up and reuse, or place in closed container for proper disposal. Flush residue with water. Shipment, storage, and/or disposal of waste materials are regulated and action to handle spilled or released materials must meet the applicable rules. If any question exists, the appropriate agencies should be contacted to assure proper action being taken.

WARNING LABEL INFORMATION

SIGNAL WORD: **CAUTION**

STATEMENT OF HAZARDS:

MAY CAUSE IRRITATION TO EYES, SKIN OR RESPIRATORY PASSAGES

PRECAUTIONARY STATEMENTS:

Do not breathe dust.
Do not get in eyes, on skin, on clothing.
Wear respirator, chemical goggles, and gloves when dust may be generated.

FIRST AID:

FOR EYES:

IMMEDIATELY flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. **GET MEDICAL ATTENTION.**

FOR SKIN:

Wash with plenty of soap and water. Wash clothing before reuse. **SEEK MEDICAL ATTENTION IF IRRITATION OCCURS.**

IF INHALED:

If symptoms develop, get person out of contaminated area to fresh air.

IF SWALLOWED:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Have patient drink several glasses of water, then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

IN CASE OF:

SPILL OR LEAK:

Follow precautionary statements. Shovel or sweep up and reuse, or place in closed container for proper disposal. Flush residue with water.

HANDLING AND STORAGE PRECAUTIONS

Store in tightly closed containers away from sources of heat.

HMIS RATING SYSTEM: HEALTH 1 FLAMMABILITY 0 REACTIVITY 0

FOR INDUSTRIAL USE ONLY

APPENDIX D

EMERGENCY EQUIPMENT LIST

ENVIRONMENTAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

If a material is spilled, steps should be taken to prevent discharges to streams or sewer systems. Spills or releases should be reported, if required, to the appropriate local, state, and federal regulatory agencies.

WASTE DISPOSAL METHOD:

Clean-up action should be carefully planned and executed. Shovel or sweep up and reuse, or place in closed container for proper disposal. Flush residue with water. Shipment, storage, and/or disposal of waste materials are regulated and action to handle spilled or released materials must meet the applicable rules. If any question exists, the appropriate agencies should be contacted to assure proper action being taken.

WARNING LABEL INFORMATION

SIGNAL WORD: **CAUTION**

STATEMENT OF HAZARDS:

MAY CAUSE IRRITATION TO EYES, SKIN OR RESPIRATORY PASSAGES

PRECAUTIONARY STATEMENTS:

Do not breathe dust.

Do not get in eyes, on skin, on clothing.

Wear respirator, chemical goggles, and gloves when dust may be generated.

FIRST AID:

FOR EYES:

IMMEDIATELY flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. **GET MEDICAL ATTENTION.**

FOR SKIN:

Wash with plenty of soap and water. Wash clothing before reuse. **SEEK MEDICAL ATTENTION IF IRRITATION OCCURS.**

IF INHALED:

If symptoms develop, get person out of contaminated area to fresh air.

IF SWALLOWED:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Have patient drink several glasses of water, then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

IN CASE OF:

SPILL OR LEAK:

Follow precautionary statements. Shovel or sweep up and reuse, or place in closed container for proper disposal. Flush residue with water.

HANDLING AND STORAGE PRECAUTIONS

Store in tightly closed containers away from sources of heat.

HMIS RATING SYSTEM: HEALTH 1 FLAMMABILITY 0 REACTIVITY 0

FOR INDUSTRIAL USE ONLY

III. GENERAL INFORMATION

A. FACILITY INFORMATION

1. Name of Facility: Exide Technologies, Baton Rouge Smelter
   Baton Rouge, Louisiana

2. Type of Facility: Secondary lead smelter plant

3. Location of Facility: 2400 Brooklawn Drive, off State Highway 61
   Baton Rouge, Louisiana
   East Baton Rouge Parish

4. Name and Address of Owner or Operator: Exide Technologies
   P.O. Box 74040
   Baton Rouge, Louisiana 70874

5. Designated person accountable for oil spill prevention at the facility:

   Name and Title: Mr. Steve Krul
   Environmental Manager

6. Reportable spill events during the twelve months prior to January 10, 1974 (effective date of 40 CFR, Part 112):

   None

B. GENERAL DESCRIPTION OF THE FACILITY

The Baton Rouge Smelter is located at the end of Brooklawn Drive, in the northeast portion of Baton Rouge, Louisiana. The coordinates for the facility are West Latitude 30° 35' 08"; North Longitude 91° 14' 40". The smelter has been in operations at this location since 1969. The site comprises approximately 33 acres and is zoned industrial. Baton Rouge Bayou makes up the north and western boundaries of the site. Reynolds Metals is on the east side of the site and NPC Services, Inc. is located across from Brooklawn Drive south of the site.

The facility is a secondary lead smelter and refinery which recycles spent lead-acid batteries and inorganic lead-bearing wastes into metallic lead, in the form of lead pig and block ingots. The product lead is sold to customers for use in making batteries, weights, bearings, ammunition, and chemicals. The facility is regulated as a recycling facility under the Resource Conservation and Recovery Act (RCRA).

II. MANAGEMENT APPROVAL AND CERTIFICATION

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature:
Name: Joseph Acker, Jr.
Title: Plant Manager

CERTIFICATION

I hereby certify that I have examined the facility, and familiar with the provisions of 40 CFR Part 112 and Chapter 9 of the Louisiana Water Quality Regulations, attest that this SPCC Plan has been prepared in accordance with the guidelines presented therein and sound engineering practices.

Signature: Paul G. Stratman, P.E.
Civil Engineer

Date: Registration No. 29150 State: Louisiana

III. GENERAL INFORMATION

A. FACILITY INFORMATION

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   Baton Rouge, Louisiana

2. Type of Facility: Secondary lead smelter plant

3. Location of Facility: 2400 Brooklawn Drive, off State Highway 61
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Signature: Paul G. Stratman, P.E.
Civil Engineer

Date: Registration No. 29150 State: Louisiana

I. INTRODUCTION

This Spill Prevention Control and Countermeasure (SPCC) Plan has been prepared as a fulfillment of a regulatory requirement by the Louisiana Department of Environmental Quality (LDEQ), Office of Water Resources which requires the preparation of a plan to address potential release of oil or other substances into state waterways.

This SPCC Plan has been prepared in accordance with the specific requirements set forth in Chapter 9 of the Louisiana Water Quality Regulations, which were promulgated November 20, 1985. These regulations are equivalent to the requirements of Title 40 Code of Federal Regulations (CFR), Part 112, "Guidelines for Preparation and Implementation of a Spill Prevention Control and Countermeasure Plan" for oil and hazardous substances. These regulations require contingency planning and implementation of operational procedures in accordance with best management practices to prevent and control discharges of pollutants resulting from a spill event that have the potential to reach the waters of the State of Louisiana.

In accordance with the applicable regulations, a copy of the SPCC Plan will be maintained at the Exide Technologies, Baton Rouge smelter. This SPCC Plan will be made available to authorized representatives of the LDEQ for on-site review during normal working hours.

This SPCC Plan will be reviewed at least every three years and will be amended as necessary to include more effective prevention and control technology, if such technology will significantly reduce the likelihood of a spill event and if such technology has been field proven at the time of review. If there is a modification in facility design, construction, storage capacity, operation or maintenance which renders this SPCC Plan inadequate, this plan will be amended and implemented as prescribed prior to or concurrent with the facility modifications. No amendment to this plan, except those proposed by LDEQ, will be effective unless it has been certified by a Registered Professional Engineer.

As included in Section II, this SPCC Plan has the approval of management at a level of authority necessary to commit the required resources for proper implementation.

Also, included with management approval is certification that preparation of the plan is in accordance with sound engineering practices.

40 CFR 112, Attachment C-II

CERTIFICATION OF SUBSTANTIAL HARM DETERMINATION FORM

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   Yes_____ No_____

2. Does the facility have a total oil storage capacity greater than or equal to one million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

   Yes_____ No_____

3. Does the facility have a total oil storage capacity greater than or equal to one million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-iii, Calculation of the Planning Distance) to this appendix or a comparable formula (1)) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to this part, section 10, for availability) and the applicable Area Contingency Plan.

   Yes_____ No_____

4. Does the facility have a total oil storage capacity greater than or equal to one million gallons and is the facility located at a distance (as calculated using the appropriate formula to Attachment C-III to this appendix or a comparable formula (1)) such that a discharge from the facility would shut down a public drinking water intake (2)?

   Yes_____ No_____

5. Does the facility have a total oil storage capacity greater than or equal to one million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last five years?

   Yes_____ No_____

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Name: Steve Krul, Environmental Manager

Signature: _____ Date: _____

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I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Name: Steve Krul, Environmental Manager

Signature: _____ Date: 5/2/03

F:\OFICEAGC\PROJECTS\Files\2003-1058\Reports\PartBRenewal\SPCCPlan\determinationform.wpd

Designation of Accountability for Discharge Prevention
[40 CFR 112.7(f)(2)]

I, hereby certify that I have been designated to be accountable for discharge prevention at this facility and report to facility management. I have reviewed this SPCC Plan and have examined the facility and being familiar with the requirements of 40 CFR Part 112.

Signature:		Date:	
	Steve Krul	Title: Environmental Manager	

SPCC COMPLIANCE INSPECTION PLAN REVIEW PAGE
[LAC 33.Part IX. Chapter 9]

In accordance with Exide Corporation's Environmental Policy and Procedures, this plan shall be reviewed annually. In accordance with Louisiana Administrative Code LAC 33: Part 9. Chapter 9, a review and evaluation of this SPCC Plan is conducted at least once every three years. 40 CFR 112.5(b) requires review of this SPCC Plan every five years. As a result of this review and evaluations, facility management will amend the SPCC Plan within six months of the review to (1) such technology will significantly reduce the likelihood of a spill event from the facility, and (2) if such technology has been field-proven at the time of review.

Also in accordance with LAC 33: Part *X. Chapter 9 and 40 CFR 112.5(b), the amended plan shall be implemented as soon as possible, but not later than six months following the preparation of any amendment.

Any amendment to the SPCC Plan in accordance with the general requirement in 40 CFR 112.5 involving a change in the facility design, construction, operation or maintenance which materially affects the facility's potential for discharge of oil into or upon navigable waters of the United States or adjoining shorelines shall be reviewed and certified by professional engineer. Plan changes that do not involve these characteristics do not require P.E. review.

Review Date	Next Review Date	P.E. Signature Required*	Name	Initials
June 7, 1995	June, 1998	Yes	Glen Hasse	
May 4, 1998 (Rev.)	May, 2001	Yes	James Parise	
May 31, 2000 (Rev.)	May, 2001	Yes	Steve Krul	
July 6, 2000 (Rev.)	July, 2001	No	Steve Krul	
June 6, 2001 (Rev.)	June, 2002	Yes	Steve Krul	
December 12, 2002 (Rev.)	December, 2003	No	Steve Krul	
March 28, 2003 (Rev.)	March, 2004	Yes	Steve Krul	

*SPCC Plan amended and certified by a Registered Professional Engineer per 40 CFR 112.3(d).

Designation of Accountability for Discharge Prevention
[40 CFR 112.7(f)(2)]

I, hereby certify that I have been designated to be accountable for discharge prevention at this facility and report to facility management. I have reviewed this SPCC Plan and have examined the facility and being familiar with the requirements of 40 CFR Part 112.

Signature:		Date: 5/2/03	
	Steve Krul	Title: Environmental Manager	

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TABLE OF CONTENTS

SECTION		PAGE NO.
i	SPCC Compliance Inspection Review	
ii	Designation of Accountability for Discharge Prevention	
iii	Certification of Substantial Harm Determination Form	
I	Introduction	1
II	Management Approval and Certification	2
III	General Information	3
IV	Spill Prevention Control and Countermeasure Plan	5

APPENDICES

Appendix A -- Quarterly Tank Inspection Form
Appendix B -- Emergency Telephone Numbers
Appendix C -- Spill Response Actions
Appendix D -- Spill Report Form

LIST OF FIGURES

Figure	
1	Site Location Map
2	Site Operational Areas
3	Locations of Emergency Response Equipment

LIST OF TABLES

Table	
1	List of Aboveground Storage Tanks

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

EXIDE TECHNOLOGIES, BATON ROUGE SMELTER
BATON ROUGE, LOUISIANA

Prepared For:

EXIDE CORPORATION
P.O. Box 74040
Baton Rouge, Louisiana

Prepared By:

ADVANCED GEOSERVICES CORP.
Chadds Ford, Pennsylvania

Project No. 2003-1058-01
May 5, 2003

EMERGENCY EQUIPMENT LIST
EXIDE TECHNOLOGIES, BATON ROUGE SMELTER

Item	Quantity	Location	Description	Capabilities
Personal Protective Equipment				
3M Self Contained Breathing Apparatus (SCBA)	1	Safety Office	30-minute self-contained breathing apparatus (SCBA) with 5-minute air pack be used for supplied air.	Provides breathable air for a thirty minute period. For use in the event that an oxygen deficient atmosphere is present, or in the event of a chlorine leak from the chlorination system.
Scott Air Line Respirators	2	Safety Office and Changehouse	Supplied air respirators for use in oxygen deficient atmosphere.	Provides breathable air via an air line. For use in oxygen deficient areas such as baghouse cells.
SE 400 powered air respirators	5	Safety Office	SEA positive pressure fan supplied SE400 respirators with high efficiency powered air purifying filters	For us in areas less than 100 times the PEL for lead.
3M Full Face Respirators*	20	Changehouse	Full face respirators with particulate, acid gas and organic vapor cartridges.	For us in areas less than 50 times the PEL for lead.
3M Half Face Respirators*	30	Changehouse	Half face respirators with particulate, acid gas and organic vapor cartridges.	For us in areas less than 10 times the PEL for lead.
Tyvek Coveralls	30	Changehouse	Tyvek white coveralls, size large and extra large.	Used to prevent contact exposure to lead or other chemicals.
Tyvek coveralls	25	Safety Locker in Maintenance Shop	Tyvek white coveralls, size large and extra large.	Used to prevent contact exposure to lead or other chemicals.
Tyvek coveralls	25	Battery Breaker Unit Safety Locker	Tyvek white coveralls, size large and extra large.	Used to prevent contact exposure to lead or other chemicals.
Ear Plugs	100 per box	Boxes located at Shift foreman's Office, Battery Breaker Unit, Changehouse and Maintenance Shop		Foam earplugs for hearing protection, reduce noise levels typically by 30 decibels.
Ear Muffs	14	Changehouse	Plastic ear muff cover the entire ear.	Used for prolonged noise exposure, reduce noise levels typically by 25 decibels.
Disposable Gloves	100 per box	Changehouse, Maintenance Shop	5 mil disposable nitril gloves.	Used to prevent contact exposure to lead or other chemicals.
Leather Gloves	30 pair	Changehouse	Heat resistant leather work gloves.	Used to prevent burns when performing hot work or working with molten metal.
Chemical Resistant Gloves	100 pair	Changehouse	Chemical and acid resistant Neoprene gloves.	Used to prevent chemical exposure, acid or caustic burns. Provides protection for hands and forearms.
Chemical Resistant Gloves	20 pair	Battery Breaker Unit Safety Locker	Chemical and acid resistant Neoprene gloves.	Used to prevent chemical exposure, acid or caustic burns. Provides protection for hands and forearms.
Chemical Resistant Steel-toed Boots	18 pair	Changehouse	Chemical resistant boot with steel toes.	Used to prevent chemical exposure and crushing injuries to feet, kept in sizes 8 through 13.
Hard Hats	30	Changehouse	High density polyethylene hart hat.	Used to prevent head injury.
Face-Shield	40	Changehouse	Clear plastic full face guard.	Used to prevent facial injuries, fits onto hard hats, can be raised or lowered.

EMERGENCY EQUIPMENT LIST
EXIDE TECHNOLOGIES, BATON ROUGE SMELTER

Item	Quantity	Location	Description	Capabilities
Safety Equipment				
Harness and Lanyards	10	Safety Office	Fall protection, full body hardness and lanyards.	Used when working at heights, to prevent falls.
Locks and tags	6	Water Treatment Control Room	Lock and Tags	Used to isolate hazardous energy when working on equipment in the area.
Locks and tags	22	Battery Breaker Unit Control Room	Lock and Tags	Used to isolate hazardous energy when working on equipment in the area.
Locks and tags	8	Production Area Control Room	Lock and Tags	Used to isolate hazardous energy when working on equipment in the area.
Locks and tags	6	No. 4 Baghouse Control Room	Lock and Tags	Used to isolate hazardous energy when working on equipment in the area.
MSA Hazardous	1	Laboratory	MA Passport, Hazardous Gas Monitor	Used to detect oxygen level, explosive gas level carbon monoxide level in confined spaces.
Fire Extinguishers	varies	See map	ABC and Class D	Each control room is equipped with a CO2 fire extinguisher for electrical fires, Class D extinguishers are located at the Chemical Warehouse, the Phosphors Shed and the Production area to be used in the event of a metals fire.
Spill Absorbent Material	3	Shop, Water Treatment, Production Area	Absorbent material,	To be used to absorb spilled oil, grease or hydraulic fluids.
Neutralization Materials	2	Shop, Battery Breaker Unit	Acid neutralization materials.	To be used to neutralize any possible acid spills.
Spill Kit	2	Chemical Warehouse and Parts Warehouse	Spill Kit	Contains absorbent materials and neutrilization chemicals.
Air Blowers	2	Maintenance Shop	Powered air blowers	Used to supply air to poorly ventalated areas or to confined spaces.
Mobile Equipment				
Forklifts	14	Plant	Forklifts	Heavy lifting
Moble Crane	1	Maintenance Shop	Cherry Picker	Heavy lifting
Manlift	2	Maintenance Shop	40-foot and 60-foot manlift	Reaching heights
Medical Equipment and Supplies				
Strecher	1	Lunchroom	Strecher	Used to transport injuried personnel.
First Aid Room	1	Safety Office	Contains medical supplies, blood pressure monitor and stethoscopes	For onsite treatment of injuries.

APPENDIX 8

TRAINING MANUAL

TRAINING MANUAL

EXIDE TECHNOLOGIES
BATON ROUGE SMELTER

2400 BROOKLAWN DRIVE
BATON ROUGE, LOUISIANA

Revision 3 – May 2003

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Policy	1
	1.2 Scope	1
2.0	OBJECTIVES	1
	2.1 Regulatory Consideration	2
3.0	TRAINING PROGRAM	2
	3.1 Medical Surveillance Program	2
	3.2 Lockout/Tagout Program	3
	3.3 Confined Space Entry Program	3
	3.4 Hearing Conservation Program	3
	3.5 Respiratory Protection Program	4
	3.6 Powered Industrial Truck Safety	4
	3.7 Hazard Communication Program	4
	3.8 HAZWOPER Program	4
	3.9 Baton Rouge Contingency Plan	5
	3.10 Environmental Regulations	5
	3.11 Spill Response	5
	3.12 Work Practice Training Program	5
	3.13 DOT Hazardous Material Training	6
	3.14 Other Required Training	6
4.0	RECORD KEEPING	6

LIST OF TABLES

TABLE 1 – EMPLOYEE TRAINING SCHEDULE

LIST OF APPENDICES

APPENDIX A –TRAINING PROGRAM REQUIRED ELEMENTS OUTLINE
APPENDIX B – JOB DESCRIPTIONS

1.0 INTRODUCTION

1.1 Policy

The Exide Technologies, Baton Rouge smelter is located in Baton Rouge, East Baton Rouge Parish, Louisiana. This facility is a secondary lead smelter and refinery that recycles spent lead-acid batteries and inorganic lead-bearing wastes into product lead.

Exide is committed to providing a safe and healthy work place for all of the employees, contractors and vendors at the Baton Rouge smelter. Proper training is essential for accomplishing this goal.

1.2 Scope

This Training Manual outlines the training requirements of Exide Technologies Health and Safety and Environmental Programs. The purpose of this manual is to document the procedures that are used to train all of the employees at the Baton Rouge smelter in all of the required elements of the Health and Safety, and Environmental Programs.

2.0 OBJECTIVES

The objectives of this manual include outlining a Training Program that:

- Promotes the health and safety of Exide employees,
- Provides for safe working conditions at the Baton Rouge smelter,
- Maintains compliance with all applicable environmental, health and safety regulations,
- Satisfies the training requirements of Exide's environmental, health and safety programs.
- Documents that the training has been completed.

Successfully meeting the objectives of this training program require cooperation of all Exide employees. This manual describes the types of training, the training frequency and the documentation necessary to comply with Exide requirements and regulatory considerations. Classroom training is conducted by department supervisors and the Environmental, Health and Safety Department (E,H&S) during weekly safety meetings. Table 1 presents a schedule for the weekly safety meetings. On the job training is typically task or job specific and is conducted by a supervisor or senior employee that is familiar with the job.

2.1 Regulatory Considerations

There are a number of legislative acts, government agencies, and organizations that impose requirements, restrictions, or guidelines for activities conducted at the facility. The major agencies and the associated regulations that affect the Baton Rouge smelter include the following:

- Occupational Safety and Health Agency (OSHA) – 29CRF 1910
- Louisiana Department of Environmental Quality (LDEQ) – LAC 33:III, LAC33.V, LAC33.VII, and LAC33.IX.
- Environmental Protection Agency (EPA) – 40CFR 190-299
- Department of Transportation (DOT) – 29CRF 160-175

3.0 TRAINING PROGRAM

Exide has developed a comprehensive Health and Safety Program for the Baton Rouge smelter. The program presents the guidelines for protection of the safety and health of the employees at the Exide Baton Rouge facility. The overall Health and Safety Program is divided into component programs, such as lockout tagout and confined space entry. The Health and Safety Program is administered by Exide's E,H&S Department.

This manual presents the training requirements specified in the Health and Safety program, as well as all other required training. Sections 3.1 through 3.13 outline the training programs that are in place at the Baton Rouge smelter. Appendix A presents an outline of the required elements of each of the training programs.

Written job descriptions have been developed for each position at the Baton Rouge smelter. The job descriptions list training requirements that the employees must complete. Appendix B presents a copy of these job descriptions.

New hires at the Baton Rouge smelter receive initial training on all required topics prior to beginning work.

3.1 Medical Surveillance Program

The Medical Surveillance Program at the Baton Rouge smelter is designed to protect the health of employees that may be exposed to elevated levels of heavy metals, in particular lead. Key elements of the Medical Surveillance Program include blood lead and air lead monitoring, medical examinations, and medical removal protection. The Medical Surveillance Program also includes drug screening and new hire physical evaluation.

Training on this program includes permissible exposure limits, types and frequency of exposure monitoring and medical removal protection. Part of the medical surveillance

program includes lead exposure training. This training emphases personal hygiene and proper respirator use to reduce exposure. Training is conducted at least once per year, with additional training administered as needed.

3.2 Lockout Tagout Program

The Baton Rouge Lockout Tagout Program describes the procedures to be followed when working on any type of equipment or machinery where the unexpected energizing, startup or release of energy could occur and cause injury. The program was developed to be job and equipment specific, so that employees know the proper lockout tagout procedures for the machinery or equipment in their work area. The lockout tagout program is continuously reviewed by the employees and changes to the program are documented by Management of Change forms.

Classroom training of all employees is conducted at least once per year. Lockout tagout training is also conducted whenever there is a change in employee job assignments, when employees are working near equipment they have not been trained on, a change in equipment, machinery or process, or where energy control procedures have changed. Training covers lockout tagout procedures for specific equipment and job descriptions. Periodic audits of jobs that require lockout tagout are conducted.

3.3 Confined Space Entry Program

The Confined Space Entry Program was developed to provide procedures for the safe work of personnel required to enter confined spaces. A confined space is any area large enough that an employee can enter and perform work, but has limited means of entry or exit, and is not designed for continuous occupancy. The program lists all permit required confined spaces at the Baton Rouge smelter. The program describes permitting, entry procedures, the duties and responsibilities of the entrants and attendants, communication procedures and rescue procedures.

Initial employee training is conducted prior to beginning any confined space entry. Follow-up training is conducted at least annually. Training includes a review of the permitting process, atmospheric testing procedures, calibration of the monitoring equipment, and duties of each person on the confined space entry team.

3.4 Hearing Conservation Program

The Hearing Conservation Program describes noise monitoring of work area, engineering and administrative controls, and hearing conservation measures. The goal of the program is to eliminate hearing loss due to workplace noise exposure.

All employees are trained annually in the effects of noise, the purpose, advantages and disadvantages of various types of hearing protection, and the purpose and procedure of audiometric testing. The training emphasizes the selection, fit and care of hearing protection and includes a review of the hearing conservation areas at the smelter.

3.5 Respiratory Protection Program

Exide has an established Respiratory Protection Program in place at the Baton Rouge smelter. This program is designed to protect employees from air contaminants in the workplace. The program describes the procedures for medical evaluation of employee's ability to wear a respirator, the fit testing procedures, appropriate selection of a respirator, and use, cleaning and storage of respirators. Exide's respiratory protection program is also designed to protect contractors and vendors.

Training includes instruction on respirator fit and how to check the respirator's seal. The training provides employees an oppurtunity to handle the respirator, wear it, adjust it and become familiar with the respirator in a normal breathing air atmosphere. The specific respiratory hazards of each work area are discussed, along with selection methodology and limitation of particular types of respirators. The training instructs the employees in the proper way to don a respirator, fit testing, and proper wear. Respirator maintenance, storage and emergency handling situations are also discussed. Classroom instruction is conducted at least once per year, with on-the-job training, fit testing and personnel instruction being administered as required.

3.6 Powered Industrial Truck Safety

Powered industrial trucks (fork lifts) are used by nearly every department at the Baton Rouge smelter. Powered material handling training is conducted to meet the OSHA 29 CFR 1910.178 and Exide safety requirements. This training consists of classroom instruction and hands-on operation. Operators are trained to understand the basic operations of powered industrial trucks, including pre-start inspections, fueling, stability, visibility, handling, operating environment, obstructions, obstacles, and breakdowns. Possible hazards that may be encountered on the job are discussed. Operators are trained to recognize unsafe conditions and how to react to them when they occur.

Each new employee receives powered material handling safety training. Refresher training is conducted once every three- (3) years.

3.7 Hazard Communication

Training in hazard communications includes topics such as right-to-know, material safety data sheets (MSDS), labeling and placarding, chemical handling and chemical hazards. This training is conducted at least once per year. Training includes a review of the material safety data sheet binders, a discussion of specific chemicals used by department and job descriptions and required labels for trucks, batteries and containers.

3.8 HAZWOPER Training

As specified by OSHA 29CFR1910.120, certain employees conducting operations at treatment storage and disposal facilities must have training in hazardous waste operations. The training is designed to help employees perform their assigned duties and

functions in a safe and healthful manner. This training is specific to job descriptions and work practices, and includes proper personal protective equipment and hazardous material handling procedures.

Every employee is given 8-hours of refresher training annually.

3.9 Baton Rouge Contingency Plan

Exide has prepared an Emergency Contingency Plan that lists emergency procedures and the emergency response organization. This plan was prepared to minimize injury and property damage in the event of a plant emergency or natural disaster. Training requirements include the plant alarm system, assembly areas, emergency response organization, emergency phone lists, fire protection equipment and evacuation routes.

Classroom training on the Emergency Contingency Plan is conducted at a minimum of once per year. Announced and unannounced emergency drills are conducted periodically.

3.10 Environmental Regulations

Training on basic environmental regulations that affect the Baton Rouge smelter is conducted for all employees. This training includes a brief discussion of regulatory agencies and programs that affect operations at the smelter. The training describes specific requirements for various job descriptions and tasks such as inspection schedules, documentation and engineering controls.

Classroom instruction on environmental regulations is conducted once per year, with on-the-job training being administered as required.

3.11 Spill Response

The Baton Rouge smelter has a Spill Prevention Control and Countermeasure Plan (SPCC) as required by LDEQ regulations. The spill response training covers spill prevention and control measures in affect at the site. Also the training discusses what to do in the event of a spill.

Spill response training is conducted at least once per year, typically in conjunction with environmental regulations training.

3.12 Work Practice Training Program

This program outlines methods and practices that when followed will reduce accidents and lead exposure. Training includes molten metal handling, chemical handling, drossing, and refining. Exide's safety consultant, Mr. Mel Cassady, CIH, completed a video exposure monitoring study of various workstations at the smelter. The video exposure monitoring has been incorporated into a Work Practice Training Program. Also part of the Work Practice training, the Baton Rouge smelter developed Job Task Analysis forms

for various jobs performed by smelter employees. This program will result in reductions of air and blood lead levels in workers. Training is conducted at least once per year and is job and task specific.

3.13 DOT Hazardous Material Training

The Department of Transportation (DOT) requires training for all employees involved in transportation of hazardous materials. Exide has a training program in place for employees who:

- load and unload hazardous materials;
- mark containers used in transporting hazardous materials;
- prepare hazardous materials for transporting;
- prepare shipping papers;
- are responsible for the safe transporting of hazardous materials;
- operate a vehicle transporting hazardous materials.

The training covers general awareness of Hazardous Material Regulations and is also function specific, describing specific requirements for each task (loading, labeling, etc.). The training is conducted initially when an employee begins working in a job that requires DOT training. Refresher training is conducted periodically.

3.14 Other Required Training

Other training that is required for all employees at the Baton Rouge smelter include sexual harassment, blood borne pathogens, heat stress, fire extinguisher use and incipient fire control, fall protection, slip trip and fall hazard avoidance, and proper lifting techniques and back protection. These topics are discussed at least once per year in the safety meetings.

4.0 RECORD KEEPING

Each employee that completes a training session fills out a Training Record sign-off sheet. These sign-off sheets are used to document the training. Training records is kept on site for all current employees of the Baton Rouge smelter. The records are retained as required by Exide's Record Retention Policy. For current employees, records are retained until facility closure. Training records for former employees are kept at least 3 years from the date the employee last worked at the facility.

TABLES

TABLE 1
EXIDE BATON ROUGE
TRAINING SCHEDULE

Month	
January 1 - 15	**January 16 - 31**
Respiratory Protection	Personel Protective Equipment
February 1 - 15	**February 16 - 28**
Lock-out Tag Out	Confined Space Entry
March 1 - 15	**March 16 - 31**
Right to Know	OSHA Lead Standard
April 1 - 15	**April 16 - 30**
Forklift Training	Housekeeping
May 1 - 15	**May 16 - 31**
Heat Stress	Medical Emergencies - First Response
June 1 - 15	**June 16 - 30**
Blood Borne Pathogens	Sexual Harrassment
July 1 - 15	**July 16 - 31**
Molten Metal Safety	Machine Guarding
August 1 - 15	**August 16 - 31**
Crane and Hoist Safety	Fall Protection and Working at Heights
September 1 -15	**September 16 - 30**
Proper Lifting	Preventing Slips Trips and Falls
October 1 - 15	**October 16 - 31**
Environmental Regulations and Spill Response and Control	Emergency Contingency Plan
November 1 - 15	**November 16 - 30**
Communicating Safety	Hazwoper
December 1 - 15	**December 16 - 31**
Hearing Conservation	Fire Extinguisher Training

APPENDIX A

TRAINING PROGRAMS REQUIRED ELEMENTS OUTLINE

TRAINING PROGRAM REQUIRED ELEMENTS OUTLINE

Medical Surveillance Program

Required Elements of the Program

1 Annual training, with documentation.
2 Annual review of the program.

Training Program Outline

1 Pre-employment physical and annual examinations.
2 OSHA lead, cadmium and arsenic standards.
3 Blood and air lead monitoring.
4 Medical removal protection.
5 Lead exposure training (personal hygiene and respirator use).

Lockout Tagout Program

Required Elements of the Program

1 Annual training, with documentation.
2 Annual review of the program.

Training Program Outline

1 When is lockout tagout required.
2 Types of stored energy (electric, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy).
3 General lockout tagout procedures.
4 Lockout tagout procedures for specific equipment in the plant.
5 Procedures for outside contractors.

Confined Space Entry Program

Required Elements of the Program

1 Update list of entry supervisors.
2 Reevaluate list of confined spaces.
3 Check that all confined spaces have signs.
4 Annual training with documentation.
5 Meet with outside rescue service and develop procedures for summoning service and preventing unauthorized attempted rescues.
6 Annual review of the program.

Training Program Outline

1 Definition of a Confined Space.
2 Identification of Confined Spaces in the smelter.
3 Confined Space Entry Permits.
4 Pre-entry monitoring and equipment calibration.
5 Energy isolation and lockout tagout.
6 Job duties for Entrants, Attendants, and Supervisors.
7 Ventilation and respiratory protection requirements.

8 Communications.

Hearing Conservation Program

Required Elements of the Program

1 Conduct on-site noise monitoring using personal noise dosimetry on a periodic basis.
2 Post warning signs in high noise areas.
3 Audiometric testing, baseline and annual.
4 Annual training, with documentation.
5 Annual review of the program.

Training Program Outline

1 Identifying hearing protection areas.
2 Types of hearing protection.
3 Proper fit and use of hearing protection.

Respiratory Protection Program

Required Elements of the Program

1 Annual training, with documentation.
2 Annual review of the program.

Training Program Outline

1 Required areas for respirator use.
2 Respirator selection and limitations.
3 Fit testing requirements and procedures.
4 Proper use.
5 Respirator care and maintenance.

Powered Industrial Truck Safety Program

Required Elements of the Program

1 Initial training, both classroom and driving with certification.
2 Refresher training every three years.

Training Program Outline

1 Pre-operation inspections.
2 Operating procedures.
3 Safety Rules.
4 Preventive Maintenance.

Hazard Communication Program

Required Elements of the Program

1 Annual training, with certification.

2 Annual review of the program.

Training Program Outline
1 Chemical inventory.
2 MSDS binders.
3 Physical and health hazards of chemical used in specific work areas.
4 Proper labeling, handling and storage of chemicals.

Baton Rouge Contingency Plan

Required Elements of the Program
1 Annual training, with documentation.
2 Annual review of the program.
3 Update plan when there is a change in facility operations, personnel, emergency equipment or emergency procedures.

Training Program Outline
1 Contingency Plan officers and duties.
2 Alarm system.
3 Emergency response procedures.
4 Fire drills.
5 Assembly areas.

