333 ADELAIDE AVENUE PROVIDENC, RHODE ISLAND

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TABLE OF CONTENTS

Section	No.	Title	Page No.				
1.0	NTRODUCTION1						
	11	PUDDOSE	1				
	1.1	RISK ASSESSMENT PROCESS	1				
	1.2	ASSUMPTIONS AND REGULATORY CONTEXT					
	1.4	HISTORY OF THE PROPERTY AND SITE					
	1.5	PHYSICAL DESCRIPTION OF MASHAPAUG COVE AND SURROUNDING AREA	A 4				
	1.6	CONCEPTUAL SITE MODEL	6				
		1.6.1 Sources	7				
		1.6.2 Migration Pathways and Receiving Media	8				
		1.6.3 Potentially Complete Exposure Pathways	9				
	1.7	SELECTION OF METHOD FOR CONDUCTING THIS RISK ASSESSMENT	11				
2.0	HAZARD IDENTIFICATION12						
	2.1	IDENTIFICATION OF AVAILABLE DATA AND SELECTION OF ANALYTICAL I	DATA FOR				
		THE RISK ASSESSMENT					
		2.1.1 Dioxin	12				
	2.2	SELECTION OF CHEMICALS OF POTENTIAL CONCERN (COPCS)					
	2.3	COPC SELECTION METHODS					
		2.3.1 COPC Selection Results	14				
3.0	тох		15				
ž	3.1	TOXICITY ASSESSMENT	15				
		3.1.1 Dose-Response Assessment for Carcinogenic Effects	15				
		3.1.2 Dose-Response Assessment for Noncarcinogenic Effects	17				
		3.1.3 Dermal Dose-Response Values					
		3.1.4 Sources of Dose-Response Values					
		3.1.5 Exposure to Lead in Site Media					
4.0	EXP	OSURE ASSESSMENT	21				
	4.1	DESCRIPTION OF CURRENT AND FORESEEABLE FUTURE SITE USE					
	4.2	IDENTIFICATION OF POTENTIAL HUMAN RECEPTORS AND EXPOSURE PATH	hways21				
		4.2.1 Receptor Exposure Scenarios for Surface Water and Sediment					
	4.3	IDENTIFICATION OF EXPOSURE POINTS AND EXPOSURE ROUTES					
	4.4	IDENTIFICATION AND ESTIMATION OF EXPOSURE POINT CONCENTRATION	1(EPC)29				
	4.5	QUANTIFICATION OF EXPOSURES					
5.0	HUN	IAN HEALTH RISK CHARACTERIZATION	31				
:	5.1	EVALUATION OF LEAD IN SITE MEDIA	32				
6.0	UNC	CERTAINTY	34				
7.0	CON	NCLUSIONS	35				
~ ~	DEE		36				

333 ADELAIDE AVENUE PROVIDENC, RHODE ISLAND

List of Figures

Figure No.	Title
Figure 1	Site Configuration Per Exhibit A of 2006 Consent Order
riguic i	Site Configuration 1 er Exmont A of 2000 Consent Order
Figure 2	Cove Sampling Locations

333 ADELAIDE AVENUE PROVIDENC, RHODE ISLAND

List of Tables

Table No.	Title
Table 1	Surface Water Data – Detected Parameters
Table 2	Sediment Data-Detected Parameters (0-2 ft)
Table 3	Toxicity Equivalency Factors (TEFs) for Dioxin and Furan Congeners
Table 4	Calculation of Dioxin Toxic Equivalents (TEQ) for Surface Water Samples
Table 5	Calculation of Dioxin Toxic Equivalents (TEQ) for Sediment Samples
Table 6	Selection of Chemicals of Potential Concern – Surface Water
Table 7	Selection of Chemicals of Potential Concern – Sediment
Table 8	RME Values Used For Daily Intake Calculations – Surface Water
Table 9	RME Values Used For Daily Intake Calculations – Sediment
Table 10	CT Values Used For Daily Intake Calculations – Surface Water
Table 11	CT Values Used For Daily Intake Calculations – Sediment
Table 12	Exposure Point Concentration Summary – Surface Water
Table 13	Exposure Point Concentration Summary – Sediment
Table 14	Risk Assessment Summary – RME
Table 15	Risk Assessment Summary – CT
Table 16	Calculations of Blood Lead Concentrations (PbBs) – Trespasser
Table 17	Calculations of Blood Lead Concentrations (PbBs) - Commercial/Industrial Worker

333 ADELAIDE AVENUE PROVIDENC, RHODE ISLAND

List of Appendices

Appendix	Title
Appendix A	Analytical Data Used in the Risk Assessment
Appendix B	Dose-Response Information and Toxicity Profiles
Appendix C	Methods for Computing the Exposure Point Concentration Term
Appendix D	Risk Calculation Spreadsheets
Appendix E	Surface Water Uncertainty Analysis

1.0 INTRODUCTION

1.1 PURPOSE

This document presents the Method 3 Risk Assessment for Mashapaug Cove that is within the boundaries of the property at 333 Adelaide Avenue, Providence, Rhode Island. Figure 1 is a map of the Property at 333 Adelaide Avenue, which also identifies Mashapaug Cove. As part of the redevelopment of the property at 333 Adelaide Avenue, the following distinct areas have been identified: the area that has been redeveloped for retail use (Parcel A); the area of the new high school that is currently under construction (Parcel B), the area of the planned YMCA facilities including office space, recreational, and after-school day-care facilities that will soon to be constructed (a portion of Parcel C); and the remaining portion of Parcel C and all of Parcel D (referred to as the Park Parcel in the March 29, 2006 Consent Order, and Mashapaug Cove is that portion of Mashapaug Pond that is within the 333 Adelaide Avenue property boundary. This risk assessment has been prepared as an appendix to the July 2006 Supplemental Site Investigation Report (SIR) for Parcel D, the portion of parcel C that is not part of the YMCA redevelopment, and Mashapaug Cove. The focus of this Method 3 Risk Assessment is the potential risks associated with Mashapaug Cove as required by the Amended Letter of Responsibility issued by RIDEM on April 5, 2006 (RIDEM, 2006a).

This Method 3 risk assessment addresses surface water and sediment and it complements the Method 1 remedial objectives identified in the Supplemental SIR for the soils in the upland portions of Parcel D and the portion of Parcel C that is not being redeveloped by the YMCA. The Site Investigation Report utilizes the results of this Method 3 risk assessment in conjunction with the Method 1 remedial objectives for the soils that are identified in the Supplemental SIR.

1.2 **RISK ASSESSMENT PROCESS**

The risk assessment process can be divided into four steps: hazard identification, dose-response assessment, exposure assessment, and risk characterization and uncertainty analysis. The hazard identification determines what substances at the Site may be of potential concern. The toxicity assessment identifies the potential adverse effects that might be associated with exposure to substances at the Site and also describes the relationship between the level of exposure and the likelihood and/or severity of an adverse effect (dose-response assessment). The exposure assessment identifies potential routes of exposure, characterizes the populations exposed, and determines the frequency, duration, and extent of exposure. The last step, risk characterization,

combines the information from the previous three steps to describe the type (e.g., carcinogenic and non-carcinogenic) and magnitude of potential risks to the exposed populations. It also identifies the uncertainty in the characterization of potential risks.

1.3 Assumptions and Regulatory Context

The August 2, 2005 Letter of Responsibility from RIDEM to Textron, Inc. required investigation of Mashapaug Cove in a manner consistent with the Rhode Island Remediation Regulations. That letter was the focus of a meeting on September 28, 2005 at RIDEM's offices attended by representatives of the City of Providence, Textron Inc., RIDEM, and Rhode Island Department of health (RIDOH). Subsequent to that meeting, Textron submitted to RIDEM the November 2005 *Supplemental Site Investigation Work Plan to Support Human Health and Ecological Risk Assessment Activities, Park Parcel/Mashapaug Cove, Former Gorham Manufacturing Property, 333 Adelaide Avenue, Providence, Rhode Island.* On March 14, 2006 RIDEM forwarded a letter to Textron in response to the November 2005 Work Plan.

On March 29, 2006 two Consent Orders were executed with respect to the property at 333 Adelaide Avenue. The Consent Orders addressed "Parcels B & C" and the "Park Parcel" respectively. The Consent Order for "Parcels B & C" primarily addressed concerns related to the construction of a new high school by the City of Providence and new YMCA facilities to be constructed on land owned by the City of Providence. The Consent Order for the "Park Parcel" addresses concerns related to the remaining portions of the 333 Adelaide Avenue property (excluding the area already developed for retail use, the area of the high school, and the area of the proposed YMCA facilities). That Consent Order required the preparation of the SIR to which this risk assessment is attached.

On April 5, 2006 RIDEM issued an Amended Letter of Responsibility to Textron and the City of Providence with respect to the Park Parcel. That letter amended the requirements for the preparation of an SIR to include Mashapaug Cove. On May 2, 2006 a meeting was held between representatives of RIDEM and Textron to discuss Textron's conceptual approach for the investigation of the uplands area and Mashapaug Cove. On May 25, 2006 RIDEM provided a letter response to the conceptual approach for sampling and analysis of the uplands area and Mashapaug Cove. Textron completed a Supplemental Site Investigation Work Plan in June 2006 and the activities identified in the Work plan were implemented in June and July of 2006. The

human health risk assessment has considered all of the available analytical data for Mashapaug Cove.

The risk assessment includes the assessment of human health risk at the Site subject to the requirements of the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (hereafter referred to as the Remediation Regulations) dated March 31, 1993 and as amended in August 1996 and February 2004 (RIDEM, 2004). The human health risk characterization has considered the analytical data that were collected during the Phase I and Phase II site investigations, pre-design investigations, and supplemental investigations, including those investigations conducted by RIDEM in 2005 and by MACTEC in behalf of Textron in 2006. The risk characterization has been performed in accordance with Rule 8.04 of the Remediation Regulations. As required by Rule 8.04, the methodology used here is consistent with scientifically acceptable risk assessment practices and the fundamentals of risk assessment under EPA's Risk Assessment Guidance for Superfund. Supplemental guidance for this risk assessment was provided by the "Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), Interim Final" (USEPA, 1989), the "Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments)" (USEPA, 1998), the "Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors" (USEPA, 1991), and USEPA Region I guidance (USEPA Region I, 1995a and 1996a), and the Exposure Factors Handbook (USEPA, 1997b).

It has been proposed in the SIR that portions of the shoreline and upland areas to the south and east of Mashapaug Cove will be capped to bring those areas into compliance with Industrial/Commercial Direct Exposure Criteria. Consistent with the March 29, 2006 Consent Order (Park Parcel), the final land use for Parcel D and the portion of parcel C not included in the YMCA redevelopment is Industrial/Commercial. Therefore the upland areas adjacent to Mashapaug Cove are considered to have potential future use as Industrial/Commercial property. An eight foot high chain link fence currently separates Parcel D, that portion of Parcel C that is not included in the YMCA redevelopment, and Mashapaug Cove from Parcel A, Parcel B, and the portion of Parcel C included in the YMCA redevelopment. An ELUR as described in Section 8.09 of the Remediation Regulations will be instituted for the Site to prohibit residential and recreational use and other sensitive uses/activities on Parcel D and the portion of Parcel C that is not included in the YMCA Providence to prohibit digging and disturbance of the cap. The ELUR will include specific measures for the preservation of the cap through the implementation of an Operation and Maintenance Plan and will restrict activities on the various surfaces of the cap to those that are consistent with cap construction.

1.4 HISTORY OF THE PROPERTY AND SITE

The history of the 333 Adelaide Avenue property that borders the cove to the east, south, and west is well documented and is summarized in Sections 1.0 and 2.0 of the SIR. The detailed summary is not reproduced here, but can be found in the SIR. The former Gorham Manufacturing Facility at 333 Adelaide Avenue is situated on a 37 acre parcel adjacent to at 333 Adelaide Avenue in Providence, Rhode Island. Between 1890 and 1986, sterling silver and plated silverware, as well as bronze castings, were manufactured on-site. Operations including casting, rolling, polishing, lacquering, forging, plating, annealing, soldering, degreasing, machining, and melting.

The former manufacturing facility has been improved with a retail complex on Parcel A, a high school is under construction on Parcel B, and the Greater Providence YMCA is planning to construct a facility on a portion of Parcel C. Parcel D is currently vacant and surrounded by a chain link fence. The currently vacant former carriage house (garage), located in the northeast portion of Parcel C is the only remaining building from the former facility. The former manufacturing site is bordered by a parking lot and supermarket to the east and Adelaide Avenue and a residential neighborhood to the south. The 333 Adelaide Avenue property site slopes downward toward Mashapaug Pond and Mashapaug Cove and Mashapaug Pond. Figure 2 shows the location of Mashapaug Cove.

The 2006 Amended Notice of Responsibility requires an assessment of Mashapaug Cove. Mashapaug Cove has an area slightly larger than four acres and is within the property line of 333 Adelaide Avenue as shown on Figure 2. The southern half of Mashapaug Cove is herein referred to as the Inner Cove and the northern half up to the property line referred to as the Outer Cove. Recent investigations have focused on approximately 10 acre area, including Mashapaug Cove. Mashapaug Cove (i.e. the "Cove") is located in the northeast corner of Mashapaug Pond.

1.5 PHYSICAL DESCRIPTION OF MASHAPAUG COVE AND SURROUNDING AREA

Mashapaug Cove has surface area slightly greater than four acres. Mashapaug Cove is bordered to the east, south, and west by portions of the property at 333 Adelaide Avenue. Mashapaug

Cove is bordered to the north by Mashapaug Pond and on the opposite shore of Mashapaug Pond is an industrially-zoned area. Water depth within the Inner Cove as measured in June 2006 had a maximum of 3.5 feet and the maximum water depth in the Outer Cove was 11.4 feet at its northern perimeter. Overall, the Inner Cove has an organic, silty bottom that might be described in common terms as "muck". The eastern shoreline of the Outer Cove generally has a more sandy, less silty bottom and is more accessible than is the shoreline along most of the Inner Cove. The deeper portion of the Outer Cove appears to also exhibit a somewhat organic, silty bottom. During the summer months, aquatic vegetation is very abundant within the Inner Cove.

Mashapaug Pond (including Mashapaug Cove) has been classified as Class B surface water (RIDEM, 2006). Class B waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They should be suitable for compatible industrial process and cooling, hydropower, aqua-cultural uses, navigation, and irrigation and other agricultural uses. These waters should have good aesthetic value.

In August 2002, RIDEM and the Rhode Island Department of Health (RIDOH) issued a letter (RIDEM and RIDOH, 2002a) to inform the public concerning water quality in Mashapaug Pond and to identify safe uses of the pond. That letter concluded that fish caught from the pond are not safe to eat due to contamination by PCBs and dioxins, that bacteria levels are apparently high following rainstorms rendering the pond unsafe for swimming, and blue-green algae found in the pond can produce toxins that can harm humans and animals that swim in or drink pond water during algal blooms, further rendering the pond unsafe for direct contact and consumption at those times. None of these conditions has been attributed to conditions at the Site itself or the former manufacturing facility.

A "Do's and Don'ts Flyer" was released by RIDEM and RIDOH (RIDEM and RIDOH, 2002b) that indicates that catch and release fishing and boating are safe activities for Mashapaug Pond. The flyer strongly urges people not to drink pond water, not to eat fish caught in the pond, not to swim, wade, play, or bathe in pond water, and not to boat whenever thick scum, algal mats, or foul odors occur on the pond. A copy of the RIDEM/RIDOH advisory letter and flyer is presented in Appendix B of the SIR. This advisory concerning safe uses of the pond indicates that a visitor to the Site should be unlikely to have significant exposures to Site-related constituents during recreational activities at the pond (minimal exposure to cove surface water

and sediment). However, historically, the RIDEM/RIDOH advisory has not been completely effective in preventing direct contact recreational uses of the cove such as wading and swimming.

Groundwater beneath the Site is classified by RIDEM as Class GB, not suitable for public or private drinking water use. Groundwater beneath or near the Site is not used as a source of drinking water. There are no public or private wells within a four-mile radius of the Site (ABB-ES 1995a and 1995b). The nearest public water supply is the Scituate Reservoir located approximately nine miles to the west, which is the source of public drinking water for the City of Providence.

Groundwater beneath the former facility flows predominantly in a northerly direction and discharges into Mashapaug Cove. There is a groundwater divide approximately parallel to the eastern property boundary, in the southeastern portion of the property. The depth to groundwater beneath the 333 Adelaide Avenue property ranges from approximately 3-feet along the north bank area (south shore of Mashapaug Cove) to 30-feet below grade in the southeastern area of the 333 Adelaide Avenue property. Historical investigations have identified low levels of volatile organic compounds (VOCs) (PCE, TCE and 1,1,1-TCA) in groundwater immediately upgradient of Mashapaug Cove along the southern shore. This VOC groundwater plume has previously been determined to pose minimal impact to surface water within the Cove (Section 3.5; HLA, 1999).

1.6 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) identifies the nature and sources of releases, migration mechanisms, receiving media, potential receptors, and potential exposure pathways. The CSM information is used in scoping the risk assessment activities and in the identification of remedial objectives. The following text describes the CSM for the evaluation of the Park Parcel soils and the surface water and sediment of Mashapaug Cove. Figure 4.41 is a summary of the CSM. Many of the sources at the former facility have been addressed through remedial actions and may no longer represent a source from which hazardous materials could migrate. The 2005 RIDEM investigation of the Site as well as the Supplemental SI have identified materials (dioxins and furans in particular) in soil and sediments that had not previously been identified at the former manufacturing facility. The specific source of the dioxins and furans is not known. However, the distribution of dioxin and furan homolog groups in soil and sediment appears to be consistent with the signature associated with municipal waste incineration.

The northeastern portion of the Site is not known to have been the location of former manufacturing or waste disposal activities. The specific source of the arsenic and PAHs that have been identified in soil in portions of that area is not known. It appears that imported fill or fill from the former manufacturing facility is present beneath the pavement on the former parking area in the northeast portion of the Park Parcel. It also appears that fill materials have been brought to that area and then placed on top of the existing pavement from the former parking area. The source of that material has not been identified.