Spill Response and Environmental Regulations

Required Elements of the Program
1 Annual training, with documentation.
2 Annual review of the SPCC plan.

Training Program Outline
1 Spill prevention and control measure.
2 Regulatory agencies and programs that affect operations at the smelter.
3 Job and task specific environmental requirements.

Work Practice Training Program

Required Elements of the Program
1 Annual training, with documentation.
2 Periodic updates of the JTA system.

Training Program Outline
1 Job Task Analysis.
2 Video exposure monitoring.
3 Safety procedures for molten metal.
4 Chemical handling procedures.
5 Job specific safety procedures.

DOT Hazardous Material Training

Required Elements of the Program

1 Annual training, with documentation.

Training Program Outline

1 Loading and unloading hazardous materials.
2 Proper labeling, packaging and shipping rules.
3 Shipping papers (bill of lading, manifests).

HAZWOPER 8-Hour Training

Required Elements of the Program

1 Annual training, with documentation.

Coarse Outline

1 Exide's Health and Safety Program: Required PPE, Respiratory Protection, Site Characterization, Lock-Out Tag-Out Program, Confined Space Entry Program and Hearing Conservation Program.

2 HazCom: Labeling, Signs, MSDS System, Site Specific Chemical Hazards, Biological Hazards, Physical Hazards and Molten Material Handling.

3 Medical Surveillance Program: Blood Lead, Arsenic and Cadmium, Air Lead, Video Exposure Monitoring and Exposure Limits.

4 Decontamination and Hygiene Program: Personal Hygiene, Vehicle Decontamination, Water Treatment, Fugitive Dust Control Measures (Road Sweeper, Area Cleanup).

5 Material Handling Program: Drum Handling, Chemical Handling, Upkeep of the Chemical Warehouse and Phosphorus Building, Lead Handling, Handling and Emergency Response for Compressed Gas Cylinders, Oxygen Storage Tanks and Fuel Tanks, Housekeeping.

6 Emergency Response: Baton Rouge Contingency Plan, Alarm System, First Responder Training Fire Extinguisher Use/Location and Utility Disconnects.

7 Unit Specific Hazards: Production, Casting, Battery Breaker, Slag Crusher, Yard, Baghouse, Water Treatment, Shop.

8 Review and Test.

JOB DESCRIPTION

JOB TITLE: REFINERY FOREMAN

FUNCTION: SUPERVISE THE REFINERY OPERATIONS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE AS A REFINERY OPERATOR, KNOW REFINERY OPERATIONS COMPLETELY AND HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE, BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, LEAD SMELTING AND RECYCLING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Understand and oversee all phases of refinery operations.
- Must direct and supervise all maintenance work incidental to the furnace operations.
- Order and maintain an inventory of all chemicals needed for the refinery operations.
- Coordinate with Raw Materials Manager to ensure that the refinery produces all of the required lead products requested by customers.
- Maintain good housekeeping in the refinery area, the chemical warehouse and the lead storage warehouse.
- Train, instruct and supervise new refinery operators.
- Must follow all of Exide's safety rules and practices, and be sure that all of the refinery operators and crews are following safety practices.

JOB DESCRIPTION

JOB TITLE: REFINERY OPERATOR

FUNCTION: PERFORM ALL TASKS ASSOCIATE WITH THE REFINERY OPERATIONS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE IN THE REFINING OF LEAD AND LEAD ALLOYS, MUST BE KNOWLEDGEABLE OF CHEMICAL ADDITIVES REQUIRED TO PRODUCE QUALITY LEAD AND LEAD ALLOY.

TRAINING: TRAINING WILL INCLUDE, BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, LEAD SMELTING AND RECYCLING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Conduct and supervise the refinery and casting operations.
- Coordinate with the laboratory staff to ensure proper chemical analysis of refinery produces.
- Conduct and supervise housekeeping in the refinery area, the chemical warehouse and the lead storage warehouse.
- Help to train new refinery and casting personnel.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: CASTER

FUNCTION: PERFORM ALL TASKS REQUIRED BY THE REFINERY OPERATOR FOR THE PRODUCTION OF LEAD AND LEAD ALLOYS.

TECHNICAL REQUIREMENTS: ON THE JOB TRAINING, MOBILE EQUIPMENT OPERATIONS AND SOME BASIC MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE, BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, LEAD SMELTING AND RECYCLING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Must follow instructions of the refinery operator or refinery foreman.
- Perform routine maintenance work.
- Maintain good housekeeping of the work area.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: LABORATORY TECHNICIAN

FUNCTION: PERFORM ALL TASKS ASSOCIATED WITH ALL THE LABORATORY OPERATIONS.

TECHNICAL REQUIREMENTS: BASIC UNDERSTANDING OF CHEMISTRY, LEAD SMELTING, REFINING AND INSTRUMENTATION.

TRAINING: TRAINING WILL INCLUDE, BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Log in all samples received by the lab.
- Analyze samples and prepare analysis forms.
- Take inventory and order chemicals and reagents as needed.
- Perform routine maintenance work.
- Maintain good housekeeping in the lab.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: FURNACE FOREMAN

FUNCTION: SUPERVISE THE OPERATIONS OF THE SMELTERS TWO BLAST FURNACES AND ONE REVERBATORY FURNACE.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE IN FURNACE OPERATIONS, KNOW FURNACE OPERATIONS COMPLETELY AND HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE, BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, LEAD SMELTING AND RECYCLING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Understand and oversee all phases of furnace operations including:
  - Ensuring each furnace is properly charged,
  - Checking that no smoke is allowed to escape from the hoods,
  - Ensuring that proper startup and shut-down procedures are followed and documented,
  - Maintain furnace feed rations, to allow for consistent operations.
- Must direct and supervise all work incidental to the furnace operations.
- Work with the baghouse crew to ensure proper ventilation.
- Train, instruct and supervise new furnace operators and helpers.
- Must follow all of Exide's safety rules and practices, and be sure that all of the furnace operators and crews are following safety practices.

JOB DESCRIPTION

JOB TITLE: FURNACE OPERATOR

FUNCTION: OPERATE THE BLAST FURNACE OR THE REVERBATORY FURNACE.

TECHNICAL REQUIREMENTS: MUST HAVE EXPERIENCE IN FURNACE OPERATIONS, METALLURGY, CHARGING AND HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, LEAD SMELTING AND RECYCLING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct all functions required to set up and operate the furnace.
- Work with the baghouse crew to ensure proper ventilation.
- Train and instruct new furnace operators.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: FURNACE HELPER

FUNCTION: ASSIST IN THE OPERATION OF THE BLAST FURNACE OR THE REVERBATORY FURNACE.

TECHNICAL REQUIREMENTS: MUST HAVE EXPERIENCE IN FURNACE OPERATIONS, AND HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, LEAD SMELTING AND RECYCLING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Assist the Furnace Operator in set up and operation the furnace.
- Perform routine maintenance.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: WASTEWASTE TREATMENT PLANT OPERATOR

FUNCTION: MAINTAIN THE WASTEWATER TREATMENT PLANT TO ENSURE OPERATIONS WITHIN THE PERMITTED PARAMETERS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE IN TREATMENT PLANT OPERATIONS, WATER AND ACID CHEMISTRY, AND EQUIPMENT MAINTENANCE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, pH CALIBRATION AND MONITORING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Must be able to operate all of the equipment used in the wastewater treatment plant.
- Must be familiar with all of the monitoring procedures and instrumentation used in the treatment plant.
- Is responsible for control of chemical dosing and monitoring, to maintain the treatment plant operations within the permitted specifications.
- Is responsible for all operations and maintenance of equipment.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: WASTEWATER TREATMENT PLANT FOREMAN

FUNCTION: SUPERVISE THE WASTEWATER TREATMENT PLANT TO ENSURE OPERATIONS WITHIN THE PERMITTED PARAMETERS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE AS A TREATMENT PLANT OPERATOR, MUST HAVE A HIGH DEGREE OF TECHNICAL APTITUDE, MUST BE ABLE TO PERFORM MAINTENANCE ON ALL EQUIPMENT IN THE TREATMENT PLANT, MUST BE ABLE TO TREAT WATER TO ACCEPTABLE STANDARDS.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CHEMICAL HANDLING, CONTINGENCY PLAN, pH CALIBRATION AND MONITORING, PROPER CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise all work in the wastewater treatment plant.
- Maintain inventory of supplies equipment and chemicals needed for wastewater treatment operations.
- Direct maintenance of all treatment plant equipment.
- Ensure proper documentation procedures are followed.
- Must be able to operate all of the equipment used in the wastewater treatment plant.
- Is responsible for control of chemical dosing and monitoring, to maintain the treatment plant operations within the permitted specifications.
- Train, instruct and supervise new employees at water treatment.
- Must follow all of Exide's safety rules and practices, and be sure that all of the treatment plant operators are following safety practices.

JOB DESCRIPTION

JOB TITLE: BAGHOUSE OPERATOR

FUNCTION: MAINTAIN THE BAGHOUSES TO ENSURE OPERATIONS WITHIN THE PERMITTED PARAMETERS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE IN BAGHOUSE OPERATIONS, AND EQUIPMENT MAINTENANCE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, BAG HANDLING, BAGHOUSE CLEANUP PROCEDURES, CONTINGENCY PLAN AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Must be able to operate all of the equipment used in the baghouses.
- Must be familiar with the continuous emissions monitoring system used in the baghouses.
- Must monitor and maintain furnace and kettle floor draft controls.
- Must monitor and document temperature, pressure, blower amps, and flows in the baghouses on a daily basis.
- Must check and document the condition of the baghouse interiors on a weekly basis.
- Must check and document shaker mechanism, isolation dampers, bag tension and fans, on a monthly basis.
- Must check and document the baghouse sprinkle system monthly.
- Must change bags when necessary.
- Must assist dust reverbatory furnace operator.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: BAGHOUSE FOREMAN

FUNCTION: SUPERVISE THE FIVE BAGHOUSES TO ENSURE OPERATIONS WITHIN THE PERMITTED PARAMETERS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE AS A BAGHOUSE OPERATOR, MUST HAVE A HIGH DEGREE OF TECHNICAL APTITUDE, MUST KNOW BAGHOUSE OPERATIONS COMPLETELY.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, BAG HANDLING, BAGHOUSE CLEANUP PROCEDURES, CONTINGENCY PLAN AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise all work in the five facility baghouses.
- Review and submit all daily, weekly, and monthly baghouse checklists.
- Direct maintenance at all of the baghouses.
- Ensure proper documentation procedures are followed.
- Responsible for ordering all supplies necessary for the baghouses.
- Must coordinate with furnace operators and shift foreman to ensure that proper drafts are maintained.
- Supervise and assist the dust reverbatory furnace operator.
- Train, instruct and supervise new employees in the baghouse crew.
- Must follow all of Exide's safety rules and practices, and be sure that all of the baghouse operators are following safety practices.

JOB DESCRIPTION

JOB TITLE: DUST REVERBATORY FURNACE OPERATOR

FUNCTION: OPERATE ONE OF THE TWO DUST REVERBATORY FURNACES.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE AS AN OPERATOR, MUST HAVE A HIGH DEGREE OF TECHNICAL APTITUDE, MUST KNOW THE BASIC ELEMENTS OF BAGHOUSE OPERATIONS.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, FURNACE OPERATIONS, CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Operate one of the two dust reverbatory furnaces in a safe and environmentally sound manner.
- Complete daily documentation of activities.
- Perform preventive maintenance of the furnaces.
- Assist baghouse crew in maintenance and upkeep of the baghouses.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: SLAG STABILIZATION OPERATOR

FUNCTION: OPERATE THE SLAG STABILIZATION UNIT WITHIN THE PERMITTED PARAMETERS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE OPERATING THE SLAG STABILIZATION UNIT, MUST BE A MOBILE EQUIPMENT OPERATOR AND HAVE EXPERIENCE WITH EQUIPMENT MAINTENANCE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN SLAG HANDLING, CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Must be able to operate all of the equipment used at the slag stabilization unit in a safe and environmentally sound manner.
- Must be familiar with the landfill operations and requirements.
- Must be able to sort slag to ensure that only blast furnace slag is processed.
- Must maintain good housekeeping in the area.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: SLAG STABILIZATION FOREMAN

FUNCTION: SUPERVISE THE SLAG STABILIZATION PROCESS AND PERSONNEL TO ENSURE OPERATIONS WITHIN THE PERMITTED PARAMETERS.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE AS A SLAG STABILIZATION OPERATOR, MUST HAVE A HIGH DEGREE OF TECHNICAL APTITUDE, MUST KNOW STABILIZATION OPERATIONS COMPLETELY.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN HAZARDOUS MATERIAL HANDLING, LANDFILL OPERATIONS, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise all work at the slag stabilization unit.
- Complete daily slag stabilization reports.
- Direct all maintenance of the slag stabilization unit.
- Ensure the vehicles receive proper preventive maintenance and care.
- Responsible for ordering all supplies and chemicals necessary for the operation.
- Train, instruct and supervise new employees in the slag stabilization crew.
- Must follow all of Exide's safety rules and practices, and be sure that all of the slag crew is following safety practices.

JOB DESCRIPTION

JOB TITLE: YARD MAN

FUNCTION: PERFORM TASKS ASSOCIATED WITH ALL PHASES OF THE YARD OPERATIONS.

TECHNICAL REQUIREMENTS: MUST BE A MOBILE EQUIPMENT OPERATOR AND HAVE EXPERIENCE HANDLING, SHIPPING AND RECEIVING PRODUCTS.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, INCOMING HAZARDOUS MATERIAL HANDLING, CLEANUP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Load produced lead for shipment.
- Unload lead-bearing materials (including hazardous materials) for recycling.
- Load sodium sulfate salt for shipment.
- Unload coke for blast furnace operations.
- Must maintain good housekeeping in the area.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: YARD FOREMAN

FUNCTION: SUPERVISE THE YARD OPERATION AND PERSONNEL.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE WORKING IN THE YARD, MUST HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, HAZARDOUS MATERIAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise all work incidental to the yard department operation including personnel and maintenance of equipment.
- Order supplies used by the yard crew.
- Monitor truck traffic and speed limits in and out of the smelter.
- Supervise loading of products and unloading of incoming materials and supplies.
- Train, instruct and supervise new employees on the yard crew.
- Must follow all of Exide's safety rules and practices, and be sure that all of the yard crew is following safety practices.

JOB DESCRIPTION

JOB TITLE: CX BATTERY BREAKER SUPERVISOR

FUNCTION: SUPERVISE THE BATTERY BREAKER OPERATION AND PERSONNEL.

TECHNICAL REQUIREMENTS: MUST HAVE EXPERIENCE WORKING IN THE BATTERY BREAKER UNIT, MUST HAVE A HIGH DEGREE OF MECHANICAL APTITUDE AND CHEMICAL KNOWLEDGE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise all work at the battery breaker operation including personnel and maintenance of equipment.
- Inventory and order any supplies, chemicals and equipment necessary for the operation of the unit.
- Monitor the unloading dock to be sure that enough batteries are available and stored properly.
- Supervise the breaker unit operations including monitoring all of the neutralization, desulfurization and crystallization procedures.
- Ensure that samples are collected following the proper procedures and frequencies.
- Complete proper documentation of activities.
- Train, instruct and supervise new employees on the battery breaker crew.
- Must follow all of Exide's safety rules and practices, and be sure that all of the battery breaker crew is following safety practices.

JOB DESCRIPTION

JOB TITLE: CX BATTERY BREAKER OPERATOR

FUNCTION: CONTROL AND OPERATE THE CX BATTERY BREAKER UNIT.

TECHNICAL REQUIREMENTS: MUST COMPLETE OPERATOR TRAINING AT THE BATTERY BREAKER UNIT, MUST HAVE A HIGH DEGREE OF MECHANICAL APTITUDE AND CHEMICAL KNOWLEDGE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Perform all work incidental to the battery breaker operation.
- Monitor the performance of the unit.
- Perform routine and preventive maintenance.
- Calibrate and adjust meters.
- Collect all of the required samples.
- Train, instruct and supervise new employees on the yard crew.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: CX BATTERY BREAKER DOCK LEADER

FUNCTION: SUPERVISE THE LOADING DOCK AT THE CX BATTERY BREAKER UNIT.

TECHNICAL REQUIREMENTS: MUST HAVE EXPERIENCE WORKING AT THE BATTERY BREAKER DOCK, MUST BE A MOBIL EQUIPMENT OPERATOR.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL (BATTERY) HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise the work at the dock including personnel and maintenance of equipment.
- Be sure that the unit has a steady supply of batteries.
- Monitor truck traffic in and out of the dock.
- Supervise unloading of batteries to ensure that incompatible materials are not feed into the unit.
- Train, instruct and supervise new employees on the dock crew.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: CX BATTERY BREAKER DOCK CREW

FUNCTION: UNLOAD BATTERIES AT THE DOCK AND FEED THEM INTO THE CX BATTERY BREAKER UNIT.

TECHNICAL REQUIREMENTS: MUST BE A MOBIL EQUIPMENT OPERATOR AND HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN; CHEMICAL (BATTERY) HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Unload batteries from trucks onto the dock.
- Remove the shrink wrap and cardboard from the batteries.
- Inspect batteries to insure that they are compatible.
- Load batteries into the unit.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: MECHANIC

FUNCTION: REPAIR AND UP-KEEP OF ALL PLANT EQUIPMENT, VEHICLES AND SYSTEMS.

TECHNICAL REQUIREMENTS: HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Inspect, maintain and repair all of the plant mobile equipment (sweeper, forklifts, scoops, backhoe and dump trucks).
- Install, maintain, troubleshoot and repair pumps, conveyors, gearboxes, and hydraulic systems.
- Install, maintain and repair all piping in the plant.
- Install, maintain and repair valves, hoses, fittings, bearing, gages and meters.
- Operate mobile equipment.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: ELECTRICIAN

FUNCTION: REPAIR AND MAINTAIN ALL OF THE PLANT ELECTRICAL SYSTEMS.

TECHNICAL REQUIREMENTS: HIGH DEGREE OF ELECTRICAL KNOWLEDGE AND MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Repair all of the plant electrical systems.
- Work with plant engineers on the installation of new electrical systems.
- Inspect and calibrate equipment.
- Maintain inventory and order electrical supplies and equipment.
- Operate mobile equipment.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: WELDER

FUNCTION: REPAIR AND UPKEEP OF ALL OF THE PLANT METAL SURFACES.

TECHNICAL REQUIREMENTS: WELDING EXPERIENCE AND MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Weld and repair all metal units including baghouses, blast furnaces, reverbatory furnace, dust reverb furnaces, slag crusher, battery breaker, casting machines and refinery kettles.
- Repair all metal flue pipes, water lines, tanks, and screw conveyors.
- Assist mechanic with repair and upkeep of plant equipment.
- Fabricate equipment and parts.
- Maintain an inventory of welding supplies and order supplies and equipment when needed.
- Operate mobile equipment.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: CHANGE HOUSE, LUNCHROOM AND RESPIRATOR MAINTENANCE OPERATOR

FUNCTION: PERFORM TASK ASSOCIATED WITH MAINTAINING RESPIRATORS, CLEANING THE CHANGE HOUSE AND THE LUNCHROOM.

TECHNICAL REQUIREMENTS: MUST BE ABLE TO FOLLOW SPECIFIC PROCEDURES AND CLEANING INSTRUCTIONS.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, CHEMICAL HANDLING, PROPER CLEAN-UP PROCEDURES, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Clean and repair respirators daily.
- Supervise and conduct cleaning of the change house and the lunchroom daily.
- Issue all of the required personal protective equipment.
- Wash, dry and sort work clothes, coveralls, and associated clothing daily.
- Maintain an inventory of supplies and order supplies and equipment when needed.
- Must follow all of Exide's safety rules and practices.

JOB DESCRIPTION

JOB TITLE: YARD FOREMAN

FUNCTION: SUPERVISE THE YARD OPERATION AND PERSONNEL.

TECHNICAL REQUIREMENTS: MUST HAVE SEVERAL YEARS EXPERIENCE WORKING IN THE YARD, MUST HAVE A HIGH DEGREE OF MECHANICAL APTITUDE.

TRAINING: TRAINING WILL INCLUDE BASIC ENVIRONMENTAL REGULATIONS, CONTINGENCY PLAN, HAZARDOUS MATERIAL HANDLING, AND ALL EXIDE SAFETY PROCEDURES INCLUDING LOCKOUT TAG-OUT, CONFINED SPACE ENTRY, RIGHT-TO-KNOW, BLOOD LEAD MONITORING, RESPIRATORY PROTECTION, AND MSDS.

DUTIES AND RESPONSIBILITIES:

- Direct and supervise all work incidental to the yard department operation including personnel and maintenance of equipment.
- Review and sign hazardous waste manifests associated with the receipt of incoming shipments of hazardous waste.
- Monitor truck traffic and speed limits in and out of the smelter.
- Supervise loading of products and unloading of incoming materials and supplies.
- Train, instruct and supervise new employees on the yard crew.
- Must follow all of Exide's safety rules and practices, and be sure that all of the yard crew is following safety practices.

APPENDIX 9

CLOSURE AND POST-CLOSURE PLAN

REVISED FACILITY CLOSURE PLAN

EXIDE TECHNOLOGIES, BATON ROUGE SMELTER

LAD008184137

May 2003

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
2.0	BACKGROUND	1
3.0	CLOSURE PROCEDURES	1
	3.1 General	1
	3.2 Slag Stabilization Area	2
	3.3 Containment Building	2
	3.3 K069/D008 Storage Area	3
	3.4 Truck Trailer Storage Area	4
	3.5 Whole Battery Storage Area	5
4.0	CLOSURE COST ESTIMATE	5
5.0	POST-CLOSURE CARE	6

LIST OF TABLES

Table 1 - Summary of Closure Costs
Table 1A - Supplemental Closure Cost Information, Slag Stabilization Area
Table 1B - Supplemental Closure Cost Information, Containment Building
Table 1C - Supplemental Closure Cost Information, K069/D008 Storage Area
Table 1D - Supplemental Closure Cost Information, Truck Trailer Storage Area
Table 1E - Supplemental Closure Cost Information, Whole Battery Storage Area
Table 2 - Post-Closure Care Cost Estimate

LIST OF FIGURES

Figure 1 - Site Map

1.0 INTRODUCTION

Exide Technologies (Exide) Baton Rouge smelter has developed this Revised Closure Plan in accordance with Chapter 35 of the Louisiana Department of Environmental Quality – Hazardous Waste Division (LDEQ-HWD) Environmental Regulatory Code. This closure plan includes a section describing the facility background and operations, the closure methodologies for each permitted hazardous waste unit, and a closure and post-closure cost estimate. The cost estimates were prepared in accordance with Chapter 37 of the LDEQ-HDW Environmental Regulatory Code.

This revised Closure Plan is being submitted to update the closure cost estimates and closure procedures for the Containment Building, Area 2, to address the upgrades to the floor of this area. The revised closure cost estimates are listed on Table 1, and described in Section 4.0 and have been reviewed and corrected for mathematical errors and consistent unit costs.

2.0 BACKGROUND

The Exide Baton Rouge smelter is located at 2400 Brooklawn Drive, in East Baton Rouge Parish, Louisiana. This facility is a secondary lead smelter and refinery which recycles inorganic lead-bearing materials into lead pig and block ingots, which are sold to customers for use in making batteries, weights, bearings, ammunition, and chemicals. The facility has been in operation since the early 1969.

Most of the raw materials used by the Baton Rouge smelter to produce lead are purchased off-site. The lead-bearing raw materials are delivered to the facility in trucks or trailers and are unloaded at the loading dock. Lead acid batteries are either fed directly into the battery breaker or are stored temporarily in permitted storage areas (the truck/trailer storage area and the whole battery storage area). Other lead-bearing materials are received in drums. These drums will either be emptied into a feed-stock pile in the containment building or held temporarily in the K069/D008 storage area. Lead acid batteries are processed by cutting the batteries, separating them into individual components. The lead-rich paste is stored in the containment building prior to smelting. The facility operates one blast furnace and one reverbatory furnace that are used to smelt the lead-bearing raw materials. The molten lead is cast into ingots using two casting machines. The lead ingots are loaded into trucks and transported off-site for reuse. As a part of the lead recycled process, the Baton Rouge smelter produces a blast furnace slag. This slag contains mostly iron, silica and calcium oxides. The slag is treated by mixing with Portland cement and sodium silicate and is placed into a permitted solid waste landfill.

On September 30, 1993 the facility was issued a Final Operating Permit (No.LAD008184137-OP-1) by the LDEQ-HWD. The Baton Rouge smelter has three permitted hazardous waste storage areas, three existing storage areas, (the truck/trailer storage area, the K069/D008 storage area and the whole battery storage area). The facility has one existing permitted treatment area, the slag stabilization area. Exide also has a containment building that is used to store raw materials prior to recycling. All of these units are shown on the site map presented on Figure 1.

The upgrades to the Containment Building, Area 2 includes installation of 80-mil HDPE liner, a 6-inch concrete pad and acid brick installed over the existing floor.

3.0 CLOSURE PROCEDURES

3.1 General

The hazardous waste units at the facility will be clean closed. No hazardous waste or waste residual will be left at a closed unit. The closure procedures described herein are based on Exide hiring a third party contractor or consultant to perform the closure activities. Personnel, equipment or resources from the Baton Rouge smelter will not be used in any manner as a part of the closure procedures. For each hazardous waste unit, the closure procedures will describe:

- closure methodologies for the specific units,
- maximum inventory of hazardous materials at each unit,
- a description of how the hazardous material will be removed from the unit,
- a description of the decontamination procedures to be used for each unit,
- the confirmation sampling procedures to be followed at each unit to confirm clean closure.

3.2 The Slag Stabilization Unit

The slag stabilization unit is a hazardous waste treatment unit. As a part of recycling spent lead batteries, a blast furnace slag is generated. After the slag is allowed to cool, it is treated at the slag stabilization unit. The slag is crushed to small diameter, and then treated by mixing with Portland cement and sodium silicate and is placed into a permitted solid waste landfill (GD-033-2054/P0326). Stabilized slag is sampled and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) at least quarterly. It is planned that the slag stabilization unit will continue to operate for the lifetime of the Baton Rouge smelter. Partial closure of this unit is not anticipated.

Closure of this unit will involve removal of all slag, disposal of the slag in a permitted hazardous waste landfill, decontamination of the area and confirmation that clean closure has been achieved.

The maximum inventory of slag at the slag stabilization unit was calculated to be 144.4 tons, as shown on Table 1A. The residual slag will be loaded into lined end dump trailers. An off-site contractor using rented or contractor supplied front-end loaders will complete the loading. The trailers will transport the slag off-site to a permitted hazardous waste disposal site.

Once the residual slag has been removed, the entire slag stabilization area along with the slag crusher feed vessel will be decontaminated using steam cleaners. The front-end loader used to load the slag will also be decontaminated. The wash water will be collected in third-party supplied trailers and transported for off-site disposal. Samples of the wash water will be collected and analyzed for lead to determine if the decontamination process is complete. It is estimated that 23,500 gallons of wash water will be generated, contained, transported and disposed. Personal protective equipment for the decontamination crew will include, respirators with particle cartridges, tyvek suits, gloves and hardhats with splashguards.

Once decontamination is complete, five (5) confirmation samples will be collected and analyzed. The samples will be collected by drilling through the concrete and collecting soil samples for lead analysis. A certification report will be prepared and certified by an independent registered professional engineer, stating the facility was closed in accordance the approved closure plan.

3.3 The Containment Building

The containment building stores lead-bearing raw materials that will be recycled in the blast or reverbatory furnaces. The building is divided into areas where particular feedstock or slag is stored. The building is completely enclosed and ventilated. It is planned that the containment building will continue to operate for the lifetime of the Baton Rouge smelter. Partial closure of the containment building is not anticipated.

The maximum inventory of slag in the containment building was calculated to be 3,333 tons, as detailed in Table 1B. The residual slag will be loaded into lined end dump trailers. An off-site contractor using rented or contractor supplied front-end loaders will complete the loading. The trailers will transport the slag off-site to a permitted hazardous waste disposal site.

The maximum inventory of battery components and other lead-bearing materials has been calculated to be 12,080 tons, as shown on Table 1B. This material will be loaded into vehicles and transported to another lead smelter for recycling.

Once all of the residual slag and the lead-bearing raw materials have been removed, a sweeper truck will be used to clean any residual material. After sweeping, the walls and floor of the containment building will be decontaminated using steam cleaners. The front-end loaders used to load the inventory and the sweeper truck will also be decontaminated. The wash water will be collected in third-party supplied trailers and transported for off-site disposal. Samples of the wash water will be collected and analyzed for lead to determine if the decontamination process is complete. It is estimated that 324,500 gallons of wash water will be generated, contained, transported and disposed. Personal protective equipment for the decontamination crew will include, respirators with particle cartridges, tyvek suits, gloves and hardhats with splashguards.

Once decontamination is complete, ninety (90) confirmation samples will be collected and analyzed. The samples will be collected by drilling through the concrete and collecting soil samples for lead analysis. In the Paste Storage area of the containment building, a hoe ram will be brought in to break-through the acid brick floor. A certification report will be prepared and certified by an independent registered professional engineer. The report will certify that the containment building was closed in accordance the approved closure plan.

3.4 K069/D008 Storage Area

The K069/D008 storage area is located in the western portion of the containment building. This area is used to hold drums containing lead-bearing materials purchased from outside sources, until the material is recycled. The drums are inspected to insure that free liquid is not present. The floor of this storage area is constructed of concrete with no cracks or gaps. The floors are slope to drain into a sump. The drums are stacked on pallets, two pallets high, four drums to a pallet. The K069/D008 storage area is an integral part of the facility operation. Closure of this unit is not anticipated. However, this unit may be relocated at a later date.

The maximum inventory of material in the K069/D008 storage area is 544 drums or 29,920 gallons. The inventory will be loaded into vehicles using a fork lift and transported to another lead smelter for recycling.

The area will be decontaminated using steam cleaners. The wash water will be collected in third-party supplied trailers and transported for off-site disposal. Samples of the wash water will be collected and analyzed for lead to determine if the decontamination process is complete. It is estimated that 5,750 gallons of wash water will be generated, contained, transported and disposed. Personal protective equipment for the decontamination crew will include, respirators with particle cartridges, tyvek suits, gloves and hardhats with splashguards.

Once decontamination is complete, 2 confirmation samples will be collected and analyzed. The samples will be collected by drilling through the concrete and collecting soil samples for lead analysis. A certification report will be prepared and certified by an independent registered professional engineer, stating the K069/D008 storage area was closed in accordance the approved closure plan.

3.5 Truck/Trailer Storage Area

Batteries that are received by Exide are either unloaded at the loading dock or are stored in the truck/trailer storage area. Batteries at the truck/trailer storage area are stored on pallets prior to being processed in the battery breaking area. It is planned that the Truck/Trailer storage area will continue to operate for the lifetime of the Baton Rouge smelter. Partial closure of this area is not anticipated.

The maximum inventory of batteries stored in this area is 85,000 batteries, or 85,000 gallons. The inventory is already loaded on trailer, however, time has been allotted for restacking and ordering the loaded batteries. The batteries will be transported to another lead smelter for recycling.

The area will be decontaminated using steam cleaners. The wash water will be collected in third-party supplied trailers and transported for off-site disposal. Samples of the wash water will be collected and analyzed for lead to determine if the decontamination process is complete. It is estimated that 17,280 gallons of wash water will be generated, contained, transported and disposed. Personal protective equipment for the decontamination crew will include, respirators with particle cartridges, tyvek suits, gloves and hardhats with splashguards.

Once decontamination is complete, fifteen (15) confirmation samples will be collected and analyzed. The samples will be collected by drilling through the concrete and collecting soil samples for lead analysis. A certification report will be prepared and certified by an independent registered professional engineer. The closure report will state the truck/trailer storage area was closed in accordance the approved closure plan.

3.6 The Whole Battery Storage Area

The whole battery storage area is used to store batteries prior to processing them. The batteries are stored on pallets. No closure date for this unit has been designated, and partial closure is not expected.

The maximum inventory of spent batteries is 81,000 batteries or 81,000 gallons. The inventory will be loaded into vehicles using a fork lift and transported to another lead smelter for recycling.

The area will be decontaminated using steam cleaners. The wash water will be collected in third-party supplied trailers and transported for off-site disposal. Samples of the wash water will be collected and analyzed for lead to determine if the decontamination process is complete. It is estimated that 9,500 gallons of wash water will be generated, contained, transported and disposed. Personal protective equipment for the decontamination crew will include, respirators with particle cartridges, tyvek suits, gloves and hardhats with splashguards.

Once decontamination is complete, eight (8) confirmation samples will be collected and analyzed. The samples will be collected by drilling through the concrete and collecting soil samples for lead analysis. A certification report will be prepared and certified by an independent registered professional engineer, stating the whole battery storage area was closed in accordance the approved closure plan.

4.0 CLOSURE COST ESTIMATES

It is estimated that the cost of closing the permitted and interim status hazardous waste units at the facility, as described in this closure plan, is approximately $1,399,491.90 including 10% contingency. A detailed cost estimate is provided in Table 1. The detailed cost estimate was calculated in accordance with the requirements of LAC 33:V.3705. The cost estimate is based on the following assumptions:

- The cost is estimated in current dollars, as of December 2000 and were adjusted for inflation to 2003.
- Closure costs are based on hiring third party contractors and consultants to close the units.
- Closure costs do not include any salvage value from the sale of hazardous waste, structures, land or other assets.

A breakdown of the closure costs for each unit is included. Table 1A presents the detailed cost estimate for the slag stabilization area. Table 1B presents the detailed cost estimate for the containment building. The detailed cost estimate for the K069/D008 storage area is presented on Table 1C. Table 1D lists the detailed cost estimate for the truck/trailer area and Table 1E has the whole battery storage area cost breakdown. Each of these tables lists the following information:

- the calculations to determine the maximum inventory,
- The unit cost of loading, transporting and disposing of the maximum inventory,
- the dimensions of the unit to be decontaminated,
- the number of people needed to complete decontamination of the unit,
- the calculation for the amount of wash water generated during decontamination,

- the number of water and soil confirmation samples to be collected at the closed unit,
- the type and amount of equipment that needs to be rented for closure activities,
- and the cost of preparing a closure certification report for each unit.

The unit costs for loading of batteries differ between Tables 1D and 1E as the batteries at the Truck/Trailer Area are already in trailers and only require inspection prior to shipment while the batteries at the Whole Battery Storage Area require loading of the pallets onto trucks. The unit costs for decontamination product rates and water usage vary depending on the estimated level of effort required. The closure cost estimate has been used by Exide to update Financial Assurance for the Baton Rouge smelter.

5.0 POST-CLOSURE CARE

The Baton Rouge smelter has two units in post-closure care, Closed Waste Pile No.1 and Closed Waste Pile No. 2. Figure 1 shows the locations of these units. The units are slag disposal areas that were closed in-place in 1985 and 1986. The Post-Closure Permit was issued in May 2001. The post-closure period of 30 years begins at issuance of the permit. Two years have already been conducted. Twenty-eight years remain in the post-closure period.

Post-closure care of these units involves maintenance of the cap and groundwater monitoring. Cap maintenance includes top-soil maintenance, fertilizing, reseeding, and grass cutting and upkeep. Cap integrity inspections will be performed and an annual certification by an engineer will be completed, documenting the integrity of the caps. Groundwater monitoring activities include purging and sampling 7 monitor wells twice per year, collection and analysis of groundwater samples and preparation of an annual report. One well MW-1R is located up gradient of the closed units, and six wells, MW-4R, MW-12R, MW-13R, MW-16, MW-17 and MW-18 are located down gradient of the closed units. The groundwater samples from each well will be analyzed for chloride, sulfate, lead, cadmium, manganese, sodium, iron, pH and specific conductance. The annual report will contain the analytical data, potentiometric maps and a summary of the groundwater quality for the closed units.

Table 2 presents the post-closure care cost estimates. The estimated post-closure care cost is $219,028.11 including 10% contingency. These estimates were prepared in accordance with LAC 33:V.3709, using current dollar values as of December 2000 and adjusted for inflation to 2003. The estimates are based on hiring third-party contractors or consultants to perform the post-closure activities.

TABLE 1
SUMMARY OF CLOSURE COSTS

Description	Units	Unit Cost	Total Cost
A. Slag Stabilization Area			
1 Loading of Residual Slag (144.4 tons)	144.4	$2.00	$288.80
2 Transportation of Residual Slag (144.4 tons)	144.4	$27.50	$3,971.00
3 Disposal of Residual Slag (144.4 tons)	144.4	$150.00	$21,660.00
4 Facility Decontamination (10 hours)	10	$127.00	$1,270.00
Slag Vessel Decontamination	1	$500.00	$500.00
5 Water Characterization	5	$50.00	$250.00
6 Transportation of Wash Water (5 loads)	5	$326.00	$1,630.00
7 Disposal of Wash Water (23,500 gallons)	23,500	$0.15	$3,525.00
8 Personal Protective Equipment	6	$45.00	$270.00
9 Confirmation Sampling	5	$500.00	$2,500.00
10 Laboratory Analysis (including QA/QC samples)			
a. Wash Water	6	$18.00	$108.00
b. Concrete Core Samples	6	$20.00	$120.00
11 Equipment Lease			
a. Front End Loader	1	$125.00	$125.00
b. Steam Cleaners	5	$45.00	$225.00
12 Certification	1	$5,000.00	$5,000.00
Subtotal - A			**$41,442.80**

TABLE 1
SUMMARY OF CLOSURE COSTS

Description	Units	Unit Cost	Total Cost
B. Containment Building			
1 Inventory Disposal - Residual Slag			
a. Loading Inventory (3,333 tons)	3,333	$2.00	$6,666.00
b. Transportation of Inventory (3,333 tons)	3,333	$27.50	$91,657.50
c. Disposal of Inventory (3,333 tons)	3,333	$150.00	$499,950.00
Inventory Removal - Lead Material for Reuse			
d. Loading Inventory (12,080 tons)	12,080	$2.00	$24,160.00
e. Transportation of Inventory (12,080 tons)	12,080	$18.00	$217,440.00
2 Facility Decontamination			
a. Sweeping (10 hours)	10	$18.00	$180.00
b. Decontamination (46 hours)	46	$397.00	$18,262.00
3 Water Characterization	65	$50.00	$3,250.00
4 Transportation of Wash Water (65 loads)	65	$326.00	$21,190.00
5 Disposal of Wash Water (324,500 gallons)	324,500	$0.15	$48,675.00
6 Confirmation Sampling	90	$650.00	$58,500.00
7 Personal Protective Equipment	273	$45.00	$12,285.00
8 Laboratory Analysis (including QA/QC samples)			
a. Wash Water	68	$18.00	$1,224.00
b. Concrete Core Samples	94	$20.00	$1,880.00
9 Equipment Lease			
a. Front End Loaders	2	$125.00	$250.00
b. Steam Cleaners	20	$360.00	$7,200.00
c. Hoe Ram	1	$400.00	$400.00
d. Sweeper	1	$1,300.00	$1,300.00
10 Certification	1	$9,000.00	$9,000.00
Subtotal B			**$1,023,469.50**

TABLE 1
SUMMARY OF CLOSURE COSTS

Description	Units	Unit Cost	Total Cost
C. K069/D008 Storage Area			
1 Inventory Disposal			
a. Loading Inventory (544 55-gallon Drums)	544	$0.45	$244.80
b. Transportation of Inventory (544 Drums)	544	$15.00	$8,160.00
2 Facility Decontamination (4 hours)	4.0	$73.00	$292.00
3 Water Characterization	2	$50.00	$100.00
4 Transportation of Wash Water (2 load)	2	$326.00	$652.00
5 Disposal of Wash Water (5,750 gallons)	5,750	$0.15	$862.50
6 Confirmation Sampling	2	$500.00	$1,000.00
7 Personal Protective Equipment	3	$45.00	$135.00
8 Laboratory Analysis (including QA/QC samples)			
a. Wash Water	3	$18.00	$54.00
b. Concrete Core Samples	3	$20.00	$60.00
9 Equipment Lease			
a. Fork Lift	1	$75.00	$75.00
b. Steam Cleaners	2	$45.00	$90.00
10 Certification	1	$4,000.00	$4,000.00
Subtotal C			**$15,725.30**

TABLE 1
SUMMARY OF CLOSURE COSTS

Description	Units	Unit Cost	Total Cost
D. Truck/Trailer Storage Area			
1 Inventory Disposal			
a. Loading Inventory (85,000 batteries)	85,000	$0.01	$850.00
a. Transportation of Inventory (85,000 batteries)	85,000	$0.42	$35,700.00
2 Facility Decontamination (6 hours)	6	$109.00	$654.00
3 Water Characterization	4	$50.00	$200.00
4 Transportation of Wash Water (4 loads)	4	$326.00	$1,304.00
5 Disposal of Wash Water (17,280 gallons)	17,280	$0.15	$2,592.00
6 Confirmation Sampling	15	$500.00	$7,500.00
7 Personal Protective Equipment	5	$45.00	$225.00
8 Laboratory Analysis (including QA/QC samples)			
a. Wash Water	5	$18.00	$90.00
b. Concrete Core Samples	16	$20.00	$320.00
9 Equipment Lease			
b. Steam Cleaners	4	$45.00	$180.00
10 Certification	1	$3,500.00	$3,500.00
Subtotal D			**$53,115.00**

TABLE 1
SUMMARY OF CLOSURE COSTS

Description	Units	Unit Cost	Total Cost
E. Whole Battery Storage Area			
1 Inventory Disposal			
a. Loading Inventory (81,000 batteries)	81,000	$0.05	$4,050.00
b. Transportation of Inventory (81,000 batteries)	81,000	$0.42	$34,020.00
2 Facility Decontamination (4 hours)	5	$91.00	$455.00
3 Water Characterization	2	$50.00	$100.00
4 Transportation of Wash Water (2 loads)	2	$326.00	$652.00
5 Disposal of Wash Water (9,500 gallons)	9,500	$0.15	$1,425.00
6 Confirmation Sampling	8	$500.00	$4,000.00
7 Personal Protective Equipment	4	$45.00	$180.00
8 Laboratory Analysis (including QA/QC samples)			
a. Wash Water	3	$18.00	$54.00
b. Concrete Core Samples	9	$20.00	$180.00
9 Equipment Lease			
a. Fork Lift	1	$75.00	$75.00
b. Steam Cleaner	3	$45.00	$135.00
10 Certification	1	$3,500.00	$3,500.00
Subtotal E			**$48,826.00**
CLOSURE COSTS			**$1,182,578.60**
10% CONTINGENCY			$118,257.86
TOTAL CLOSURE COSTS			**$1,300,836.46**

Inflation adjustment for 2001 (2.5%)	**$1,333,357.37**
Inflation adjustment for 2002 (2.5%)	**$1,366,691.31**
Inflation adjustment for 2003 (2.4%)	**$1,399,491.90**

TABLE 1A

SUPPLEMENTAL CLOSURE COST INFORMATION
SLAG STABILIZATION AREA

A. INVENTORY DISPOSAL

1. Maximum quantity of residual slag to be removed and disposed off-site.

   20'w x 15'l x 10'h = 3,000 ft^3
   3,000 ft^3 / 27ft^3/yd^3 = 111.1 yd^3
   111.1 yd^3 x 1.3 tons/yd^3 = 144.4 tons

2. Unit cost to dispose of residual slag.

   Loading: $2.00/ton x 144.4 tons = $288.80
   Transportation: $27.50/ton x 144.4 tons = $3,971.00
   Disposal: $150.00/ton x 144.4 tons = $21,660.00

   Total cost for inventory disposal = $25,919.80

B. DECONTAMINATION OF SLAG STABILIZATION AREA

1. Total surface area to be decontaminated.

   174'l x 27'w = 4,700ft^2 of surface area to be decontaminated.

2. Unit cost of decontamination.

   Crew = 1 supervisor ($37.00/hour) and 5 laborers ($18.00/hour each)
   100 ft^2/hour * 5 laborers = 500 ft^2/hour
   4,700ft^2 / 500 ft^2/hour = 9.5 hours
   Plus 0.5 hours for equipment decontamination
   10 hours * $127.00 = $1,270.00

3. Decontamination of the slag crusher feed vessel.

   1 feed vessel x $500.00 decontamination cost = $500.00

   Total cost for decontamination = $1,770.00

C. DISPOSAL OF WASH WATER

1. Volume of water generated during decontamination.

   High pressure wash = 4.0 gallons per ft^2
   4,700 ft^2 * 4.0 gallons per ft^2 = 18,800 gallons
   Vessel decontamination = 4,200 gallons
   Equipment decontamination = 500 gallons
   Total amount of waste water = 23,500 gallons

2. Water characterization.

   1 sample every 5,000 gallons
   Sampling crew charge = $50.00 / water sample
   23,500 gallons / 5,000 gallons/sample = 5 water samples
   5 water samples x $50.00/sample = $250.00

3. Transportation of wash water.

   23,500 gallons / 5,000gallons/ load = 5 loads
   5 loads x $326.00/load = $1,630.00

4. Disposal of wash water.

   23,500 gallons x $0.15/gallon = $3,525.00

   Total cost for disposal of wash water = $5,405.00

D. PERSONAL PROTECTIVE EQUIPMENT

1. **$45.00 per man x 6 man crew = $270.00**

E. CONFIRMATION SAMPLING

1. Concrete core samples: 1sample every 1,000ft^2
   4,700 ft^2 / 1,000 ft^2/sample = 5 samples
   Sampling crew charge = $500.00 / concrete core sample
   5 concrete core samples x $500/sample = $2,500.00

2. Laboratory analysis (lead).

   5 water samples x $18.00/sample = $90.00
   5 concrete core samples x $20.00/sample = $100.00
   QA/QC samples (1 water and 1 soil) = $38.00

   Total cost for confirmation sampling = $2,728.00

F. EQUIPMENT LEASE

1. 1 Front end loader = $125.00.
2. 5 Steam cleaners: 5 x $45.00 = $225.00

Total cost for equipment lease = $350.00

G. CLOSURE CERTIFICATION

Lump Sum = $5,000.00

SLAG STABILIZATION AREA TOTAL CLOSURE COSTS = $41,442.80

Inflation adjustment for 2001 - 2.5 % = $42,478.87

Inflation adjustment for 2002 – 2.5 % = $43,540.84

Inflation adjustment for 2003 – 2.4% = $44,585.82

TABLE 1B

SUPPLEMENTAL CLOSURE COST INFORMATION
CONTAINMENT BUILDING

A. INVENTORY DISPOSAL

1. Maximum quantity of residual slag to be removed and disposed off-site.

   a) Slag storage Area 1:
   100'l x 25'w x 10'h = 25,000 ft^3
   25,000 ft^3 / 27 ft3/yd^3 = 925.93 yd^3
   925.93 yd^3 x 1.3 tons/yd^3 = 1,204 tons
   b) Slag storage Area 2:
   77'l x 45'w x 12'h = 41,580ft^3
   41,580 ft^3 / 27 ft3/yd^3 = 1,540 yd^3
   1,540 yd^3 x 1.3 tons/yd^3 = 2,002 tons

Total residual slag to be removed and disposed = 3,206 tons; however assume 3,333 tons as that volume is reflected in the original permit.

2. Unit cost to dispose of residual slag.

   Loading: $2.00/ton x 3,333 tons = $6,666.00
   Transportation: $27.50/ton x 3,333 tons = $91,657.50
   Disposal: $150.00/ton x 3,333 tons = $499,950.00

   Total disposal cost of residual slag = $598,273.50

3. Maximum quantity of inventory to be removed for reuse.

   a. Paste Storage Area 3:
   95'l x 80'w x 12'h = 91,200ft^3
   91,200ft^3 / 27 ft^3/yd^3 = 3,377.8 yd^3
   3,377.8 yd^3 x 1.8 tons/yd^3 = 6,080 tons

   b. Dry paste storage -
   Area 4: 50'l x 50'h x 12'h = 30,000 ft^3
   30,000ft^3 / 27yd^3 = 1,111.11 yd^3
   1,111.11 yd^3 x 1.7 tons/yd^3 = 1,888 tons, round to 2,000.00 tons

   Area 5: 100'l x 25'h x 12'h = 30,000 ft^3
   30,000ft^3 / 27yd^3 = 1,111.11 yd^3
   1,111.11 yd^3 x 1.7 tons/yd^3 = 1,888 tons, round to 2,000.00 tons

   Area 6: 100'l x 25'h x 12'h = 30,000 ft^3
   30,000ft^3 / 27yd^3 = 1,111.11 yd^3
   1,111.11 yd^3 x 1.7 tons/yd^3 = 1,888 tons, round to 2,000.00 tons

Total inventory to be removed = 12,080 tons

Total capacity of the Containment Building = 7,614.81 yd^3 as listed in the RCRA Part A Permit Application, January 1999.

4. Unit cost of inventory disposal.

   Loading: $2.00/ton x 12,080 tons = $24,160.00
   Transportation: $ 18.00/ton x 12,080 tons = $217,440.00

   Total cost of inventory disposal = $241,600.00

B. DECONTAMINATION OF CONTAINMENT BUILDING

1. Total surface area to be decontaminated:

   Area 1 Floor: 100'l x 25'w = 2,500 ft^2
   Area 1 Walls: 150'l x 10'h = 1,500 ft^2
   Area 2 Floor: 70'l x 45'w = 3,150 ft^2
   Area 2 Walls: 125'l x 12'h = 1,500 ft^2
   Area 3 Floor: 95'l x 80'w = 7,600 ft^2
   Area 3 Walls: 200'l x 12'h = 2,400 ft^2
   Area 4 Floor: 50'l x 50'w = 2,500 ft^2
   Area 4 Walls: 100'l x 12'h = 1,200 ft^2
   Area 5 Floor: 100'l x 25'w = 2,500 ft^2
   Area 5 Walls: 100'l x 12'h = 1,200 ft^2
   Area 6 Floor: 100'l x 25'w = 2,500 ft^2
   Area 6 Walls: 100'l x 12'h = 1,200 ft^2
   29,750 ft^2 = Total surface area

Plus, 42,000 ft^2 of production area and 9,000 ft^2 trackways = 80,750 ft^2

2. Unit cost of decontamination.

   Crew = 1 supervisor ($37.00/hour) and 20 laborers ($18.00/hour each)
   100ft^2/hour x 20 laborers = 2,000ft^2/hour
   80,750ft^2 / 2,000ft^2/hour = 41 hours
   Plus 5 hour for equipment decontamination
   46 hours x $397.00/hour = $18,262.00

   Sweeper = 1 laborer ($18.00) x 10 hours = $180.00

   Total cost for decontamination = $ 18,442.00

C. DISPOSAL OF WASH WATER

1. Volume of water generated during decontamination.

   High pressure wash = 4.0 gallons per ft^2
   80,750ft^2 x 4.0 gallons per ft^2 = 323,000 gallons
   Equipment decontamination = 1,500 gallons
   Total amount of waste water = 324,500 gallons

2. Water characterization.

   Water samples: 1 sample every 5,000 gallons
   Sampling crew charge = $50.00 / water sample
   324,500 gallons / 5,000 gallons/sample = 65 water samples
   65 water samples x $50.00/sample = $3,250.00

3. Transportation of wash water.

   324,500 gallons / 5,000 gallons/load = 65 loads
   65 loads x $326.00/load = $21,190.00

4. Disposal of wash water.

   324,500 gallons x $0.15/gallon = $48,675.00

   Total cost for disposal of wash water = $ 73,115.00

D. PERSONAL PROTECTIVE EQUIPMENT

1. **$45.00 per man x 21 man crew x 13 days = $12,285.00**

E. CONFIRMATION SAMPLING

1. Concrete core samples: 1sample every 900ft^2
   Floor area = 2,500 + 3,150 + 2,500 + 2,500 + 2,500 + 42,000 + 9,000
   = 64,150 sf
   64,150ft^2 / 900ft^2/sample = 71 samples
   Paste Storage area: 1 sample every 400 ft^2
   7,600 ft^2 / 400 ft^2 = 19 samples
   Sampling crew charge = $650.00 / concrete core sample
   90 concrete core samples x $650.00/sample = $58,500.00

2. Laboratory analysis (lead).

   65 water samples x $18.00/sample = $1,170.00
   90 concrete core samples x $20.00/sample = $1,800.00
   QA/QC samples (3 water and 4 soil) = $134.00

   Total cost for confirmation sampling = $61,604.00

F. EQUIPMENT LEASE

1. 2 Front end loaders x $125.00 each = $250.00
2. 20 Steam Cleaners x $180.00 each x 2 weeks = $7,200.00
3. 1 Hoe Ram x $400.00 each = $400.00
4. 1 Sweeper truck x $1,300.00 = $1,300.00

Total cost for equipment lease = $9,150.00

G. CLOSURE CERTIFICATION

Lump Sum = $9,000.00

CONTAINMENT BUILDING TOTAL CLOSURE COSTS = $1,023,469.50

Inflation adjustment for 2001 – 2.5 % = $1,049,056.24

Inflation adjustment for 2002 – 2.5 % = $1,075,282.64

Inflation adjustment for 2003 – 2.4% = $1,101,089.43

TABLE 1C

SUPPLEMENTAL CLOSURE COST INFORMATION
K069/D008 STORAGE AREA

A. INVENTORY DISPOSAL

1. Maximum quantity of inventory to be removed for reuse.

   25'w x 70'l = 1,750ft^2
   4 rows with 17 pallets/row, stacked 2 pallets high = 136 pallets
   136 pallets x 4 drums per pallet = 544 drums
   544 drums x 55-gallon capacity/drum = **29,920 gallons – As listed in RCRA Part A Permit Application, January 1999.**

2. Unit cost for inventory removal.

   Loading: $0.45/drum x 544 drums = $244.80
   Transportation: $15.00/drum x 544 = $8,160.00

   Total cost for inventory removal = $8,404.80

B. DECONTAMINATION OF K069/D008 STORAGE AREA

1. Total surface area to be decontaminated.

   25'w x 70'l = 1,750ft^{2}of surface area to be decontaminated.

2. Unit cost of decontamination.

   Crew = 1 supervisor ($37/hour) and 2 laborers ($18.00/hour each)
   300ft^2/hour x 2 laborers = 600ft^2/hour
   1,750ft^2 / 600ft^2/hour = 2.9 hours
   Equipment decontamination = 1 hour
   4 hours x $73.00 = $292.00

   Total cost for decontamination = $ 292.00

C. DISPOSAL OF WASH WATER

1. Volume of water generated during decontamination.

   High pressure wash = 3.0 gallons per ft^2 1,750ft^2 x 3.0 gallons per ft^2 = 5,250 gallons
   Equipment decontamination = 500 gallons
   Total amount of waste water = 5,750 gallons

2. Water characterization.

   Water samples: 1 sample every 5,000 gallons
   Sampling crew charge = $50.00 / water sample
   5,750 gallons / 5,000 gallons/sample = 2 water samples
   2 sample x $50.00/sample = $100.00

3. Transportation of wash water.

   5,750 gallons / 5,000 gallons/load = 2 loads
   2 loads x $326/gallon = $652.00

4. Disposal of wash water.

   5,750 gallons x $0.15/gallon = $862.50

   Total cost for disposal of wash water = $ 1,614.50

D. PERSONAL PROTECTIVE EQUIPMENT

1. $45.00 per man x 3 man crew = $135.00

E. CONFIRMATION SAMPLING

1. Concrete core samples: 1sample every 1,000ft^2
   1,750ft^2 / 1,000ft^2/sample = 2 samples
   Sampling crew charge = $500.00 / concrete core sample
   2 concrete core samples x $500.00/sample = $1,000.00

2. Laboratory analysis (lead).

   2 water samples x $18.00/sample = $36.00
   2 concrete core samples x $20.00/sample = $40.00
   QA/QC samples (1 water and 1 soil) = $38.00

   Total cost for confirmation sampling = $1,114.00

F. EQUIPMENT LEASE

1. 1 Fork lift = $75.00
2. 2 Steam cleaners: 2 x $45.00 = $90.00

Equipment lease total = $165.00

G. CLOSURE CERTIFICATION

Lump sum = $4,000.00

TABLE 1D

SUPPLEMENTAL CLOSURE COST INFORMATION
TRUCK/TRAILER STORAGE AREA

A. INVENTORY DISPOSAL

1. Maximum quantity of inventory to be removed for reuse.

   85,000 batteries on pallets stored on trucks or trailers.
   1 battery = 1 gallon. Total capacity = **85,000 gallons – As listed in RCRA Part A Permit Application, January 1999.**

2. Unit cost for inventory removal.

   Loading batteries: 85,000 batteries x $0.01/battery = $850.00
   Transportation: 85,000 batteries x $0.42/battery = $35,700.00

   Total cost for inventory removal = $36,550.00

B. DECONTAMINATION OF TRUCK/TRAILER STORAGE AREA

1. Total surface area to be decontaminated.

   120'w x 120'l = 14,400ft^{2}of surface area to be decontaminated.

2. Unit cost of decontamination.

   Crew = 1 supervisor ($37/hour) and 4 laborers ($18.00/hour each)
   600ft^2/hour x 4 laborers = 2,400ft^2/hour 14,400ft^2 / 2,400ft2/hour = 6 hours
   6 hours x $109.00 = 654.00

   Total cost for decontamination = $ 654.00

C. DISPOSAL OF WASH WATER

1. Volume of water generated during decontamination.

   High pressure wash = 1.2 gallons per ft^2
   14,400ft^2 x 1.2 gallons per ft^2 = 17,280 gallons

2. Water samples: 1 sample every 5,000 gallons
   Sampling crew charge = $50.00 / water sample
   17,280 gallons / 5,000 gallons/sample = 4 water samples
   4 water samples x $50.00/sample = $200.00

3. Transportation of wash water.

   17,280 gallons / 5,000 gallons/load = 4 loads
   4 loads x $326.00 = $1,304.00

4. Disposal of wash water.

   17,280 gallons x $0.15/gallon = $2,592.00

   Total cost for disposal of wash water = $ 4,096.00

D. PERSONAL PROTECTIVE EQUIPMENT

1. **$45.00 per man x 5 man crew = $225.00**

E. CONFIRMATION SAMPLING

1. Concrete core samples: 1sample every 1,000ft^2
   14,400ft^2 / 1,000ft^2/sample = 15 samples
   Sampling crew charge = $500.00 / concrete core sample
   15 concrete core samples x $500.00/sample = $7,500.00

2. Laboratory analysis (lead).

   4 water samples x $18.00/sample = $72.00
   15 concrete core samples x $20.00/sample = $300.00
   QA/QC samples (1 water and 1 soil) = $38.00

   Total cost for confirmation sampling = $7,910.00

F. EQUIPMENT LEASE

4 Steam cleaners: 4 x $45.00 = $180.00

G. CLOSURE CERTIFICATION

Lump Sum = $3,500.00

TRUCK/TRAILER STORAGE AREA TOTAL CLOSURE COSTS = $53,115.00

Inflation adjustment for 2001 – 2.5% = $54,442.88

Inflation adjustment for 2002 – 2.5% = $55,803.95

Inflation adjustment for 2003 – 2.4% = $57,143.24

TABLE 1E

SUPPLEMENTAL CLOSURE COST INFORMATION
WHOLE BATTERY STORAGE AREA

A. INVENTORY DISPOSAL

1. Maximum quantity of inventory to be removed for reuse.

   75'w x 100'l = 7,500ft^2
   20 rows x 18 pallets per row x 3 pallets high = 1,080 pallets
   1,080 pallets x 75 batteries per pallet = 81,000 batteries
   1 battery = 1 gallon. Total capacity = **81,000 gallons – As listed in RCRA Part A Permit Application, January 1999.**

2. Unit cost for inventory removal.

   Loading: 81,000 batteries x $0.05/battery = $4,050.00
   Transportation: 81,000 batteries x $0.42/battery = $34,020.00

   Total cost for inventory removal = $38,070.00

B. DECONTAMINATION OF WHOLE BATTERY STORAGE AREA

1. Total surface area to be decontaminated.

   750'w x 100'l = 7,500ft^{2}of surface area to be decontaminated.

2. Unit cost of decontamination.

   Crew = 1 supervisor ($37/hour) and 3 laborers ($18.00/hour each)
   600ft^2/hour x 3 laborers = 1,800ft^2/hour
   7,500ft^2 / 1,800ft^2/hour = 4 hours
   Equipment decontamination = 1 hour
   5 hours x $91.00 = $455.00

   Total cost for decontamination = $ 455.00

C. DISPOSAL OF WASH WATER

1. Volume of water generated during decontamination.

   High pressure wash = 1.2 gallons per ft^2
   7,500ft^2 x 1.2 gallons per ft^2 = 9,000 gallons
   Equipment decontamination = 500 gallons
   Total amount of waste water = 9,500 gallons

2. Water samples: 1 sample every 5,000 gallons
   Sampling crew charge = $50 / water sample
   9,500 gallons / 5,000 gallons/sample = 2 water samples
   2 water samples x $50.00/sample = $100.00

3. Transportation of wash water.

   9,500 gallons / 5,000 gallons/load = 2 loads
   2 loads x $326.00 = $652.00

4. Disposal of wash water.

   9,500 gallons x $0.15/gallon = $1,425.00

   Total cost for disposal of wash water = $ 2,177.00

D. PERSONAL PROTECTIVE EQUIPMENT

1. **$45.00 per man x 4 man crew = $180.00**

E. CONFIRMATION SAMPLING

1. Concrete core samples: 1sample every 1,000ft^2
   7,500ft^2 / 1,000ft^2/sample = 8 samples
   Sampling crew charge = $500.00 / concrete core sample
   8 concrete core samples x $500.00/sample = $4,000.00

2. Laboratory analysis (lead).

   2 water samples x $18.00/sample = $36.00
   8 concrete core samples x $20.00/sample = $160.00
   QA/QC samples (1 water and 1 soil) = $38.00

   Total cost for confirmation sampling = $4,234.00

F. EQUIPMENT LEASE

1. 1 Fork lift = $75.00
2. 3 Steam cleaners: 3 x $45.00 = $135.00

Equipment lease total = $210.00

G. CLOSURE CERTIFICATION

Lump sum = $3,500.00

WHOLE BATTERY STORAGE AREA TOTAL CLOSURE COSTS = $48,826.00

Inflation adjustment for 2001 – 2.5% = $50,046.65

Inflation adjustment for 2002 – 2.5% = $51,297.81

Inflation adjustment for 2003 – 2.4% = $52,528.96

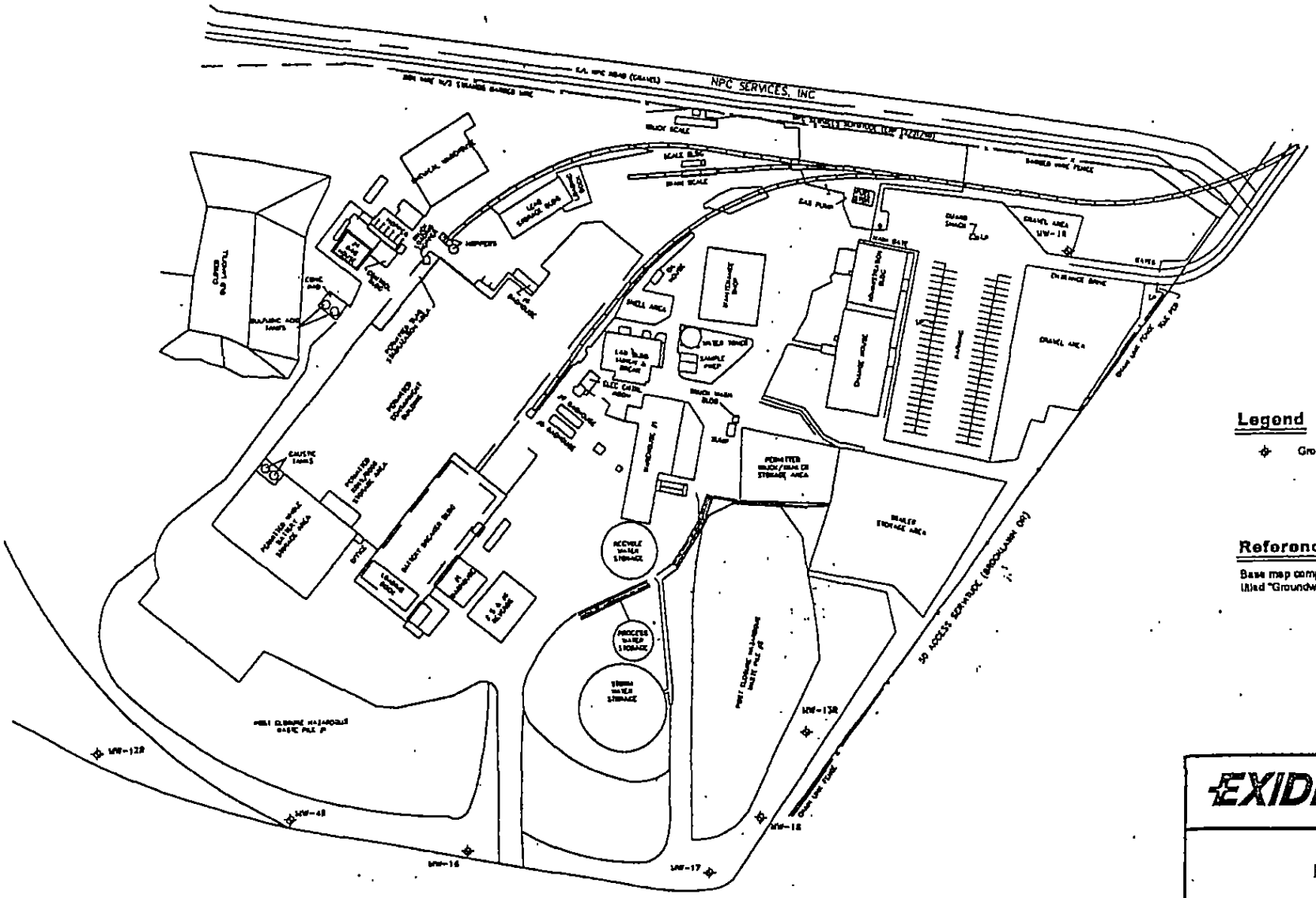
TABLE 2

POST CLOSURE CARE COST ESTIMATE

Description	Units	Unit Cost	Total Yearly Cost
TWO CLOSED WASTE PILES			
1 Cover Maintenance			
a. Top Soil Maintenance (5 acres)	5	$100.00	$500.00
b. Fertilizing and Reseeding (5 acres)	5	$60.00	$300.00
c. Grass Cutting and Upkeep ($40.00/acre x 4 events)	5	$160.00	$800.00
d. Engineer's Inspection	1	$300.00	$300.00
Subtotal			**$1,900.00**
TOTAL (28 years of Post-Closure Monitoring)	**28**	**$1,900.00**	**$53,200.00**
2 Groundwater Monitoring (7 Wells)			
a. Purging and Sampling (Twice a Year at $50.00 per well)	7	$100.00	$700.00
b. Laboratory Analysis (Twice a Year at $110.00 per well)	8*	$220.00	$1,760.00
c. Annual Report	1	$500.00	$500.00
Subtotal			**$2,960.00**
TOTAL (28 years of Post-Closure Monitoring)	**28**	**$2,960.00**	**$82,880.00**
3 LDEQ Annual Monitoring and Maintenance Fee	7	$250.00	$1,750.00
TOTAL (28 years of Post-Closure Monitoring)	28	$1,750.00	**$49,000.00**
POST-CLOSURE COSTS - CLOSED WASTE PILES			**$185,080.00**
Plus 10% Contingency			$18,508.00
TOTAL POST-CLOSURE COSTS			**$203,588.00**

* Cost includes analyzing 1 duplicate sample.

Inflation adjustment for 2001 (2.5%)	**$208,677.70**
Inflation adjustment for 2002 (2.5%)	**$213,894.64**
Inflation adjustment for 2003 (2.4%)	**$219,028.11**



Legend

Groundwater Monitor Wells

Reference:

Base map comprised from drawing provided by Exide Corporation titled "Groundwater Report" dated 02/01/99.