1.6.1 Sources

Investigations of the former Gorham Manufacturing Facility and the remainder of the property at 333 Adelaide Avenue have identified evidence of releases of hazardous materials associated with the former facilities to soils and groundwater. The 1995 RI Report indicated that six categories of release, or potential release had been identified. These include: oil from removed and out-of-service USTs; VOCs in soil and groundwater from above-ground storage tanks (ASTs), production activities (particularly in the areas of Buildings W and T), or incidental disposal; fill material of the West Parking and North Bank Areas; surface soils containing PCBs near the transformer pad and Building N; releases of oil from machines to building basements; and possible contaminants conveyed from the site in stormwater runoff. Subsequent to the RI Report, an additional source has been identified. A slag pile located immediately south of Mashapaug Cove appears to have been accumulated from smelter operations that were performed in Building V of the former facility. The slag pile consisted of very dense, metals-containing, solid material that was present in chunks ranging in diameter between an inch or two to perhaps nine or ten inches. The slag pile has been excavated and removed from the property in July 2006.

In particular, the bronze casting, silverware manufacturing, and plating activities have resulted in releases of metals (in particular lead and copper) to soils on Parcels A, B, and C. In addition, a slag pile located immediately south of Mashapaug Cove appears to have been accumulated from smelter operations that were performed in Building V of the former facility. Chlorinated VOCs have been detected in groundwater in the areas of former Buildings W and T. The Building W area is a probable source area for PCE in groundwater. However, the specific source or point of release of PCE in the vadose zone soil nor in the shallow groundwater has not been identified. Remedial activities including excavation and treatment of petroleum residuals in the former facility area have been conducted.

1.6.2 Migration Pathways and Receiving Media

Investigations to date indicate that metals and PAHs and other persistent materials in surficial soils and fill material have the potential to migrate with soil material via overland flow during and immediately after precipitation events. It appears that historically, and recently, soils from the former facility area and along the filled area immediately to the south of Mashapaug Cove have been subjected to this mechanism and a number of drainage swales have been identified between the higher elevation former facility area and the shoreline of Mashapaug Cove. Potentially, release of metals from the former slag pile might have occurred via infiltration of precipitation and subsequent leaching of metals. The leachate may have infiltrated into groundwater and subsequently flowed to surface water or it may have flowed directly into the cove from the slag pile.

Persistent and bioaccumulating substances that are present in sediments have the potential to accumulate in biota and be biomagnified via food chain (both human and ecological) mechanisms. There are few persistent and bioaccumulating substances detected in sediments that may need to be evaluated for this type of migration/exposure pathway. USEPA identified a list of priority persistent and bioaccumulating substances. The list includes aldrin/dieldrin; benzo(a)pyrene; chlordane; DDT, DDD, DDE; hexachlorobenzene; alkyl-lead; mercury; mirex; octachlorostyrene; PCBs; dioxins and furans; and toxaphene. From that list of compounds, only benzo(a)pyrene and dioxins and furans have been reported in sediments frequently and at concentrations that are indicative of a release. Potential bioaccumulation of these substances into biota from the pond and into humans or non-human predators is a possibility.

There is an identified plume of chlorinated VOCs in groundwater which flows in a northerly direction from the higher elevation former facility area in the direction of Mashapaug Cove. The groundwater appears to discharge into Mashapaug Cove, passing through the sediments of the cove in the process. Available data indicate that minimal transfer of chlorinated VOCs from groundwater to surface water is occurring. The available sediment quality data suggest that the highly organic sediments of the cove may be acting as a sink for VOCs in groundwater that passes through the sediment. This has not been confirmed, and direct historical discharge of VOC-containing materials to the cove has also not been ruled out as a possible explanation of sediment quality.

There are currently no occupied buildings within the Park Parcel and therefore there is no current or potential migration pathway involving vapor migration from groundwater to indoor air. There have

not been highly leachable materials identified in soils within the Site that might migrate to groundwater via leaching or infiltration.

1.6.3 Potentially Complete Exposure Pathways

A complete exposure pathway requires four elements: 1) a source or mechanism of chemical release; 2) a transport or retention medium; 3) a point of potential human contact with the contaminated medium; and 4) a route of exposure at the point of contact (USEPA, 1989). Potential exposure pathways were determined by first identifying all sources of contamination and the receiving media. Once sources were identified, relevant fate and transport mechanisms were evaluated to identify potential exposure media. Exposure points and exposure routes were then identified by determining the areas where receptors may potentially come in contact with contaminated media (i.e., the exposure points), and the likely mechanisms of exposure (i.e., exposure routes). Exposure pathways that have these four elements (i.e., a source or mechanism of release, a transport or retention medium, an exposure point where contact can occur, and an exposure route at the point of contact) are considered potentially complete pathways (USEPA, 1989).

The CSM indicates that inorganics and metals, SVOCs, and dioxins and furans are present in soils of the Park Parcel. Under the industrial/commercial land use (identified final use of the Site), an employee could potentially be exposed to surface soil. Utility or construction work could also occur under the industrial/commercial land use, thereby potentially exposing utility or construction workers to soil. Potential exposure pathways to the constituents detected in soil could include incidental soil ingestion, dermal contact, and inhalation of soil-derived dust and vapors.

Trespassers could potentially be exposed to soils at the site. Trespassers at the Site could include adults, adolescents and children, although children under the age of 8 are unlikely to be trespassing on this property. Potential exposure pathways to the constituents detected in soil could include incidental soil ingestion, dermal contact, and inhalation of soil-derived dust.

The groundwater at and downgradient of the Site is not used as a source of potable water, and there are no private water supply wells within $\frac{1}{2}$ mile of the site. Potable water is supplied by the City of Providence municipal supply system. Therefore, there are no complete exposure

pathways associated with potable or non-potable use of groundwater (either residential or industrial/commercial).

It appears groundwater discharges to Mashapaug Cove. VOCs, particularly chlorinated solvent compounds, are present at very low concentrations in surface water but appear to be present in sediment at several locations within Mashapaug Cove. The cove sediments also contain inorganics and metals, PAHs, and dioxins and furans. Industrial workers might be exposed to constituents in surface water and sediment (covered by two feet of water or less) during infrequent wading activities within the cove. Trespassers might be exposed to constituents in surface water and sediments that are covered by surface water two feet or less in depth during wading and/or swimming activities. Environmental receptors (aquatic life, wildlife, birds) might be exposed to constituents in surface water and sediment.

Biota in the cove may have accumulated benzo(a)pyrene and dioxins and furans tissues. Humans who might catch and consume biota (such as fish or turtles) could potentially be exposed to these constituents. It should be noted there is a RIDEM/RIDOH advisory in place that advises people not to consume fish from Mashapaug Pond because of PCBs and dioxins reported in fish tissue. Biota in the cove might be exposed directly by accumulating the constituents in tissues, or predators (such as fish, predatory fish and birds, and semi-aquatic wildlife) may be exposure via consumption of prey.

In summary, the following potentially complete exposure pathways have been identified for the Site:

- 1) Industrial/commercial employee:
 - a. potential direct contact with soil/incidental ingestion, dermal contact, and inhalation of dust; and
 - b. potential incidental ingestion and dermal contact with surface water and sediment in Mashapaug Cove.
- 2) Construction and utility workers:
 - a. potential direct contact with soil/incidental ingestion, dermal contact, and inhalation of dust and vapor inhalation.
- 3) Adolescent and adult trespasser:
 - a. potential direct contact with soil/incidental ingestion, dermal contact, and inhalation of dust;
 - b. potential incidental ingestion and dermal contact with surface water and sediment in Mashapaug Cove during wading/swimming activities; and
 - c. potential consumption of fish or other biota obtained from Mashapaug Cove.

1.7 SELECTION OF METHOD FOR CONDUCTING THIS RISK ASSESSMENT

Three soil risk assessment methods associated with remedial objectives are described in RIDEM's Remediation Regulations (RIDEM, 1993 and updated in 1996 and 2004). Method 1 risk assessments involve comparisons of soil concentrations to direct exposure criterion and leachability criteria. Method 2 risk assessments evaluate potential risks using site-specific information for individual chemicals, possibly in conjunction with Method 1 values for other chemicals. Both Methods 1 and 2 are chemical-specific assessment/management approaches. Method 3 risk assessments evaluate the cumulative cancer and non-cancer risks associated with possible exposures at a site. The Method 3 approach is a cumulative risk approach rather than a chemical-specific approach. Method 3 has been selected as the method to evaluate potential human health risk at the site. This is appropriate because there are no Method 1 or Method 2 direct exposure criteria for surface water and sediment.

2.0 HAZARD IDENTIFICATION

2.1 IDENTIFICATION OF AVAILABLE DATA AND SELECTION OF ANALYTICAL DATA FOR THE RISK ASSESSMENT

Sections 3 and 4 of the SIR discussed the data collection and evaluation activities. Appendix A presents all of the analytical data used in the risk assessment.

For surface water, the HHRA uses only the samples collected in June 2006 by MACTEC to evaluate the risk from surface water. There are some historical surface water samples which were collected by URI, RIDEM and HLA, of which the most recent sampling was preformed in 1999. It is assumed that the recent data will better represent the current conditions of the cove. Table 1 presents a summary of detected compounds in surface water.

For sediment, the HHRA uses samples collected in June, 2006 by MACTEC and samples collected in December, 2005 by RIDEM. The sediment samples collected by MACTEC were collected at locations SED10 through SED32. Multiple depth intervals were sampled during this event but only the 0 - 1 foot interval will be used in this HHRA. The sediment samples collected by RIDEM were collected at locations SD-1001 to SD-1005 at an interval of 0-2 feet. Table 2 presents a summary of detected compounds in sediment.

2.1.1 Dioxin

In this report the term dioxin is used to refer to both dioxin congeners (dioxins or polychlorinated dibenzo dioxins (PCDDs)) and furan congeners (furans or polychlorinated dibenzo furans (CDFs)), a group of related compounds with similar risk characteristics. The congener-specific dioxin and furan concentration data have been consolidated into a simple measure for each of the samples that have been analyzed. That single measure is referred to as the Toxic Equivalence (or TEQ) of the sample. The TEQs are media-specific concentrations that are normalized to the toxicity of the 2,3,7,8-TCDD congener, generally considered to be the most toxic of the dioxin, furan, and dioxin-like compounds. The TEQs are calculated by multiplying the medium-specific concentration of each congener or congener group by a Toxicity Equivalence Factor (TEF) and summing those products. The TEF is a measure of the toxicity of a particular congener or congener group relative to toxicity of 2,3,7,8-TCDD. The human health risk assessment process typically utilizes the mammalian TEFs published by the World Health Organization listed in Table 3. In simple terms, the dioxins/furans TEQ indicates the concentration of 2,3,7,8-TCDD

that would have the same toxicity as the mixture of dioxins and furans being evaluated. Congeners that do not contain chlorine at the 2,3,7, and 8 positions are not assigned a TEF, since they do not have the same chemistry as the 2,3,7,8-TCDD congener.

Calculations for dioxin TEQ values in surface water and sediment are presented in Tables 4 and 5 respectively.

2.2 SELECTION OF CHEMICALS OF POTENTIAL CONCERN (COPCS)

This section identifies the chemicals present at the Site and provides rationale for inclusion of analytes as COPCs.

2.3 COPC SELECTION METHODS

COPCs are chemicals for which data of sufficient quality are available, and which may pose more than a *de minimus* health risk. The procedure used to select COPCs for the HHRA is summarized as follows, and is consistent with USEPA Region I (USEPA, 1999) methodology:

- 1) Comparison to Available Criteria
 - <u>Selected</u> as a COPC in **sediments** if the maximum detected concentration exceeds the USEPA Region IX PRG for residential soils (USEPA, 2004).
 - <u>Selected</u> as a COPC in **surface water** if the maximum detected concentration exceeds the USEPA Region IX PRG for tap water (USEPA, USEPA, 2004).

The soil PRGs are protective for direct contact (ingestion and dermal contact) exposures, as well as for inhalation of particulate and volatile constituents that may be released to air. The PRGs are derived for a 1×10^{-6} cancer risk level or a non-cancer hazard quotient (HQ) of 1. Per USEPA Region I guidance (USEPA, 1995), the PRGs based on noncarcinogenic effects have been adjusted to represent a HQ of 0.1 for the purposes of COPC selection. This adjustment of the PRGs per the guidance is applied to account for the possible cumulative impacts of having several chemicals that might have similar mechanisms of toxic action.

The use of residential PRGs for selection of COPCs in sediment ensures that analytes present at concentrations that could potentially pose more than a *de minimus* risk for residential land use exposures are identified. The use of these PRGs for selection of COPCs in and sediments represents a conservative approach, since potential exposures to these media will not occur at the frequency or intensity that would be associated with residential land use. The use of tap water PRGs to identify COPCs in surface water represents a very conservative approach, since potential

exposures to surface water would involve only incidental ingestion of water (Mashapaug Pond is not used as a source of potable water).

The results of the COPC selection for each medium are summarized in Tables 6 through 7. The following notes are used to denote the reasons for selection or exclusion of analytes as COPCs:

- A. ASL: The concentration used for COPC screening (the maximum detected concentration) is greater than the risk-based concentration; the analyte is therefore selected as a COPC.
- B. BSL: The concentration used for COPC screening (the maximum detected concentration) is less than the risk-based concentration; the analyte is therefore not selected as a COPC.
- C. NSL: The chemical does not have an available risk-based concentration and therefore is selected as a COPC.
- D. FOD: The concentration used for COPC screening (the maximum detected concentration) is greater than the risk-based concentrations; however the chemical is detected in less than five percent of the samples and at low concentrations, therefore the analyte is not selected as a COPC.

2.3.1 COPC Selection Results

COPCs have been selected for both exposure areas combined (inner cove and outer cove) for each medium. In surface water the following chemicals were selected as COPCs because their maximum detected concentration is greater than their corresponding screening value: cis-1,2dichloroethene, tetrachloroethene, trichloroethene, vinyl chloride, benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, and dioxin (TEQ). Also in surface water lead is selected as a COPC because there was no screening value available. The selection of COPCs for surface water is presented in Table 6.

In sediment the following chemicals have been selected as COPCs because their maximum detected concentration is greater than their corresponding screening value: cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, vinyl chloride, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, aroclor-1254, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and dioxin (TEQ). Also in sediment s-butylbenzene is selected as a COPC because there was no screening value available. The selection of COPCs for sediment is presented in Table 7.

3.0 TOXICITY ASSESSMENT

3.1 TOXICITY ASSESSMENT

The purpose of the toxicity assessment is to characterize the relationship between the dose of COPC administered or received and the incidence of adverse health effects in the exposed population. From this quantitative dose-response relationship, toxicity values (e.g., slope factors, reference dose values, or reference concentrations) are derived that can be used to estimate the likelihood of adverse effects as a function of human exposure to an agent. These toxicity values are used in the risk characterization process to estimate the potential for adverse effects occurring in humans at different exposure levels.

The dose-response relationship(s) for each chemical that has been selected as a COPC is presented in this section. The dose-response information may be divided into two major categories:

- Toxicity information associated with threshold (non-carcinogenic) health effects.
- Toxicity information concerning carcinogenicity, either from human epidemiologic data or from laboratory studies.

All the chemicals selected as COPCs are evaluated for potential *non-carcinogenic* health effects. In addition, any substance considered to be a *known*, *probable*, or *possible* human carcinogen is also evaluated for its potential carcinogenic effects. The classification of a chemical as a carcinogen does not preclude an evaluation of that same chemical for potential non-carcinogenic health risks, as all potentially carcinogenic chemicals may also exert non-carcinogenic health effects.

3.1.1 Dose-Response Assessment for Carcinogenic Effects

It has generally been assumed that carcinogenic effects are non-threshold effects (IRIS, 2003). This means that any dose, no matter how small, is assumed to pose a finite probability of generating a response. Thus, no dose of a carcinogen is thought to be risk-free. For carcinogenic effects, USEPA uses a two-part evaluation in which the substance is first assigned a weight-of-evidence classification, and then a slope factor (SF) or unit risk (UR) is calculated to reflect the carcinogenic potency.

The weight-of-evidence evaluation involves determining the likelihood that the agent is a human carcinogen. USEPA has developed a system for characterizing the overall weight of evidence for a chemical's carcinogenicity based on the availability of animal, human, and other supportive data (USEPA, 1989a). The weight-of-evidence classification rates the likelihood that an agent is a human carcinogen. It qualitatively affects the interpretation of potential health risks. Three major factors are considered in characterizing the overall weight-of-evidence for carcinogenicity: (1) the quality of evidence from human studies, (2) the quality of evidence from animal studies, and (3) other supportive information, such as mutagenicity data and structure-activity data.

The USEPA final classification of the overall weight-of-evidence has the following five categories; these categories will be redefined when USEPA adopts the Final Guidelines for Carcinogen Risk Assessment:

<u>Group A - Human Carcinogen.</u> This category indicates there is sufficient evidence from epidemiological studies to support a causal association between an agent and human cancer.

<u>Group B - Probable Human Carcinogen.</u> This category generally indicates there is at least limited evidence from epidemiologic studies of carcinogenicity to humans (Group B1) or that, in the absence of data on humans, there is sufficient evidence of carcinogenicity in animals (Group B2).

<u>Group C - Possible Human Carcinogen.</u> This category indicates that there is limited evidence of carcinogenicity in animals in the absence of data on humans.

<u>Group D - Not Classified.</u> This category indicates that the evidence for carcinogenicity in animals is inadequate.

<u>Group E - No Evidence of Carcinogenicity to Humans.</u> This category indicates that there is evidence of noncarcinogenicity in at least two adequate animal tests in different species or in both epidemiologic and animal studies.