EXIDE

Baton Rouge Smelter
Baton Rouge, Louisiana

Facility Plot Plan

REVISION	DESCRIPTION	DATE
-	-	-
-	-	-

Engrd: TAB	Appd. TAD	Date: 08/27/01	Scale: 1" = 150'
Drawn: LMH	DWG. NO.: 028-001-8009		FIG. 1
Chkd: TAB			

APPENDIX 10

SURETY BOND

EXIDE TECHNOLOGIES

Exide Technologies
3000 Montrose Avenue
Reading, PA 19605
www.exideworld.com

August 21, 2002

Mr. Darryl Serio
Louisiana Department of Environmental Quality
Office of Management and Finance
P.O. Box 82263
Baton Rouge, LA 70884-2263

Re: Financial Assurance Adjustments
Exide Technologies
Baton Rouge, Louisisana
Solid Waste Facility No. GD-033-2054
Hazardous Waste Facility No. LAD 008 184 137

Dear Mr. Serio,

Please find attached copies of two of letters of credit issued by Citibank N.A. on August 20, 2002 to provide additional financial assurance for the subject facility. Original copies of the letters of credit were issued by Citibank N.A. directly to the Louisiana Department of Environmental Quality via mail. Please contact me if you do not receive the original copies.

Letter of credit No. NY-20511-30033321 was obtained to increase financial assurance for closure of the solid waste units to an amount commensurate with the most recent closure cost estimate. Incorporated into the adjustment is this year's adjustment for inflation. This letter of credit along with letter of credit No. 1S1286270 issued last year by Fleet National Bank and Surety Bond No. 400JT6546 issued by St. Paul in 1999 and adjusted for inflation in 2000 comprise financial assurance for closure of solid waste units at the facility.

Letter of credit No. NY-20511-30033314 was obtained to meet financial assurance requirements associated with this year's adjustment of the closure and post-closure cost estimate for inflation. This letter of credit along with letter of credit No.

1S1286269 issued last year by Fleet National Bank and Surety Bond No. 400JT6548 issued by St. Paul in 1999 and adjusted for inflation in 2000 comprise financial assurance for closure and post-closure of hazardous waste units at the facility.

Sincerely,

EXIDE TECHNOLOGIES

Matthew A. Love
Director, Environmental Affairs

Attachments

cc: Steve Krul – Exide/Baton Rouge (w. attach.)

NORTH AMERICAN TRADE FINANCE

BENEFICIARY:
Louisiana Department of Environmental Quality
Account Administrator
PO Box 74040
Baton rouge, LA 70874

August 20, 2002

Irrevocable Standby Letter of Credit No. NY-20511-30033321

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No. NY-20511-30033321 in your favor, at the request and for the account of Exide Technologies, 210 Carnegie Center, Suite 500, Princeton, NJ 08540 up to the aggregate amount of US Dollars Two Hundred Twenty Six Thousand Nine Hundred Ninety Five and 00/100 (U.S. dollars $226,995.00), available upon presentation of

(1) your sight draft, bearing reference to this letter of credit No. NY-20511-30033321, and

(2) your signed statement reading as follows: "I certify that the amount of the draft is payable since a final judgement has been issued by a competent court of law in favor of a governmental body, person, or other entity and against permit holder's or applicant's name for sudden and accidental occurrences for claims arising out of injury to person or property due to the operation of the solid waste site at the name of permit holder or applicant at the site location as set forth in the LAC 33:VII. 727. A.1."

This letter of credit is effective as of August 20, 2002 and shall expire on August 20, 2003, but such expiration date shall be automatically extended for a period of 12 months on August 20, 2003 and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and Exide Technologies by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft to be presented on or before the then expiry date of Letter of Credit.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of Exide Technologies in accordance with your instructions.

We are informed that that the wording of this letter of credit is identical to the wording specified in LAC 33:VII.727.A.1.D.II. (E), as such regulations were constituted on the date shown immediately below.

This Letter of Credit is subject to the Uniform Customs and Practice for documentary Credits, Revision 1993, International Chamber of Commerce, Publication No. 500.

Regards,
Citibank, N.A.

Authorized Signature
August 20, 2002

NORTH AMERICAN TRADE FINANCE

BENEFICIARY:
Louisiana Department of Environmental Quality
Account Administrator
PO Box 74040
Baton rouge, LA 70874

August 20, 2002

Irrevocable Standby Letter of Credit No. NY-20511-30033314

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No. NY-20511-30033314 in your favor, at the request and for the account of Exide Technologies, 210 Carnegie Center, Suite 500, Princeton, NJ 08540 up to the aggregate amount of Thirty Once Thousand Nine Hundred Forty Six and 00/100 US Dollars (U.S. Dollars $31,946.00), available upon presentation of

(1) your sight draft, bearing reference to this letter of credit No. NY-20511-30033314, and

(2) your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Louisiana Environmental Quality Act R.S. 30: 2001, ET SEG."

This letter of credit is effective as of August 20, 2002 and shall expire on August 20, 2003, but such expiration date shall be automatically extended for a period of 12 months on August 20, 2003 and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and Exide Technologies by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft to be presented on or before the then expiry date of Letter of Credit.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of Exide Technologies in accordance with your instructions.

We are informed that that the wording of this letter of credit is identical to the wording specified in LAC 33: v.3719.D as such regulations were constituted on the date shown immediately below.

This Letter of Credit is subject to the Uniform Customs and Practice for documentary Credits, Revision 1993, International Chamber of Commerce, Publication No. 500.

Regards,
Citibank, N.A.

Authorized Signature
August 20, 2002

The St Paul

STIPULATION
(Penalty Increase or Decrease)

ATTACHED TO AND FORMING PART OF BOND NO.	EFFECTIVE DATE OF BOND	EFFECTIVE DATE OF THIS STIPULATION	AMOUNT OF INCREASE/DECREASE	NEW PENALTY AMOUNT
400JT6548	August 20, 1999	August 18, 2000	$21,418.00	$1,449,285.00

ISSUED ON BEHALF OF	ISSUED IN FAVOR OF
Exide Corporation d/b/a Schuylkill Metals 645 Penn Street, Reading, PA 19601	Louisiana Department of Environmental Quality 7290 Bluebonnett Boulevard, Baton Rouge, LA 70810

We, St. Paul Fire and Marine Insurance Company, Surety on the above Bond, hereby stipulate and agree that from and after the effective date of this Stipulation the penalty of said Bond shall be

☒ increased
☐ decreased
} *Check One*

by the amount stated above but the total liability of St. Paul Fire and Marine Insurance Company under said Bond and this Stipulation shall not exceed the sum of One Million Four Hundred Forty-Nine Thousand Two Hundred Eighty-Five and 00/100 dollars ($1,449,285.00).

COUNTERSIGNED BY:

T. D. Ruddock
T. D. Ruddock, LA Resident Agent

St. Paul Fire and Marine Insurance Company

Marjorie A. Altemus
Marjorie A. Altemus, Attorney-in-Fact

REQUEST FOR STIPULATION (INCREASE)

We Exide Corporation d/b/a Schuylkill Metals, Principal hereby request St. Paul Fire and Marine Insurance Company to execute the foregoing Stipulation.

Exide Corporation d/b/a Schuylkill Metals

By _____

CONSENT TO STIPULATION (DECREASE)

We, _____, Obligee, hereby consent to the foregoing Stipulation decreasing the Bond amount.

_____

By _____

The St Paul

POWER OF ATTORNEY

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

Power of Attorney No. 20840 Certificate No. [illegible]

KNOW ALL MEN BY THESE PRESENTS: That Seaboard Surety Company is a corporation duly organized under the laws of the State of New York, and that St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, and that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, and that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc. is a corporation duly organized under the laws of the State of Wisconsin *(herein collectively called the "Companies")*, and that the Companies do hereby make, constitute and appoint

James L. Bly, Christine A. Hartung, Leslie L. Rudat, Pamela L. Nunez, Elena Zunic, Karen L. Jensen, Nancy M. Kunold, Marjorie A. Altemus and Elizabeth A. Hartzberg

of the City of Pittsburgh, State Pennsylvania, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety to, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed this 5th day of August, 1999.

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

MICHAEL B. KEEGAN, Vice President

MICHAEL R. MCKIBBEN, Assistant Secretary

State of Maryland
City of Baltimore

On this 5th day of August, 1999, before me, the undersigned officer, personally appeared Michael B. Keegan and Michael R. McKibben, who acknowledged themselves to be the Vice President and Assistant Secretary, respectively, of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc. and that they, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the names of the corporations by themselves as duly authorized officers.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the 13th day of July, 2002.

REBECCA EASLEY-ONOKALA, Notary Public

86203 Ed. 5-99 Printed in U.S.A.

APPENDIX 13

OPERATIONAL PROCEDURES: DUST SUPPRESSION AND FEED PILE INSPECTIONS

OPERATIONAL PROCEDURE

CONTAINMENT BUILDING DUST SUPPRESSION

All of the lead-bearing materials stored in the Containment Building are kept in feed piles. These feed piles are typically undisturbed except for when the material is placed into the pile and when it is taken to the furnace for smelting. The feed piles are arranged in the Containment Building based on what the material in the pile will be used for. For example, the feed pile located east of the north doorway is used to feed the No. 3 reverberatory furnace.

Lead-bearing material is placed into a feed pile either by dumping from a truck, emptying a 55-gallon drum or by unloading with a scoop bucket. As the material is unloaded, the pile is sprayed with a light mist, using one of the water hoses in the Containment Building. The hoses in the Containment Building are all 1-inch lines with water pressures typically less than 30 psi. Each hose is equipped with a mister nozzle; designed to cover a high surface area with a low volume of water. Care is taken so that dust suppression liquids do not accumulate into standing puddles. This procedure is also followed if material is moved from one feed pile to another.

The amount of water that is sprayed on the pile is kept to a minimum. For operations and safety purposes, any material that is feed for a furnace needs to be as dry as possible. If water from dust suppression accumulates in the Containment Building, the puddles will be either pumped to a sump or removed using absorbent materials. These procedures will be utilized for both Area 1 (concrete and geomembrane floor system) and the upgraded floor system at Area 2 (primary and secondary containment with leak detection system).

Currently, Exide uses only clean water for dust suppression. Other methods of dust suppression are being evaluated and may be implemented in the future. Exide does not use any oils or any other material that is contaminated for dust suppression.

Some of the raw materials used in the process and stored on-site are classified as hazardous wastes by regulation. Exide was issued a Hazardous Waste Permit (LAD008184137) to operate three container storage areas (the Truck/Trailer Storage area, the K069/D008 Storage area and the Whole Battery Storage area). Exide operates a Containment Building, which is currently under interim status. Exide has submitted a permit modification to upgrade the containment building and include it in the Hazardous Waste permits. A hazardous waste treatment unit, the Slag Stabilization unit, is also permitted under LAD008184137.

Lead acid batteries are either fed directly into the battery breaker or are stored temporarily at the Truck/Trailer Storage area and the Whole Battery Storage area. Lead acid batteries are processed in the battery breaker unit, by cutting the batteries, and hydraulically separating the individual components. The plastic is thoroughly washed to remove residual acid and lead. It is then loaded into trailers and shipped off-site for recycling. The battery acid, a weak sulfuric acid solution, is neutralized with sodium hydroxide and crystallized to form sodium sulfate salt. The salt is sold as a product. The lead material from the batteries is processed to convert lead sulfate to lead oxide. The lead oxide paste is then stored in the containment building prior to recycling.

The facility operates two blast furnaces and one reverbatory furnace that are used to smelt the lead-bearing raw materials. The molten lead is cast either into ingots using two casting machines or blocks using molds. Additionally, the facility operates a billet casting machine to produce lead billets. The finished lead is tested to determine if it meets client specifications and is then loaded into trucks and transported off-site for reuse.

As a part of the lead recycling, a blast furnace slag is generated. This slag is allowed to cool, crushed to small diameter, and treated using a mixture of cement and sodium silicate, as specified in Exide's Hazardous Waste Permit. The stabilized slag is rock-like in appearance and engineering properties. After treatment, the slag is placed in a permitted on-site solid waste landfill.

IV. SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

LAC 33:IX.907.A

The Plan shall be prepared in accordance with sound engineering practices. If the Plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, these items shall be discussed, and the details of installation and operational start-up shall be explained individually. The office recognizes that the designs of major facilities differ and that in certain cases the appropriate methods for spill prevention and control must be site-specific. While the guidelines presented herein suggest the use of specific methodologies for this purpose, alternate methods may be employed if it can be demonstrated to the satisfaction of the office that the alternate methods will adequately prevent and control spills, and that they are reasonably equivalent to the suggested methods. A complete plan shall follow the sequence outlined in LAC 33.IX.903.B through E.

RESPONSE:

This plan has been prepared in accordance with sound engineering practices. Certification of this plan's preparation is provided in Section II Management Approval and Certification. In accordance with the Louisiana Water Quality Regulations, this SPCC Plan follows the regulatory sequence outlined in LAC 33:IX.903.B through E.

LAC 33.IX.907.B

A complete plan shall include the following:

LAC 33.IX.907.B1

name of the facility;

RESPONSE:

The name of the facility is Exide Technologies (Exide), Baton Rouge Smelter.

LAC 33.IX.907.B2

name of the operator of the facility;

RESPONSE:

The name of the operator is Exide Technologies.

LAC 33.IX.907.B3

mailing address of the facility;

RESPONSE:

Exide Technologies
P.O. Box 74040
Baton Rouge, Louisiana 70874

LAC 33.IX.907.B4	**location of the facility;**
RESPONSE:	Exide's secondary lead smelter plant is located in East Baton Rouge Parish, approximately 2 miles west of the intersection of U.S. Highway 61 and Brooklawn Drive, Baton Rouge, Louisiana.
LAC 33.IX.907.B5	**date and year of initial facility operation;**
RESPONSE:	The Baton Rouge Smelter commenced its operation in 1969.
LAC 33.IX.907B6	**a brief but adequate description of the facility, including an indication of the nearest potential receiving waters;**
RESPONSE:	A brief description of the facility has been included in Section B - General Description of the Facility. The surface drainage from the facility flows into Baton Rouge Bayou.
LAC 33.IX.907.B7	**the identity, amount, and location of substances stored at the facility meeting the applicability criteria outlined in Section 903 of this Chapter; and**
RESPONSE:	Information regarding the identity, amount, location of substances stored at the facility meeting the applicability criteria outlined in Section 903 of this Chapter is provided in Table 1. This table is prepared in such a manner as to identify fuel (diesel and gasoline), waste oil, and kerosene at the facility with their corresponding locations at the facility as indicated in Figure 2. Additional information regarding chemical and physical characteristics of the substances stored at the facility is provided in Material Safety Data Sheets (MSDSs) maintained at the facility.
LAC 33.IX.907.B8	**facility capability and procedures for taking corrective actions and/or countermeasures when a spill event occurs.**
RESPONSE:	In order to provide assistance in the event of a disaster and to assure the proper control of a spill that may occur at the facility, Exide has prepared an emergency contingency plan which outlines the Emergency Response Organization. The Emergency Response Organization consists of the Environmental Manager or his/her designee who will serve as the On-Site Coordinator. The On-Site Coordinator will report

an incident of spill to the Plant Manager. A summary of spill response action plans including procedures for notification, containment, and cleanup, is included in Appendix C. The On-Site Coordinator will be responsible for conducting appropriate remedial activities at the facility site. The specifics regarding Emergency Response Organization are, including communications and response procedures are as follows:

1. Upon indication of an imminent or an actual emergency at the facility, the On-Site Coordinator, Mr. Steve Krul, Environmental Manager, if unavailable, Mr. Mike Ashford, Maintenance Supervisor or Mr. Joseph Acker, Jr., Plant Manager, will be contacted immediately and notified of the location and nature of the emergency. If none of the three individuals are available at the site/in the office, they will be contacted at their residences at the following numbers:

   Mr. Steve Krul
   Environmental Manager
   (225) 756-5866

   Mr. Mike Ashford
   Maintenance Superintendent
   (225) 344-6857

   Mr. Joseph Acker, Jr.
   Plant Manager
   (225) 405-8190

2. The On-Site Coordinator, Mr. Steve Krul will immediately contact Mr. Joseph Acker, Jr., Plant Manger at the facility. If Mr. Acker is not available in the office, he will be contacted at his residence.

3. The Environmental Manager will immediately notify the appropriate state and local agencies with designated response roles if their help is needed. In the event of spill of any material on which maintenance of MSDS is required and the spill exceeds the reportable quantity, or if the spill causes

emergency conditions (irrespective of the quantity), the Environmental Manager will notify the Department of Public Safety (DPS) hotline within one hour after learning of the discharge. The telephone number for the DPS hotline is (225) 925-6595.

The following government agencies and emergency response action contractors may be contacted, depending upon the nature of spill/emergency:

1) U.S. EPA Region VI
1445 Ross Avenue
Dallas, Texas 75202
Phone: (866) EPA-SPIL (24 hours)

2) LA Dept. of Environmental Quality
P.O. Box 4301
Baton Rouge, Louisiana 70821-4301
Phone: (225) 342-1234 (24 hours)

3) U.S. Coast Guard
1615 Poydras Street
New Orleans, Louisisàna 70112
Phone: (504) 589-6261 (24 hours)

4) National Response Center (NRC)
Washington, D.C.
Phone: 1-800-424-8802 (24 hours)
Written correspondence not permitted

5) Fire Department/Emergency
Phone: 911

6) Baker Fire Department
3190 Washington Street
Baker. Louisiana 70714
Phone: (225) 775-3712

7) Alsen Fire Department
674 Old Rafe Mayer Road
Baton Rouge, Louisiana 70807
Phone: (225) 774-3473

8) State Police, Troop A
17801 Highland Road
Baton Rouge, Louisiana 70810
Phone: (225) 754-8515

9) East Baton Rouge Sheriff's Office
300 North Boulevard
Baton Rouge, Louisiana 70802
Phone: (225) 389-5000

10) HAZMATT/TESS
P.O. Box 66614
Baton Rouge, Louisiana 70896
(225) 925-6595

4. Whenever there is a release, fire, or explosion, the On-Site Coordinator will immediately identify the character, exact source, amount, and areal extent of any released materials. He may do so by observation or review of facility records or manifests (maintained at the facility site) and material safety data sheets (MSDS), and if necessary, by chemical analysis.

5. Concurrently, the On-Site Coordinator will assess possible hazards to human health and the environment that may result from the release, fire, or explosion. This assessment will consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface run-off from water of chemical agents used to control fire and heat-induced explosions).

6. If the On-Site Coordinator determines that the facility has had a release, fire, or explosion which could threaten human health and/or the environment outside the facility, telephone notification reports to the appropriate state or local agency will be followed with written reports within seven (7) days of telephone notification. A copy of Exide Technologies' Oil Spill Report Form is provided in Appendix D. The report form indicates the information to be recorded in the event of a spill.

7. During an emergency, the On-Site Coordinator will take all reasonable measures necessary so that fires, explosions, and releases do not occur, reoccur, or spread to other locations outside the facility. These measures will include, where applicable, stopping operations, collecting and containing released substances, and isolating tanks.

8. Immediately after any emergency, the On-Site Coordinator, in consultation with the Plant Manager, will provide for treating, storing, or disposing of recovered substances, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

9. The On-Site Coordinator will ensure that in the affected area(s) of the facility:

   a. No waste that may be incompatible with the released material is treated, stored, or disposed of until procedures are completed.

   b. All emergency equipment is cleaned and fit for its intended use before operations are resumed.

10. Upon completion of site cleanup activities, Exide's Environmental Manager will notify the EPA Regional Administrator, and appropriate state and local authorities that the facility is in compliance with paragraph 7 of this Section before operations are resumed in the affected area(s) of the facility.

11. The Environmental Manager will note in the operating record the time, date, and details of the incident. Within 7 days after the incident, he must submit a written report regarding the incident to the EPA Regional Administrator. The report will include:

   a. Name, address, and telephone number of the owner or operator;
   b. Name, address, and telephone number of the facility;

c. Date, time, and nature of incident (e.g., fire, explosion);
d. Name and quantity of material(s) involved in the incident;
e. The extent of injuries, if any;
f. An assessment of actual or potential hazard to human health and the environment;
g. Information regarding an estimated quantity and disposal of the recovered material that resulted from the incident;
h. The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacements;
i. Additional preventive measures taken or contemplated to minimize the possibility of reoccurrence; and
j. Such other information as the EPA Regional Administrator and/or LDEQ may reasonably require pertinent to the plan or spill event.

LAC 33:IX.907.C

The plan shall include a prediction of the direction, rate of flow and total quantity of applicable substances which could be spilled at the facility where experience indicated a reasonable potential for equipment failure and/or human error.

RESPONSE:

The direction in which spilled substances would flow is Baton Rouge Bayou. In addition, information regarding the predicted direction of flow is also provided in Figure 2.

In the event of a worst-case spill scenario, the pumps maintained at the facility will be used to contain a spill by pumping liquids to containment structures. The secondary containment structures have been designed to hold 110% of the tank contents. In a worst-case spill scenario described above, the entire contents of the single largest tank unit would be contained in the concrete containment around the tank.

LAC 33:IX.907.D

Appropriate containment and/or diversionary structures or equipment to prevent an applicable spilled substance from reaching waters of the state should be provided. One of the following should be used as a minimum:

1. **dikes, berms or retaining walls sufficiently impervious to contain spills;**

2. **curbing, drip pans;**

3. **culverts, gutters or other drainage systems;**

4. **weirs, booms or other barriers;**

5. **spill diversion ponds;**

6. **retention ponds;**

7. **sorbent substances; and**

8. **sumps and collection systems.**

RESPONSE: The containment area is build around the base of the tanks. The containment area is constructed of 6" thickness impervious concrete monopoured. The containment is capable of holding the entire contents of the largest tank plus approximately 12" of precipitation falling directly in the containment. This area is located at an elevation higher than the surrounding area such that storm runon will be diverted around the containment area at an elevation above the 100 year flood plain. The containment has one drain with a locked valve through which precipitation is removed after storms. The maintenance shop supervisor or his designate are responsible for removal of the storm water. This water will be inspected for oil residues prior to removal. In addition, Exide has provided and will maintain the following containment and/or diversionary structures or equipment at the facility site to prevent migration of tank contents to waters of the state:

1. Maintain at least ten 55 gallon DOTD-approved steel drums and two spill response kits containing sorbent granules, pad/mats, and socks. The kits also contain disposable personnel protective clothing, and a disposable drum with appropriate labels of hazardous or non-hazardous materials.

LAC 33:IX.907.E **When it is determined that the installation of structures or equipment listed in LAC 33:IX.907.D of this Chapter is not practical, the owner/operator of an applicable facility shall clearly demonstrate such impracticality and provide a strong spill**

contingency plan, including a written commitment of the manpower, equipment, and materials required to ensure timely and effective action to minimize damage resulting from a spill event.

RESPONSE: Exide has made provisions to contain spills at the facility through constructing secondary containment structures around the tanks. In addition, an adequate number of containers and pumps are maintained at the facility site. Exide also maintains an adequate number of spill response kits containing sufficient quantity of absorbent granules, pads, and socks.

LAC 33:IX.907.F **In addition to the minimal prevention standards listed under LAC 33:IX.907.D of this Chapter, sections of the plan should include a complete discussion of conformance with the following applicable guidelines or other effective spill prevention and containment procedures:**

RESPONSE: Exide has provided a complete discussion of each of the following guidelines below.

LAC 33:IX.907.F1 **All storage tank installations should be constructed so that a secondary means of containment is provided for the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation. Diked areas are sufficiently impervious to contain spills.**

RESPONSE: All storage tank installations are constructed so that a secondary means of containment is provided for the entire contents of the largest single tank plus 10%. Diked areas are sufficiently impervious to contain spills.

LAC 33:IX.907.F2 **Drainage from diked areas should be restrained by valves or other positive means to prevent a spill event, except where facility treatment systems are designed to handle such spills. Flapper-type valves should not be used as a restrained device. Valves used for the drainage of diked areas should, as far as possible, be of manual, open-and-closed design. In all cases, drainage from diked areas shall be in accordance with all applicable rules, regulations, and laws.**

RESPONSE: All aboveground storage tanks are located inside the secondary containment structures. Drainage at the site is away from the tanks

and is not anticipated to enter the secondary containment constructed around the tanks. Secondary containment structures have valves which remain locked all the time. Therefore, any spill inside the secondary containment structures will be contained within the diked areas.

LAC 33:IX.907.F3 **New and old tank installations should, as far as practical, be fail-safe engineered or updated into a fail-safe engineered installation to avoid spills. Liquid level sensing devices should be regularly tested to ensure proper operation. Consideration should be given to providing one or more of the following devices (optional for tanks served by adequate secondary containment systems):**

a. **high liquid level alarms with an audible or visual signal at a constantly manned operation or surveillance; in smaller facility an audible air vent may suffice;**

b. **high liquid level pump cutoff devices set to stop flow at predetermined tank content level;**

c. **direct audible or code signal communication between the tank gauger and the pumping station;**

d. **a fast response system for determining the liquid level of each bulk storage tank such as digital computers, telepulse, or direct vision gauges or their equivalent; and**

e. **additional tank(s) connected to automatically receive overflow.**

RESPONSE: Exide has several ASTs storing oil and chemicals. These tanks have secondary containment structures around them to contain any accidental spill. These tanks are visually inspected prior to transfer of products to these tanks to prevent any tank overflow.

LAC 33:IX.907.F4 **All above-ground storage tanks should be visually inspected by a competent person for condition and need for maintenance on a scheduled periodic basis. Such examination should include the foundation and supports of tanks that are above the surface of the ground. Visible leaks from a tank and its appurtenances shall be promptly corerected.**

RESPONSE: Exide has a company-wide program for inspection of tanks and associated piping. The tanks will be inspected bi-weekly. The above-ground storage tanks will be visually inspected by a competent person for condition and need for maintenance on a scheduled periodic basis. Such examination will include the foundation and supports of tanks that are above the surface of the ground. Visible leaks from a tank and its appurtenances will be promptly corrected.

LAC 33:IX.907.F5 **Buried metallic piping installation should have a protective wrapping and coating or the equivalent, and should be cathodically protected if soil conditions warrant. If a section of buried line is exposed for any reason, it shall be carefully examined for deterioration. If corrosion damage is found, additional examination and corrective action shall be taken as indicated by the magnitude of the damage.**

RESPONSE: Buried metallic piping have a protective coating or the equivalent. All exposed piping will be inspected as part of the quarterly inspection program. Visible leaks from any piping will be promptly corrected.

LAC 33:IX.907.F6 **When a pipeline is not in service or in standby service for an extended time, the terminal connection at the transfer point should be isolated, capped, or blank-flanged as well as marked, or the on/off switch tagged as to origin.**

RESPONSE: When a pipeline is not in service or in standby service for an extended time, the terminal connection at the transfer point will be isolated, capped, or blank-flanged as well as marked, or the on/off switch tagged as to origin.

LAC 33:IX.907.F7 **Pipe supports shall be properly designed to minimize abrasion and corrosion; to allow for expansion and contraction, and to adequately support thrust loadings at bends.**

RESPONSE: Pipe supports have been designed in accordance with sound engineering practices. Exide will inspect and maintain these pipe supports to prevent any abrasion and corrosion and to adequately support thrust loadings at bends.

LAC 33:IX.907.F8 **All above-ground valves and piping should be subjected to regular examinations by operating personnel at which time the general conditions of items such as flange joints, pipeline**

supports, locking of valves, and metal surfaces should be assessed. In addition, periodic pressure testing may be warranted for piping in areas where facility drainage is such that a failure might lead to a spill event if there is a reason to suspect the integrity of the piping. Records of such inspections and tests shall be kept for three years and include all items addressed.

RESPONSE: All above-ground valves and piping will be subject to quarterly examinations by operating personnel at which time the general conditions of items such as flange joints, pipeline supports, locking of valves, and metal surfaces will be assessed. In addition, periodic pressure testing may be warranted for piping in areas where facility drainage is such that a failure might lead to a spill event if there is a reason to suspect the integrity of the piping. Records of such inspections and tests shall be kept for three years and include all items addressed.

LAC 33:IX.907.F9 **All tank cars and tank loading/unloading area drainage shall flow into a catchment basin, treatment system or other containment system designed to hold at least the maximum capacity of any single compartment of a tank car or truck loaded or unloaded at the facility.**

RESPONSE: Material loading/unloading areas drain into the facility wastewater treatment system.

LAC 33:IX.907.F10 **An interlocked warning light, physical barrier system, or warning signs shall be provided in loading/unloading areas to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines.**

RESPONSE: Prior to loading/unloading of tank cars or trucks, the trucks will be properly immobilized by the truck driver to prevent vehicular departure before complete loading/unloading. Warning signs are posted at the loading points to ensure the truck drivers close all valves, and disconnect and cap all lines before departure.

LAC 33:IX.907.F11 **Prior to filling and departure of any tank car or truck, the lowermost drain and all outlets of such vehicles shall be closely examined for leakage, and if necessary, tightened, adjusted, or replaced to prevent leakage.**

RESPONSE:	Prior to filling and departure of any tank car or truck, the lowermost drain and all outlets of such vehicles will be closely examined for leakage, and if necessary, tightened, adjusted, or replaced to prevent leakage.
LAC 33:IX.907.G	**The Plan, as applicable, should include a complete discussion of conformance with the following guidelines for facility drainage:**
RESPONSE:	Exide has provided a response to each guideline below.
LAC 33:IX.907.G1	**Facility drainage from undiked areas subject to spill events should if possible, flow into ponds, lagoons or catchment basins designed to retain spills or return them to the facility. Catchment basins should not be located in areas subject to flooding.**
RESPONSE:	As outlined above, all ASTs have secondary containment structures. All drainage at the facility is away from the containment structures and flows into the facility wastewater treatment system. In addition, Exide will maintain an adequate quantity of oil absorbent mats at the facility as part of preventive measures for containing spills at the facility site.
LAC 33:IX.907.G2	**Facility drainage systems should be adequately engineered to prevent spills from reaching the waters of the state in the event of equipment failure or human error at the facility.**
RESPONSE:	As outlined above, all ASTs have secondary containment structures. All drainage at the facility is away from the containment structures and flows into the facility wastewater treatment system.
LAC 33:IX.907.H	**The plan, as applicable, should include a complete discussion of conformance with the following guidelines for facility security:**
RESPONSE:	Exide has provided response to each of the following guidelines for security.
LAC 33:IX.907.H.1	**Means of restricting unauthorized entry or other security procedures should be provided when the facility is not attended.**
RESPONSE:	The subject facility is enclosed by a chain-link fence. Access to the facility will be through gates which are monitored 24-hours per day, 7-days a week.

LAC 33:IX.907.H.2 **Master flow and drain valves and any other valves that permit direct outward flow of spilled substances to the waters of the state should be securely locked, tagged, or sealed in the closed position when unattended. Sample cocks, gauge valves, and other small valves are not subject to this requirement.**

RESPONSE: There are no master flow and drain valves and any other valves that will permit direct outward flow of spilled substances to the waters of the state.

LAC 33:IX.907.H.3 **The starter control on all pumps with discharge piping open to the waters of the state should be locked in the "off" position, or accessible only to authorized personnel when in non-operating or non-standby status.**

RESPONSE: This section is not applicable as Exide does not have pumps with discharge piping open to the water of the state.

LAC 33:IX.907.H.4 **The loading/unloading connections of pipelines should be securely capped or blank-flanged when not in service or standby service. This security practice should also apply to pipelines that are emptied either by draining or by inert gas pressure.**

RESPONSE: The loading/unloading connections of pipelines will be securely capped or blank-flanged when not in service or standby service. This security practice will also apply to pipelines that are emptied either by draining or by inert gas pressure.

LAC 33:IX.907.H.5 **Facility lighting should be commensurate with the type and location of the facility and should provide for the following: (These provisions may not apply to oil and gas production sites.)**

a. discovery of spills occurring during hours of darkness, both by operating personnel and by non-operating personnel (the general public, local police, etc.); and

b. prevention of spills that may result through acts of vandalism.

RESPONSE: The facility has an extensive and operational dusk-to-dawn lighting system which is sufficient for facility personnel to discover spills occurring during hours of darkness as well as to prevent spills that may result through acts of vandalism.

LAC 33:IX.907.I	**Personnel training and spill prevention procedures should be employed, and brief discussions of the following should be included in the plan:**
RESPONSE:	Exide has provided responses to each section below.
LAC 33.IX.907.I.1	**Operators are responsible for properly instructing the appropriate personnel in the operation and maintenance of equipment to prevent or contain spills and all applicable spill control rules and regulations.**
RESPONSE:	All personnel at the facility involved with loading/unloading of chemicals, oil and lubricants, and fuel, and transfer of chemicals and lubricating oil to or from the tanks have undergone an extensive training program. In addition, facility personnel are also trained to perform emergency repairs to leaking units and appurtenances, and employ the on-site emergency spill kit.
LAC 33.IX.907.I.2	**Each facility should have a designated person who is accountable to for spill prevention who reports to line management.**
RESPONSE:	Upon indication of an imminent or an actual emergency at the facility, the On-Site Coordinator, Mr. Steve Krul, Environmental Manager or if unavailable, Mr. Mike Ashford, Maintenance Superintendent, or Mr. Joseph Acker, Jr., Plant Manager, will be contacted immediately and notified of the location and nature of the emergency. If none of these three individuals are available at the site, they will be contacted at their residences (see response to LAC 33.IX.907.B.). The On-Site Coordinator, responsible for internal facility alarms and management notification, will immediately contact Mr. Joseph Acker, Jr., Plant Manager at the facility for applicable notification to the pertinent regulatory agencies.
LAC 33:IX.907.I.3	**Operators should schedule and conduct spill prevention briefings for their operating personnel and appropriate contractors at intervals frequent enough to assure adequate understanding of the plan for that facility. Such briefings should highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures.**

RESPONSE: Personnel at the facility are instructed periodically in the knowledge and use of the plan, proper operation of on-site pump systems, loading/unloading procedures, fire extinguishers, and the use of the on-site emergency spill kits. As part of regular continuing training program, Exide has a training program for new employees in addition to the annual refresher courses for the trained employees.

LAC 33:IX.907.J **Inspections and Records**

The plan shall provide for inspections required by this Chapter. Inspections shall be in accordance with written procedures developed for the facility by the operator. These written procedures shall be part of the plan. Inspection records shall be signed or initialed by the inspector, appropriate supervisor or the facility designee (LAC 33.IX.303.H), and shall be retained for a minimum period of three years.

RESPONSE: Routine visual inspections of the tanks and transfer equipment at the facility will be performed on a daily basis as part of normal operations to ensure proper facility operating conditions. In addition, Exide conducts a quarterly inspection that includes observation of conditions, need for maintenance and repair of visible leaks from tanks and piping, drum storage areas, and other related transfer and storage appurtenances. These inspections, which will be documented, will be conducted in accordance with the outline included in Appendix A. Appendix A is the Quarterly Storage Tank Inspection form. If during these quarterly inspections a problem is identified, it would be reported immediately to Mr. Steve Krul, Environmental Manager or his designee.

Exide will maintain all records of quarterly inspections/spill incidents at the facility for a period of 3 years and make available to authorized representatives of the LDEQ for on-site review during normal working hours.

The following responses to Federal Spill Prevention, Control and Countermeasures (SPCC) Regulations address Federal regulatory issues that are not addressed in the responses to the Louisiana Spill Prevention and Control Regulations.

Code of Federal Regulations, Title 40, Part 112 (40 CFR 112)

Oil Pollution Prevention: Non-transportation-related Onshore and Offshore Facilities

Section 112.7 Guidelines for the Preparation and Implementation of a Spill Prevention, Control and Countermeasure Plan

The SPCC Plan shall be a carefully thought-out plan, prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources. If the plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, these items should be discussed in separate paragraphs, and the details of installation and operational start-up should be explained separately. The complete SPCC Plan shall follow the sequence outlined below, and include a discussion of the facility's conformance with the appropriate guidelines listed:

(a) **A facility which has experienced one or more spill events within twelve months prior to the effective date of this part should include a written description of each such spill, corrective action taken and plans for preventing recurrence.**

The Exide facility has not experienced a spill event within the past 12 months.

40 CFR 112.7(e)

(1) **Facility drainage (onshore); (excluding production facilities).**

(iii) **Plant drainage systems from undiked areas should, if possible, flow into ponds, lagoons or catchment basins, designed to retain oil or return it to the facility. Catchment basins should not be located in areas subject to periodic flooding.**

Facility drainage flows into the wastewater treatment facility and any spill will be prevented from reaching navigable waters.

(iv) **If plant drainage is not engineered as above, the final discharge of all in-plant ditches should be equipped with a diversion system that could, in the event of an uncontrolled spill, return the oil to the plant.**

This section is not applicable as the facility drainage flows to the wastewater treatment facility.

(v) **Where drainage waters are treated in more than one treatment unit, natural hydraulic flow should be used. If pump transfer is needed, two "lift" pumps should be provided, and at least one of the pumps should be permanently installed when such treatment is continuous. In any event, whatever techniques are used facility drainage systems should be adequately engineered to prevent oil from reaching navigable waters in the event of equipment failure or human error at the facility.**

Facility drainage systems in the facility are designed and engineered to prevent oil from reaching navigable waters in the unlikely event of equipment failure or human error at the facility.

(2) **Bulk storage tanks (onshore); (excluding production facilities).**

(I) **No tank should be used for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.**

The materials and construction of all oil storage tanks at the Exide facility are designed to be compatible with the materials stored and the conditions of storage. Also, all tanks within the facility are routinely inspected for leakage or corrosion in the event that the tank materials or construction become incompatible with the stored product or storage conditions during use.

(v) **Partially buried metallic tanks for the storage of oil should be avoided, unless the buried section of the shell is adequately coated, since partial burial in damp earth can cause rapid corrosion of metallic surfaces, especially at the earth/air interface.**

No partially buried tanks are used for the storage of oil at the Exide facility.

(vii) **To control leakage through defective internal heating coils, the following factors should be considered and applied, as appropriate.**

(A) **The steam return or exhaust lines from internal heating coils which discharge into an open water course should be monitored for contamination, or passed through a settling tank, skimmer, or other separation or retention system.**

Not applicable as no internal heating systems for oil storage tanks are used.

(B) **The feasibility of installing an external heating system should also be considered.**

Not applicable. No external heating systems for oil storage tanks is required at the Exide facility.

40 CFR 112.7(e)(2)

(ix) **Plant effluents which are discharged into navigable waters should have disposal facilities observed frequently enough to detect possible system upsets that could cause an oil spill event.**

Plant effluents and their treatment systems are visually inspected on a daily basis.

(x) **Visible oil leaks which result in a loss of oil from tank seams, gaskets, rivets and bolts sufficiently large to cause the accumulation of oil in diked areas should be promptly corrected.**

Oil leaks will be cleaned up and disposed of in a timely manner, in accordance with facility's maintenance and housekeeping procedures.

(xi) **Mobile or portable oil storage tanks (onshore) should be positioned or located so as to prevent spilled oil from reaching navigable waters. A secondary means of containment, such as dikes or catchment basins, should be furnished for the largest single compartment or tank. These facilities should be located where they will not be subject to periodic flooding or washout.**

All ASTs at the Exide facility have secondary containment structures. The secondary containment structures have the capacity of 110% of the largest tank unit.

40 CFR 112.7(e)(3)

(v) **Vehicular traffic granted entry into the facility should be warned verbally or by appropriate signs to be sure that the vehicle, because of its size, will not endanger aboveground piping.**

Appropriate signs and verbal warnings are used at the Exide facility to alert operators of vehicle that may harm aboveground piping.

40 CFR 112.7(e)(4)

(I) **Tank car and tank truck loading/unloading procedures should meet the minimum requirements and regulation established by the Department of Transportation.**

Tank truck loading/unloading procedures are followed within the facility in accordance with the requirements and regulations established by the Department of Transportation.

40 CFR 112.7(e)(5)

(5) **Oil production facilities (onshore).**

Not applicable as Exide does not operate onshore oil production facilities.

(6) **Oil drilling and workover facilities (onshore).**

Not applicable as Exide does not operate onshore oil drilling and work over facilities.

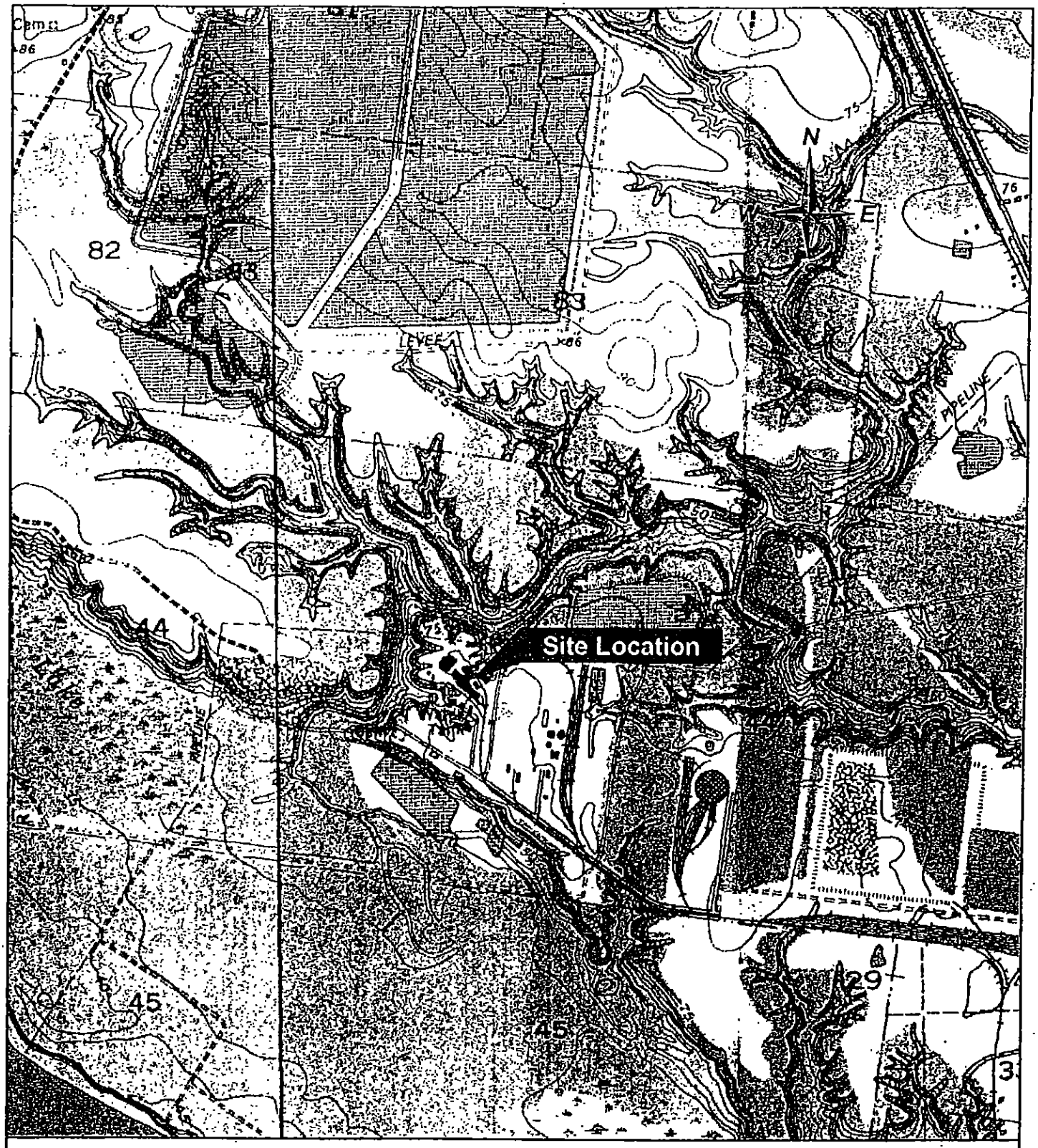
(7) **Oil drilling, production, or workover facilities (offshore).**

Not applicable as Exide does not operate offshore oil drilling, production or work over facilities.

Table 1. Listing of Above-Ground Storage Tanks

	Service	Capacity (Gallons)	Construction Materials	Year Installed	Containment	Reportable Quantity
1.	Filter Aid	2,000	Stainless Steel	1987	Yes	*
2.	Lime	2,000	Stainless Steel	1987	Yes	*
3.	Separan	2,000	Stainless Steel	1987	Yes	*
4.	Storm Water	600,000	Galvanized Steel	1987	Yes	N/A
5.	Process Water	110,000	Galvanized Steel	1987	Yes	N/A
6.	Recycle Water	40,000	Galvanized Steel	1987	Yes	N/A
7.	Diesel Fuel	4,000	Steel	1988	Yes	42 gals
8.	Gasoline Fuel	2,000	Steel	1988	Yes	42 gals
9.	Kerosene	550	Steel	1988	Yes	42 gals
10.	Waste Oil	450	Steel	1988	Yes	42 gals
11.	Clean Acid	15,000	Fiberglass	1989	Yes	1,000 lbs
12.	Clean Acid	15,000	Fiberglass	1989	Yes	1,000 lbs
13.	Dirty Acid	1,500	Plastic	1989	Yes	1,000 lbs
14.	Dirty Acid	1,500	Plastic	1989	Yes	1,000 lbs
15.	Diesel Fuel	500	Steel	1990	Yes	42 gals
16.	Caustic - 50%	15,000	Fiberglass	1995	Yes	1,000 lbs
17.	Caustic - 50%	15,000	Fiberglass	1995	Yes	1,000 lbs

* No information is available for reportable quantities.
N/A Discharge is regulated under the facility water discharge permit.



NOTE:

BASE MAP COMPRISED OF U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS, " WALLS, LA." DATED 1963, REVISED 1994 AND "SCOTLANDVILLE, LA." DATED 1963, REVISED 1994. IMAGE IS REFERENCED TO UTM NAD 27 ZONE 15.

BATON ROUGE SMELTER

BATON ROUGE, LOUISIANA

Scale: 1"=2000'	SITE LOCATION PLAN
Originated By: J.W.P.	
Drawn By: P.S.G.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Checked By: J.W.P.	
Project Mgr: P.G.S.	
Dwg No. 2003-1058-01-14	Project No. 2003-1058-01 — FIGURE: 1

MAY 05 2003

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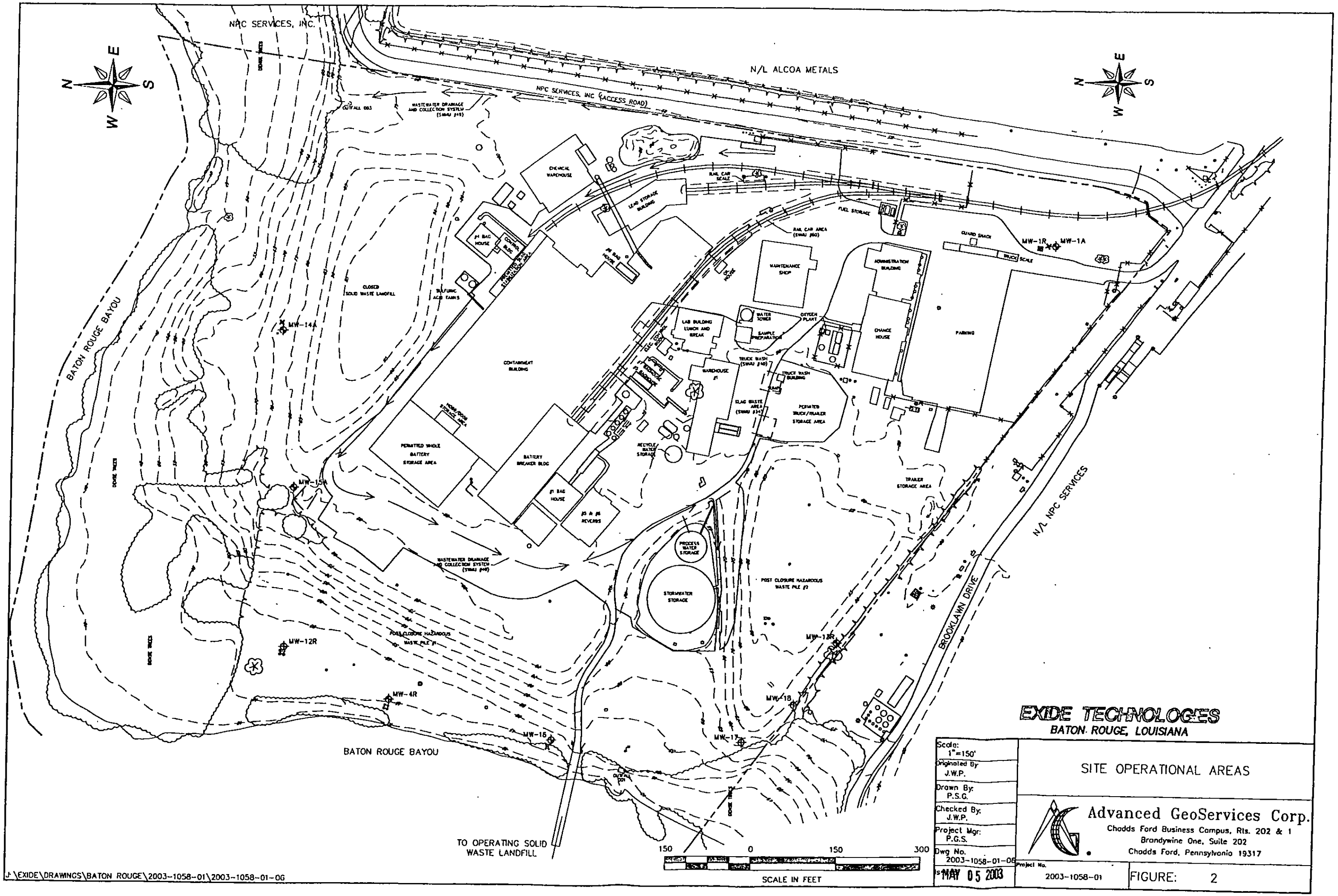
NPC SERVICES, INC.
N/L ALCOA METALS
NPC SERVICES, INC (ACCESS ROAD)
WASTEWATER DRAINAGE AND COLLECTION SYSTEM (SWMU #49)
OUTFALL 003
CHEMICAL WAREHOUSE
LEAD STORAGE BUILDING
RAIL CAR SCALE
FUEL STORAGE
RAIL CAR AREA (SWMU #60)
GUARD SHACK
TRUCK SCALE
MW-1R
MW-1A
#4 BAG HOUSE
CONTROL BLDG
ACIDIFIED PLATE STORAGE AREA
#4 BAG HOUSE
CLOSED SOLID WASTE LANDFILL
SULFURIC ACID TANKS
MW-14A
MAINTENANCE SHOP
ADMINISTRATION BUILDING
LAB BUILDING LUNCH AND BREAK
WATER SOFTNER
OXYGEN PLANT
SAMPLE PREPARATION
CHANGE HOUSE
PARKING
CONTAINMENT BUILDING
TRUCK WASH (SWMU #40)
WAREHOUSE
TRUCK WASH BUILDING
SLAG WASTE AREA (SWMU #34)
PERMITTED TRUCK/TRAILER STORAGE AREA
PERMITTED WHOLE BATTERY STORAGE AREA
BATTERY BREAKER BLDG
RECYCLE WATER STORAGE
MW-15A
#1 BAG HOUSE
#3 & #6 REVERBS
TRAILER STORAGE AREA
N/L NPC SERVICES
WASTEWATER DRAINAGE AND COLLECTION SYSTEM (SWMU #49)
PROCESS WATER STORAGE
STORMWATER STORAGE
POST CLOSURE HAZARDOUS WASTE PILE #2
POST CLOSURE HAZARDOUS WASTE PILE #1
MW-12R
MW-12A
BROOKLAWN DRIVE
MW-4R
MW-18
MW-16
MW-17
BATON ROUGE BAYOU
OUTFALL 001
TO OPERATING SOLID WASTE LANDFILL
150 0 150 300
SCALE IN FEET
EXIDE TECHNOLOGIES
BATON ROUGE, LOUISIANA
Scale: 1"=150'
Originated By: J.W.P.
Drawn By: P.S.G.
Checked By: J.W.P.
Project Mgr: P.G.S.
Dwg No. 2003-1058-01-06
Issued: MAY 05 2003
SITE OPERATIONAL AREAS
Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317
Project No. 2003-1058-01
FIGURE: 2
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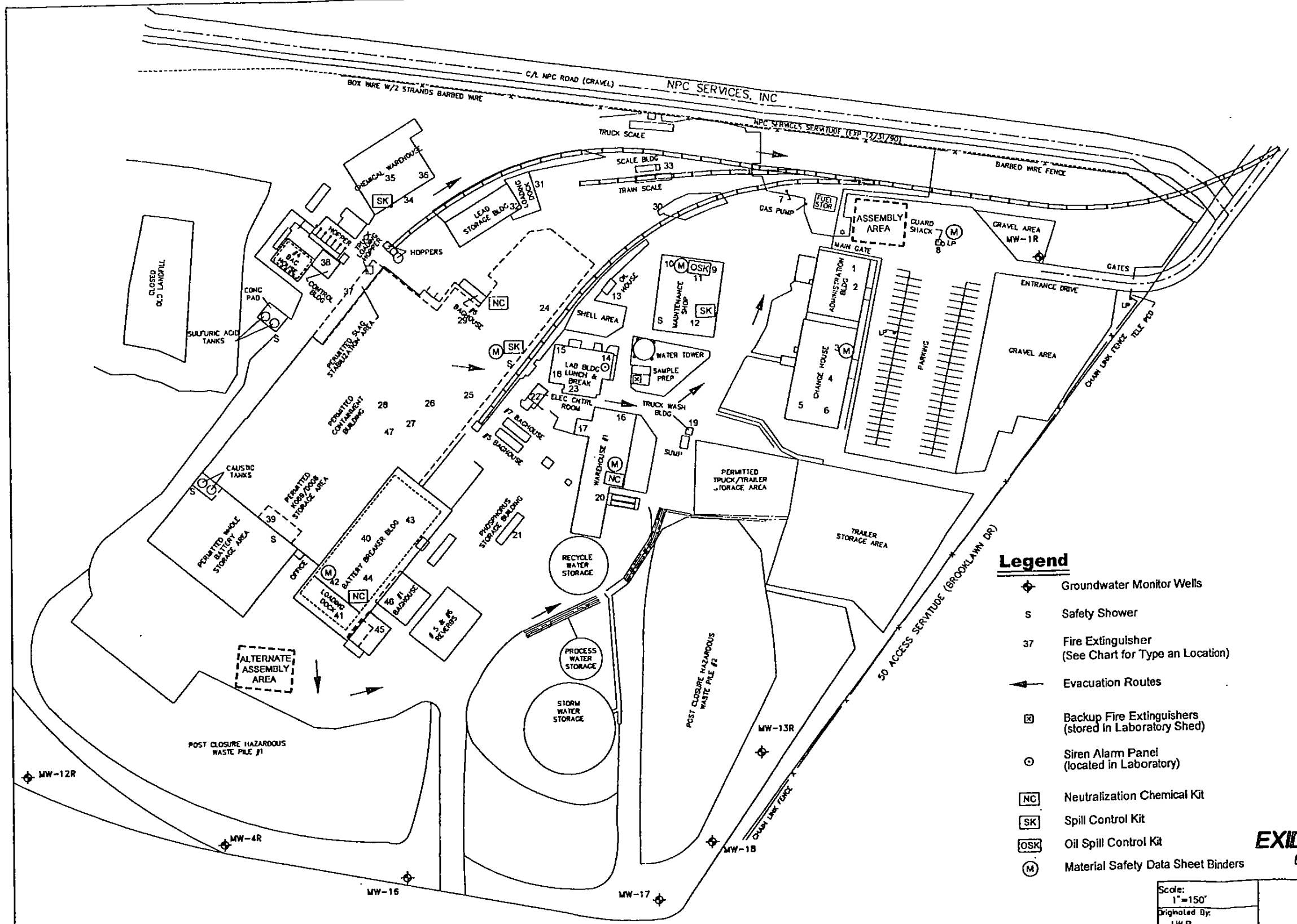

Fire Extinguisher

No.	Location	Type
1	Office Hallway	Class A
2	Office Kitchen	ABC
3,4	Changehouse Hall	ABC
5,6	Changehouse Shower	CO2
7	Fuel Station	ABC
8	Guard House	ABC
9	Spare Extinguishers - in the Shop Tool Room	ABC
10,11	Shop - Fabrication Area	ABC
12	Shop - Vehicle Repair Area	ABC
13	Oil House	ABC
14	Lab	Dry Chem
15	Lab AA Room	CO2
16	Electrical Warehouse	ABC
17	Compressor Room	ABC
18	Lunchroom	ABC
19	Wash Rack	ABC
20	Water Treatment Unit	ABC
21	Phosphorus Storage Room	Class D
22	No. 5 Baghouse Control Room	CO2
23	Outside Lunchroom	ABC
24	Kettle Floor - Kettle 11	ABC
25	No. 1 Blast Furnace	ABC
26	No 1 Blast Furnace	CO2
27,28	Upstairs - Control Rooms	ABC
29	No. 1 Casting Machine	ABC
30	Mobile Equipment Storage	ABC
31	Lead Loading Dock	ABC
32	Lead Storage Warehouse	ABC
33	Rail Car Scale	ABC
34	Chemical Warehouse	Class D
35,36	Chemical Warehouse	ABC
37	Slag Crusher	ABC
38	No. 4 Baghouse Control Room	CO2
39	K069 Storage Area	ABC
40	CX Electrical Control Room	CO2
41	CX Flammable Storage Area	ABC
42	CX Control Room	CO2
43	CX Boiler Room	ABC
44	CX Office	ABC
45	No. 1 Baghouse Control Room	CO2
46	No. 1 Baghouse	ABC
47	No. 1 Blast Furnace	Class D

Legend

- Groundwater Monitor Wells
- S — Safety Shower
- 37 — Fire Extinguisher (See Chart for Type an Location)
- Evacuation Routes
- Backup Fire Extinguishers (stored in Laboratory Shed)
- Siren Alarm Panel (located in Laboratory)
- NC — Neutralization Chemical Kit
- SK — Spill Control Kit
- OSK — Oil Spill Control Kit
- M — Material Safety Data Sheet Binders

Reference:

Base map comprised from drawing provided by Exide Corporation titled "Groundwater Report" dated 02/01/99.

150 0 150

Scale: 1" = 150'

EXIDE TECHNOLOGIES

BATON ROUGE, LOUISIANA

LOCATIONS OF EMERGENCY RESPONSE EQUIPMENT

Scale: 1"=150'
Originated By: J.W.P.
Drawn By: P.S.G.
Checked By: J.W.P.
Project Mgr: P.G.S.
Dwg No. 2003-1058-01-13
Issued: MAY 05 2003

Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No. 2003-1058-01

FIGURE: 3

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APPENDICES

QUARTERLY STORAGE TANK INSPECTION FORM

DATE:

TIME:

INSPECTOR:

1.	Tank lines, valves, pumps are structurally sound with no visual deterioration and/or leaks	OK	OTHER
2.	The tank foundations and containments are structurally sound without cracks and there is no evidence of foundation settling which could result in tank failure or spills		

Remarks:

EMERGENCY TELEPHONE NUMBERS

1. US EPA Region VI
   1445 Ross Ave.
   Dallas, Texas 75202
   Phone: (866) EPA-SPIL (24 Hours)

2. LA Department of Environmental Quality
   P.O. Box 4301
   Baton Rouge, Louisiana 70821-4301
   Phone: (225) 342-1234 (24 Hours)

3. US Coast Guard
   1615 Poydras St.
   New Orleans, Louisiana 70112
   Phone: (504) 589-6261 (24 Hours)

4. National Response Center (NRC)
   Washington, D.C.
   Phone: 1-800-424-8802 (24 Hours)
   Written correspondence not permitted

5. Fire Department/Emergency
   Phone: 911

6. Baker Fire Department
   3190 Washington St.
   Baker, Louisiana 70714
   Phone: (225) 775-3712

7. Alsen Fire Department
   674 Old Rafe Mayer Rd.
   Baton Rouge, Louisiana 70807
   Phone: (225) 774-3473

8. State Police, Troop A
   17801 Highland Rd.
   Baton Rouge, Louisiana 70810
   Phone: (225) 754-8515

APPENDIX C

Spill Response Actions

IN THE EVENT OF AN OIL SPILL, THE PERSON OBSERVING THE SPILL WILL:

* Take appropriate correct measures to stop the continued release. The selected measures will be dependent on the nature of the release but may include closing open valves, transferring tank contents to alternate tank(s), containing the spill with absorbent pads and pumping spilled contents to containers.

* Contain the material if possible.

* Estimate the amount spilled.

* Notify their team leader (i.e., foreman for that work activity). The minimum training required for a team leader is experience in the specific job task and completion of the Exide Training Program including environmental regulations, chemical handling, contingency plan and cleanup procedures.

The team leader will then:

* Notify the On-site Coordinator, Mr. Steve Krul, Environmental Manager or Mr. Joseph Acker, Jr., Plant Manager or Mr. Mike Ashford, Maintenance Superintendent.

* Provide the known details about the spill.

If the spill is onto soil and is greater than 42 gallons, the On-site Coordinator will contact the **Environmental Manager** who will notify **La DEQ at (225) 342-1234 WITHIN 24 HOURS.** In the event that the Environmental Manager can not be contacted, the On-site Coordinator will make the contact to LDEQ.

If oil reaches or is likely to reach waters of the state, LDEQ MUST BE CONTACTED WITHIN 1 HOUR. ALSO THE NATIONAL RESPONSE CENTER MUST BE CONTACTED AT (800) 424-8802.

All spilled oil and contaminated materials must be cleaned up and managed properly, contact the Environmental Manager for assistance. All visible signs of oil contamination will be managed through the use of oil absorbent pads, booms or other sufficient mechanisms designed to control incidental oil releases.

The spill report form must be completed as soon as possible.

Spill cleanup kits including oil absorbent pads, booms and empty drums are stored in the vicinity of the used oil tank. The oil-contaminated materials will be drained so that no visible signs of free-flowing oil remain. These materials will be transferred by an authorized transporter and disposed at an authorized disposal unit. The used oil reclaimed for these materials will be returned to the used oil storage tank.

IN THE EVENT OF CHEMICAL SPILL, THE PERSON OBSERVING THE SPILL WILL:

* Consider the health risk from the spilled material to responders.

* Take appropriate correct measures to stop the continued release. The selected measures will be dependent on the nature of the release, but may include closing open valves, transferring tank contents to alternate tank(s), containing the spill with absorbent pads and pumping spilled contents to containers.

* Contain the material if possible.

* Estimate the amount spilled.

* Notify their team leader (i.e., foreman for that work activity). The minimum training required for a team leader is experience in the specific job task and completion of the Exide Training Program including environmental regulations, chemical handling, contingency plan, and cleanup procedures.

The team leader will then:

* Notify the On-site Coordinator, Mr. Steve Krul or Mr. Joseph Acker, Jr., or Mr. Mike Ashford.

* Provide the known details about the spill.

The **On-site Coordinator** will determine what notifications to regulatory agencies are required. If the Environmental Manager can not be contacted and the spill results in a condition which could **endanger the health and of the public or cause significant impact to the environment,** the following notification must be made within 1 hour:

* La Dept. Of Public Safety (State Police) Hot Line ..... (225) 925-6595
* La DEQ Baton Rouge Office ..... (225)-342-1234
* US EPA Region VI ..... (866) EPA-SPIL
* National Response Center ..... (800) 424-8802
* IF INTO WATER US Coast Guard ..... (504) 589-6261

REPORTABLE SPILLS WHICH DO NOT RESULT IN EMERGENCY CONDITIONS REQUIRE NOTIFICATION TO REGULATORY AGENCIES WITHIN 24 HOURS:

* La DEQ ..... (225) 342-1234

HAZARDOUS MATERIALS ALSO REQUIRE NOTIFICATION TO EAP

* REGION VI ..... (866) EPA-SPIL

Spill cleanup kits including drums and pallets with absorbent materials and shovels are located at the Maintenance Shop, Chemical Warehouse, and Production floor. Neutralization chemicals for acid leaks are located at the Battery Breaker, production floor and wastewater treatment plant.

APPENDIX D

Spill Report Form

EXIDE TECHNOLOGIES, BATON ROUGE SMELTER

2400 Brooklawn Drive, Off State Highway 61

Baton Rouge, Louisiana

OIL SPILL REPORT

1. Date of spill Time:
2. Reported by:
3. Reported to:
4. Location of spill:
5. Description of terrain:
6. Nearest water body or drain:
7. Type of equipment: Quantity of spill:
8. Cause of spill:
9. Cleanup activity:
10. Pertinent weather conditions:
11. Comments:
12. Person making report:
13. Agency reported to: Date: Time:
14. Person reported to: Date: Time:
15. Person making report:
16. Agency reported to: Date: Time:
17. Person reported to: Date: Time:

APPENDIX 19

PHOTOGRAPHS

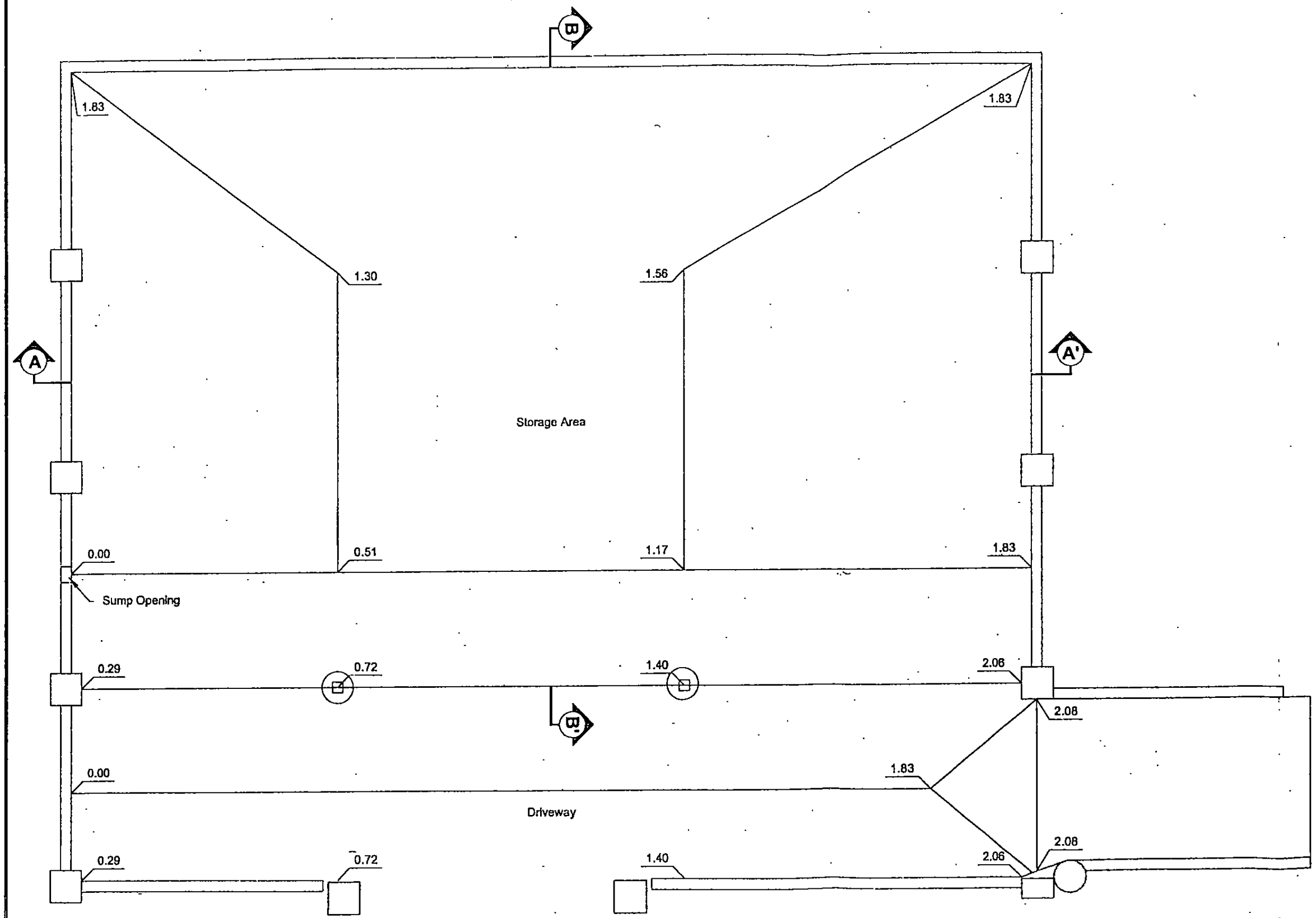
Reference Sheet

REF+156420

Printed: 07/30/2003 6:32 am

APPENDIX 20

PROPOSED UPGRADES TO CONTAINMENT BUILDING AREA 2



N

Legend

1.83 Approximate Elevation, FT (Relative)

Notes:

1. Elevations taken from as-built drawing of 1992 included with the April 7, 1992 Woodward-Clyde construction certification document.
2. Elevations shall be field verified.