USEPA's draft revised guidelines for cancer risk assessment (USEPA, 1999) have been adopted as agency policy for cancer risk assessment. These guidelines contain a revised classification system for carcinogenic effects with the following classifications.

- Carcinogenic to humans
- Likely to be carcinogenic to humans
- Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential
- Data inadequate for an assessment of human carcinogenic potential
- Not likely to be carcinogenic in humans

In IRIS, the weight of evidence classification for a given chemical may reflect either of the two classification schemes identified above.

CSF values are typically calculated for chemicals in Groups A, B1, B2, and "Carcinogenic to humans" and "Likely to be carcinogenic to humans". Cancer dose-response values for chemicals in Group C are calculated on a case-by-case basis. The CSF is an estimate of the upper 95% Confidence Limit of the slope of the dose-response curve extrapolated to low doses.

For some chemicals, human epidemiologic data are the basis of an estimate of the carcinogenic potency, although the most common basis of these values is an animal study. The CSF is given in units of $(mg/kg/day)^{-1}$ and is based upon the concept of a lifetime average daily dose. Oral CSFs are used to estimate the risks associated with exposure to carcinogens via ingestion. No SFs are available for the dermal route of exposure, but are instead calculated from oral SFs using the methodology described in Section 3.1.3.

The dose-response data used in this HHRA for carcinogenic effects are presented in Appendix B.

3.1.2 Dose-Response Assessment for Noncarcinogenic Effects

In contrast to carcinogens, noncarcinogens are believed to have threshold exposure levels below which adverse effects are not expected. USEPA has derived standards and guidelines based on acceptable levels of exposure for such compounds. Noncarcinogenic effects of concern on which many of the standards and guidelines are based include liver toxicity, reproductive effects, neurotoxicity, teratogenicity, and other chronic toxicities. Various criteria have been developed from experiments that can be used to estimate the dose-response relationship of noncarcinogens. Some of the same uncertainties involved in deriving cancer risk estimates (namely, selection of an appropriate data set and extrapolation of high-dose animal data to low-dose human exposure) are also involved in deriving noncarcinogenic dose-response criteria. Dose-response values used most often to evaluate noncarcinogenic effects are reference doses (RfDs).

The RfD, expressed in units of mg/kg/day, is defined as an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime (USEPA, 1989). When available, the RfD is the dose-response criterion

most appropriate for quantitatively estimating noncarcinogenic effects. The RfD is derived from the following equation:

$$RfD (mg/kg/day) = \frac{NOAEL \text{ or } LOAEL}{UF \text{ and/or } MF}$$

The No Observable Adverse Effect Level (NOAEL) represents the dose of a chemical at which there are no statistically or biologically significant differences in the frequency of an adverse effect between the exposed population and its appropriate control. The Lowest Observable Adverse Effect Level (LOAEL) represents the lowest dose at which a statistically significant difference in the frequency of an effect is noted. Both the NOAEL and the LOAEL are reported in terms of mg/kg/day. An uncertainty factor (UF) of ten per type of uncertainty (e.g., extrapolation from animal sensitivity to human sensitivity, relationship between lowest adverse effect level and no adverse effect level) is used to account for interspecies and interspecies differences, severity of the adverse effect, whether the dose was an NOAEL or an LOAEL, and the adequacy of the data. The magnitude of the UF will therefore vary from chemical to chemical, ranging from 10 to 10,000. A modifying factor (MF), ranging from less than 1 to 10 may also be added to reflect qualitative uncertainties not explicitly addressed in the UFs. The toxicity endpoint upon which the RfD is derived and the UF and/or MF used in the calculation are presented in the dose-response tables. No RfDs are available for the dermal route of exposure but are instead calculated from oral RfDs using the methodology described in subsection 3.1.1 (USEPA, 2004).

The use of chronic RfDs to evaluate the potential for adverse health effects resulting from substantially less-than-lifetime exposures may be overly protective. Subchronic Reference Doses (RfD_ss) have been developed for many chemicals to evaluate the potential noncarcinogenic effects of limited duration exposures. RfD_ss are similar to chronic RfDs; the distinction is the length of exposure duration. When available, RfD_ss/RfC_ss are used in this risk assessment to evaluate noncarcinogenic effects to a construction worker. When RfD_ss are unavailable, chronic RfDs are used to evaluate noncarcinogenic effects for these receptors.

The dose-response data for noncarcinogenic effects (RfDs) and their critical toxic effects are presented in Appendix B, for both chronic and subchronic effects.

3.1.3 Dermal Dose-Response Values

Cancer SFs and non-cancer RfDs were developed to evaluate risk associated with the dermal contact exposure route. In accordance with USEPA guidance (USEPA, 2001a), dermal dose-response values are calculated from oral dose-response values using an oral absorption factor. The oral absorption factor represents the amount of substance that is absorbed from the gastrointestinal tract following oral administration of a substance. The absorbed dose represents the amount of substance that is potentially available for biological interaction; it is this dose-response relationship that the toxicity of a dermally absorbed substance must be evaluated by. Thus, for potentially carcinogenic substances, the dermal dose-response value is calculated as follows:

$$SF_d = SF_{oral} / Oral ABS$$

The dermal dose-response value for evaluating non-carcinogenic effects is calculated as follows:

$$RfD_d = RfD_{oral}x \ Oral \ ABS$$

The Oral ABS is the fraction of contaminant absorbed in the gastrointestinal tract (dimensionless) in the critical toxicity study. Chemical-specific Oral ABS values are published by USEPA (USEPA, 2004). In accordance with USEPA guidance (USEPA, 2004), oral dose-response values are only adjusted using an Oral ABS value if the COPC has an oral ABS value less than 50%. Otherwise, the oral dose-response value is used as the dermal dose-response value. Dermal SFs and RfDs are presented in Appendix B.

3.1.4 Sources of Dose-Response Values

The following hierarchy of sources for dose-response values has been utilized in identifying doseresponse values for this HHRA.

Tier 1- IRIS (<u>http://www.epa.gov/iris/).</u> In accordance with USEPA guidance, the main source of dose-response values is the USEPA Integrated Risk Information System (IRIS), which is a database established by USEPA containing all validated data on many toxic substances found at hazardous waste Sites. This database was used to identify the SFs and RfDs applied in this risk assessment (USEPA, 2006).

Tier 2- NCEA's provisional peer reviewed toxicity values (PPRTVs). NCEA's PPRTVs are developed by the Superfund Technical Support Center (STSC) for the EPA Superfund program.

STSC's reassessment of HEAST toxicity values, as well as development of PPRTVs in response to Regional or Headquarters Superfund program requests, are consistent with Agency practices on toxicity value development, use the most recent scientific literature, and are supported by both internal and external peer review, providing a high level of confidence in the use of these values in the Superfund Program.

Tier 3 - Other toxicity values

- Cal EPA's toxicity values. Cal EPA develops toxicity values for both cancer and non-cancer effects. Cal EPA toxicity values are obtained on the Cal EPA website at http://www.oehha.ca.gov/risk/chemicalDB//index.asp.
- ATSDR's MRLs address non-cancer effects only, and are available on the ATSDR website at <u>http://www.atsdr.cdc.gov/mrls.html.</u>
- Toxicity values remaining in current versions of HEAST (1997a).

In this HHRA, the majority of dose-response values used are published in IRIS. For some Siterelated COPCs required dose-response data are only available as NCEA provisional values or from CAL-EPA. These dose-response values were used in this HHBRA in order to provide a more complete evaluation of potential risks.

For tetrachloroethylene, the toxicity values from Cal EPA and not the NCEA provisional values have been utilized.

Uncertainties related to the absence of dose-response data, particularly for COPCs for which the exposure pathway, which represents the only pathway or most significant exposure pathway, has no toxicity criterion, will be discussed in the risk assessment uncertainty analysis.

3.1.5 Exposure to Lead in Site Media

No dose-response values are published for potential exposures to lead. In the absence of doseresponse data, USEPA recommends use of lead biokinetic uptake models to evaluate potential lead exposures. The biokinetic uptake models provide an estimate of blood lead levels in exposed populations. Risks for potential exposures to lead are characterized by comparing the estimated blood lead levels in exposed individuals to threshold blood lead levels that are protective for adverse health effects resulting from lead exposure.

4.0 EXPOSURE ASSESSMENT

4.1 DESCRIPTION OF CURRENT AND FORESEEABLE FUTURE SITE USE

The current and foreseeable future Site uses were identified in Section 1. In summary, under current conditions the Site is fenced and posted with signage reflecting the Rhode Island Department of Health (RIDOH) and RIDEM advisory concerning the safe uses of Mashapaug Pond (including the cove). The advisory (copy in Appendix B of the SIR) recommends that people do not do the following:

- Drink pond water,
- Eat fish caught in Mashapaug Pond,
- Swim, wade, play or bathe in pond water, and
- Boat whenever thick scum, algae mats, or foul odors occur on the pond.

These advisories are in place due to the high levels of bacteria (Fecal Coliform) following rainstorms, also blue green algae (cyanobacteria) found in the pond can produce toxins that can harm humans and animals that swim in or drink pond water during algae blooms. The fish consumption advisory was issued due to reported concentrations of PCBs and dioxins in sediment. Nonetheless, it is possible that trespassers gain access to the Site area.

The future use of the Site is commercial/industrial.

4.2 IDENTIFICATION OF POTENTIAL HUMAN RECEPTORS AND EXPOSURE PATHWAYS

This subsection describes the receptors, exposure pathways, exposure parameters and exposure points for the commercial/industrial worker and the trespasser. The potential receptor populations and exposure pathways were identified in Section 1. Therefore, this section focuses on identifying the exposure scenarios that are used to characterize health risks for the potential receptor populations and potentially complete pathways.

This step involves the identification of all relevant exposure pathways through which specific populations may be exposed (current and future) to contaminants at the site. An exposure pathway consists of four necessary elements: 1) a source or mechanism of chemical release; 2) a transport or retention medium; 3) a point of human contact; and 4) a route of exposure at the point of contact (USEPA, 1989a).

Exposures were evaluated based on two scenarios, the Reasonable Maximum Exposure (RME) and Central Tendency (CT) scenarios. The RME and CT scenarios are characterized by coupling the contaminant concentrations with conservative exposure parameters developed for each exposure scenario. The CT exposure is the typical or average exposure that would be expected in a population. The RME is the highest exposure that is reasonably expected to occur at a site. The RME and CT scenarios are summarized in Table 8 thru 11 and are discussed in sections below, and results are described in the text. Exposure parameters are obtained from USEPA guidance (USEPA, 1997a) and other USEPA-approved sources. In general, RME parameters represent 95th percentile values and CT parameters represent mean values.

4.2.1 Receptor Exposure Scenarios for Surface Water and Sediment

Exposure parameters for the RME were selected from USEPA guidance documents (USEPA, 1994; 1997; 2004) and were based on professional judgment considering the site-specific exposure conditions. This subsection describes the exposure scenarios and RME exposure parameters in detail. Exposure parameters for the CT were based on the RME values, with the following modifications:

- CT values for incidental ingestion of sediment, and surface water were identified as onehalf the RME values, based on USEPA Region I guidance (USEPA, 1994) which recommends using one-half the RME value as the CT value for incidental soil ingestion.
- CT values for sediment dermal adherence were the recommended CT parameters from USEPA RAGS Part E guidance (USEPA, 2004).
- The RME values assume that a receptor uses the Site for all of their outdoor activities (e.g., recreational play/exploration, recreational angling, or subsistence angling). The CT parameters accommodate the assumption that a more "typical" or "average" receptor would spend a portion of their outdoor time at the Site (i.e., would access other, non-Site related areas for recreational purposes).

Commercial/Industrial Worker

Although the site is currently unoccupied a potentially future use would include commercial/industrial use. Although it would be unlikely, commercial/industrial workers could potentially wade in Mashapaug Pond. Potential exposures to surface water and aquatic (submerged) sediment by incidental ingestion and dermal contact could occur during wading.

Cancer and non-cancer risk estimates are calculated separately for each of the exposure media and exposure points. The risks for each medium are summed to derive a total risk for surface water and sediment at each exposure point. The RME and CT exposure parameters for surface water are presented in Tables 8 and 10, for sediment in Tables 9 and 11.

Exposure Duration. For both the RME and CT scenarios, it is assumed that the commercial/industrial worker remains at the same place of employment over a 25-year period (USEPA, 2002).

Exposure Frequency. It is assumed that a commercial/industrial worker visits the water bodies for wading only mid May through mid September. It is further assumed that during summer months, is wading defined as standing or walking in water to a depth of the knees. It is assumed that a commercial/industrial worker wades in the pond once a week from mid May to mid September for a total of 17 times per year.

Exposure Time and Event Frequency. Exposures to surface water during wading activities are assumed to occur 1 hour per event, with 1 event per day exposed (i.e., 1 hour per day), based on the recommended exposure time for recreational swimming (USEPA, 1997). The swimming value would likely, overestimate wading time.

Body Weight. Body weight values for adults are based on values recommended in USEPA guidance (USEPA, 1994).

Incidental Ingestion Rate and Fraction Ingested. The incidental ingestion rate for surface water is based on the recommended value for incidental ingestion of water during swimming of 50 ml per hour (USEPA, 1988). The fraction ingested parameter for surface water is 100%, indicating that 100% of surface water intake on the day-exposed is assumed to occur at the Site. Once again, the water ingestion estimate for swimming likely overestimates ingestion for a wading scenario.

Human exposure parameter values specifically applicable to sediment are not provided in USEPA Region I or USEPA national guidance. Since incidental ingestion exposure to soil (or sediment) primarily occurs through hand-to-mouth transfer of material that has adsorbed to the skin, it is unlikely that ingestion exposure to COPCs in submerged sediment would occur through hand-mouth contact because sediment would wash off of the hand while the hand was being removed from the water. Nonetheless, it is possible that some sediment would adhere to the skin when

leaving a water body (i.e., some sediment may not wash off), and it is possible that sediment entrained in the surface water could be ingested if surface water is incidentally ingested.

Incidental ingestion values for soil may be used for sediment. However, values for soil are generally considered conservative for sediment because: 1) The mechanism of exposure to sediment is different from soil, resulting in less particle adherence to the skin and lower dermal and ingestion exposures, as outline above; and 2) soil incidental ingestion rate values are based on daily intakes from all sources of soil and sediment; it is not generally appropriate to assume that a receptor's total daily intake of soil and sediment is derived from sediment on the days of sediment exposure. Given these considerations, the soil ingestion rates published by USEPA Region I (USEPA, 1994) are used as sediment ingestion rates, and the fraction ingested parameter for sediment of 100% is applied for the commercial/industrial worker.

Dermal Surface Area and Adherence Factor. Surface water exposures for the commercial/industrial worker would involve contact with only the lower legs, feet, and hands.

Exposures to aquatic sediments that are submerged beneath the water are unlikely to be substantial. In order for dermal absorption of COPCs from sediment to occur, the material must adhere to the skin (USEPA, 2004). Sediment that is submerged would not adhere to skin, as the surrounding surface water would prevent binding of the sediment to the skin. In addition, when a body part that contacts sediment is removed from the surface water body, the majority of sediment would wash off, thereby preventing adherence of the material. Hence, although dermal exposures to COPCs in sediment are likely to be negligible, they are quantified to account for the possibility that some sediment may remain adhered to the skin following contact with surface water.

Exposure parameter values for soil may be used for sediment. However, exposure parameter values for soil are generally too conservative for sediment as outlined above. Therefore, dermal surface area and adherence values are based on the following:

• Adult wader: Body surface area values for feet, lower legs, and hands (average of 50th percentile values for males), and RAGS Part E resident default values for soil adherence for sediment exposure. The choice of these values indicates that upper legs, arms, and face would not contact sediment.

SECTION 4

Trespasser

Although the site is currently surrounded by a fence, and signs are posted along the fence advising people not to enter the Site. Trespassers may circumvent the fence and enter the Site for various activities. It is assumed that area trespassers would include older children (ages 7 through 18), and adults (assumed ages 19 through 30). It is also assumed that a younger child (ages 1 through 6) would not trespass onto the site and therefore will not be evaluated in this HHRA. Potential exposures to surface water and aquatic (submerged) sediment by incidental ingestion and dermal contact may occur during wading, or swimming. In is assumed that a potential trespasser could swim or wade in either the inner cove or outer cove. However, realistically, swimming and wading are likely to occur, the cove becomes covered with aquatic vegetation making it a less desirable place for wading or swimming as compared to the outside the cove. Also the depth of water in the inner cove is relatively shallow (generally less than 3 feet during the summer) which would make swimming difficult.

Cancer and non-cancer risk estimates are calculated separately for each of the exposure media and exposure points. The risks for each medium are summed to derive a total risk for surface water and sediment at each exposure point.

The trespasser RME and CT exposure parameters for surface water are presented in Tables 8 and 10, for sediment in Tables 9 and 11.

Exposure Duration. For the RME scenario, it is assumed that the trespasser is an area resident who is raised at and remains at the same residence over a 30-year period (USEPA, 1994). The 30-year duration is segregated into three age periods: young-child (ages 1 through 6) for 6 years (not evaluated); older child (ages 7 through 18) for 12 years; and adult (ages 19 through 30) for 12 years. The CT exposure duration values are based on the recommended CT parameters for exposure duration published in USEPA RAGS Part E of 9 years. The 9-year exposure duration value was segregated as follows: young child (2 years); older child (3 years); and adult (4 years).

Exposure Frequency. It is assumed that a trespasser visits the water bodies for wading and swimming mid May through mid September. It is further assumed that during summer months, wading (defined as standing or walking in water to a depth of the knees) occurs more frequently

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than s	swimming	(defined	as total	submersion	of the	body i	n water).	The exposure	frequency
associ	iated with t	hese vario	ous activ	ities is broke	n down	as foll	ows:		

Activity	RME Frequency / Period	RME Total No. Days per Vear		
		Adolescent Trespasser	Adult Trespasser	
Swimming	1x/week: mid May – mid Sep	17	17	
Wading	2x/week: mid May – mid Sep	34	34	
Total Days per Year of Water Bodies Exposure	3x/week: mid May – mid Sep	51	51	

Activity	CT Frequency / Period	CT Total No. Days per Year		
		Adolescent	Adult	
		Trespasser	Trespasser	
Swimming	1x/week: mid May – mid	17	17	
	Sep			
Wading	1x/week: mid May – mid	17	17	
-	Sep			
Total Days per Year of Water	2x/week: mid May – mid	34	34	
Bodies Exposure	Sep			

The exposure frequency during the summer months assumes that wading and swimming each occur on the same day, such that a total of three visits to the water body occur each week for RME and a total of two visits to the water body for CT.

Contact with submerged sediment is not likely to be substantial under any of the scenarios, as explained under "Ingestion Rate" below. However, if contact with sediment were to occur, it would be during wading activities when a person is standing in the water (i.e., standing in the sediment), and not when a person is actively swimming (i.e., when body parts do not contact the sediment for more than a minute or two). However, it is assumed here that on days when swimming occurs, sediment is contacted at the same rate as on those days when only wading occurs. A person would likely contact sediment on swimming days when they made they wade into and out of the water and as they take breaks from active swimming. During the breaks form active swimming, person may be standing in water, with most of their body immersed, with feet contacting sediment. Therefore, the exposure frequency for sediment is based on the exposure frequency for wading (51 RME and 34 CT days per year for adults/older child). The exposure

frequency for surface water is based on the total frequency for wading and swimming (68 RME and 51 CT days per year).

Exposure Time and Event Frequency. Exposures to surface water during swimming or wading activities are assumed to occur 1 hour per event, 1 event per day (i.e., 1 hour per day), based on the recommended exposure time for recreational swimming (USEPA, 1997).

Body Weight. Body weight values for young children and adults are based on values recommended in USEPA guidance (USEPA, 1994). Body weight values for older children are based on the average of 50th percentile body weights for males ages 7 through 18 (USEPA, 1997).

Incidental Ingestion Rate and Fraction Ingested. The incidental ingestion rate for surface water is based on the recommended value for incidental ingestion of water during swimming of 50 ml per hour (USEPA, 1988). The fraction ingested parameter for surface water is 100%, indicating that 100% of surface water intake on the day-exposed is assumed to occur at the Site.

Human exposure parameter values specifically applicable to sediment are not provided in USEPA Region I or USEPA national guidance. Since incidental ingestion exposure to soil (or sediment) primarily occurs through hand-to-mouth transfer of material that has adsorbed to the skin, it is unlikely that ingestion exposure to COPCs in submerged sediment would occur through hand-mouth contact because sediment would wash off of the hand while the hand was being removed from the water. Nonetheless, it is possible that some sediment would adhere to the skin when leaving a water body (i.e., some sediment may not wash off), and it is possible that sediment entrained in the surface water could be ingested if surface water is incidentally ingested.

Incidental ingestion values for soil may be used for sediment. However, values for soil are generally considered conservative for sediment because: 1) The mechanism of exposure to sediment is different from soil, resulting in less particle adherence to the skin and lower dermal and ingestion exposures, as outline above; and 2) soil incidental ingestion rate values are based on daily intakes from all sources of soil and sediment; it is not generally appropriate to assume that a receptor's total daily intake of soil and sediment is derived from sediment on the days of sediment exposure. Nonetheless, it is possible that some receptors could spend most of their outdoor recreational time at the cove's edge rather than at their own yard. Given these considerations, the

soil ingestion rates published by USEPA Region I (USEPA, 1994) are used as sediment ingestion rates, and the fraction ingested parameter for sediment of 100% is applied for the trespasser.

Dermal Surface Area and Adherence Factor. The dermal surface area for surface water is different between wading and swimming exposures. Wading exposures for the trespasser would involve contact with only the lower legs, feet, and hands, whereas swimming exposures would involve contact with the entire body. For adults and older children, the surface water exposures are quantified using the frequency-weighted average dermal surface area associated with wading and swimming. These weighted average surface area values reflect the relative frequencies of wading and swimming activities and they are presented in Tables 8 and 10.

Exposures to aquatic sediments that are submerged beneath the water are unlikely to be substantial. In order for dermal absorption of COPCs from sediment to occur, the material must adhere to the skin (USEPA, 2004). Sediment that is submerged would not adhere to skin, as the surrounding surface water would prevent binding of the sediment to the skin. In addition, when a body part that contacts sediment is removed from the surface water body, the majority of sediment would wash off, thereby preventing adherence of the material. Hence, although dermal exposures to COPCs in sediment are likely to be negligible, they are quantified to account for the possibility that some sediment may remain adhered to the skin following contact with surface water.

Exposure parameter values for soil may be used for sediment. However, exposure parameter values for soil are generally too conservative for sediment as outlined above. Therefore, dermal surface area and adherence values are based on the following:

• Older child and adult wader: Body surface area values for feet, lower legs, and hands (average of 50th percentile values for males), and RAGS Part E resident default values for soil adherence for sediment exposure. These values account for the fact that upper legs, arms, and face would not contact sediment.

4.3 IDENTIFICATION OF EXPOSURE POINTS AND EXPOSURE ROUTES

For the purpose of this HHRA two separate exposure points were evaluated for each receptor. The exposure points are the inner cove and outer cove. The inner cove is defined as the area which is contained by the two peninsulas, which includes locations SW/SED16, SW/SED17, SW/SED18, SW/SED19, SW/SED20, SW/SED21, SW/SED22, SW/SED23, SW/SED24, SW/SED25, SW/SED26, SW/SED27, SED28, SED29, SED30, SED31, SED32, and SD-1001 threw SD-1005.

The outer cove is defined as the area from the two peninsulas to just beyond the property line, which includes locations SW/SED10, SW11, SW/SED12, and SED13. Sample locations SED11, SED14, and SED15 are not include in the outer cove exposure point. The depth of surface water at these locations is 6 feet or greater. As previously discussed, contact to sediment is most likely to occur during wading activities when a person is standing in the water (i.e., standing in the sediment), and not when a person is actively swimming, therefore contact to sediment under 6 or more feet of water is assumed not to occur.

4.4 IDENTIFICATION AND ESTIMATION OF EXPOSURE POINT CONCENTRATION (EPC)

A single concentration is selected as representative of the actual concentration for each COPC in a given medium for a given exposure point. This value, called the EPC, is used in the estimates of health risks at the site. An EPC is selected for every COPC identified in the screening process described earlier.

For the RME the 95% Upper Confidence Limit (UCL) on the mean is typically used as the EPC. There are two exceptions to this rule. In the case where the 95% UCL is greater than the maximum detected concentration; and/or if there are fewer than 10 samples in a data set (the UCL is not calculated). For these two situations, the maximum detected concentration should be used as the RME EPC.

For the CT the arithmetic mean is typically used as the EPC. In the case where arithmetic mean is greater than the maximum detected concentration the maximum detected concentration is used as the CT EPC.

A summary of the calculation of EPC for surface water and sediment is presented in Tables 12 and 13 respectively. 95% UCLs were calculated using USEPA's Pro UCL software; documentation on the calculation of 95% UCLs is presented in Appendix C.

4.5 QUANTIFICATION OF EXPOSURES

For each of the potentially exposed populations a COPC intake was calculated. Populationrelated variables were selected that describe the characteristics associated with individual receptors in that population. For example, intake is dependent upon contact rate, age, body weight, body surface area, exposure frequency, exposure duration, and averaging time. When possible, variables such as age, body weight, and body surface area will selected from USEPA guidance documents, including "Dermal Exposure Assessment: Principles and Applications (USEPA, 2004 and The Exposure Factors Handbook (USEPA, 1998).

The general equation for calculating chemical intake from the various media is:

$\frac{ADI = C x CR x EF x ED x CF}{BW x AT}$

Where

ADI	=	average daily chemical intake, chemical, media and receptor specific
С	=	chemical concentration, media specific
CR	=	contact rate, media specific
EF	=	exposure frequency, population specific
ED	=	exposure duration, population specific
CF	=	conversion factor, media specific
BW	=	body weight of hypothetically exposed individual
AT	=	averaging time (for carcinogens, AT=70 years x 365 days per year; for
		noncarcinogens, AT=ED x 365 days per year).

Intakes for all potential exposure pathways identified for this site will be calculated per Section 6 of RAGS Part A (USEPA, 1989) and RAGS Part E (USEPA, 2004). Specific algorithms for calculation of intakes are presented in Tables 8 - 11. Intake calculations are documented in Appendix D.

Due to the uncertainties associated with characterization of dermal exposure risks to PAHs and dioxin in surface water, PAHs and dioxin in surface water were excluded from the dermal exposure pathway. Potential risks associated with dermal exposures to PAHs and dioxin in surface water are discussed in Appendix E.

5.0 HUMAN HEALTH RISK CHARACTERIZATION

Calculated risks to each receptor were then compared to the remedial objectives as outlined in the

Remediation Regulations (RIDEM, 2004):

- The excess lifetime cancer risk for each carcinogenic substance does not exceed 1 x 10⁻⁶ and the cumulative excess lifetime cancer risk (ELCR) posed by the site does not exceed 1 x 10⁻⁵;
- 2. The hazard index for each substance does not exceed a hazard index of 1 and the cumulative hazard index posed by the contaminated-site does not exceed 1 for any target organ.

Risk summaries for both the RME and CT scenarios are presented in Tables 14 and Table 15 respectively. Risk calculations are presented in Appendix D.

Outer Cove

The risk characterization results for the Outer Cove are summarized below:

- The RME and CT cumulative and individual chemical HI values for the Industrial/Commercial worker and the trespasser exposures to surface water and sediment in the Outer Cove are below the target risk level.
- The RME and CT cumulative and individual chemical ELCR for the Industrial/Commercial worker exposures to surface water and sediment in the Outer Cove are below the target risk levels.
- The CT cumulative and individual chemical ELCR for the trespasser for exposure to surface water and sediment in the Outer Cove are below the target risk levels.
- The RME cumulative ELCR for the trespasser in the Outer Cove meets the target risk level of $1 \ge 10^{-5}$; however, the RME individual chemical cancer risk for arsenic in sediment is greater than the individual chemical risk limit of $1 \ge 10^{-6}$.
- In summary, the Outer Cove risks meet the risk management criteria and no remediation would be required for the RME and CT Industrial/Commercial worker scenario and the CT trespasser scenario. However, for the RME trespasser scenario, the arsenic ELCR of 1.6 x 10⁻⁶ is above the individual chemical target risk of 1 x 10⁻⁶.

Inner Cove

The risk characterization results for the Inner Cove are summarized below:

- For the Inner Cove RME and CT scenarios, there are no individual chemicals which have a HI greater than one, and the cumulative HI for each receptor is less than 1 for any target organ, indicating that the non-cancer risks meet the target risk levels.
- The RME and CT cumulative and individual chemical ELCR for the Industrial/Commercial worker exposures to surface water and sediment in the Inner Cove meet the target risk levels.
- The Inner Cove CT cumulative ELCR for the adolescent trespasser and adult trespasser are each 1 X 10⁻⁶, giving the trespasser a cumulative receptor risk of 2 X 10⁻⁶ (below the cumulative risk limit). However, the Inner Cove CT individual chemical cancer risk for dioxin TEQ for the adolescent and adult trespasser combined is greater than the individual chemical cancer risk limit of 1 x 10⁻⁶.
• The Inner Cove RME cumulative ELCR for the adolescent trespasser and adult trespasser are 2 x 10⁻⁵ and 1 x 10⁻⁵, respectively, giving the trespasser a cumulative receptor risk of 3 x 10⁻⁵(above the cumulative risk limit). Dioxin TEQ is the largest contributor to the cumulative ELCR. Also, for the RME combined adolescent and adult trespasser scenario the individual carcinogenic substance ELCR for TCE, vinyl chloride, benzo(a)pyrene, arsenic and dioxin TEQ are greater than 1 x 10⁻⁶(above the risk limit).

In summary, the RME and CT ELCR and Hazard Index values for the Industrial/Commercial Worker for both the Outer Cove and the Inner Cove meet the Remediation Regulations risk limits. The RME and CT Hazard Index values for the Trespasser for the Outer Cove and Inner Cove meet the Remediation Regulations limits. However, the RME and CT ELCR for the trespasser exceed at least one of the Remediation Regulation Limits for cancer risk at both the Outer Cove and the Inner Cove. Dioxin TEQ in sediment is the largest cancer risk contributor for the Inner Cove exposure scenarios.

5.1 EVALUATION OF LEAD IN SITE MEDIA

Blood lead levels were calculated for the trespasser and commercial/industrial worker exposure scenarios using USEPA's adult biokentic uptake model (USEPA, 2003). This model was used to estimate blood lead levels in these receptor populations that could result from potential exposure to lead in sediment. Although USEPA publishes an integrated exposure uptake biokentic uptake (IEUBK) model for children, that model is specifically designed and calibrated to characterize blood lead levels in children younger than age 7 who are assumed to be exposed to lead-containing soil at a high frequency over long periods (e.g., 12 months per year, over several years). The IEUBK model for young children is not applicable to this Site because potential exposures to lead would occur to children over age 6 and to adults, infrequently, via contact with sediment.

The adult biokinetic model calculations are presented in Tables 16 and 17. The model calculations are based on the following:

- Equation 1 is used to estimate blood lead levels. This equation excludes contribution of lead intake from fugitive dust emissions from the Site, and is the appropriate algorithm to use since dust cannot be liberated from sediment;
- The sediment EPC is 551 mg/kg;
- With the exception of the sediment exposure frequency parameters that are applicable to the commercial/industrial worker and trespasser exposure scenarios (Tables 16 and 17), the biokinetic model inputs are the default variables provided in the lead model guidance (USEPA, 2003);

• Two blood lead levels were calculated for each receptor scenario using a range of geometric standard deviation (GSDi) and baseline blood lead levels. This provides a range of estimated blood lead levels for highly sensitive and less sensitive populations.

USEPA indicates that blood lead levels should be compared to a target blood level of 10 ug/deciliter (dL), and that the probability of blood lead levels exceeding this threshold value should not exceed 5%. The target blood lead level is a multi-agency goal that has been designated by the US Centers for Disease Control (CDC) and Agency of Toxic Substances and Disease Registry (ATSDR) as a level of concern to protect sensitive populations such as neonates, infants, and children. This threshold blood lead level is applied in the adult lead model to ensure that females who may be pregnant are adequately protected. Specifically, the 95th percentile blood lead level among fetuses of females is compared to the 10 ug/dL threshold level.

As indicated in Table 16, the biokentic modeling results for trespassers are as follows:

The estimated blood lead levels in trespassers assumed to be exposed to lead in sediment range from 1.7 ug/dL to 1.9 ug/dL. These blood lead levels are applicable to males and females of non-child bearing age.

The estimated 95^{th} percentile blood lead levels among fetuses of females range from 5.1 ug/dL to 6.7 ug/dL, and the probability that fetal blood lead concentrations would exceed the 10 ug/dL threshold level range from 0.6% to 1.7% These blood lead levels are applicable to females of child-bearing age.

The results of this evaluation indicates that lead in sediment would not pose health risks of concern to trespassers.

As indicated in Table 17, the biokentic modeling results for commercial/industrial workers are as follows:

The estimated blood lead levels in trespassers assumed to be exposed to lead in sediment range from 1.6 ug/dL to 1.8 ug/dL. These blood lead levels are applicable to males and females of non-child bearing age.

The estimated 95^{th} percentile blood lead levels among fetuses of females range from 4.8 ug/dL to 6.2 ug/dL, and the probability that fetal blood lead concentrations would exceed the 10 ug/dL threshold level range from 0.4% to 1.4% These blood lead levels are applicable to females of child-bearing age.

The results of this evaluation indicates that lead in sediment would not pose health risks of concern to commercial/industrial workers.

6.0 UNCERTAINTY

Due to the uncertainty associated with the potential human skin contact (dermal) exposure to PAHs and dioxins and furans in surface water the dermal exposure pathway for PAHs and dioxins and furans in surface water was not evaluated in the this report. There are a number of uncertainties associated with the dermal exposure pathway for dioxins and furans in surface water, including:

- Surface water is a dynamic exposure medium. As flow rates vary with precipitation events, the amount of suspended particulate matter (aquatic sediments especially) also varies. Sampling of surface water at a few points in time provides snapshots of conditions, but may not provide representative data for long-term exposure.
- PAHs and dioxins and furans have low water solubility and have an affinity for particulate matter and organic carbon. Dioxins and furans could be associated with suspended particulate matter as well as the dissolved phase. The available surface water samples were not filtered and, therefore, represent PAH and dioxin and furan concentrations that are not specifically representative of dissolved phase concentrations.
- The diffusion-based dermal exposure assessment model is based on an assumed dissolved-phase compound being present in water that is contacting the skin. The available surface water data may over-estimate the dissolved phase concentrations in surface water.
- The diffusion-based dermal exposure assessment model (from RAGS Part E) utilizes estimated permeability constants (K_p) for PAHs and dioxin and furan compounds. However, PAHs and dioxin's physical characteristics are identified by USEPA as being outside the Effective Prediction Domain (EPD) for the model used to estimate K_p values.

Appendix E presents an uncertainty analysis that evaluates the potential contribution to risks if the PAH and dioxin surface water data are included in the risk calculations. As indicated in Appendix E, the estimated cancer risks would increase, and in that scenario, surface water dermal contact would become the predominant ELCR contributor

The presence of PAHs and dioxins in sediment indicates that additional evaluation should be conducted to address potential bioaccumulation of those compounds in biota such as fish in the cove. These compounds have the potential to accumulate in biota, and consumption of biota could potentially result in exposure. Given the relatively small area of impacted sediments, consumption of biota may, however, represent a minimal potential exposure pathway. Under current conditions, consumption of fish from Mashapaug Pond is discouraged by the RIDEM/RIDOH advisory.