1 0 10

Scale: 1" = 10'

Existing Concrete Plan View

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

PROVIDENCE
ENGINEERING & ENVIRONMENTAL GROUP LLC
BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	1
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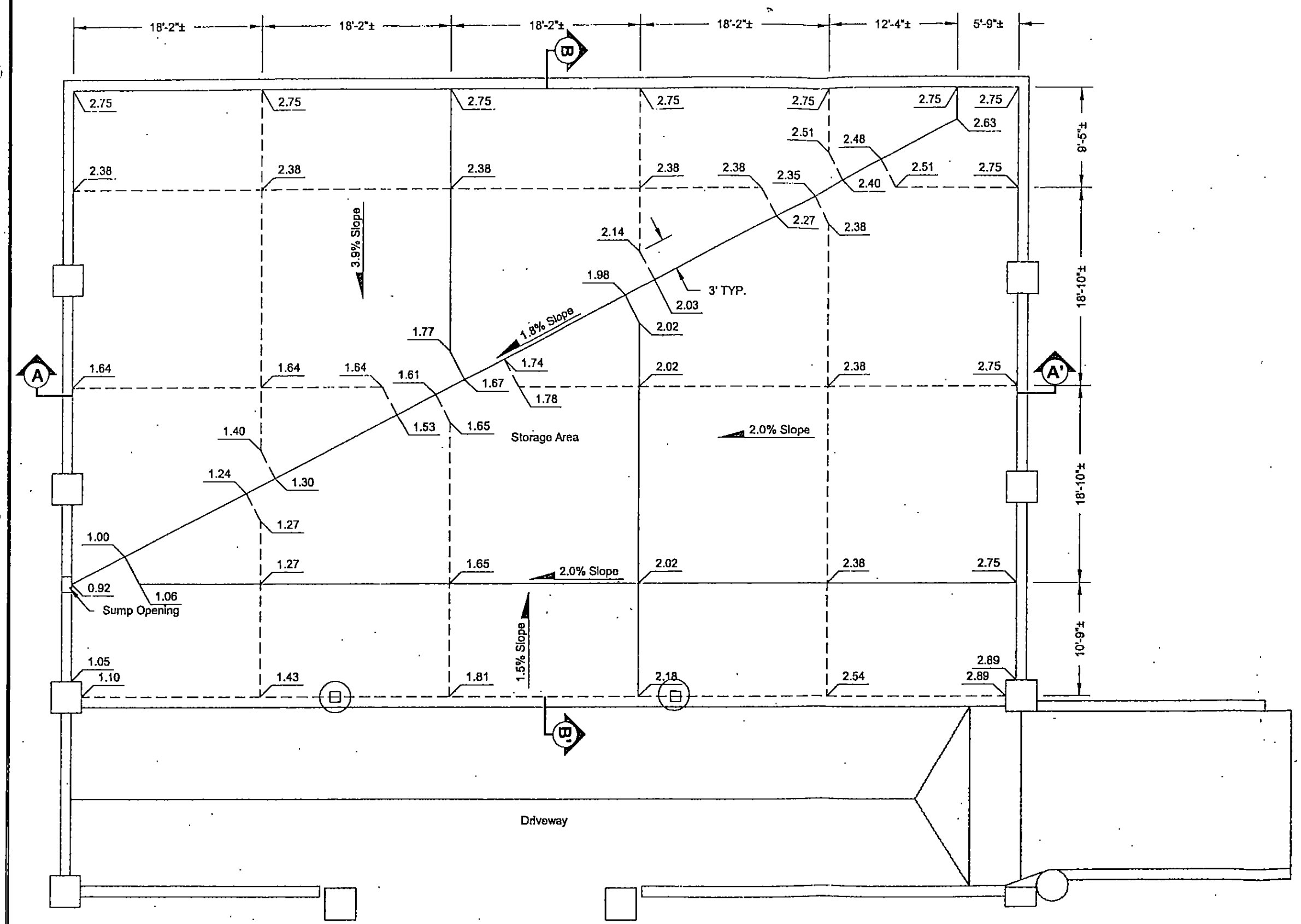
Dwg. No.:	028-005-B004	Approved:	CJH	Figure
		Date:	07/16/02	



Legend

———	Construction Joint
– – – –	Zip Strip Expansion Joint
2.75	Approximate Elevation, FT (Relative)

Notes:

1. Low spots (pitting, etc.) of existing foundation shall be filled to grade with grout prior to placement of drainage/liner system.
2. New concrete shall have a minimum compressive strength of 4,000 psi.
3. Concrete shall be mixed and placed in accordance with ACI standards.
4. Concrete shall be reinforced with #5s rebar @ 12" o.c. in each direction located at mid depth.
5. All joints shall be covered with corrosive resistant tape.
6. All elevations are relative.
7. Actual field conditions and constructability issues may warrant minor design changes. However, the design concept will not be altered. In no case will the span between expansion joints exceed 20 feet.

1 0 10

Scale: 1" = 10'

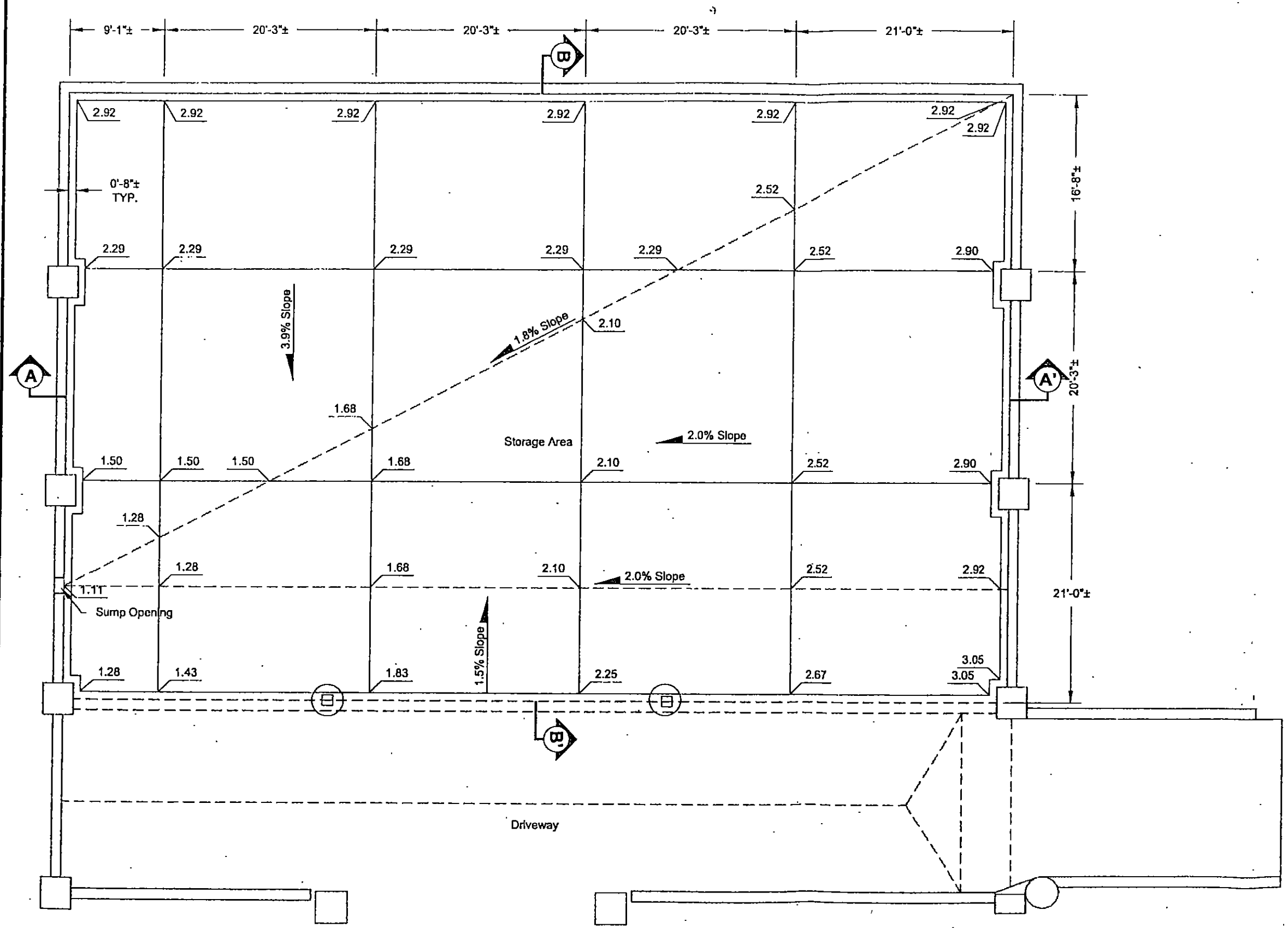
Final Concrete Plan View

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

PROVIDENCE
ENGINEERING & ENVIRONMENTAL GROUP LLC
BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	2
		Checked:	CJH	
Dwg. No.:	028-005-B005	Approved:	CJH	Figure
		Date:	07/18/02	



Legend

———	Approximate Location of Expansion Joints
– – – –	Approximate Location of Drainage Valley
2.75	Approximate Elevation, FT (Relative)

Notes:

1. Corrosive resistant brick shall be placed in accordance with manufacturer's specifications.
2. Changes in layout shall be submitted in writing to the Engineer for approval.
3. Actual field conditions and constructability issues may warrant minor design changes. However, the design concept will not be altered. In no case will the span between expansion joints exceed 20 feet.

1 0 10

Scale: 1" = 10'

Surface of Acid Brick Plan View

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

PROVIDENCE
ENGINEERING & ENVIRONMENTAL GROUP LLC
BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	3
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Dwg. No.:	028-005-B006	Approved:	CJH	Figure
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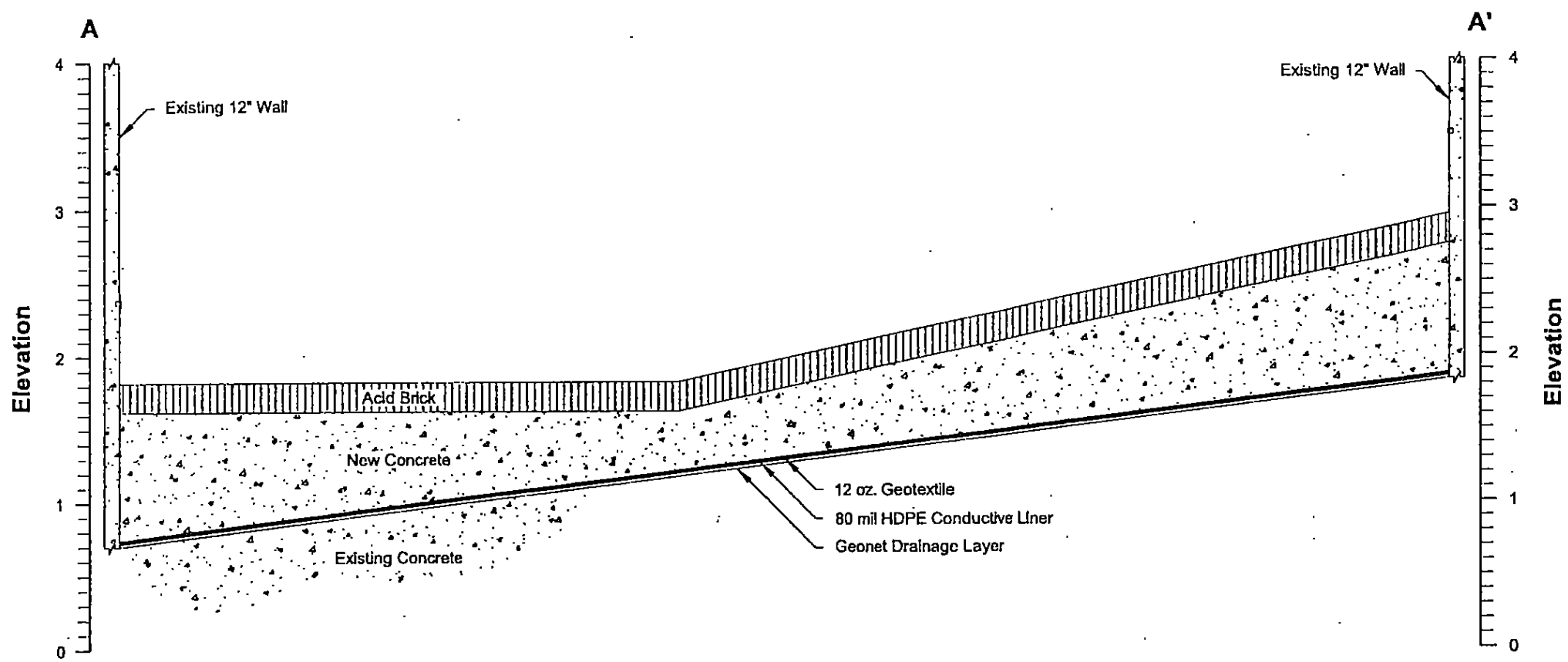

Section A-A'
Horizontal Scale: 1" = 10'
Vertical Scale: 1" = 1'

Note:

1. Cut brick for change in slope as appropriate.

Cross-Section A-A'

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

PROVIDENCE
ENGINEERING & ENVIRONMENTAL GROUP LLC
BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	4
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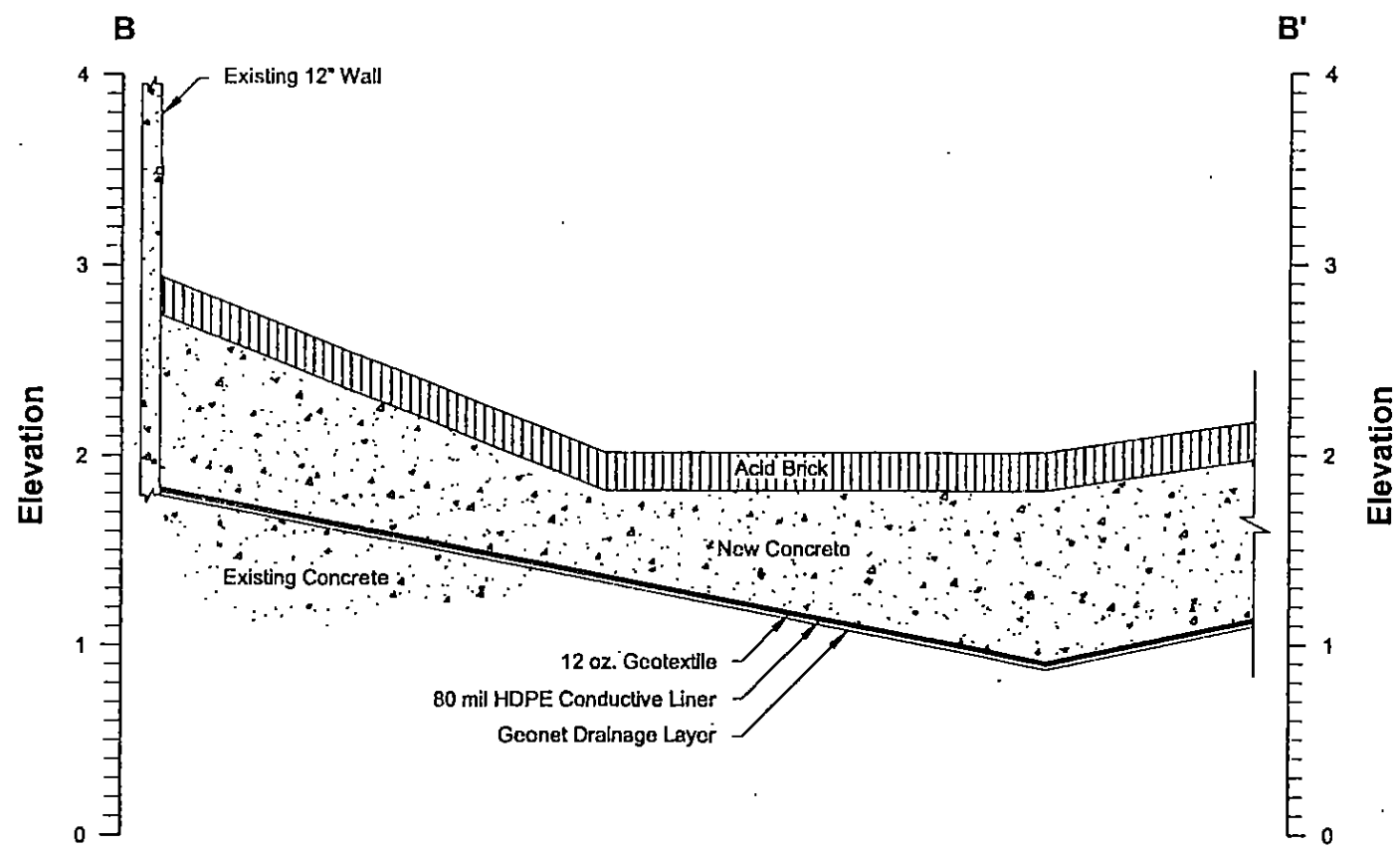
Dwg. No.:	028-005-B003	Approved:	CJH	Figure
		Date:	07/16/02	



Section B-B'
Horizontal Scale: 1" = 10'
Vertical Scale: 1" = 1'

Note:

1. Cut brick for change in slope as appropriate.

Cross-Section B-B'

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

PROVIDENCE
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BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	5
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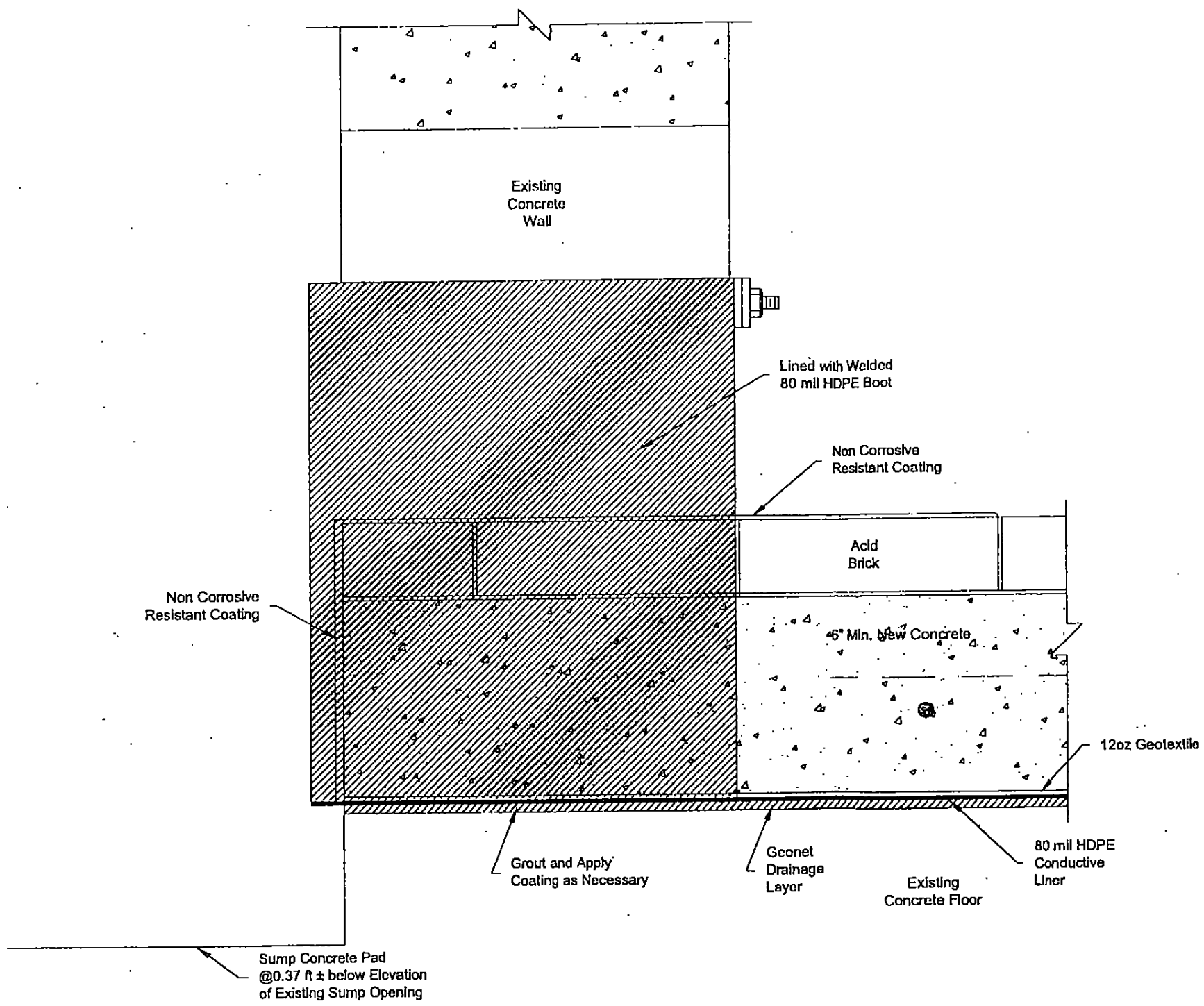

Scale: 1/4" = 1"

Cross-Section of Sump Opening

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

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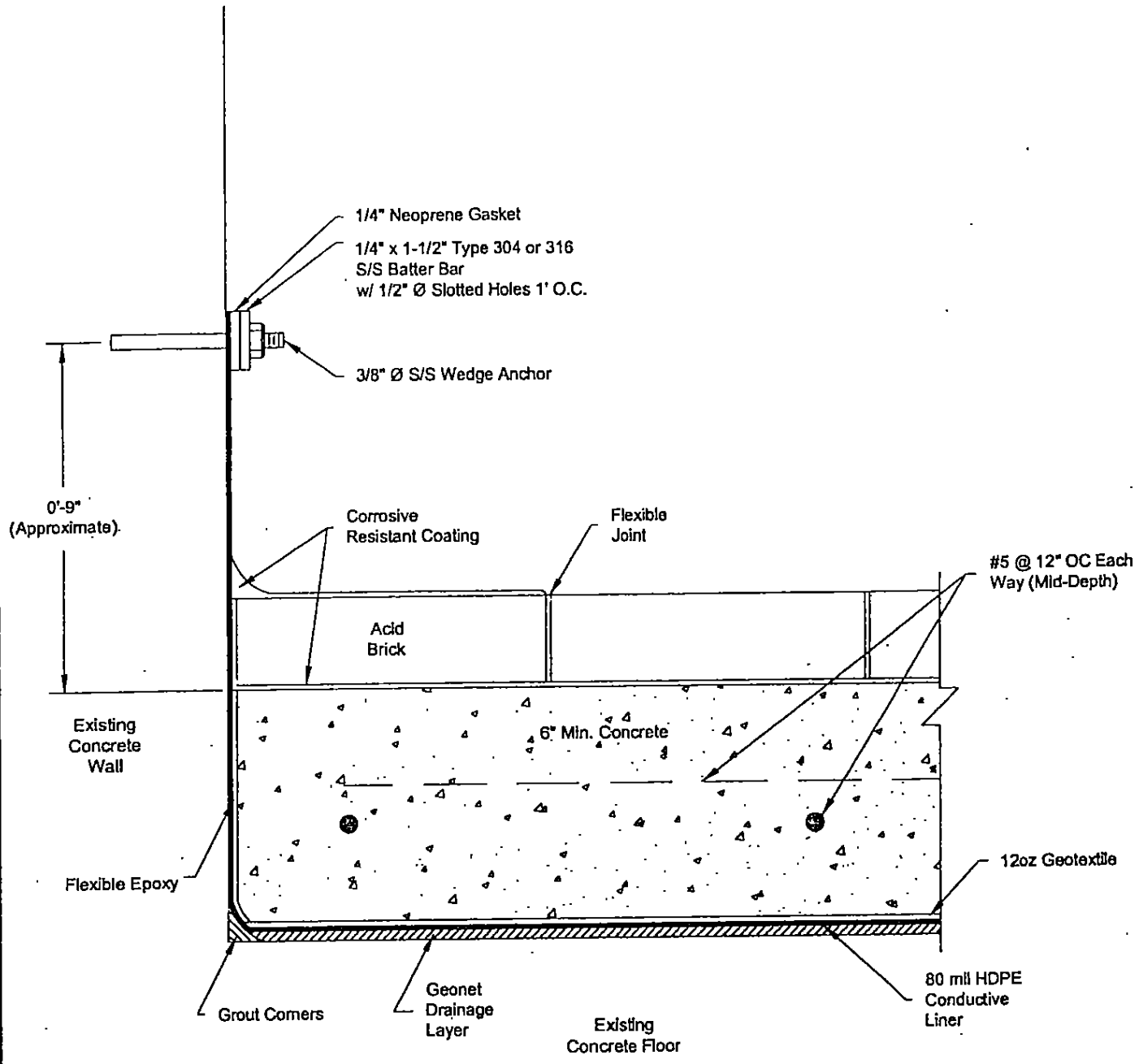
BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	6
		Checked:	CJH	
Dwg. No.:	028-005-B008	Approved:	CJH	Figure
		Date:	07/16/02	



Scale: 1/4" = 1"

Typical Detail

Containment Building Floor Upgrade
East Baton Rouge Parish

Exide Technologies
Baton Rouge, Louisiana

PROVIDENCE
ENGINEERING & ENVIRONMENTAL GROUP LLC
BATON ROUGE, LOUISIANA

Doc Code	028-005	Drawn:	LMH	7
		Checked:	CJH	
Dwg. No.:	028-005-A001	Approved:	CJH	Figure
		Date:	07/16/02	

APPENDIX 21

STORMWATER POLLUTION PREVENTION PLAN

STORMWATER POLLUTION PREVENTION PLAN (SWP3) AND BEST MANAGEMENT PRACTICES PLAN

EXIDE CORPORATION, BATON ROUGE SMELTER
BATON ROUGE, LOUISIANA

Prepared For:

EXIDE CORPORATION
P.O. BOX 74040
BATON ROUGE, LOUISIANA

Prepared By:

M.S. ENVIRONMENTAL CONSULTANTS, INC.
BATON ROUGE, LOUISIANA

February, 1995
Revision - 3, June, 2001
Project No. 200149

STORMWATER POLLUTION PREVENTION PLAN (SWP3) AND BEST MANAGEMENT PRACTICES PLAN

EXIDE CORPORATION, BATON ROUGE SMELTER
BATON ROUGE, LOUISIANA

Prepared For:

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P.O. BOX 74040
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M.S. ENVIRONMENTAL CONSULTANTS, INC.
BATON ROUGE, LOUISIANA

February, 1995
Revision - 3, June, 2001
Project No. 200149

TABLE OF CONTENTS

I	MANAGEMENT APPROVAL AND CERTIFICATION	iv
II	BMPP/SWP3 REVISION HISTORY	v
1.0	ENVIRONMENTAL POLICY OF EXIDE CORPORATION, BATON ROUGE SMELTER	1
2.0	INTRODUCTION AND COMPANY OBJECTIVES	2
3.0	FACILITY DESCRIPTION	3
4.0	RISK IDENTIFICATION AND EVALUATION	5
	4.1 Reference	5
	4.2 Risk Identification and Evaluation	5
5.0	BEST MANAGEMENT PRACTICES COMMITTEE	14
6.0	BMP INCIDENT (SPILL) REPORTING	17
7.0	INVENTORY OF BMP SUBSTANCES	20
8.0	EMPLOYEE TRAINING	21
9.0	PREVENTION	23
	9.1 Plant Security	23
	9.2 Controlled Access	24
	9.3 Surveillance	25
	9.4 Reporting	25
10.0	INSPECTIONS	27

TABLE OF CONTENTS (cont.)

11.0 PREVENTATIVE MAINTENANCE 31

11.1 Response 31

11.2 Compilation and Evaluation of Records 32

11.3 Testing 32

12.0 HOUSEKEEPING 33

13.0 MATERIALS COMPATIBILITY 34

14.0 BMP PLAN REVIEW AND REVISIONS 35

TABLES

1 Quarterly Petroleum Storage Inspection Report

2 Monthly and Weekly Inspection Schedule and Report

3 BMP Plan Spill and Remedial Action Report

4 BMP Plan Review Procedures

5 Training Certification Form

FIGURES

1. Site Vicinity Map

2. Site Topographic Map

3. Site Plot Plan

4. Locations of Emergency Response Equipment and Fire Extinguishers

MANAGEMENT APPROVAL AND CERTIFICATION

Certification

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 qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those 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.

Signatures:

Name: **Joseph Acker, Jr.**

Title: Plant Manager

BMPP/SWP3 REVISION HISTORY

Initial Plan	February, 1995
Revision 1	October, 1997
Revision 2	May, 2000
Revision 3	June, 2001

1.0 ENVIRONMENTAL POLICY OF EXIDE CORPORATION, BATON ROUGE SMELTER

It is the policy of Exide Corporation, Baton Rouge Smelter (Exide) to comply in good faith with all applicable laws and regulations, in each jurisdiction where it engages in commerce. These include, but are not limited to, applicable federal, state and local laws and regulations.

In the carrying out of this policy, the management of Exide has committed itself to the selection of appropriate personnel to effectively implement training programs, to provide maintenance for our facilities and systems, and to prevent or mitigate incidents that may create the potential for risk to the environment or the public health, which includes the control of toxic pollutants and hazardous substances.

2.0 INTRODUCTION AND COMPANY OBJECTIVES

The objectives of this Best Management Practices (BMP) Plan is to provide a comprehensive guide for the prevention of discharges to receiving waters of significant amounts of any hazardous or toxic pollutants from the Exide facility in Baton Rouge, Louisiana. The facility is located in East Baton Rouge Parish, Louisiana. This plan addresses the facilities and procedures necessary to properly manage discharges from the plant site runoff, spillage and leaks, sludge, disposal and drainage from material storage areas at the Baton Rouge, Louisiana facility. These facilities and procedures apply to all raw materials, intermediates, final products, and resale items in use at the facility that can be harmful to human health and the environment if not properly managed. This SWP3/BMP Plan is prepared to meet the regulatory requirements of the Louisiana Department of Environmental Quality (LDEQ), Water Quality Regulations, Section 33:IX.1107 and Federal stormwater pollution prevention regulations. This plan also includes by reference the Spill Prevention Control and Countermeasure (SPCC) Plan (40 CFR, Part 112.7) for use in the event of release into the environment. Note that the above referenced SPCC Plan is submitted separately and independently of this SWP3/BMP Plan.

3.0 FACILITY DESCRIPTION

The Baton Rouge Smelter is located at the end of Brooklawn Drive, in the northeast portion of Baton Rouge, Louisiana. The coordinates for the facility are West Latitude 30° 35' 08"; North Longitude 91° 14' 40". The smelter has been in operations at this location since 1969. The site comprises approximately 33 acres and is zoned industrial. Baton Rouge Bayou makes up the north and western boundaries of the site. Reynolds Metals is on the east side of the site and NPC Services, Inc. is located across from Brooklawn Drive south of the site.

The facility is a secondary lead smelter and refinery which recycles spent lead-acid batteries and inorganic lead-bearing wastes into metallic lead, in the form of lead pig and block ingots. The product lead is sold to customers for use in making batteries, weights, bearings, ammunition, and chemicals. The facility is regulated as a recycling facility under the Resource Conservation and Recovery Act (RCRA).

Some of the raw materials used in the process and stored on site are classified as hazardous wastes by regulation. Exide was issued a Hazardous Waste Permit (LAD008184137) to operate three container storage areas (the Truck/trailer Storage area, the K069/D008 Storage area and the Whole Battery Storage area). Exide operates a Containment Building, which is currently under interim status. A hazardous waste treatment unit, the Slag Stabilization unit, is also permitted under LAD008184137.

Lead acid batteries are either fed directly into the battery breaker or are stored temporarily at the truck/trailer storage area and the Whole Battery Storage area. Lead acid batteries are processed in the battery breaker unit, by cutting the batteries, and hydraulically separating the individual components. The plastic is thoroughly washed

to remove residual acid and lead. It is then loaded into trailers and shipped offsite for recycling. The battery acid, a weak sulfuric acid solution, is neutralized with sodium hydroxide and crystallized to form sodium sulfate salt. The salt is sold as a product. The lead material from the batteries is processed to convert lead sulfate to lead oxide. The lead oxide paste is then stored in the containment building prior to recycling.

The facility operates two blast furnaces and one reverbatory furnace that are used to smelt the lead-bearing raw materials. The molten lead is cast either into ingots using two casting machines or blocks using molds. Additionally, the facility operates a billet casting machine to produce lead billets. The finished lead is tested to determine if it meets client specifications and is then loaded into trucks and transported off-site for reuse.

As a part of the lead recycling, a blast furnace slag is generated. This slag is allowed to cool, crushed to small diameter, and treated using a mixture of cement and sodium silicate, as specified in Exide's Hazardous Waste Permit. The stabilized slag is rock-like in appearance and engineering properties. After treatment, the slag is placed in a permitted onsite solid waste landfill.