7.0 CONCLUSIONS

In summary, the RME and CT ELCR and Hazard Index values for the Industrial/Commercial Worker for both the Outer Cove and the Inner Cove meet the Remediation Regulations risk limits. Therefore, no remediation of surface water or sediment is required for the Industrial/Commercial scenario. The RME and CT Hazard Index values for the trespasser for the Outer Cove and Inner Cove meet the Remediation Regulations limits. However, the RME and CT ELCR for the trespasser exceed at least one of the Remediation Regulation Limits for cancer risk at both the Outer Cove and the Inner Cove. TCE, vinyl chloride, benzo(a)pyrene, arsenic and dioxin TEQ in sediment of the Inner Cove each contribute cancer risk greater than one in one million. For the Outer Cove, only arsenic contributes cancer risk greater than one in one million, and it is not certain that the arsenic concentrations are Site-related.

8.0 **REFERENCES**

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FIGURES





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TABLES

Table 1Surface Water Data - Detected ParametersSupplemental Site Investigation ReportFormer Gorham Manufacturing Site333 Adelaide AvenueProvidence, Rhode Island

	Frequenc	cy of		<u> </u>	ange of Detecte	pe	Average of	SW10 SW10	SW11 SW11	SW12 SW12	SW16 SW16	SW17 SW17	SW18 SW18	SW19 SW19	SW20 SW20
Parameter	Detecti	on Ran	ge of Non Detec	ts	Concentrations		samples	6/21/2006	9/21/2009	9/21/2009	6/21/2006	6/21/2006	6/21/2006	6/21/2006	9/21/2000
Volatile Organics (mg/L)				100 million - 100					100.0	100 01	00000		0,000		100 01
1,1,1-Trichloroethane	11 /	15 0	1.001 - 0.001		0.001 - 0.001	8	0.0012	<0.001	<0.001	<0.001	0.0016	0.0018	0.0013	0.0014	<0.001
1,1-Dichloroethane	5 /	15 0	0.001 - 0.001		0.001 - 0.001	4	0.00073	<0.001	<0.001	<0.001	0.0011	0.0014	<0.001	0.001	<0.001
1,2,4-Trimethylbenzene	2 /	15 0	0.001 - 0.001		0.001 - 0.001	Ξ	0.00057	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	15 /	15		0	.0015 - 0.010	38	0.0046	0.0022	0.0108	0.0015	0.0045	0.0045	0.0048	0.0062	0.0025
Ethylbenzene	3 /	15 0	1.001 - 0.001		0.001 - 0.001		0.00060	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001
Tetrachloroethene	11	15 0	0.001 - 0.001	0	.0012 - 0.001	12	0.00055	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001
Toluene	12 /	15 0	0.001 - 0.001	0	.0011 - 0.004	1 3	0.0023	<0.001	<0.001	<0.001	0.0043	0.0043	0.0024	0.0034	0.0017
Trichloroethene	1 11	15 0	0.001 - 0.001		0.001 - 0.002	50	0.0013	<0.001	0.0023	<0.001	0.001	0.001	0.0015	0.0029	<0.001
Vinyl chloride	10 /	15 0	1.001 - 0.001		0.001 - 0.002	21	0.0012	<0.001	<0.001	<0.001	0.0015	0.0013	0.0013	0.0021	<0.001
Xylene, M&P-	5 /	15 0	0.002 - 0.002		0.002 - 0.002	28	0.0015	<0.002	<0.002	<0.002	0.0026	0.0024	<0.002	0.002	<0.002
Xylene, O-	3 /	15 0	1.001 - 0.001		0.001 - 0.001	12	0.00062	<0.001	<0.001	<0.001	0.0011	0.001	<0.001	<0.001	<0.001
Xylenes, Total	15 /	15			0.003 - 0.004		0.0031	0.003	0.003	0.003	0.0037	0.0034	0.003	0.003	0.003
Semivolatile Organics (mg/L)															
Benzo(a)anthracene	1 1	15 0.0	0002 - 0.0002	0	.0002 - 0.000	02	0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002
Benzo(a)pyrene	11	15 0.0	0002 - 0.0002	0.0	00024 - 0.000	024	0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00024	<0.0002
Benzo(a,h,i)perylene	11	15 0.0	0002 - 0.0002	0.0	00038 - 0.000	038	0.00012	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00038	<0.0002
Chrysene	11	15 . 0.0	3002 - 0.0002	0.0	0023 - 0.000	023	0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00023	<0.0002
Dibenz(a.h)anthracene	1 1	15 0.0	J002 - 0.0002	0.0	0031 - 0.000	031	0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00031	<0.0002
Nanhthalene	4 /	15 0.0	J002 - 0.0002	0	0002 - 0.000	03	0.00014	<0.0002	<0.0002	<0.0002	<0.0002	0.00026	<0.0002	<0.0002	<0.0002
Pesticides/PCBs (ma/L)															
4.4'-DDT	1 1	3 0.000	3050 - 0.0000	50 0.00	00080 - 0.000	0080	0.000043		0.00008					<0.00005	
Metals. Total (mg/L)					A DESCRIPTION OF A DESC										
Chromium	3 /	15	0.02 - 0.02		0.034 - 0.06		0.017	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02
Copper	5 /	15	0.02 - 0.02		0.023 - 0.126	0	0.030	<0.02	<0.02	<0.02	<0.02	<0.02	0.099	0.029	<0.02
Lead	5 /	15 0	0.005 - 0.005	0	.0083 - 0.031	18	0.0089	<0.005	<0.005	<0.005	<0.005	<0.005	0.0318	0.0121	<0.005
Silver	3 /	15 0	0.005 - 0.005		0.005 - 0.008	~	0.0033	<0.005	<0.005	<0.005	<0.005	<0,005	0.008	<0.005	<0.005
Zinc	4 /	15	0.05 - 0.05		0.068 - 0.146	0	0.046	<0.05	<0.05	<0.05	<0.05	<0.05	0.107	0.068	<0.05
Inorganics (mg/L)															10 mm
Hardness	15 /	15			67 - 87.3		78	70.8	71.9	67	78.4	73.6	87.3	76.1	77.3
Dioxins/Furans (mg/L)															
1,2,3,4,6,7,8-HpCDD	3 /			i,	4E-08 - 4.3E-	-08 0.	000000037		0.000000024					0.000000043	
1,2,3,6,7,8-HxCDD	1 1	3 0.00000	0001 - 1E-08		3E-08 - 1.3E-	-08 0.0	2000000027		<0.00000001					<0.00000001	
1,2,3,7,8,9-HxCDD	1 1	3 0.00000	0001 - 1E-08	ù.	1E-08 - 5.1E-	-08 0.	000000020		<0.00000001					<0.00000001	
1,2,3,7,8-PeCDD	1 1	3 0.00000	0001 - 1E-08	4.	3E-08 - 4.6E-	-08 0.	000000019		<0.00000001					<0.00000001	
2,3,7,8-TCDD	. / 1	3 21	E-09 - 2.1E-05	с Э	1E-09 - 3.1E-	0 60-	2000000017		<0.0000000021					<0.000000002	
2,3,7,8-TCDF	1 1	3 21	E-09 - 2.1E-05	9.8	9E-09 - 8.9E-	-09 0.	2000000037		<0.0000000021					<0.000000002	
ocdd	3 1	e		0.000	0018 - 3.5E-	-07 0	.00000028		0.00000018					0.00000032	
Total HpCDD	3 /	8		4	3E-08 - 7.2E-	-08 0.	000000059		0.000000043					0.000000072	
Total HpCDF	3 / 5	8			2E-08 - 2.1E-	-08 0.	000000015		0.000000012					0.000000021	
Total HxCDD	1 1	3 0.00000	0001 - 1E-08	.9	4E-08 - 6.4E-	-08 0.	000000025		<0.00000001					<0.00000001	
Total PeCDD	11	3 0.00000	0001 - 1E-08	4.6	5E-08 - 4.6E-	-08 0.	000000019		<0.00000001					<0.00000001	
Total PeCDF	1 1	3 0.00000	0001 - 1E-08	2	9E-08 - 2.9E-	-08 0.	000000013		<0.00000001					<0.00000001	
Total TCDD	. / 1	3 21	E-09 - 2.1E-05	9.3.	1E-09 - 3.1E-	0 60-	000000002		<0.0000000021					<0.000000002	
Total TCDF	2 /	3 2.11	E-09 - 2.1E-05	9.3.	4E-09 - 3.2E-	-08 0.1	000000122		<0.0000000021					0.0000000034	
TEQ-Mammal	3 / .	3		1.276	4E-08 6.221	IE-08 0.	000000029		0.000000013					0.000000013	

c - Compound not detected, value is detection limit.
 mg/L milligrams per liter

P.W.2-mB/TEXTROMOGRHMM/SupplementSI 2005/HH_Risk_July_2005/Tables/ SW-SummaryCOPC, Detects

7/31/2006 Prepared by: BJR Checked by: KJC

Page 1 of 2

Table 1 Surface Water Data - Detected Parameters Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

	SW21	SW22	SW23	SW24	SW25	SW26	SW27
Parameter	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/22/2006	6/21/2006	6/22/2006
Volatile Organics (mg/L)							
1,1,1-Trichloroethane	0.0012	0.001	0.001	0.0013	0.0018	0.0015	0.0018
1,1-Dichloroethane	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	0.0013
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011
cis-1,2-Dichloroethene	0.0054	0.0044	0.0044	0.0059	0.0045	0.0025	0.0054
Ethylbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Tetrachloroethene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	0.0011	0.0014	0.0019	0.0029	0.0033	0.0015	0.0041
Trichloroethene	0.0016	0.0013	0.0017	0.0014	0.0012	<0.001	0.0014
Vinyl chloride	0.0013	0.0011	0.001	0.0018	0.0015	<0.001	0.002
Xviene. M&P-	<0.002	<0.002	<0.002	<0.002	0.0023	<0.002	0.0028
Xvlene. O-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012
Xylenes, Total	0.003	0.003	0.003	0.003	0.003	0.003	0.004
Semivolatile Organics (mg/L)							
Benzo(a)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(a)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(a,h.i)pervlene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Dibenz(a h)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nanhthalene	<0.0002	<0.0002	0.0002	0.0003	0.00024	<0.0002	<0.0002
Pesticides/PCRs (ma/l)	-	100000	-	200		1	1
							<0.00005
Metals Total (mo/l.)							
Chromium	0.034	0.046	<0.02	<0.02	<0.02	<0.02	<0.02
Condition	1200	3010	20.02	20.02	20.02	20.07	10.02
Copper	0.0050	0.120	0.0003	20.02	20.00	20.005	20.02
Ledu	0.000	0000	2000.0	200.01	100.07	100.01	200.01
Silver	G00.0	0.006	c00.05	c00.05	CUU.U>	c00.0>	c00.0>
Zinc	0.089	0.146	<0.05	<0.05	<0.05	<0.05	<0.05
Inorganics (mg/L)							
Hardness	86.7	86.7	86.6	83.4	7.77	73.7	80
Dioxins/Furans (mg/L)							
1,2,3,4,6,7,8-HpCDD							0.000000043
1,2,3,6,7,8-HxCDD							0.000000013
1,2,3,7,8,9-HxCDD							0.000000051
1,2,3,7,8-PeCDD							0.000000046
2,3,7,8-TCDD							0.0000000031
2.3.7.8-TCDF							0.000000089
ocdd							0.00000035
Total HpCDD							0.000000061
Total HpCDF							0.000000013
Total HxCDD							0.000000064
Total PeCDD							0.000000046
Total PeCDF							0.000000029
Total TCDD							0.0000000031
Total TCDF							0.000000032
TEQ-Mammal							0.000000062

< - Compound not detected, value is detection limit. mg/L milligrams per liter 7/31/2006 Prepared by: BJR Checked by: KJC

Er Chemical name	equen	ion	Range	of Non	Range of Concen	Detected trations	Average of Samples	SD-1001 12/28/2005 0-2	SD-1002 12/28/2005 0-2	SD-1003 12/28/2005 0-2	SD-1004 12/28/2005 0-2	SD-1005 12/28/2005 0-2	SED1001 6/22/2006 0 5-1	SED1101 6/22/2006 0-1
Draanics (mo/ko)														
hloroethane	5 /	28	0.004 -	0.15	0.3	. 1.3	0.15	< 0.013	< 0.0098	< 0.15	1.3	0.3	< 0.004	< 0.0427
proethane	/ 6	28	0.004 -	1.1	0.011	. 7.92	0.64	< 0.013	< 0.0098	1.4	< 1.1	< 0.012	< 0.004	< 0.0427
proethene	5 /	28	0.004 -	. 1.1	0.014	. 11.3	0.52	< 0.013	< 0.0098	< 0.15	< 1.1	0.014	< 0.004	< 0.0427
	14 /	28	0.039	. 4.6	0.0757	. 1.9	0.32	< 0.052	< 0.039	0.87	< 4.6	< 0.048	< 0.0403	0.649
isulfide	9 /	28	0.004 -	1.1	0.0046	. 0.0576	0.033	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0427
chloroethene	/ 6	28	0.004 -	. 1.1	0.0091	. 175	10.8	< 0.013	< 0.0098	0.42	< 1.1	0.016	< 0.004	< 0.0427
Benzene	1 1	28	0.004 -	. 1.1	0.0514	. 0.0514	0.030	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0427
nzene	2 /	28	0.004 -	. 1.1	0.0197	0.0303	0.030	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0427
roethene	4 /	28	0.004 -	. 1.1	0.0081	. 18.1	0.71	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0427
	1 1	28	0.004 -	. 1.1	1.92	. 1.92	0.097	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0427
-Dichloroethene	3 /	28	0.004 -	. 1.1	0.0053	. 3.62	0.26	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0427
sthene	1 6	28	0.004 -	- 0.15	0.176	- 58.4	3.0	< 0.013	< 0.0098	< 0.15	5.6	0.21	< 0.004	< 0.0427
nide	1 1	28 (D.0081 -	- 2.3	0.0218	. 24.8	1.7	< 0.026	< 0.02	2	< 2.3	< 0.024	< 0.0081	< 0.0855
atile Organics (mg/kg)														
thene	9 /	28	0.03 -	0.183	0.024	. 0.26	0.062	0.25	0.26	< 0.039	< 0.03	0.024	< 0.0305	< 0.163
thylene	3 /	28 (- 6700.C	0.183	0.026	. 0.781	0.064	0.07	0.026	< 0.039	< 0.03	< 0.0079	< 0.0305	< 0.163
.e	13 /	28 (0.0305 -	0.183	0.04	. 3.09	0.24	0.83	0.36	0.11	0.04	0.079	< 0.0305	< 0.163
anthracene	18 /	28 (0.0305 -	0.183	0.0896	. 15.1	0.87	2	0.69	0.29	0.16	0.15	< 0.0305	< 0.163
pyrene	1 1	28 (0.0305 -	. 0.183	0.0707	. 7.87	0.57	1.8	0.59	0.24	0.15	0.12	< 0.0305	< 0.163
fluoranthene	21 /	28 (0.0305 -	0.183	0.0378	. 14.8	1.0	2.9	0.86	0.34	0.25	0.17	< 0.0305	0.245
h,i)perylene	14 /	28 (0.0305 -	· 0.183	0.046	. 2.54	0.21	0.73	0.26	0.11	0.088	0.046	< 0.0305	< 0.163
luoranthene	12 /	28 (0.0305 -	0.183	0.065	- 5.1	0.35	0.97	0.25	0.18	0.11	0.065	< 0.0305	< 0.163
	1 11	28 (0.0305 -	. 0.183	0.0896	. 8.94	0.66	2.4	0.84	0.43	0.24	0.16	< 0.0305	< 0.163
a,h)anthracene	9 /	28 (- 0079 -	· 0.183	0.0404	. 1.45	0.099	0.22	< 0.013	< 0.039	< 0.03	< 0.0079	< 0.0305	< 0.163
Iphthalate	2 /	5	0.2 -	. 0.74	0.48	. 1.1	0.44	0.48	< 0.33	1.1	< 0.74	< 0.2		
ene	23 /	28 (0.0305 -	. 0.035	0.0833	. 28.8	1.8	4.3	1.6	0.71	0.45	0.39	< 0.0305	0.327
	1 6	28	0.018 -	. 0.183	0.022	· 0.863	0.082	< 0.018	0.022	0.081	0.036	0.025	< 0.0305	< 0.163
2,3-cd)pyrene	13 /	28	0.03 -	. 0.183	0.046	. 2.47	0.21	0.74	0.22	0.11	< 0.03	0.046	< 0.0305	< 0.163
ene	5 /	28	0.03 -	0.183	0.0342	. 0.28	0.054	0.21	0.28	< 0.039	< 0.03	0.045	< 0.0305	< 0.163
Irene	19 /	28 (0.0305 -	0.183	0.0333	. 11.8	1.0	4	2.1	0.48	0.23	0.41	< 0.0305	< 0.163
	22 /	28 (0.0305 -	0.0794	0.0513	. 15.2	1.2	5.3	2.3	0.76	0.45	0.4	< 0.0305	0.258
ss/PCBs (mg/kg)	100	The second		Note of the	100 Te 17 17 17 10 17 14									
	3 /	28 (0.0008	0.0481	0.0214	0.0301	0.010	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056	< 0.0351
	1 1	28 (- 8000.C	0.0481	0.0109	. 0.0109	0.0084	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056	< 0.0351
	1 /	28 (- 8000.C	0.0481	0.0635	. 0.0635	0.010	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056	< 0.0351
tone	1 1	28 (- 8000.C	0.0481	0.0431	0.0431	0.0092	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056	< 0.0351
254	2 /	28	0.016 -	- 0.404	0.207	. 0.528	0.092	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056	< 0.351
260	1 1	28	0.016 -	0.404	0.605	· 0.605	0.086	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056	< 0.351
cs (mg/kg)														
	2 /	28	0.54	- 25.7	1.6	. 2.7	6.0	2.7	1.6	< 2.7	< 2	< 0.54	< 6.5	< 25.7
	22 /	28	0.3	<i>с</i> о	2.1	. 47.6	16.8	19	12	45	32	3.8	< 0.3	4.8
	28 /	28			9.7	. 466	123	190	76	250	69	19	10.2	156
	22 /	28	0.07	. 0.13	0.075	. 3.5	0.55	1.1	0.46	1.4	3.5	0.075	< 0.07	0.47
	20 /	28	0.65	. 1.31	0.14	. 7.11	2.6	1.8	0.91	4.1	3.2	0.14	< 0.65	3.24
	22 /	28 28	0.07	- 0.13 - 1.31	0.075	. 3.5	0.55 2.6		1.1 1.8	1.1 0.46 1.8 0.91	1.1 0.46 1.4 1.8 0.91 4.1	1.1 0.46 1.4 3.5 1.8 0.91 4.1 3.2	1.1 0.46 1.4 3.5 0.075 1.8 0.91 4.1 3.2 0.14	1.1 0.46 1.4 3.5 0.075 < 0.07 1.8 0.91 4.1 3.2 0.14 < 0.65

Table 2Sediment Data - Detected Parameters (0-2 ft)Supplemental Site Investigation ReportFormer Gorham Manufacturing Site333 Adelaide AvenueProvidence, Rhode Island

P.W2-mfghTEXTRON/GORHAM/SupplementSI 2006/HH_Risk_July_2006/Tables/ SedimentSummary-Cove2006, 0-1fl Detect

Page 1 of 6

7/31/2006

Table 2Sediment Data - Detected Parameters (0-2 ft)Supplemental Site Investigation ReportFormer Gorham Manufacturing Site333 Adelaide AvenueProvidence, Rhode Island

Chromium Chromium Copper Lead Mercury Nickel	L					1	20-1002		20-1004	coni-ne		0000
Chromium Copper Lead Mercury Nickel	Frequi	tency of	Range of Non	Range of Detected	Average of Samples	12/28/2005	12/28/2005 0-2	12/28/2005	12/28/2005 0-2	12/28/2005 0-2	6/22/2006	6/22/2006
Critorium Copper Lead Mercury Nickel	200	1 20	20000	20 640	100	74	10	100	20	4 8		213
Copper Lead Mercury Nickel	9	1 20		040 - 6.7	132		2007	8	001	0.4	2.3	017
Lead Mercury Nickel	28	/ 28		4.1 - 26/0	955	1200	180	/40	1500	19	4.1	423
Mercury Nickel	24	/ 28	6.5 - 7.4	12.2 - 1120	364	340	140	590	140	23	< 6.5	590
Nickel	17	/ 28	0.035 - 0.208	0.031 - 2.52	0.40	0.3	0.087	1.3	0.2	0.031	< 0.035	< 0.208
	25	/ 28	3.7 - 6.6	3.6 - 853	132	48	20	120	810	10	3.6	85.7
Selenium	e	/ 28	0.54 - 25.7	1.8 - 17.9	6.5	3.2	1.8	< 2.7	< 2	< 0.54	< 6.5	< 25.7
Silver	22	/ 28	0.65 - 1.31	2.77 - 227	67.4	120	15	95	24	2.9	< 0.65	29.7
Zinc	28	/ 28		9.5 - 1940	783	570	200	770	1200	34	28.1	620
Total Organic Carbon (TOC)	23	/ 23		780 - 115000	31334						780	65000
TPH (mg/kg)					0.00000							
Total Petroleum Hydrocarbons (TPH)	19	/ 28	42.6 - 291	57.8 - 2600	543	1900	2600	1700	740	370	< 42.6	< 253
Dioxins/Furans (mg/kg)									1000 1000 1000 1000 1000 1000 1000 100			
1,2,3,4,6,7,8-HpCDD	25	/ 28	7E-07 - 8E-07	2E-06 - 0.0006	0.000151	0.00011	0.000059	0.00013	0.00014	0.000017	< 0.00000075	0.00028
1,2,3,4,6,7,8-HpCDF	24	/ 28	7E-07 - 8E-07	2E-06 - 0.001	0.00021	0.000092	0.00016	0.00027	0.00021	0.00003	< 0.00000075	0.00014
1,2,3,4,7,8,9-HpCDF	22	/ 28	7E-07 - 1E-06	1E-06 - 0.0002	0.000038	0.0000099	0.000014	0.000049	0.000047	0.0000041	< 0.00000075	0.000018
1.2.3.4.7.8-HxCDD	17	/ 28	7E-07 - 2E-05	1E-06 - 7E-05	0.0000144	0.0000049	0.0000061	0.000016	< 0.000014	< 0.0000018	< 0.00000075	0.0000095
1.2.3.4.7.8-HxCDF	22	/ 28	7E-07 - 2E-06	2E-06 - 0.0007	0.000120	0.00003	0.000057	0.00017	0.00011	0.000017	< 0.00000075	0.000036
1.2.3.6.7.8-H×CDD	23	/ 28	7E-07 - 8E-07	1E-06 - 0.0002	0.000040	0.000013	0.000012	0.000042	0.000039	0.0000047	< 0.00000075	0.000025
1.2.3.6.7.8-HxCDF	22	/ 28	7E-07 - 1E-06	7E-06 - 0.0013	0.00020	0.000037	0.000059	0.00023	0.00026	0.000033	< 0.00000075	0.000086
1,2,3,7,8,9-HxCDD	20	/ 28	7E-07 - 2E-05	2E-06 - 1E-04	0.000020	0.0000082	0.000008	0.000021	0.00002	< 0.0000027	< 0.00000075	0.000017
1,2,3,7,8,9-H×CDF	18	/ 28	7E-07 - 7E-06	2E-06 - 0.0004	0.0000733	< 0.0000031	< 0.0000028	0.0000086	< 0.0000071	< 0.00000091	< 0.00000075	0.00003
1,2,3,7,8-PeCDD	21	/ 28	7E-07 - 3E-06	1E-06 - 0.0001	0.000026	0.0000097	0.0000074	0.000031	0.000033	< 0.000003	< 0.00000075	0.000011
1.2.3.7.8-PeCDF	13	/ 28	7E-07 - 2E-05	2E-06 - 0.0002	0.000020	0.000016	0.000028	0.00006	0.000055	0.0000083	< 0.00000075	0.000032
2,3,4,6,7,8-HxCDF	22	/ 28	7E-07 - 1E-06	1E-05 - 0.0009	0.00017	0.000036	0.000051	0.00018	0.00022	0.000028	< 0.00000075	0.00008
2,3,4,7,8-PeCDF	25	/ 28	7E-07 - 8E-07	7E-07 - 0.0062	0.000834	0.000036	0.000043	0.00016	0.00017	0.000023	< 0.00000075	0.00043
2,3,7,8-TCDD	21	/ 28	1E-07 - 3E-07	5E-07 - 3E-05	0.0000075	0.0000053	0.0000025	0.0000095	0.0000092	0.0000008	< 0.00000015	0.0000042
2,3,7,8-TCDF	20	/ 28	1E-07 - 4E-06	2E-07 - 0.0001	0.000023	0.000018	0.000015	0.000027	0.000029	0.0000043	< 0.00000015	< 0.00000057
OCDD	28	/ 28		4E-06 - 0.0029	0.00074	0.00075	0.00024	0.00042	0.00048	0.000077	0.0000044	0.0018
OCDF	25	/ 28	1E-06 - 2E-06	2E-06 - 0.0003	0.00009	0.000075	0.00019	0.00019	0.00007	0.0000076	< 0.0000015	0.000087
TOTAL HpCDD	25	/ 28	7E-07 - 8E-07	4E-06 - 0.0013	0.00031	0.0002	0.00012	0.00027	0.00026	0.000036	< 0.00000075	0.00063
TOTAL HDCDF	25	/ 28	7E-07 - 8E-07	1E-06 - 0.0028	0.00054	0.00018	0.00024	0.00062	0.00055	0.000073	< 0.00000075	0.00033
TOTAL HxCDD	24	/ 28	7E-07 - 8E-07	1E-06 - 0.0026	0.00051	0.00012	0.00013	0.00049	0.00042	0.000048	< 0.00000075	0.0003
TOTAL HxCDF	27	/ 28	8E-07 - 8E-07	1E-06 - 0.025	0.0050	0.00078	0.001	0.0055	0.0058	0.00079	< 0.00000075	0.0023
TOTAL PeCDD	23	/ 28	7E-07 - 8E-07	8E-06 - 0.002	0.00037	0.000074	0.000056	0.00031	0.00029	0.000022	< 0.00000075	0.00014
TOTAL PeCDF	27	/ 28	8E-07 - 8E-07	3E-06 - 0.04	0.0061	0.00068	0.00088	0.0051	0.0054	0.00075	< 0.00000075	0.0055
TOTAL TCDD	24	/ 28	1E-07 - 2E-07	3E-07 - 0.0008	0.000162	0.000077	0.000045	0.00012	0.00011	0.000011	< 0.00000015	0.000089
TOTAL TCDF	27	/ 28	2E-07 - 2E-07	1E-06 - 0.015	0.00270	0.00029	0.00029	0.0013	0.0013	0.00017	< 0.00000015	0.0016

Compound not detected, value is detection limit.
 mg/kg - milligrams per kilogram

Page 2 of 6

7/31/2006

Table 2 Sediment Data - Detected Parameters (0-2 ft) Sediment Data - Detected Parameters (0-2 ft) Supplemental Site Investigation Report Sediment Data - Detected Parameters (0-2 ft) SED14 SED14 SED14 SED140 SED16 SED1401 SED1301 O-1 O-1 O-1 O-1 O-1 O-1		SED21 SED2101 6/22/2006 0-1	< 0.0044		
Table 2 Sediment Data - Detected Parameters (0-2 ft) Supplemental Site Investigation Report Supplemental Site Investigation Report Supplemental Site Investigation Report Sediment Data - Detected Parameters (0-2 ft) Supplemental Site Investigation Report Sediment Data - Detected Parameters (0-2 ft) Supplemental Site Investigation Report Site Investigation Report <td <="" colspan="2" td=""><td></td><td>SED20 SED2001 6/22/2006 0 5-1</td><td>< 0.0149</td></td>	<td></td> <td>SED20 SED2001 6/22/2006 0 5-1</td> <td>< 0.0149</td>			SED20 SED2001 6/22/2006 0 5-1	< 0.0149
Table 2 Table 2 Sediment Data - Detected Parameters (0-2 ft) Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island 0-2 ft) SED14 SED14 SED15 SED16 SED14 SED15 SED1601 SED14 SED15 SED1601 SED1401 SED1601 SED1701 SED1401 SED1601 SED1701 SED1401 SED1601 SED1701 SED1401 SED1601 SED1801 6/22/2006 6/22/2006 6/22/2006 0-1 0-1 0_5-1		SED19 SED1901 6/22/2006 0-1	0.635		
Table 2 Table 2 Sediment Data - Detected Parameters (0-2 Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island SED14 SED15 SED1401 SED1501 SED1401 SED1601 SED1401 SED1501 SED1401 SED1601 SED1401 SED1601 SED1401 SED1701 SED1401 SED1701 SED1401 SED1701 SED1401 SED1701 SED1401 SED1701 SED1401 SED1701 SED160 6/22/2006 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1	£	SED18 SED1801 6/22/2006 0-1	< 0.0506		
Table 2 Table 2 Sediment Data - Detected Parasupplemental Site Investig Former Gorham Manufat 333 Adelaide Ave 333 Adelaide Ave 333 Adelaide Ave 333 Adelaide Ave 333 Adelaide Ave 90-1 SED14 SED1501 SED1401 SED1501 SED1401 SED1501 SED1401 SED1501 SED1401 SED1601 6/22/2006 6/22/2006 0-1 0-1	ameters (0-2 l jation Report turing Site nue Island	SED17 SED1701 6/22/2006 0_5-1	0 732		
Sediment Data Supplement Former Go Former Go 333 Provio 8/22/2006 0-1 0-1 0-1 0-1	Table 2 - Detected Pai al Site Investig rham Manufac Adelaide Ave dence, Rhode	SED16 SED1601 6/22/2006 0-1	< 0.0235		
SED1401 SED1401 6/22/2006 0-1	ediment Data Supplement Former Go 333 Provi	SED15 SED1501 6/22/2006 0-1	0.863		
	Ø	SED14 SED1401 6/22/2006 0-1	< 0.012		

24	SED12	SED13	SED14	SED15	SED16	SED17	SED18	SED19	SED20	SED21	SED22	SED23
	SED1201	SED1301	SED1401	SED1501 6/22/2006	SED1601	SED1701	SED1801	SED1901	SED2001	SED2101	SED2201	SED2301
chemical name	0 5-1	0-0 5	0-1	0-1	0-1	0_5-1	0-1	0-1	0 5-1	0-1	0-1	0-1
Volatile Organics (mg/kg)												
1,1,1-Trichloroethane	< 0.006	< 0.0045	< 0.012	0.863	< 0.0235	0.732	< 0.0506	0.635	< 0.0149	< 0.0044	< 0.0126	< 0.0041
1,1-Dichloroethane	< 0.006	< 0.0045	< 0.012	0.0518	< 0.0235	0.137	< 0.0506	7.92	< 0.0149	< 0.0044	< 0.0126	< 0.0041
1,1-Dichloroethene	< 0.006	< 0.0045	< 0.012	0.0467	< 0.0235	0.0555	< 0.0506	11.3	< 0.0149	< 0.0044	< 0.0126	< 0.0041
Acetone	0.0757	0.105	0.202	< 0.0461	< 0.235	< 0.0463	1.9	0.242	0.421	< 0.0445	0.294	< 0.0406
Carbon Disulfide	< 0.006	0.0046	< 0.012	0.021	< 0.0235	0.007	< 0.0506	0.0576	< 0.0149	< 0.0044	< 0.0126	< 0.0041
cis-1,2-Dichloroethene	< 0.006	< 0.0045	< 0.012	0.296	< 0.0235	0.0298	< 0.0506	175	< 0.0149	< 0.0044	< 0.0126	0.0091
Isopropyl Benzene	< 0.006	< 0.0045	< 0.012	< 0.0046	< 0.0235	< 0.0046	< 0.0506	< 0.017	< 0.0149	< 0.0044	< 0.0126	< 0.0041
s-Butylbenzene	< 0.006	< 0.0045	< 0.012	< 0.0046	< 0.0235	< 0.0046	< 0.0506	0.0197	< 0.0149	< 0.0044	< 0.0126	< 0.0041
Tetrachloroethene	< 0.006	< 0.0045	< 0.012	0.0161	< 0.0235	0.0081	< 0.0506	18.1	< 0.0149	< 0.0044	< 0.0126	1.04
Toluene	< 0.006	< 0.0045	< 0.012	< 0.0046	< 0.0235	< 0.0046	< 0.0506	< 0.017	< 0.0149	< 0.0044	< 0.0126	< 0.0041
trans-1,2-Dichloroethene	< 0.006	< 0.0045	< 0.012	0.0053	< 0.0235	< 0.0046	< 0.0506	2.79	< 0.0149	< 0.0044	< 0.0126	< 0.0041
Trichloroethene	< 0.006	< 0.0045	< 0.012	1.47	< 0.0235	1.22	< 0.0506	58.4	< 0.0149	< 0.0044	< 0.0126	0.176
Vinyl chloride	< 0.0121	< 0.0089	< 0.024	< 0.0092	< 0.047	< 0.0093	< 0.101	0.148	< 0.0298	< 0.0089	< 0.0253	< 0.0081
Semivolatile Organics (mg/kg)												
Acenaphthene	0.0564	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	0.153	< 0.0328	< 0.0794	< 0.0322
Acenaphthylene	< 0.0553	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	0.781	< 0.0328	< 0.0794	< 0.0322
Anthracene	0.276	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	3.09	< 0.0328	< 0.0794	< 0.0322
Benzo(a)anthracene	0.685	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	0.218	15.1	< 0.0328	0.108	< 0.0322
Benzo(a)pyrene	0.862	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	0.151	7.87	< 0.0328	0.102	< 0.0322
Benzo(b)fluoranthene	1.41	0.0378	< 0.0943	< 0.0315	0.201	< 0.035	< 0.183	0.32	14.8	< 0.0328	0.114	< 0.0322
Benzo(g,h,i)perylene	0.244	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	2.54	< 0.0328	< 0.0794	< 0.0322
Benzo(k)fluoranthene	0.636	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	5.1	< 0.0328	< 0.0794	< 0.0322
Chrysene	0.625	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	0.201	8.94	< 0.0328	0.119	< 0.0322
Dibenzo(a,h)anthracene	0.0807	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	1.45	< 0.0328	< 0.0794	< 0.0322
Di-n-butylphthalate	11 M00.00					internet of the second s						1000 Contraction Contraction
Fluoranthene	1.92	0.0833	0.204	< 0.0315	0.33	< 0.035	0.267	0.533	28.8	< 0.0328	0.235	< 0.0322
Fluorene	0.107	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	0.863	< 0.0328	< 0.0794	< 0.0322
Indeno(1,2,3-cd)pyrene	0.259	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	2.47	< 0.0328	< 0.0794	< 0.0322
Naphthalene	< 0.0553	< 0.0321	< 0.0943	< 0.0315	< 0.179	< 0.035	< 0.183	< 0.124	< 0.0612	< 0.0328	< 0.0794	< 0.0322
Phenanthrene	1.14	0.0333	0.0999	< 0.0315	< 0.179	< 0.035	< 0.183	0.218	11.8	< 0.0328	0.121	< 0.0322
Pyrene	1.01	0.0513	0.153	< 0.0315	0.244	< 0.035	0.187	0.35	15.2	< 0.0328	< 0.0794	< 0.0322
Pesticides/PCBs (mg/kg)	and the second se	and an and a second sec					and the second	IIIIIIIAA MAANAA MA	and a subsection of the Control of t			
4,4-DDD	0.0214	< 0.00631	< 0.0192	< 0.00594	< 0.0357	< 0.00671	< 0.0405	< 0.0247	0.0292	< 0.00692	< 0.0327	< 0.00685
4,4'-DDE	< 0.0112	< 0.00631	< 0.0192	< 0.00594	< 0.0357	< 0.00671	< 0.0405	< 0.0247	< 0.0112	< 0.00692	< 0.0327	< 0.00685
4,4'-DDT	< 0.0112	< 0.00631	< 0.0192	< 0.00594	< 0.0357	< 0.00671	< 0.0405	< 0.0247	< 0.0112	< 0.00692	< 0.0327	< 0.00685
Endrin ketone	< 0.0112	< 0.00631	< 0.0192	< 0.00594	< 0.0357	< 0.00671	< 0.0405	0.0431	< 0.0112	< 0.00692	< 0.0327	< 0.00685
Aroclor-1254	< 0.112	< 0.0631	< 0.192	< 0.0593	< 0.357	< 0.067	< 0.404	< 0.246	< 0.112	< 0.0691	< 0.163	< 0.0685
Aroclor-1260	< 0.112	< 0.0631	< 0.192	< 0.0593	< 0.357	< 0.067	< 0.404	0.605	< 0.112	< 0.0691	< 0.163	< 0.0685
Inorganics (mg/kg)												
Antimony	< 11.9	< 6.7	< 15.1	< 6.6	< 22.6	< 7.6	< 25.7	< 23.6	< 13.1	< 7.4	< 15.9	< 7.4
Arsenic	ຕ >	11.5	47.6	12.6	20	< 0.4	22.2	36	< 0.7	2.1	12	< 1.8
Barium	33.1	11.5	130	9.7	194	12.4	278	224	25.3	13	125	13.1
Beryllium	0.31	< 0.07	0.35	< 0.07	0.6	< 0.08	0.72	1.03	< 0.13	0.14	0.32	< 0.07
Cadmium	< 1.19	< 0.67	2.26	< 0.66	5.66	< 0.76	6.9	7.11	< 1.31	< 0.74	2.8	< 0.74