4.0 RISK IDENTIFICATION AND EVALUATION

4.1 References

The following documents are attached for use as references in implementing this BMP:

- A site location map is attached as Figure 1.
- A detailed topographic map is attached as Figure 2.
- A plant layout map is attached as Figure 3.

4.2 Risk Identification and Evaluation

The risk of potential spills may arise from sources located in the following areas of the plant:

- Material storage areas
- Loading and unloading areas
- NPDES/LPDES Outfall 001
- In-plant transfers, process, and material handling areas
- Spillage or leaks
- Sludge or waste disposal.

These following potential sources have been evaluated:

A. Material Storage Areas

1. Tanks

a) The fuel storage at the facility consists of five (5) tanks with four (4) being fabricated steel, aboveground storage tanks which are placed on individual foundations. The tanks include one 2,000-gallons capacity tank used for storage of unleaded gasoline, two

(2) 550-gallons capacity tanks used for kerosene and used oil, and one 4,000-gallons capacity tank for storage of diesel fuel. The tanks are located approximately 50 feet due east of the secondary plant entrance gate. The containment structure around the tanks is capable of holding the entire contents of the largest single tank plus approximately 12 inches of precipitation falling directly into the containment. The tank storage area is located at an elevation higher than the surrounding area such that storm run-on will be diverted around the containment area and at an elevation above the 100-year floodplain. The containment has one drain with a locked valve through which precipitation is removed after storms. The maintenance shop supervisor or his designee are responsible for removal of the storm water. This water will be inspected for oil residues prior to removal. This tank storage area is inspected on a daily basis for leaks, spills or accumulations. Because of the design, the opportunity for discharge is very slight even if a spill accident were to occur.

The fifth tank is a 1,000 gallon propane storage tank located east of the maintenance shop. The tank is protected by guard rails and concrete cubes to prevent the possibility of damage to the tank, thus reducing the chance of a release to a very low probability.

The fuel storage tanks are filled by a contractor from his truck in a manner which does not endanger any aboveground piping. The pump and fill areas are protected from vehicular traffic with concrete curbing.

b) The Water Treatment Plant contains two tanks utilized in the process of treating the plant waste water, landfill leachate and runoff, and plant roadway runoff. The tanks and a clarifier are connected in sequence. Over-flow protection is built in by hydraulic lines. A part of the water treatment system is located in a building designed for this purpose. Spill prevention concrete dike and capture drainage systems have been engineered to prevent any spill accident from escaping the building/tank area. The Water Treatment Plant is manned at all times it is in operation. Inspections for leaks and deterioration are ongoing as part of process procedures. Because of the design, the opportunity for discharge is very slight even if a spill accident were to occur.

c) The Battery Breaker building contains collection tanks for battery acid collected during the process. The Battery Breaker Building has an impervious base which is sloped to a collection sump. The battery acid is filtered and pumped to storage tanks prior to neutralization and crystallization. To prevent a discharge of this solution the process is designed with hydraulic flow troughs leading to the tank. The building floor is designed to direct any spill to the tank by the gravity of hydraulics. The entry-ways to the buildings are designed with berm-type dikes to prevent any storm runoff from entering the system and prevent any discharge of spill inside the building. The system is under continuous inspection as part of the operational process making the possibility for discharge very slight.

d) There are no underground storage tanks on site.

2. Warehouses

a) The primary warehouse for process raw materials is located in the main smelter building. The materials stored are primarily metallic alloys and reagents for the smelting process. The storage area is constructed of concrete floor, full walls, under roof and has restricted access. Material movement is by forklift and front-end loader scooper and is conducted on an as needed basis. Restricted access and a closed building structure have reduced the possibility of a discharge emanating from a spill. Any spill accident would generate a housekeeping effort that will return the spilled material to stock.

b) The Containment Building contains a permitted area for storage of K069 emission control dust and D008 lead sludge/by-products stored in sealed containers. The north end of this building contains the wet battery plate storage area. This area allows the battery plates to drain prior to being moved into the smelter building. The floor in this area is impervious (concrete and asphalt flooring) and has a secondary leak detection system. Flooring is inspected on a regular basis. Design of this area prevents the possibility of a spill. The remainder of the Containment Building is used to store other D008 lead-bearing materials that do not contain any free liquid. There

is no run-on/run-off, thus greatly reducing the possibility of a discharge.

c) Located on the east side of the facility is an open storage area for limestone and coke fines. These materials are purchased as flux and make up a part of the charge. They are classified as non-hazardous. They are controlled as a purchased raw material and do not require storage in a covered area. They are protected from run-on by diversion walls or placement. Runoff from these piles will not cause any problem or be considered as a release to the environment.

d) The Maintenance Shop building is located on the southeast portion of the facility. The building has cement flooring. If there is a spill in this area, it will be cleaned up via housekeeping techniques including use of floor-dry absorbent clay. This maintenance area is utilized to repair the plant equipment and is continuously manned. Any spill would be of limited quantity and would be immediately dealt with preventing a discharge.

e) Located on the south side of the facility is the Water Treatment Plant. The materials utilized in water treatment are stored inside the water treatment building. The Water Treatment Plant is continuously manned. Any spill of stored materials will by contained within the building. Any spilled materials that could not be returned to stock is introduced into the water treatment process. The possibility of a discharge in this area is minimal.

f) On the northwest end on the facility, adjacent to the Control and Fan Building, the end-product, metallic lead alloy ingots and pigs are stored awaiting shipment to customers. The possibility of a discharge from the storage of these metallic lead ingots is minimal.

g) Located on the north side of the mill building is the Slag Stabilization Unit. This permitted unit is used to treat blast furnace slag prior to disposal in the on-site landfill. The slag stabilization materials are fed into the process automatically by volume. The Slag Stabilization Unit is under roof with a concrete flooring properly bermed to prevent any run-on/run-off. Any spilled material will be cleaned up and returned to the process. The possibility of a discharge to the environment is minimal.

B. Loading and Unloading Areas

1. Whole Battery Storage Area located north of the Battery Breaker Unit is approximately 100 feet by 70 feet. In this area, batteries will be unloaded and stored on pallets in rows with 2 feet of spacing between rows. This storage area has a capacity of 24 rows of pallets with 17 pallets per row stacked 3 pallets high. Semi-tractor trailer trucks will back into the Battery Breaker area to be unloaded directly into the battery breaker operation. The Whole Battery Storage Area will have an impermeable flooring consisting of concrete/asphalt. The entire storage area will have a berm around it to hold any accidental spill at the site.

The batteries are loaded by forklift onto conveyors that carry the batteries through the battery breaking process. Discharge is unlikely while the batteries are in the truck. If a battery were to be dropped and accidentally spilled, the resultant volume of battery acid will be neutralized and cleaned immediately.

2. Truck Trailer Storage Area located on the south side of the facility is approximately 120 feet by 120 feet. Concrete and asphalt curbs and berms surround the storage area to provide a secondary containment and to prevent run-on to the unit and prevent run-off from the unit. This area is used to store spent lead acid batteries on trailers prior to recycling onsite and to accumulate/store spent nickel-cadmium batteries in van trailers prior to shipment off-site for recycling.

   Batteries in the Truck Trailer Storage Area are stored in trailers, approximately 40 inches above the surface of the storage area. As a result, accumulated liquids will not come in contact with the containers while they are stored in this area. This storage area is equipped with a sump, that gravity drains to the wastewater treatment system. Accumulated liquids drain to the wastewater treatment system by opening a locked valve in the sump.

3. K069 and D008 Container Storage Area stores dry, powdery material and does not contain free liquids. Therefore, a containment system is not required. The area of the K069 Storage Area is 1,750 square feet.

4. The Battery Breaker operation has a loading site for washed and crushed

plastic from the battery cases which is loaded onto trucks for recycling. Should there be a spill accident, the spilled material would be attended to via housekeeping procedures utilizing shovels to put the spilled plastic chunks back into the truck. The possibility of discharge at these stations is minimal.

C. NPDES/LPDES Outfall 001

1. The facility operates a wastewater treatment plant that discharges through a NPDES permitted Outfall (Outfall 001). The effluent goes through several different treatment steps before being discharged through Outfall 001. Any spill in the wastewater Treatment Plant will gravity flow to the process water holding tank thus eliminating the chance of an accidental release to the environment.

D. In-plant Transfer Areas

1. At the fuel dispensing station, fuels are transferred from the tanks to the plant operating vehicles. These refueling operations are always attended to reduce the possibility of a spill and limit the volume if a spill were to occur. Spilled product at this transfer station would flow into the secondary containment structure around the tanks where it would be contained and cleaned up.

2. The product process transfer operations from raw material to final product start at the Battery Breaker Building. In the reclamation process, the batteries are hydraulically separated into components of plastic, metallic lead, lead plates/oxide, separators and rubber, and acid. This battery breaking operation is a continuous process until the

components are separated. The lead plates/oxides, separators and rubber are further recycled as raw materials in the blast and reverb furnaces to produce metallic lead ingots. The battery acid is collected, neutralized with sodium hydroxide and crystallized to form sodium sulfate salt. The salt is solid as a product.

3. Added to the charge of lead-bearing raw material is coke for melting fuel, alloy for metallurgical properties, and additives to control the chemistry of the heat. The additives to the charge are taken from the storage areas and weighed into the charge mix to attain the proper product quality. At the referenced in-plant transfer points, there is a minimal possibility of discharge due to the placement of the transfer points and the route that the materials are transported through.

E. Spillage or Leaks

1. There are no areas of current spillage or leaks that have not been thoroughly addressed and cleaned up to prevent a discharge resulting from run-off.

F. Solid Waste Disposal Area

1. The facility operates an on-site solid waste landfill that only receives stabilized blast furnace slag and construction debris. Generated slag is stabilized on-site. The landfill is permitted and designed to prevent any run-on and run-off. All leachate is pumped to the Wastewater Treatment Plant and treated prior to being discharged. The possibility of a discharge from the landfill is minimal.

5.0 BEST MANAGEMENT PRACTICES COMMITTEE

The BMP Committee, also known as the Spill Control Committee, is responsible for implementing and maintaining the BMP program at the Baton Rouge Smelter. The responsibility and authority to carry out Exide's policy and achieve the BMP program objectives has been assigned to the committee by the management of the Baton Rouge Smelter.

The BMP Committee is assigned the authority and responsibility to initiate immediate action in the event of a spill. The committee shall advise management of any spill event as soon as practical. The BMP Committee is assigned the following responsibilities:

- Identification of toxic and hazardous materials handled (material inventory)
- Identification of potential spill sources
- Conduct and maintenance of spill reporting procedures and visual inspections
- Annual review of past incidents of spills and counter resources utilized
- Coordination of all departments in carrying out the goals of the BMP program
- Coordination of the activities for spill cleanup
- Notification of authorities
- The establishment of training programs for plant personnel.

The BMP Committee shall hold quarterly meetings to review and evaluate the BMP program and shall institute appropriate changes to the BMP Plan. The BMP Committee shall review new construction and process changes relative to spill prevention and control. The committee shall also evaluate the effectiveness of the BMP program on an annual basis and give recommendations to management in support of the corporate policy. A copy of minutes of meeting will be retained in the files

BMP PLAN ANNUAL REVIEW PROCEDURES

1. The BMP Committee Reviews:

   - Anticipated changes to plant process equipment or operating practices
   - The Spill Report (see Table 4) completed after the incident has been remedied
   - Regulatory changes affecting the compliance status of the facility
   - Review in-plant transfer requirements

2. The BMP Committee Discusses:

   - The facility or procedural changes necessary to prevent a recurrence of the incidents or to achieve compliance with changes in regulations. These concerns are discussed with the facility's emergency coordinator. They agree on a course of action that will satisfy the BMP Plan objectives.

3. The BMP Committee Schedules a Meeting:

   - To summarize the incident, its impact, and the remedial action taken
   - To discuss the need for procedural or hardware changes to prevent a recurrence
   - To decide necessary corrective action (s)

4. The BMP Plan will be modified as agreed upon by the BMP committee.
5. The BMP Committee Chairman:
   - Follows the implementation of the approved corrective measures
   - Informs the BMP committee of completion of the corrective action (s)

6.0 BMP INCIDENT (SPILL) REPORTING

This spill reporting system is designed to maintain records of spills for the purpose of minimizing recurrence, expediting mitigation activities, complying with legal and regulatory requirements and documentation.

Spill reporting includes notification of a spill to appropriate plant personnel to initiate immediate action, formal written reports for review and evaluation of spills and revisions to the BMP program, and notification of governmental and environmental agencies in the event that a spill reaches navigable waters.

For the purposes of this BMP Plan, a BMP Incident (spill) is defined as:

- Any on-site release of a "reportable quantity" of any listed material. (List of materials and reportable quantities as defined in LAC 33:I.3931.
- Any release that results in an injury to an employee or off-site personnel.
- Any release that requires the use of outside assistance (fire department, police, etc.)
- Any release that results in an upset (as defined by NPDES) of the wastewater treatment system.
- Any release that requires implementation of the SPCC plan.
- Any other release that does not meet the requirements of the above, but which the BMP Committee should report as a BMP incident (spill) because of its nature.

In the event of a spill, the in-plant notification system described in the SPCC Plan will be utilized. This system provides significant redundancy to insure that appropriate personnel are notified to action in the shortest possible time. The system includes the public telephone (numbers listed below); the in-plant interoffice telephone (extensions listed below); the maintenance department

two-way radios; the intra-plant intercom/paging system; and as the back up notification the plant signal horn, normally used for shift change, will be set off with three (3) blasts to gain the attention of appropriate individuals.

Title

Plant Manager

Environmental Manager

Maintenance Superintendent

Safety Coordinator

Personnel Manager

Production Manager

The Security Guard at the facility has emergency and digital pager numbers to notify the proper personnel.

The written reports of all (spills) incidents shall be submitted to the BMP Committee for review. The report format is attached as Table 4.

In the event of a spill incident, the following agencies shall be notified:

1) U.S. EPA Region VI
   Dallas, Texas
   Phone: (866) EPA-SPIL (24 Hours)

2) LA Dept. of Environmental Quality
   Baton Rouge, Louisiana
   Phone: (225) 342-1234 (24 Hours)

3) U.S. Coast Guard
New Orleans, Louisiana
Phone: (504) 589-6261 (24 Hours)

4) National Response Center (NRC)
Washington, D.C.
Phone: 1-800-424-8802 (24 Hours)

5) Fire Department/Emergency
Phone: 911

6) State Police, Troop A
Phone: 225-754-8515

7) East Baton Rouge Sheriff's Office
Phone: 225-389-5000

8) HAZMATT/TESS
Baton Rouge, LA
(225) 925-6595

7.0 INVENTORY OF BMP SUBSTANCES

At the Baton Rouge Smelter, there are three primary areas where materials are stored and utilized. These are the production facilities, the maintenance shop and the laboratory facilities.

The production area includes battery breaker operations; the raw materials storage operations; the smelting, refining, and casting operations; the product storage area; the slag-breaking operation; and the air emission control operation.

The maintenance area includes the maintenance building, the fuel storage area, and the water treatment plant.

The laboratory is a small, industrial and metallurgical lab.

A complete listing of materials utilized in the plant is maintained at the facility. Exide also maintains Material Safety Data Sheets (MSDS) for each of the substance stored at the facility. A complete listing of all MSDS are kept in the Safety Supervisor's office.

In order to keep the list focused most directly on the objectives of the BMP plan, LAC 33:I.3931 provides a listing of the reportable quantities (RQ) for reporting in the event of a discharge of these materials. In the event of a discharge, Exide will review the listing provided in LAC 33:I.3931 to determine whether or not the spill exceeded the RQ for that material. A complete listing of CERCLA and SARA Title III (EPCRA) chemicals is available in 40 CFR Part 302 and 40 CFR Part 372, respectively.

8.0 EMPLOYEE TRAINING

It is the policy of Exide that only trained, qualified and adequately supervised personnel are assigned to activities involving hazardous substances. Exide personnel who handle hazardous substances, operate equipment associated with these materials, or have supervisory responsibility for such activities, are trained commensurate with the need through classroom and on-the-job instruction. The training is formulated around the following:

- Information about the hazardous nature of substances the employee is handling;
- Awareness of the potential impacts of uncontrolled releases on the environment and public health;
- Competency in the conduct of job duties so that risks of spill incidents may be minimized; and
- Familiarity with the implementing of preventative measures and spill response procedures to control an incident.

Any employee who handles hazardous substances or associated equipment is familiarized with such activities through classroom and on-the-job training. Procedures designating employee activities to perform their job function properly are maintained by company management. The employee's immediate supervisor is responsible to insure that the employee:

- Performs tasks in a competent manner
- Follows correct procedures and practices in performing job duties

Exide routinely conducts various training activities for new and current employees. This training may consist of classroom and on-the-job exercises, at a level of intensity commensurate with the complexity of the present or anticipated job duties. Exide's training program is designed to

teach the employee to perform job functions in a competent and skilled manner so that equipment may be operated safely and efficiently.

Employees receive classroom training initially to provide information about the processes and materials with which they are working, the safety hazards, the practice of preventing discharges, the procedures for responding properly and rapidly to oil and hazards substances incidents, and as necessary to comply with existing and new regulations. Additionally, new employees will receive classroom training on the BMP and SPCC plans in conjunction with training on other plant procedures, as a part of their job orientation.

Supervisors provide employees with more specific information as it relates to the employee's job responsibilities. Each time the BMP and SPCC plans are discussed in a meeting with employees, supervisors should document the event using the form included as Table 5.

To further reinforce the objectives of the BMP Plan, management will discuss it at least once each year during a safety meeting or training meeting. Each time the BMP Plan is discussed, it shall be so noted in the safety meeting written summary.

9.0 PREVENTION

Prevention of uncontrolled release of hazardous substances is the primary goal to be achieved through implementation on the BMP Plan. This section describes elements that are classified as preventative measures that should be followed by personnel designated responsible.

9.1 Plant Security

The primary responsibility of plant security is to assure that:

- Access to facilities by unauthorized personnel is prevented
- Authorized entry and egress by contractors and visitors are recorded
- Relevant plant management personnel are aware of visitor's presence on plant property
- Persons granted access to the Exide Baton Rouge Smelter are appropriately escorted by plant personnel or plant security during their presence on plant property
- The shift supervisor in the respective department and the BMP Committee Chairman are informed immediately of uncontrolled releases of hazardous substances inside or outside the buildings
- Checking that fire extinguishers, fire-water hydrants, first-aid equipment are properly maintained. These responsibilities will be fulfilled by security and plant personnel through the conduct of duties fitting into three categories: controlled access, surveillance, and reporting.

9.2 Controlled Access

Access to facilities will be controlled by:

- Direction of traffic to manned security stations, except as approved by management
- The facility is enclosed by a fence except the area along the bayou. There is one authorized entry gate at the south end of the facility which is opened between the hours of 6:00 a.m. and 6:00 p.m. and at shift changes Monday through Friday and at shift changes only on weekends. The gate is manned by a security guard when opened and locked when closed. A second gate which is electrically operated from the guard station and is located just behind the guard station at the plant site. This gate is open from 6:00 a.m. to 4:00 p.m. Monday through Friday.

  In addition to securing the authorized entry gates, the guards patrol the facility on a 24 hour/day, 7 day/week basis to minimize the possibility of unauthorized entry onto the facility.

  At the Exide facility, there are there are warning signs, legible at 50 feet, which state "Danger - Unauthorized Personnel Keep Out." The predominant language in the area is English.

- Recording information on security log sheets, such as:
  1. Personal identification, affiliation, and purpose of visit
  2. Vehicular identification (license number and DOT registration, as appropriate)

3. Station personnel responsible for escort or control
4. Time of entry and egress

9.3 Surveillance

Routine surveillance will be achieved through scheduled patrols by security personnel. Security personnel will be primarily responsible to check the integrity of:

- Fencing and other barriers
- Lighting

In addition, security personnel will be aware of the seriousness of potential spill incidents in the following areas:

- Fuel storage areas
- Truck loading and unloading stations
- Chemical storage areas
- Storage and production areas
- Water treatment plant

9.4 Reporting

Security personnel will look for and report to the appropriate plant management the following events:

- Presence of unauthorized persons or vehicles on plant property
- Evidence suggesting releases of oil or chemicals onto the ground or into drainage

ditches

- Tank, container, or pipe leakage
- Breaching of fences and other barriers
- Apparent malfunction of plant equipment based on unusual sight, sound, or odor

Incidents, both uncontrolled and controlled (containment), are to be followed up with a written incident report that is sent to management.

10.0 INSPECTIONS

The objective of a BMP Plan inspection program is to provide plant personnel with information on the operability and condition of equipment and systems used in handling hazardous substances. The inspection report serves to inform management of the need for maintenance or replacement of hardware to pre-empt a spill incident.

Visual inspection includes an examination of the unit with the intent of finding any present or impending malfunction that may lead to an uncontrolled release of oil or hazardous substances.

A more detailed inspection is intended to provide for thorough examination, and to allow time for scheduling and necessary repairs or replacement while equipment and system failure is still at a reduced risk level.

The Environmental Superintendent or his designated representative will inspect all pipeline, valves, tanks, and basins within the entire wastewater treatment system on a daily (work days) basis. He will look for leads and structural integrity problems which could result in leaks if not corrected. Any leak must be stopped immediately and reported to the Plant Manager or the BMP Committee Chairman. Any structural integrity problems must be corrected as the severity of the problem dictates.

The Environmental Superintendent or his designated representative will measure and record the free board level of the water treatment units each day. Each week he will also inspect the water treatment plant and discharge areas to determine if there are any structural problems which could result in an overflow. Any problem detected in this inspection must be corrected.

Any unauthorized overflow detected must be corrected immediately and reported to the Environmental Manager or the Maintenance Superintendent for their assessment.

The Environmental Manager or his designated representative will inspect on a weekly basis, the whole batteries on pallets in the battery storage area to insure the cases are not leaking, that there is no deterioration of the base or containment system, and that liquids are removed from the containment system. Any discrepancies will be corrected within a reasonable time period.

The Environmental Manager or his designated representative will inspect the battery component storage areas each week and after storms to insure that there is no run-on and/or run-off storm water. He will also inspect to insure that these preventative structures are sound and in place. Any deficiencies will be brought to the attention of the Plant Manager for corrective action.

The Environmental Manager or his designated representative will inspect the solid waste landfill on a frequency of once per week and after storms. He will also inspect each monitoring well to insure that the seal around the base of each well is unbroken and there are no apparent holes or breaks in the well casings or covers. Any discrepancies discovered shall be corrected within a reasonable time period. He will inspect to insure that there are no apparent liner leaks caused by cracks, lenses, or channels due to settling, or surface water, and root holes from vegetation growth. He will inspect to insure that the levees which divert the stormwater run-on from entering the cell are sound and intact and not deteriorated or eroded from wind or water. He will inspect the laced collection and removal system to insure that it is working properly.

The Plant Engineer or his designated representative will inspect the petroleum storage (including maintenance parts cleaners) tanks, lines, gaskets, bases, pumps, and valves to insure that there are no leaks. He will also inspect the tank foundations and containment system levees to insure that they are structurally sound and not eroded. He will conduct this inspection once each quarter.

The Environmental Manager or his designated representative will inspect the plant safety and communication equipment at least once a month to insure that each is in good operable condition. Each fire extinguisher is inspected to insure that it is charged, that the trigger and pins are in working order, and that there is clear access to the fire extinguishers. The fire hose will also be inspected monthly to insure that each is in operable condition. The special respirators, eye washes, and other related safety equipment will be checked to insure that they are in operable condition. Any discrepancies shall be corrected within a reasonable time period.

All the above inspections including the dates, times, names of the inspector(s), date and nature of corrective action taken, and the notation of the inspection shall be recorded on the attached Inspection Schedules (Tables 1, 2, and 3).

The detailed inspection procedure for equipment and systems with oil or hazardous substances can be found in the Inspection Forms.

The format for recording the detailed quarterly inspections of tank equipment and systems to fulfill the intent of the BMP Plan is included as Table 1, "Quarterly Petroleum Storage Inspection Report."

The format for recording the detailed weekly and monthly inspections of potential discharge areas is included as Table 2.

The format for recording the detailed inspections of hazardous materials areas is included as Table 3, "Daily Hazardous Waste Inspection Schedule and Log." All of these completed inspection reports shall be forwarded to the BMP Coordinator.

Management is responsible for assuring that inspections are routinely performed, documented, and submitted to the BMP Coordinator. The BMP Coordinator is then responsible for the overall auditing of the inspection program. If the inspection reveals that equipment, procedures, and/or training modifications are necessary, he is responsible for tracking progress and reporting their completion to the BMP Committee.

positioned near the activity.

11.2 Compilation and Evaluation of Records

Review of the maintenance record book of BMP Plan-related items will be made by the Environmental Manager on at least an annual basis. The purpose of this review will be to determine the:

- Type of system, subsystem, or component failures
- Frequency of maintenance activities
- Severity level of the failure(s)

These review findings will be discussed with the BMP Committee to ascertain if further corrective action is necessary. For example, maintenance records and severity level may indicate that the system, subsystem, or component should be replaced with a more reliable or durable one. This evaluation should be made in the context of decreasing the potential risk of a spill incident.

11.3 Testing

Testing of systems, subsystems, and components that contact hazardous substances is intended to provide quantitative means to assess their condition and the potential for failure during use. In the context of plant operations involving chemicals, this need is not significant except in the case of storage tanks. Structural integrity of chemical storage tanks should be checked by best engineering judgement when a need for such testing is indicated by the routine visual inspections.

12.0 HOUSEKEEPING

Housekeeping practices are essential for minimizing uncontrolled employee exposures to hazardous substances. A sound program emphasizes prevention of such exposures resulting from material accumulation on surfaces that employees are likely to contact directly (e.g., floors, handrails, workbenches, or equipment controls). Hazardous substances resulting from accidental spills or leaks, and which pose a risk to employees, shall be cleaned up and contained promptly. Disposal of these substances should be done in accordance with applicable regulations.

The shift supervisor is responsible for assuring that housekeeping procedures are followed. Periodic inspections will be made by the shift supervisor and BMP Coordinator in conjunction with the currently documented Safety Committee inspections performed on a monthly basis. During the inspection, any housekeeping deficiencies will be noted. A copy of the inspection report will be given to the departmental supervisor and operator responsible for the area for corrective action.

The elements of "Good Housekeeping" are listed below:

- Prompt removal of spillage
- Clear and proper pathways and walkways, with no containers or drums protruding onto walkways
- Neat and orderly storage of chemicals
- Stimulation of employee interest in good housekeeping practices

Additionally the plant maintains a crew that operate the roadway sweeper. This crew is responsible for keeping the plant roadways, parking lots and production floor areas, where accessible, free of accumulation of dusts and debris.

13.0 MATERIALS COMPATIBILITY

Materials compatibility is considered at each stage of a new product review. Materials of construction for storage tanks, plumbing, pumps, valves, reactors, etc. are selected on the basis of literature references, manufacturers' recommendations, and actual testing, if necessary.

Potential incompatibility of reactants is considered during the product and process review. Process sequence, feed rates, and reaction temperatures are determined using best engineering judgement, based on bench-scale data, literature citations, industry standard practices, and experience.

Containers for products are reviewed during the new product review process. Selection is based on:

a. Department of Transportation (DOT) regulations regarding containers
b. Review of the available literature, manufacturers' recommendations, and actual testing, if necessary

Methods and procedures for purging and washing of equipment, lines, and/or storage vessels are selected during the product review process. These procedures are based on industry standard practices, literature references, and experience.

Of primary importance to the Exide operations are the use of chemicals in the melting process. Depending upon product specifications, either oxidizers or reducers are used as reagents in the melt change mix. The storage and usage of these materials is consciously controlled not only for personal and environmental safety aspect but also for the assurance of product quality.

14.0 BMP PLAN ANNUAL REVIEW AND REVISIONS

The BMP Plan is intended to serve as a guide for Exide staff to utilize in managing hazardous substances to meet regulatory concerns. For it to be a valuable tool in this endeavor, the BMP Plan must be maintained in a relevant and useful format. The BMP Committee will review the BMP Plan to assure its continued:

- Relevance to plant operation
- Effectiveness in mitigation of uncontrolled releases
- Usefulness as a guide in decision-making exercises concerning plant design or operating practice modifications

In addition to a routine annual review, events that can trigger this review process include:

- Changes in plant production process, hardware, or facilities
- Failure of response procedures
- Changes in regulatory requirements affecting hazardous substance classification, response notification, preparedness, planning, or reporting requirements

It is the responsibility of the BMP Committee to consider anticipated changes to production processes, hardware, or facilities that may necessitate revisions in the BMP Plan.

It is the responsibility of the BMP Committee Chairman to notify the BMP Committee of:

- Regulatory changes affecting the compliance status of the plant.
- The procedure for the BMP Committee review process (described in Table 5).
- The schedule for implementation of BMP review procedure is consistent with per applicable regulations.

QUARTERLY PETROLEUM STORAGE TANK INSPECTION REPORT

1. Are there any oil drums located outside the secondary containment areas?
   ____ Yes ____ No

2. If yes, describe the action taken

3. Are any of the tanks/drums leaking? ____ Yes ____ No

4. If yes, describe the extent of leak

5. Corrective action taken

6. Inspected by

7. Date of inspection _____

EXIDE TECHNOLOGIES - BATON ROUGE SMELTER
HAZARDOUS WASTE INSPECTION SCHEDULE
MONTHLY AND WEEKLY

DATE/TIME										
INSPECTOR										
STATUS	OK	NO	OK	NO	OK	NO	OK	NO	OK	NO
SLAG STABILIZATION										
1. There are no cracks, gaps, or pooled water on base or in sump.										
2. Warning signs are in place.										
3. There are no visible air emissions.										
4. The runon-runoff system works.										
5. There are no spills on base.										
6. TCLP and Air Monitoring Samples have been tested at the appropriate frequency.										
CONTAINMENT BUILDING										
1. Containment of materials and height of stored material.										
2. No free liquids.										
3. Runon-runoff barriers working.										
4. Leak detection sump.										
5. Liquid collection system.										
6. No visible emissions.										
7. Decon areas operational and No tracking.										
8. Warning signs are in place.										
9. Release of any hazardous waste from the Continnment Building										
NI-CD BATTERIES										
1. Containers are structurally sound with covers in place.										
2. Containers are labeled. Date on label is less than 90 days.										

EXIDE TECHNOLOGIES - BATON ROUGE SMELTER
HAZARDOUS WASTE INSPECTION SCHEDULE
MONTHLY AND WEEKLY

DATE/TIME										
INSPECTOR										
STATUS	OK	NO	OK	NO	OK	NO	OK	NO	OK	NO
TRUCK/TRAILER AREA										
1. Containers and trailers are structurally sound with covers or tops in place.										
2. There are no cracks, gaps or pooled water on the base nor accumulated water in sump.										
3. Warning signs are in place.										
4. Runon-runoff system works.										
WHOLE BATTERY CONTAINER AREA										
1. Containers are structurally sound with covers in place.										
2. Proper aisle space and stacking height.										
3. There are no cracks, gaps or pooled water on the base nor accumulated water in sump.										
4. The warning signs are in place.										
K069 CONTAINER AREA										
1. Containers are structurally sound with covers in place.										
2. Proper aisle space and stacking height.										
3. The containers are on pallets and above any liquid on the floor.										
USED OIL TANK										
1. Tank is structurally sound with no leaks.										

DATE AND NATURE OF REPAIRS OR ACTIONS: _____

MONTHLY

1. Closed area, Security, Monitoring Wells;

Date_____ Time _____ Inspector _____

OK	Other

a. No apparent clay cap erosion.

b. Leachate collection system operating properly.

c. No ants, termites, or burrowing animals detrimental to clay cap.

EXIDE TECHNOLOGIES - BATON ROUGE SMELTER
HAZARDOUS WASTE INSPECTION SCHEDULE
MONTHLY AND WEEKLY

d. Seal around monitoring well is unbroken.
e. No holes or breaks in monitoring well casing /covers.
f. Warning signs, security fences in place.

2. Safety Communication Equipment;

Date_____ Time _____ Inspector _____

OK	Other

a. Each fire hose, extinguisher is operable and accessible.
b. Telephone and alarm system is operable.
c. Special respirator is operable.
d. Spill Control materials (adsorbent, acid neutralizer)
e. First Aid equipment

DATE AND NATURE OF REPAIRS OR ACTIONS: _____

_____

SPILL REPORT FORM

SPILL INFORMATION

1. Location of Spill

2. Date of Spill	3. Time

4. Cause of Spill

5. Type of Equipment, S/N

6. Quantity of Spill	7. Weather at Time of Spill

8. Pre Cleanup Sampling Data (If Applicable)

9. Pre Cleanup Sampling Methodology

10. Describe cleanup activity. Include a description of any solid surfaces cleaned and a description of the double wash/rinse method used, if applicable. Approximate the depth of soil excavation and the amount of soil removed.

11. Date of Cleanup Completion	12. Time of Completion

13. Person Making This Report

14. I certify that the appropriate oil cleanup requirements have been met and that the information listed above is true to the best of my knowledge.

Printed Name: Signature:

REPORTS TO AGENCYS

15. Agency Reported To

16. Person Reported To	Date Reported	Time

17. Person Making Report

18. Agency Reported To

19. Person Reported To	Date Reported	Time

20. Person Making Report

21. Agency Reported To

22. Person Reported To	Date Reported	Time

23. Person Making Report

ents

TABLE 4

EXIDE CORPORATION BMP PLAN REVIEW PROCEDURE

1. BMP Committee Reviews:

    - Anticipated changes to plant process equipment or operation practices
    - The Spill Report (see Table 3) completed after the incident has been remediated
    - Regulatory changes affecting the compliance status of the facility
    - Review in-plant transfer requirements

2. BMP Committee Discusses:

    - The facility or procedural changes necessary to prevent a recurrence of the incident (s) or to achieve compliance with changes in regulations. These concerns are discussed with the facility's Emergency Coordinator. They agree on a course of action that will satisfy the BMP Plan objectives.