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Page 3 of 6

7/31/2006

Table 2Sediment Data - Detected Parameters (0-2 ft)Supplemental Site Investigation ReportFormer Gorham Manufacturing Site333 Adelaide AvenueProvidence, Rhode Island

chemical name romium pper roury kel	SED12 SED1201 6/22/2006 0 5-1 7 7 12.5 20.7 < 0.068 < 5.9	SED13 SED1301 6/22/2006 0-0 5 4.7 5.3 < 6.7 < 0.04 < 2.2.5	SED14 SED1401 6/22/2006 0-1 49.1 215 215 250 < 0.116 31.4	SED15 SED1501 6/22/2006 0-1 2.9 5.8 5.8 < 6.6 < 0.041	SED16 SED1601 6/22/2006 0-1 565 2050 763 763 0.162 130	SED17 SED1701 6/22/2006 0 5-1 11.1 34.8 20.9 < 0.047 5.7	SED18 SED1801 6/22/2006 0-1 640 2590 961 0.163 157	SED19 SED1901 6/22/2006 0-1 387 1880 927 2.52 2.52 2.52	<u>v</u> @	SED20 ED2001 (22/2006 0 5-1 7.5 14.6 34.1 34.1 5 0.067 < 0.067	SED20 SED21 ED2001 SED2101 222/2006 6/22/2006 0.5-1 0-1 7.5 7.1 14.6 20.1 34.1 12.2 < 0.067 < 0.043 < 6.6 6.6 6.8	SED20 SED21 SED22 ED2001 SED2101 SED2201 2222006 6/222006 6/222006 0.5-1 0-1 0-1 7.5 7.1 616 7.4 12.2 426 34.1 12.2 426 < 0.067 < 0.043 0.677 < 6.6 6.8 86
enium /er c al Organic Carbon (TOC)	< 11.9 < 1.19 34.7 2300	< 6.7 < 0.67 41.4 2700	 15.1 18.5 363 31000 	 6.6 0.66 12.6 7000 	 22.6 164 1630 73000 	7.05.2739.35800	 227 227 1940 115000 	2 2 3 69	53.0 830 600	53.5 < 13.1 92 < 1.31 830 38.8 600 26000	5.5 < 13.1 < 7.4 92 < 1.31 2.77 130 38.8 71.6 600 26000 5300	Size < 13.1 < 1.4 < 15.9 92 < 1.31
н (mg/кg) al Petroleum Hydrocarbons (TPH) xins/Furans (mg/kg) ,3,4,6,7,8-нрСDD	< 85 0.0000074	< 48.1 0.0000022	< 147 0.000071	< 44.9 < 0.000008	< 275 0.00048	83.4 0.000021	< 291 0.00064	756	27	1810 27 0.00009	1810 57.8 27 0.00009 0.0000045	1810 57.8 190 27 0.00009 0.000045 0.00011
,3,4,6,7,8-HpCDF ,3,4,7,8,9-HpCDF	0.000002	<pre>< 0.00000076 1 < 0.00000076</pre>	0.0000037 0.0000044	< 0.0000008 < 0.0000008	0.00057	0.0000035	0.001	0.00051	ideal.	0.0002	0.0002 0.000065 0.0000065 0.0000012	0.0002 0.000065 0.00016 0.00016 0.000025
,3,4,7,8-HxCDD ,3,4,7,8-HxCDF	< 0.0000007	1 < 0.00000076 1 < 0.00000076	<pre>0.0000033</pre> <pre></pre>	< 0.0000008 < 0.0000008	0.000041 0.00033	0.0000022 0.000017	0.000074 0.00067	0.000051 0.00039		0.000015 0.00014	0.000015 < 0.00000084 0.00014 0.0000034	0.000015 < 0.0000084 < 0.000016 0.00014 0.0000034 0.000068
,3,6,7,8-HxCDD ,3,6,7,8-HxCDF	< 0.0000007	1 < 0.00000076 1 < 0.00000076	0.0000068 0.000026	< 0.0000008 < 0.0000008	0.00012 0.00057	0.0000057 0.00003	0.00019 0.0013	0.00012 0.00062		0.000035 0.00014	0.000035 0.0000013 0.0000013 0.000073	0.000035 0.0000013 0.000028 0.00014 0.0000073 0.00016
,3,7,8,9-HxCDD 3 7 8 9-HxCDF	< 0.0000007	1 < 0.00000076	0.0000034	< 0.0000008	0.000056	0.0000033	0.000039	0.000059		0.000016	0.000016 < 0.00000084	0.000016 < 0.0000084 < 0.000018 0.000052 0.0000024 0.000062
3,7,8-PeCDD	< 0.0000000 >	1 < 0.00000076	0.0000048	< 0.0000008	0.000056	0.0000033	0.000098	0.000069		0.00003	0.00003 0.00000055	0.00003 0.0000095 0.000018
.3.7.8-PeCDF 4.6.7.8-HxCDF	< 0.00000071	1 < 0.00000076	0.0000084 0.000051	< 0.0000008 < 0.0000008	< 0.0000034 0.0004	0.0000081 0.000075	< 0.0000032 0.00091	< 0.0000027 0.00054		< 0.0000012 0.00012	< 0.0000012 0.0000023 0.00012 0.000016	<pre>< 0.0000012 0.0000023 0.000041 0.00012 0.000016 0.00015</pre>
4,7,8-PeCDF	0.00000073	0.00000086	0.00015	< 0.0000008	0.0028	0.00019	0.0062	0.0035		0.00014	0.00014 0.000044	0.00014 0.00044 0.0013
.7,8-TCDD .7,8-TCDF	< 0.0000001	4 < 0.00000015 0.00000019	0.0000014	< 0.00000016 < 0.000000016	0.000016 0.000082	< 0.00000011	0.00003	0.000021 0.000058		0.0000003	0.00000073 < 0.00000017 0.0000003 < 0.000000017	0.0000073 < 0.00000017 0.0000068 0.0000093 < 0.00000017 0.000027
0	0.000064	0.000016	0.00047	0.0000044	0.0023	0.00007	0.0027	0.00033		0.00024	0.00024 0.000025	0.00024 0.000025 0.0005
DF	0.0000031	0.0000016	0.000036	< 0.0000016	0.00025	0.000008	0.0003	0.0001		0.000082	0.000082 0.0000022	0.000082 0.0000022 0.000044
TAL HPCDD	0.000013	0.0000039	0.00014	< 0.0000008	16000.0	0.000044	0.0013	0.00058		0.00019	0.00019 0.0000088	0.00019 0.0000088 0.00024
	0.000002	< 0.00000076	0.000087	< 0.000008	0.0014	0.00007	0.0026	0.0016	-2	0.00047	0.00047 0.000013	0.00047 0.000013 0.00031
TAL HXCDF	0.0000039	0.00003	0.00051	0.0000011	0.016	0.009	0.023	0.012		0.0046	0.0046 0.0002	0.0046 0.0002 0.0055
TAL PeCDD	< 0.0000007	1 < 0.00000076	0.000047	< 0.0000008	0.001	0.000041	0.002	0.0014		0.00039	0.00039 0.0000081	0.00039 0.0000081 0.0002
TAL PECDF	0.0000056	0.0000074	0.0013	0.0000031	0.0073	0.0021	0.0096	0.0088		0.0069	0.0069 0.00046	0.0069 0.0046 0.014
TAL TCDF	0.0000037	0.0000031	0.00042	0.0000013	0.0069	0.0006	0.012	0.0065		0.0014	0.0014 0.00014	0.0014 0.00014 0.0045

Compound not detected, value is detection limit.
 mg/kg - milligrams per kilogram

Sediment Data - Detected Parameters (0-2 ft) Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

	SED24	SED25	SED26	SED27	SED28	SED29	SED30	SED31	SED32
	SED2401	SED2501	SED2601	SED2701	SED2801	SED2901	SED3001	SED3101	SED3201
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006
chemical name	0-1	0-1	0-1	-1-	0_5-1	0_5-1	0_5-1	0 5-1	0_5-1
Volatile Organics (mg/kg)									1
1,1,1-Trichloroethane	< 0.0079	< 0.0088	< 0.008	< 0.0198	< 0.0226	< 0.025	< 0.0043	< 0.0289	< 0.005
1,1-Dichloroethane	0.011	1.09	< 0.008	4.67	0.0266	< 0.025	< 0.0043	1.92	< 0.005
1,1-Dichloroethene	< 0.0079	< 0.0088	< 0.008	2.34	< 0.0226	< 0.025	< 0.0043	< 0.0289	< 0.005
Acetone	< 0.0791	0.128	0.0856	< 0.198	0.384	0.27	< 0.0434	0.522	< 0.0496
Carbon Disulfide	< 0.0079	0.0111	< 0.008	0.0398	< 0.0226	< 0.025	< 0.0043	< 0.0289	< 0.005
cis-1,2-Dichloroethene	< 0.0079	11.5	< 0.008	103	< 0.0226	< 0.025	< 0.0043	10.6	< 0.005
Isopropyl Benzene	< 0.0079	< 0.0088	< 0.008	< 0.0198	0.0514	< 0.025	< 0.0043	< 0.0289	< 0.005
s-Butvibenzene	< 0.0079	< 0.0088	< 0.008	< 0.0198	0.0303	< 0.025	< 0.0043	< 0.0289	< 0.005
Tetrachloroethene	< 0.0079	< 0.0088	< 0.008	< 0.0198	< 0.0226	< 0.025	< 0.0043	< 0.0289	< 0.005
Toluene	< 0.0079	< 0.0088	< 0.008	< 0.0198	< 0.0226	< 0.025	< 0.0043	1.92	< 0.005
trans-1,2-Dichloroethene	< 0.0079	< 0.0088	< 0.008	3.62	< 0.0226	< 0.025	< 0.0043	< 0.0289	< 0.005
Trichloroethene	< 0.0079	0.276	< 0.008	15.1	< 0.0226	< 0.025	< 0.0043	0.797	< 0.005
Vinvl chloride	0.0218	24.8	< 0.016	5.42	0.0499	< 0.05	< 0.0087	11.7	< 0.0099
Semivolatile Organics (mg/kg)	and the second se								
Acenaphthene	< 0.0631	< 0.0829	< 0.0463	< 0.124	< 0.0912	< 0,101	< 0.0311	< 0.109	0.12
Acenaphthylene	< 0.0631	< 0.0829	< 0.0463	< 0.124	< 0.0912	< 0.101	< 0.0311	< 0.109	< 0.034
Anthracene	< 0.0631	0.163	< 0.0463	< 0.124	0.403	0.169	0.0852	0.171	0.438
Benzo(a)anthracene	0.0896	0.541	0.241	0.134	1.29	0.687	0.376	0.671	0.64
Benzo(a)pvrene	0.0707	0.483	0.273	< 0.124	0.993	0.543	0.239	0.503	0.497
Benzo(b)fluoranthene	0.0732	0.516	0.256	0.285	1.49	0.882	0.433	1.18	0.892
Benzo(g,h,i)perylene	< 0.0631	0.27	0.144	< 0.124	0.296	0.117	0.152	0.124	0.191
Benzo(k)fluoranthene	< 0.0631	< 0.0829	< 0.0463	< 0.124	0.668	0.396	0.137	0.326	0.43
Chrysene	0.0896	0.534	0.227	< 0.124	1.16	0.617	0.299	0.579	0.551
Dibenzo(a,h)anthracene	< 0.0631	< 0.0829	< 0.0463	< 0.124	0.0912	< 0.101	0.0404	< 0.109	0.0667
Di-n-butylphthalate									
Fluoranthene	0.211	3.17	0.419	0.354	2.31	1.34	0.535	1.51	1.56
Fluorene	< 0.0631	< 0.0829	< 0.0463	< 0.124	0.135	< 0.101	0.0802	< 0.109	0.156
Indeno(1,2,3-cd)pyrene	< 0.0631	0.27	0.133	< 0.124	0.314	0.125	0.124	0.128	0.207
Naphthalene	< 0.0631	< 0.0829	< 0.0463	< 0.124	< 0.0912	< 0.101	0.0342	< 0.109	0.0456
Phenanthrene	0.169	2.46	0.158	< 0.124	1.14	0.689	0.466	0.757	1.23
Pyrene	0.177	2.4	0.348	0.196	1.29	0.874	0.81	0.953	1.07
Pesticides/PCBs (mg/kg)									
4,4'-DDD	< 0.0229	< 0.0309	< 0.0189	< 0.0481	< 0.0193	< 0.0211	< 0.00635	< 0.0207	0.0301
4,4'-DDE	< 0.0229	< 0.0309	< 0.0189	< 0.0481	< 0.0193	< 0.0211	< 0.00635	< 0.0207	0.0109
4,4'-DDT	< 0.0229	< 0.0309	< 0.0189	< 0.0481	< 0.0193	< 0.0211	< 0.00635	< 0.0207	0.0635
Endrin ketone	< 0.0229	< 0.0309	< 0.0189	< 0.0481	< 0.0193	< 0.0211	< 0.00635	< 0.0207	< 0.00678
Aroclor-1254	0.207	< 0.168	< 0.093	< 0.245	< 0.193	< 0.21	0.528	< 0.207	< 0.0677
Aroclor-1260	< 0.125	< 0.168	< 0.093	< 0.245	< 0.193	< 0.21	< 0.0634	< 0.207	< 0.0677
Inorganics (mg/kg)			Sile - X HEL						
Antimony	< 9.8	< 13.1	< 10.1	< 16.6	< 19.7	< 20.4	< 7	< 21.3	< 7.4
Arsenic	9.3	22.4	36.1	36.6	33.8	31.7	2.2	14.8	< 1.8
Barium	82.4	207	466	123	202	372	25.1	113	13.4
Beryllium	0.28	0.58	0.87	0.85	0.64	0.65	0.11	0.61	0.1
Cadmium	2.87	4.56	1.57	4.39	4.73	6.44	0.75	4.13	0.93

Page 5 of 6

 Table 2

 Sediment Data - Detected Parameters (0-2 ft)