3. BMP Committee Schedules a Meeting:

    - To summarize the incident, its impact, and the remedial action taken
    - To discuss the need for procedural or hardware changes to prevent a recurrence
    - To decide necessary corrective action

4. The BMP Plan will be modified as agreed upon by the BMP Committee.

5. The BMP Chairman:

    - Follows the implementation of the approved corrective measures
    - Informs the BMP Committee of completion of the corrective action

The procedure is implemented on a schedule according to the type of event effecting hazardous substance management.

TRAINING CERTIFICATION FORM

I certify that I have been trained in and understand the Exide Corporation's Stormwater Pollution Prevention Plan/Best management Practices Plan. I understand my role and my duties under this program.

Employee Signature

Instructor Signature

Date of Completion

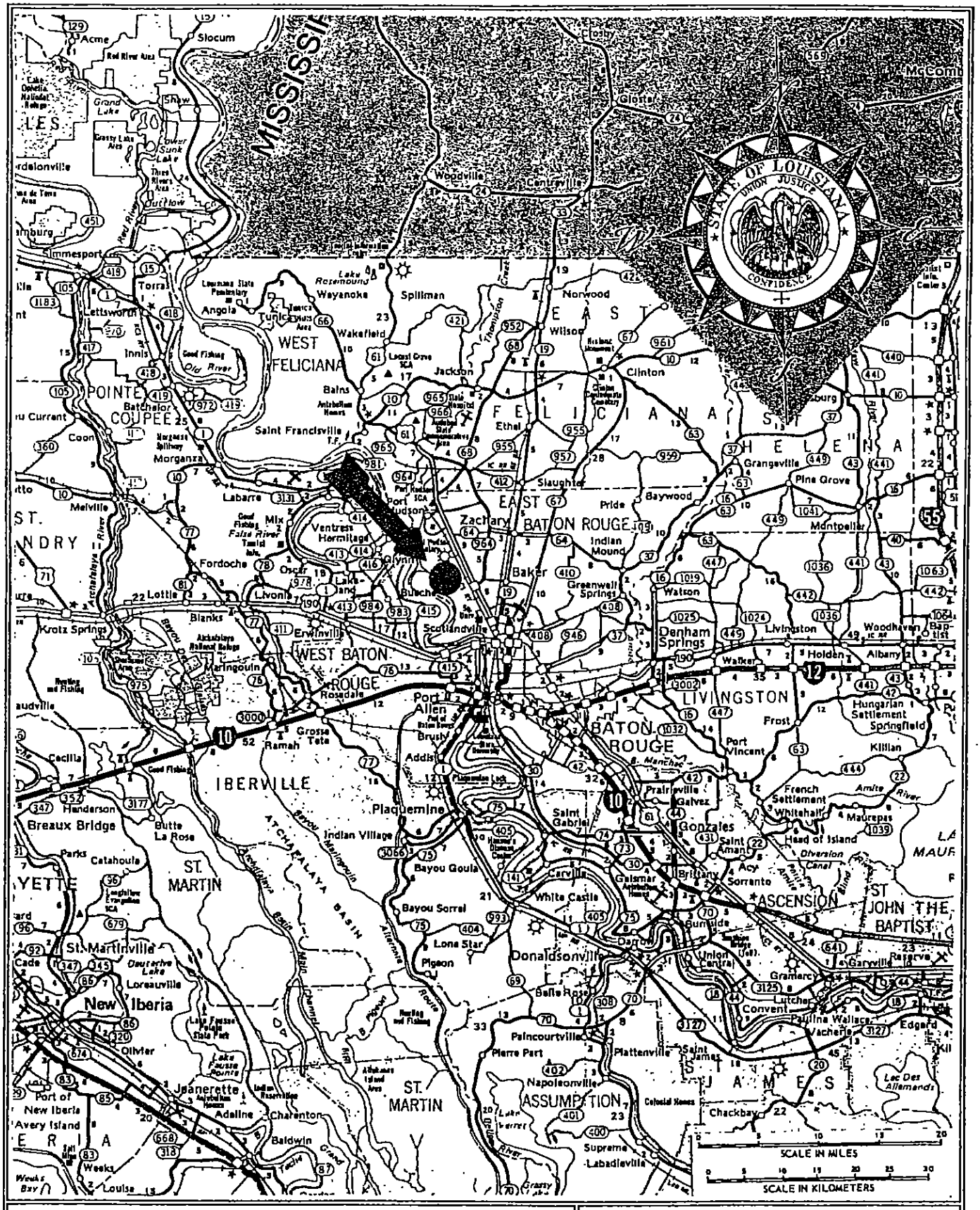
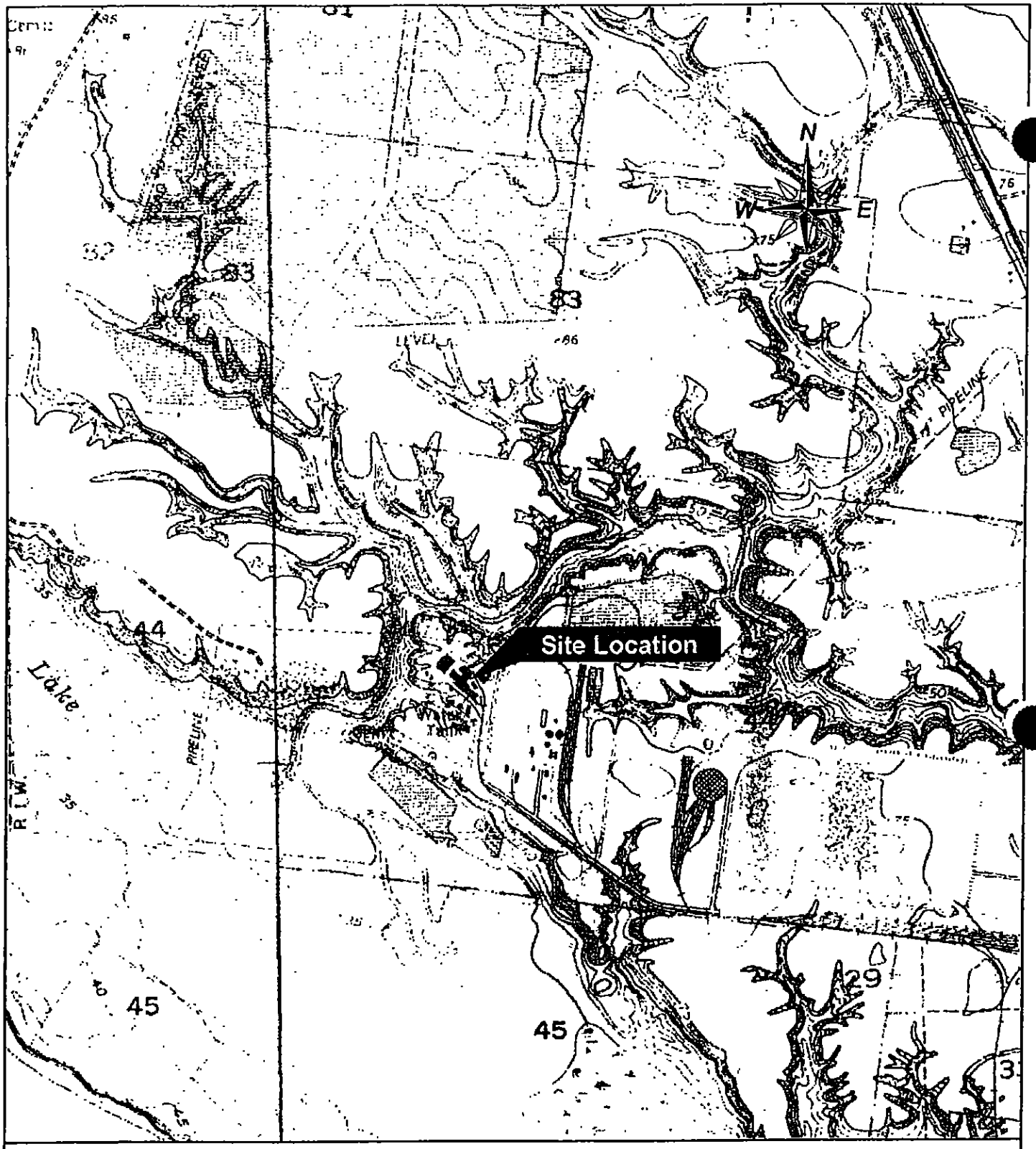


Figure 1: Site Vicinity Map
Exide Corporation Baton Rouge Smelter
Baton Rouge, LA

Source: State Road Map, 1994

MS ENVIRONMENTAL CONSULTANTS



NOTE:

BASE MAP COMPRISED OF U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS, " WALLS, LA." DATED 1963, REVISED 1994 AND "SCOTLANDVILLE, LA." DATED 1963, REVISED 1994. IMAGE IS REFERENCED TO UTM NAD 27 ZONE 15.

BATON ROUGE SMELTER

BATON ROUGE, LOUISIANA

Scale: 1"=2000'	SITE LOCATION PLAN
Originated By: J.W.P.	
Drawn By: P.S.C.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Checked By: J.W.P.	
Project Mgr: P.G.S.	
Dwg No. 2003-1058-01-14	Project No. 2003-1058-01
ISSUED MAY 05 2003	FIGURE: 2

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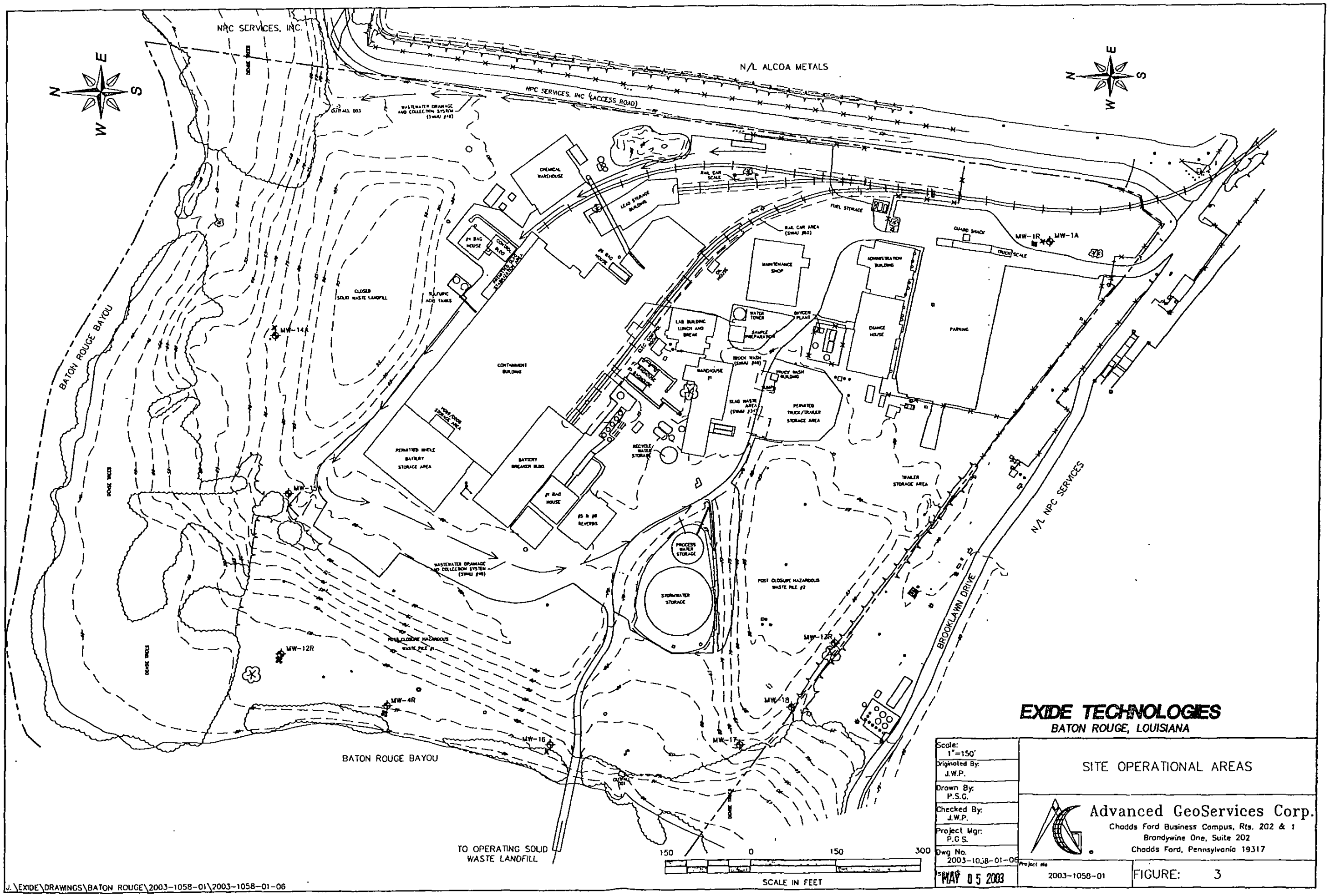

EXIDE TECHNOLOGIES
BATON ROUGE, LOUISIANA

Scale: 1"=150'	SITE OPERATIONAL AREAS
Originated By: J.W.P.	
Drawn By: P.S.G.	
Checked By: J.W.P.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 2003-1058-01-06	Project No 2003-1058-01
Issued MAY 05 2003	FIGURE: 3

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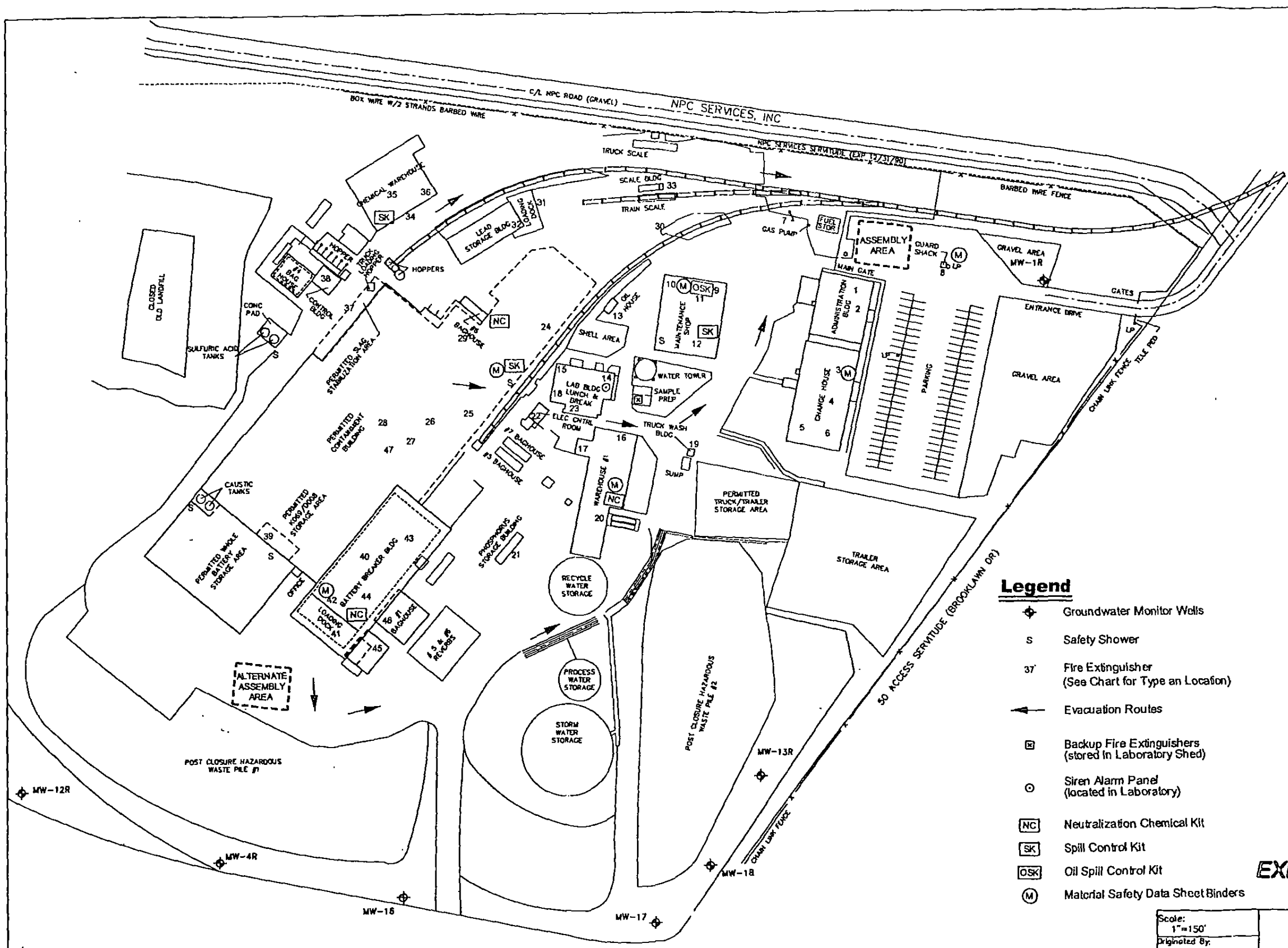

Legend

- Groundwater Monitor Wells
- S — Safety Shower
- 37 — Fire Extinguisher (See Chart for Type an Location)
- Evacuation Routes
- Backup Fire Extinguishers (stored in Laboratory Shed)
- Siren Alarm Panel (located in Laboratory)
- NC — Neutralization Chemical Kit
- SK — Spill Control Kit
- OSK — Oil Spill Control Kit
- M — Material Safety Data Sheet Binders

Fire Extinguisher

No.	Location	Type
1	Office Hallway	Class A
2	Office Kitchen	ABC
3,4	Changehouse Hall	ABC
5,6	Changehouse Shower	CO2
7	Fuel Station	ABC
8	Guard House	ABC
9	Spare Extinguishers - in the Shop Tool Room	ABC
10,11	Shop - Fabrication Area	ABC
12	Shop - Vehicle Repair Area	ABC
13	Oil House	ABC
14	Lab	Dry Chem
15	Lab AA Room	CO2
16	Electrical Warehouse	ABC
17	Compressor Room	ABC
18	Lunchroom	ABC
19	Wash Rack	ABC
20	Water Treatment Unit	ABC
21	Phosphorus Storage Room	Class D
22	No. 5 Baghouse Control Room	CO2
23	Outside Lunchroom	ABC
24	Kettle Floor - Kettle 11	ABC
25	No. 1 Blast Furnace	ABC
26	No. 1 Blast Furnace	CO2
27,28	Upstairs - Control Rooms	ABC
29	No. 1 Casting Machine	ABC
30	Mobile Equipment Storage	ABC
31	Lead Loading Dock	ABC
32	Lead Storage Warehouse	ABC
33	Rail Car Scale	ABC
34	Chemical Warehouse	Class D
35,36	Chemical Warehouse	ABC
37	Slag Crushhr	ABC
38	No. 4 Baghouse Control Room	CO2
39	K069 Storage Area	ABC
40	CX Electrical Control Room	CO2
41	CX Flammable Storage Area	ABC
42	CX Control Room	CO2
43	CX Boiler Room	ABC
44	CX Office	ABC
45	No. 1 Baghouse Control Room	CO2
46	No. 1 Baghouse	ABC
47	No. 1 Blast Furnace	Class D

Reference:

Base map comprised from drawing provided by Exide Corporation titled "Groundwater Report" dated 02/01/99.

EXIDE TECHNOLOGIES
BATON ROUGE, LOUISIANA

Scale: 1"=150'	LOCATIONS OF EMERGENCY RESPONSE EQUIPMENT
Originated By: J.W.P.	
Drawn By: P.S.G.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Checked By: J.W.P.	
Project Mgr: P.G.S.	
Dwg No. 2003-1058-01-13	Project No. 2003-1058-01
Issued: MAY 05 2003	FIGURE: 4

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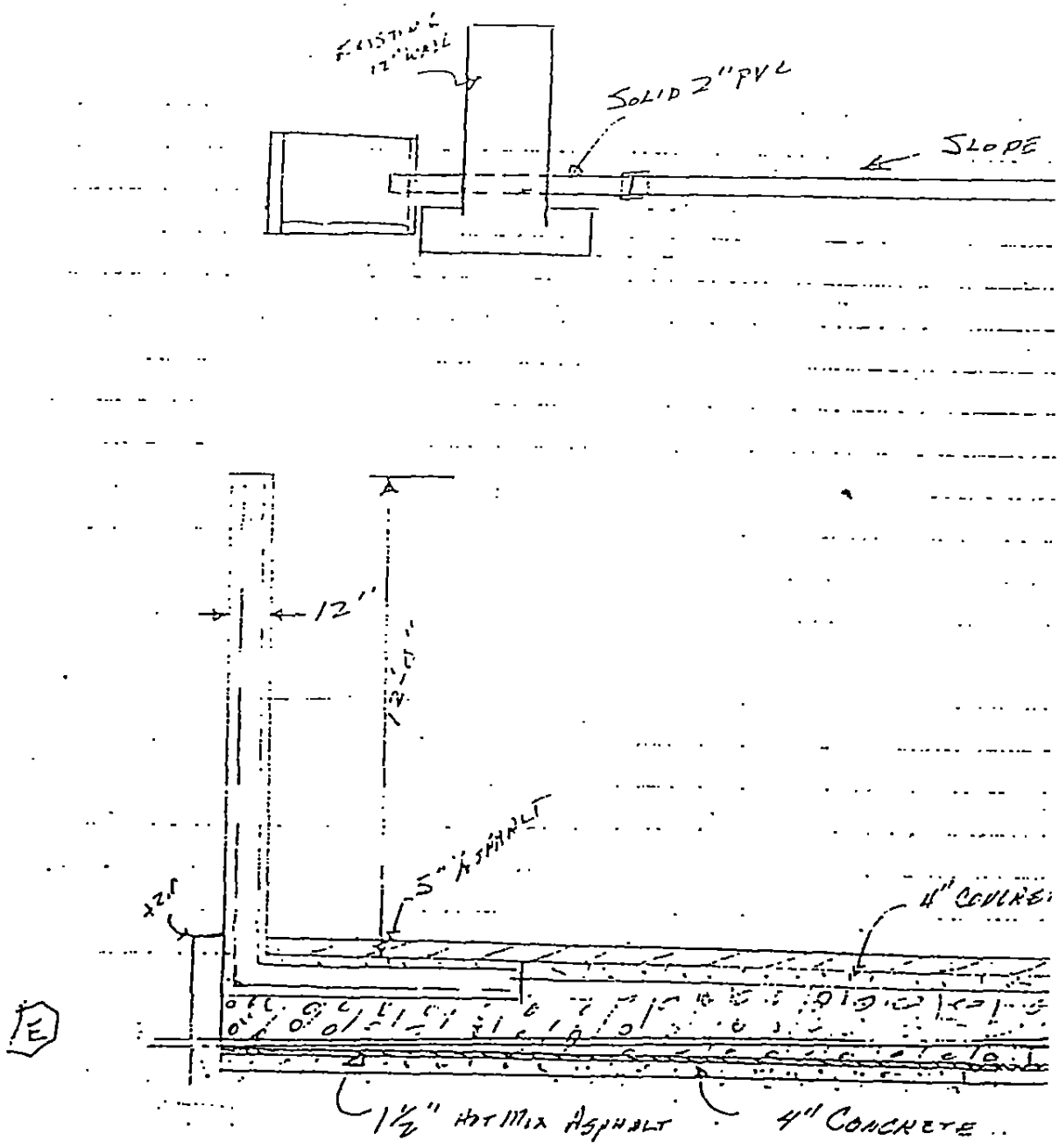


CONTAINMENT BUILDING - AREA 2

FROM WOODWARD CLYDE CONSULTANTS.
APRIL 7, 1992 LETTER

FACTOR OF SAFETY

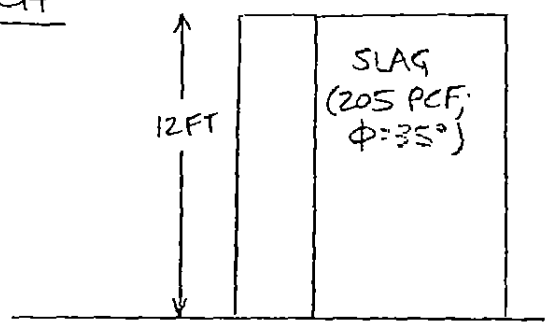
$$FS = \frac{\phi V_n}{V_{applied}} = \frac{6704 \text{ lb}}{4000 \text{ lb}} = 1.7$$

The factor of safety is in addition to the strength reduction factor.

CONCLUSION

The slag stabilization unit wall is has sufficient structural strength in shear.

SKETCH



$$K_A = \frac{1-\sin\phi}{1+\sin\phi} = \frac{1-\sin 35^\circ}{1+\sin 35^\circ} = 0.271$$

APPLIED SHEAR

$$V_{applied} = \tfrac{1}{2} K_a \gamma H^2 = \tfrac{1}{2}(0.271)(205)(12)^2 \checkmark$$
$$= 4{,}000 \text{ lb}$$

where $V_{applied}$ = shear applied by waste pile
γ = unit weight of waste
H = wall height (for this calculation assumes that H does not include wall height below floor slab and footing as wall has equal forces on both sides below grade
K_a = active earth pressure coefficient

WALL STRENGTH

$$\phi V_n = 2\phi w d' \sqrt{f'_c} = V_{ultimate}$$
$$= 2(0.85)(12")(6")\sqrt{3000 psi} = 6{,}704 \text{ lb}$$

where ϕ = strength reduction factor, 0.85
w = unit wall width
d' = thickness of compression portion of wall
f'_c = concrete compressive strength
V_n = nominal shear strength

CONTAINMENT BUILDING WALLS - STRUCTURAL STRENGTH

PURPOSE: TO DEMONSTRATE THAT EXISTING CONTAINMENT BUILDING WALLS HAVE ADEQUATE STRENGTH TO CONTAIN WASTES.

KNOWN: WALLS FOR AREA 1 AND 2 ARE 12 FT HIGH AND 12 INCHES WIDE. WALLS ARE REINFORCED, BUT TYPE AND QUANTITY OF REINFORCING STEEL ARE NOT KNOWN. SEE ATTACHED DRAWING AND ASSUMPTIONS.

ASSUMPTIONS

1. REBAR IS HORIZONTALLY CENTERED IN THE WALL.
2. NO 5 REBAR IS SPACED ONE FOOT ON CENTER EACH WAY.
3. CONCRETE STRENGTH IS A MINIMUM OF 3000 PSI (CONSERVATIVE AS CONCRETE IS TYPICALLY 4000 PSI)
4. WEIGHT OF SLAG IS 205 PCF (CONSERVATIVE) WITH A Φ OF 35°

METHOD:

1. DETERMINE LATERAL LOAD APPLIED BY THE WORST CASE WASTE PILE (SLAG AT 205 PCF) AGAINST A 12 FT TALL WALL. THIS IS THE WORST CASE OF AREAS 1 AND 2.

2. DETERMINE THE MAXIMUM SHEAR STRENGTH OF THE WALL.

3. DETERMINE THE FACTOR OF SAFETY FOR THE WALL.

FACTOR OF SAFETY

$$FS: \frac{\phi V_n}{V_{applied}} = \frac{6,704 \text{ lb}}{2,778 \text{ lb}} = 2.4$$

The factor of safety is in addition to the strength reduction factor.

CONCLUSION

The slag stabilization unit wall is has sufficient structural strength in shear.

APPLIED LOAD

$V_{applied} = \frac{1}{2} k_a \gamma H^2 = \frac{1}{2}(0.271)(205)(10^2)$

$= 2,778$ lb

where $V_{applied}$ = shear applied by waste pile

γ = unit weight of waste

H = wall height (for this calculation assumes that H does not include wall height below floor slab and footing as wall has equal forces on both sides below grade)

k_a = active earth pressure coefficient

WALL STRENGTH

$\phi V_n = 2\phi w d' \sqrt{f'_c} = V_{ultimate}$

$= 2(0.85)(12\text{ in})(6\text{ in})\sqrt{3000\text{ psi}} = 6,704$ lb

where ϕ = strength reduction factor, 0.85

w = unit wall width

d' = thickness of compression portion of wall

f'_c = concrete compressive strength

V_n = nominal shear strength

SLAG STABILIZATION UNIT WALL STRENGTH CALCULATIONS

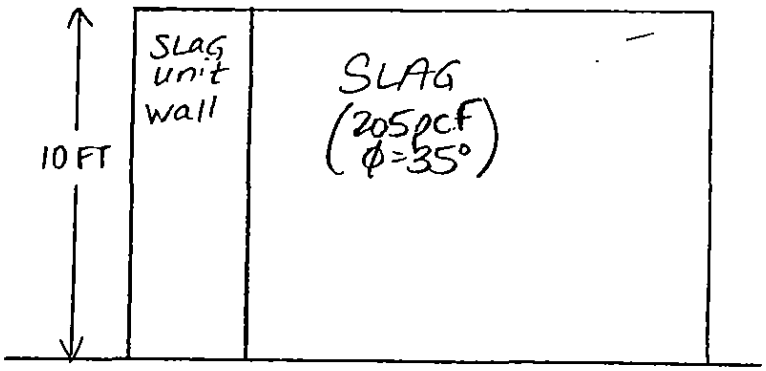
PURPOSE: To demonstrate that existing slag stabilization unit walls have adequate strength to contain wastes.

KNOWN: The wall is 10 feet high and constructed of concrete.

ASSUMPTIONS:
1. The wall is reinforced, but the size and quantity of reinforcement is not known.
2. The minimum concrete strength is 3000 psi.
3. The wall thickness is 12 inches (similar to adjacent Containment Building walls.
4. Slag is 205 pcf* with $\phi = 35°$ (worst case).
5. Reinforcement is centered in the wall.

METHOD:
1. Determine the lateral load applied by the waste pile.
2. Determine the shear strength of the wall.
3. Determine the factor of safety against shear failure.

SKETCH



$$k_a = \frac{1-\sin\phi}{1+\sin\phi} = \frac{1-\sin 35}{1+\sin 35} = 0.271$$

* Note: Slag unit weight is greater than that assumed in the closure cost estimate to create a worst case scenario for wall failur

HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

1. Greenwich Insurance Company, (the "Insurer") of Seaview House, 70 Seaview Avenue, Stamford, CT 06902-6040,(address of the "Insurer") hereby certifies that it has issued liability insurance covering bodily injury and property damage to Exide Technologies, of 210 Carnegie Center, Suite 500, Princeton, NJ 08540 in connection with the insured's obligation to demonstrate financial responsibility under LAC 33:V.3715 or 4411. The coverage applies at EPA ID#LAD008184137 , Exide Technologies, West End Brooklawn Drive, Baton Rouge, LA 70807 (list name, and address for each facility) for Sudden and nonsudden accidental occurrences The limits of liability are $4,000,000 each occurrence and $8,000,000 annual aggregate limits of the Insurer's liability, exclusive of legal defense costs. The coverage is provided under policy number PEC000506202 issued on September 28, 2002. The effective date of said policy is September 28, 2002.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

   (a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

   (b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in LAC 33:V.3715.F or 4411.

   (c) Whenever requested by the administrative authority, the Insurer agrees to furnish to the administrative authority a signed duplicate original of the policy and all endorsements.

   (d) Cancellation of the insurance, whether by the insurer, the insured, a parent corporation providing insurance for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the administrative authority.

   (e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the administrative authority.

I hereby certify that the wording of this instrument is identical to the wording specified in LAC 33:V.3719.J as such regulation was constituted on the date this certificate was issued, as indicated below, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States, and is authorized to conduct insurance business in the State of Louisiana.

Jefferey S. Lejfer

(Signature of Authorized Representative of Insurer)

Jefferey S. Lejfer, Vice President
Authorized Representative of Greenwich Insurance Company

c/o XL Environmental, Inc.
520 Eagleview Boulevard,
Post Office Box 636
Exton, PA 19341-0636

Date of Issuance: October 4, 2002

XL INSURANCE

XL Environmental, Inc.
520 Eagleview Boulevard
PO Box 636
Exton, PA 19341-0636
USA
Tel 800-327-1414
610-458-0570
Fax 610-458-8667
www.xlenvironmental.com

October 4, 2002

Mr. Shaw Schatzle
Louisiana Department of Environmental Quality
Office of Solid and Hazardous Waste
Hazardous Waste Division
P O Box 82178
Baton Rouge, LA 70884-2178

RE: EXIDE CORPORATION
Policy Number – PEC000506202

Dear Mr. Schatzle:

Enclosed please find the Solid and Hazardous Waste Facility Certificates for the above captioned account as required by Louisiana State Law.

Please contact me if you have any questions.

Sincerely,

Kathy Moyer

Kathy Moyer
Underwriting Assistant
Industrial and Commercial Facilities

Enclosure(s)

9. East Baton Rouge Sheriff's Office
300 North Blvd.
Baton Rouge, Louisiana 70802
Phone: (225) 389-5000

10. HAZMATT/TESS
P.O. Box 66614
Baton Rouge, Louisiana 70896
Phone: (225) 925-6595 (Hotline)
Phone: (225) 925-6113 (Information)

EMERGENCY TELEPHONE NUMBERS

1. US EPA Region VI
   1445 Ross Ave.
   Dallas, Texas 75202
   Phone: (866) EPA-SPIL (24 Hours)

2. LA Department of Environmental Quality
   P.O. Box 4301
   Baton Rouge, Louisiana 70821-4301
   Phone: (225) 342-1234 (24 Hours)

3. US Coast Guard
   1615 Poydras St.
   New Orleans, Louisiana 70112
   Phone: (504) 589-6261 (24 Hours)

4. National Response Center (NRC)
   Washington, D.C.
   Phone: 1-800-424-8802 (24 Hours)
   Written correspondence not permitted

5. Fire Department/Emergency
   Phone: 911

6. Baker Fire Department
   3190 Washington St.
   Baker, Louisiana 70714
   Phone: (225) 775-3712

7. Alsen Fire Department
   674 Old Rafe Mayer Rd.
   Baton Rouge, Louisiana 70807
   Phone: (225) 774-3473

8. State Police, Troop A
   17801 Highland Rd.
   Baton Rouge, Louisiana 70810
   Phone: (225) 754-8515