 Supplemental Site Investigation Report

 Former Gorham Manufacturing Site

Providence, Rhode Island

333 Adelaide Avenue

< 0.00000073 SED3201 6/21/2006 0.00000052 0.0000018 0.0000048 0.0000028 0.0000053 0.0000022 0.00081 0.00008 0.00017 0.0000051 0.000011 0.000012 0.000012 0.000028 0.000074 0.000006 0.000025 0.000012 0.000051 0.00004 0.00012 0.00032 0.0005 0.00016 SED32 28.9 2670 304 0.061 0 5-1 22.8 < 7.4 30.3 1110 7000 209 SED3101 6/21/2006 0.000033 0.00012 0.00023 0.00064 0.000078 0.00043 0.000055 0.00075 0.0016 0.0016 0.00094 0.025 < 21.3 0.00032 0.00015 0.00042 0.00017 SED31 1440 46000 0.002 0.002 0.00064 0.015 1790 1120 1.11 99.8 0 5-1 0.04 449 131 961 < 0.0000007 SED3001 6/21/2006 0.00000062 0.0000072 0.0000061 0.0000034 0.000018 0.000014 0.0000096 0.0000052 0.000076 0.0000047 0.00054 0.000037 0.000013 0.000055 0.000036 0.000066 0.000012 0.000094 0.00013 SED30 0.00013 0.00038 0.00059 0.00017 0.00002 1320 159 0.113 1240 0 5-1 19.2 38.4 893 6700 172 1 > < 0.0000018 SED2901 6/21/2006 0.000041 0.000012 0.000031 0.00014 0.000069 0.000018 0.00029 0.00016 0.00084 0.00018 0.00035 0.00023 0.0004 0.0083 0.00021 0.00007 0.0009 0.00027 130 1480 45000 0.00087 SED29 < 20.4 0.014 0 5-1 252 1260 772 1.53 147 459 SED2801 6/21/2006 < 0.000018 0.000068 0.0002 0.000022 0.000084 0.000076 0.000099 0.000039 0.00052 0.00042 0.00064 0.0003 SED28 0.00049 0.0031 0.0029 0.00095 0.00011 0.0016 0.0014 0.0088 118 < 19.7 132 1420 41000 0.001 0.024 0.00042 1930 659 1.21 0 5-1 0.01 372 394 < 0.0000042 SED27 SED2701 6/22/2006 0.00023 0.000036 < 0.000021 0.000022 0.000075 0.000029 0.000035 0.0000081 0.00083 0.00013 0.000037 0.00045 0.00015 0.00091 0.00013 0.00018 0.00038 < 0.12 < 16.6 0.00018 0.00024 0.0098 0.00013 1300 46000 0.00051 0.0048 0.003 78.3 413 148 892 507 853 5 < 0.0000014 < 0.0000014 < 0.0000014 < 0.0000014 < 0.00000028 < 0.0000014 < 0.0000014 < 0.0000014 SED26 SED2601 6/22/2006 0.000043 0.0000059 0.0000024 0.0000036 0.0000017 0.0000017 0.0000016 0.0000059 0.000033 0.0000054 0.000064 0.000022 0.0000061 0.000021 0.00002 0.000021 29600 0.637 17.9 37.9 209 88.8 274 18.8 219 5 < 0.0000049 SED2501 6/22/2006 0.000083 0.00038 0.000038 0.000079 0.000063 0.00065 0.000018 0.000053 0.00018 0.00044 0.00003 0.00031 0.00031 0.0022 0.0019 0.0005 0.00017 0.0011 0.0069 113 < 13.1 140 1360 46100 0.00032 SED25 672 0.159 0.012 0.00091 0.012 300 1890 380 5 < 0.00000026 SED2401 6/22/2006 0.00000072 0.0000028 0.0000045 0.0000013 0.0000024 0.0000055 0.0000054 0.000029 0.000029 0.000012 0.000016 0.000007 0.000012 0.000095 0.000017 0.000058 0.000066 0.000029 0.000017 0.00005 0.00049 0.00017 532 1930 520 0.653 55.6 < 9.8 1920 0.0011 0.00032 SED24 107 226 5 **Fotal Petroleum Hydrocarbons (TPH)** Fotal Organic Carbon (TOC) chemical name Dioxins/Furans (mg/kg) 1,2,3,4,6,7,8-HpCDD ,2,3,4,6,7,8-HpCDF ,2,3,4,7,8,9-HpCDF 1,2,3,4,7,8-HxCDD ,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,7,8-HxCDF ,2,3,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 2,3,4,6,7,8-HxCDF ,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF **FOTAL HPCDD** OTAL PeCDD **FOTAL HPCDF** FOTAL HxCDD **FOTAL PecdF** FOTAL HXCDF 2,3,7,8-TCDD FOTAL TCDD **TPH (mg/kg)** 2,3,7,8-TCDF FOTAL TCDF Chromium Selenium Mercury Copper OCDD Nickel OCDF Silver Lead Zinc

 Compound not detected, value is detection limit, mg/kg - milligrams per kilogram

Prepared by: BJR Checked by: KJC

> P:W2-mig/TEXTRON/GORHAM/SupplementSI 2006/HH_Risk_July_2006/Tables/ SedmentSummary-Cove2006, 0-1ft Delect

Toxicity Equivalency Factors (TEFs¹) for Dioxin and Furan Congeners Supplemental Site Investigation Report Former Gorham Manufacturing Site Providence, Rhode Island 333 Adelaide Avenue

	To	xicity Equivalency Facto	or
Congener	Human/Mammal	Fish	Bird
ninelizo-p-aloxilis		400 P (000)	
2,3,7,8-TCDD		2	
1,2,3,7,8-PnCDD			-
1,2,3,4,7,8-HxCDD	0.1	0.5	0.05
1,2,3,6,7,8-HxCDD	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.01	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.001	0.001
ocdd	0.0001	0.0001	0.0001
Dibenzofurans			
2,3,7,8-TCDF	0.1	0.05	-
1,2,3,7,8-PnCDF	0.05	0.05	0.1
2,3,4,7,8-PnCDF	0.5	0.5	-
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01
OCDF	0.0001	0.0001	0.0001
Notes:			

¹ TEFs are based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, June 15-18 1997 (Van den Berg et al., 1998).

Hasegawa, R., Kennedy, S.W., Kubiak, T., Larsen, J.C., van Leeuwen, F.X.R., Liem, A.K.D.,Nolt, C., Peterson, Van den Berg, M., Birnbaum, L., Bosveld, B.T.C., Brunström, B., Cook, P., Feeley, M., Giesy, J.P., Hanberg, A., R.E., Poellinger, L., Safe, S., Schrenk, D., Tillitt, D., Tysklind, M., Younes, M., Waern, F., Zacharewski, 1998. T. Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environmental Health Perspective, 106 (12), 775-792.

Calculation of Dioxin Toxic Equivalents (TEQ) for Surface Water Samples Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

chemical name	TEF Humans- Mammals	SW11 SW11 6/21/2006	Sample*TEF	SW19 SW19 6/21/2006	Sample*TEF	SW27 6/22/2	SW27 2006	Sample*TEF
1.2.3.4.6.7.8-HpCDD	0.01	2.4E-08	2.4E-10	4.3E-08	4.3E-10	4	3E-08	4.3E-10
1.2.3.4.6.7.8-HpCDF	0.01	< 0.00000001	5E-11	< 0.00000001	5E-11	< 0.000	100000	5E-11
1.2.3.4.7.8.9-HpCDF	0.01	< 0.00000001	5E-11	< 0.00000001	5E-11	< 0.000	100000	5E-11
1,2,3,4,7,8-HxCDD	0.1	< 0.00000001	5E-10	< 0.00000001	5E-10	< 0.000	100000	5E-10
1,2,3,4,7,8-HxCDF	0.1	< 0.00000001	5E-10	< 0.00000001	5E-10	< 0.000	100000	5E-10
1.2,3,6,7,8-HxCDD	0.1	< 0.00000001	5E-10	< 0.00000001	5E-10	-	.3E-08	1.3E-09
1.2,3.6,7,8-HxCDF	0.1	< 0.00000001	5E-10	< 0.00000001	5E-10	< 0.000	000001	5E-10
1,2,3,7,8,9-HxCDD	0.1	< 0.00000001	5E-10	< 0.00000001	5E-10	S	5.1E-08	5.1E-09
1.2.3.7.8.9-HxCDF	0.1	< 0.00000001	5E-10	< 0.0000001	5E-10	< 0.000	100000	5E-10
1,2,3,7,8-PeCDD	-	< 0.0000001	0.000000005	< 0.00000001	0.000000005	4	.6E-08	0.000000046
1,2,3,7,8-PeCDF	0.05	< 0.00000001	2.5E-10	< 0.00000001	2.5E-10	< 0.000	100000	2.5E-10
2,3,4,6,7,8-HxCDF	0.1	< 0.0000001	5E-10	< 0.00000001	5E-10	< 0.000	100000	5E-10
2,3,4,7,8-PeCDF	0.5	< 0.00000001	2.5E-09	< 0.00000001	2.5E-09	< 0.000	100000	2.5E-09
2,3,7,8-TCDD	-	< 2.1E-09	1.05E-09	< 2E-09	0.00000001	e	3.1E-09	3.1E-09
2,3,7,8-TCDF	0.1	< 2.1E-09	1.05E-10	< 2E-09	1E-10	œ	3.9E-09	8.9E-10
ocdd	0.0001	0.00000018	1.8E-11	0.00000032	3.2E-11	0.000	300035	3.5E-11
OCDF	0.0001	< 2.1E-08	1.05E-12	< 0.00000002	1E-12	< 0.000	00000	1E-12
TEQ-Mammal (1)			1.28E-08		1.29E-08		-	6.22E-08

(1) - TEQ-Mammal is calculated by multipling each congener by its coressponding TEF then summing all of the results.
 Bolded and Shaded values indicat the TEQ-Mammal is greater than the surface water screening value standard.
 compound was not detected and half the detection limit was used to calculate the TEQ.

Calculation of Dioxin Toxic Equivalents (TEQ) for Sediment Samples Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

2.39E-05			2.03E-04		- train	1.98E-04		5.61E-05			5.09E-05				-Q-Mammal (1)
7.6E-10	0.0000076	~	0.00000000	0.00007		0.000000019	0.00019	0.000000015	0.00019		7.5E-09	0.000075		0.0001	CDF
7.7E-09	0.000077	ω	0.00000004	0.00048		0.0000000042	0.00042	0.000000024	0.00024		0.000000075	0.00075		0.0001	CDD
0.00000043	0.0000043	ດ	0.000002	0.000029		0.00000027	0.000027	0.0000015	0.000015		0.0000018	0.000018		0.1	3,7,8-TCDF
0.00000098	0.00000098	2	0.000009	0.0000092		0.0000095	0.0000095	0.0000025	0.0000025		0.0000053	0.0000053		-	3,7,8-TCDD
0.0000115	0.000023	2	0.00008	0.00017	_	0.00008	0.00016	0.0000215	0.000043		0.000018	0.000036		0.5	3,4,7,8-PeCDF
0.0000028	0.000028	2	0.00002	0.00022	~	0.000018	0.00018	0.0000051	0.000051		0.0000036	0.000036		0.1	3,4,6,7,8-HxCDF
0.000000415	0.0000083	u)	0.0000027	0.000055	~	0.000003	0.00006	0.0000014	0.000028		0.0000008	0.000016		0.05	2,3,7,8-PeCDF
0.0000015	< 0.000003	ŝ	0.00003	0.000033		0.000031	0.000031	0.0000074	0.0000074		0.0000007	0.0000007		÷	2,3,7,8-PeCDD
4.55E-08	< 0.00000091	сл.	0.00000035	0.0000071	v	0.00000086	0.0000086	0.00000014	0.0000028	v	0.000000155	< 0.0000031	v	0.1	2,3,7,8,9-HxCDF
0.000000135	< 0.0000027	N.	0.00000	0.00002		0.0000021	0.000021	0.000008	0.000008		0.00000082	0.0000082		0.1	2,3,7,8,9-HxCDD
0.0000033	0.000033	g	0.00002	0.00026	~	0.000023	0.00023	0.0000059	0.000059		0.0000037	0.000037		0.1	2,3,6,7,8-HxCDF
0.00000047	0.0000047	o	0.000003	0.000039		0.0000042	0.000042	0.0000012	0.000012		0.0000013	0.000013		0.1	2,3,6,7,8-HxCDD
0.0000017	0.000017	-	0.00001	0.00011		0.000017	0.00017	0.0000057	0.000057		0.000003	0.00003		0.1	2,3,4,7,8-HxCDF
0.0000000	< 0.0000018	-	0.000000	0.000014	v	0.0000016	0.000016	0.00000061	0.0000061		0.00000045	0.0000049		0.1	2,3,4,7,8-HxCDD
0.000000041	0.0000041	~	0.0000004	0.000047	-	0.00000045	0.000049	0.00000014	0.000014		3600000000000	0.0000099		0.01	2,3,4,7,8,9-HpCDF
0.0000003	0.00003	-	0.000002	0.00021		0.0000027	0.00027	0.0000016	0.00016		0.0000000	0.000092		0.01	2.3,4,6,7,8-HpCDF
0.00000017	0.000017	4	0.000001	0.00014	~	0.0000013	0.00013	0.00000059	0.000059		0.0000011	0.00011		0.01	2,3,4,6,7,8-HpCDD
Sample*TEF	12/28/2005 0-2		Sample*TEF	2/28/2005 0-2		Sample*TEF	12/28/2005 0-2	Sample*TEF	2/28/2005 0-2	-	Sample*TEF	12/28/2005 0-2		Humans- Mammals	chemical_name
	SD-1005			SD-1004			SD-1003		SD-1002			SD-1001	_	TEF	
	SD-1005			SD-1004			SD-1003		SD-1002			SD-1001			

(1) - TEQ-Mammal is calculated by multipling each congener by its coressponding TEF then summing all of the results.
 Bolded and Shaded values indicat the TEQ-Mammal is greater than the sediment screening value standard.
 - Compound was not detected and half the detection limit was used to calculate the TEQ.

Table 5 Calculation of Dioxin Toxic Equivalents (TEQ) for Sediment Samples Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue

Providence, Rhode Island

0.00000000 0.00000000 0.0000004 0.00000004 0.00000000 0.000000000 4.4E-10 8E-11 0.00000000.0 0.00000000 0.0000000.0 0.0000000.0 0.0000000.0 0.0000000.0 0.0000000.0 0.000000.0 Sample*TEF 0.00000000 1.00E-06 0.0000008 0.000008 0.0000008 0.0000008 0.0000008 0.0000008 0.000008 0.0000008 0.0000008 0.0000008 0.00000016 0.00000016 0.0000016 0.000008 0.000008 0.0000044 0.0000008 6/22/2006 SED1501 SED15 5 v v v v v v V v v v v v 0.00000076 3.6E-09 0.0000026 0.00000037 0.000000044 0.00000033 0.000000085 0.00000068 0.00000034 0.0000084 0.0000048 0.00000042 0.0000051 0.000075 0.0000014 0.000000047 Sample*TEF 0.000000.0 9.35E-05 0.0000044 0.0000033 0.0000017 0.0000068 0.0000084 0.0000048 0.00015 0.0000076 0.00047 0.000036 0.000037 0.000026 0.0000034 0.0000014 0.0000084 0.00005 0.00007 SED1401 6/22/2006 SED14 5 0.00000038 3.8E-09 3.8E-09 0.00000038 0.000000038 0.00000038 0.000000015 0.00000043 0.000000015 1.6E-09 1.6E-10 0.00000038 0.00000038 0.000000038 0.00000038 0.000000075 Sample*TEF 0.0000000 1.22E-06 < 0.00000076 < 0.00000076 < 0.00000076 0.00000015 0.00000019 < 0.00000076 < 0.00000076 < 0.00000076 < 0.00000076 < 0.00000076 < 0.00000076 < 0.00000076 0.00000076 0.00000086 0.000016 0.0000016 0.0000022 6/22/2006 SED1301 SED13 0-0 5 v v 3.55E-08 3.55E-08 0.00000079 3.55E-08 3.55E-08 0.000008 0.000000355 1.775E-08 3.55E-08 0.000000015 0.000000012 0.00000079 3.55E-08 0.000000365 0.00000007 0.000000024 0.00000068 Sample*TEF 1.13E-05 0.00000073 < 0.00000014 0.00000024 0.00015 0.00012 0.000079 0.00008 0.000079 0.000068 < 0.00000071 0.00000071 < 0.00000071 < 0.0000007 > 0.0000007 < 0.0000007 < 0.0000007 > < 0.0000007 > 6/22/2006 SED1201 SED12 0 5-1 v v 0.00000095 0.0000016 0.0000042 0.0000014 0.00000018 0.0000036 0.0000025 0.0000086 0.000003 0.000011 0.000008 0.000215 2.85E-08 0.00000018 8.7E-09 0.0000017 Sample*TEF 0.0000028 2.65E-04 0.000018 0.0000095 0.000036 0.000025 0.000086 0.00003 0.000032 0.00008 0.00043 0.0000042 0.0018 0.00028 0.00014 0.000017 0.000011 0.000000057 0.000087 6/22/2006 SED1101 SED11 5 v 3.75E-09 3.75E-09 3.75E-08 3.75E-08 3.75E-08 3.75E-08 3.75E-09 4.4E-10 3.75E-08 3.75E-08 0.000000375 1.875E-08 3.75E-08 1.875E-07 0.000000075 7.5E-09 7.5E-11 Sample*TEF 9.38E-07 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000075 < 0.00000015 0.00000015 0.0000044 0.0000015 0.0000000 6/22/2006 SED1001 SED10 0 5-1 v v v ,2,3,4,6,7,8-HpCDD ,2,3,4,6,7,8-HpCDF ,2,3,4,7,8,9-HpCDF ,2,3,4,7,8-HxCDD ,2,3,4,7,8-HxCDF ,2,3,6,7,8-HxCDD ,2,3,7,8,9-HxCDD chemical name ,2,3,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8-PeCDD TEQ-Mammal (1) ,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 3.7.8-TCDD 2,3,7,8-TCDF OCDF OCDD

TEQ-Mammal is calculated by multipling each congener

by its coressponding TEF then summing all of the results.

Bolded and Shaded values indicat the TEQ-Mammal is greater than the sediment screening value standard.

Compound was not detected and half the detection limit was used to calculate the TEQ.

Calculation of Dioxin Toxic Equivalents (TEQ) for Sediment Samples Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

1.63E-04		2.06E-03		3.62E-03		1.15E-04		1.66E-03		TEQ-Mammal (1)
8.2E-09	0.000082	0.0000001	0.0001	0.0000003	0.0003	8E-10	0.000008	0.000000025	0.00025	OCDF
0.000000024	0.00024	0.00000003	0.00093	0.00000027	0.0027	0.000000007	0.00007	0.00000023	0.0023	OCDD
0.0000003	0.0000093	0.0000058	0.000058	0.000012	0.00012	0.000000007	< 0.00000014	0.0000082	0.000082	2,3,7,8-TCDF
0.0000073	0.0000073	0.000021	0.000021	0.00003	0.00003	0.0000011	0.0000011	0.000016	0.000016	2,3,7,8-TCDD
0.00007	0.00014	0.00175	0.0035	0.0031	0.0062	0.000095	0.00019	0.0014	0.0028	2,3,4,7,8-PeCDF
0.000012	0.00012	0.000054	0.00054	0.000091	0.00091	0.0000075	0.000075	0.00004	0.0004	2,3,4,6,7,8-HxCDF
0.00000003	0.0000012	6.75E-08 <	< 0.0000027	0.00000008	< 0.0000032	0.000000405	0.0000081	0.000000085	< 0.0000034	1,2,3,7,8-PeCDF
0.00003	0.00003	0.000069	0.000069	0.000098	0.000098	0.0000033	0.0000033	0.000056	0.000056	1,2,3,7,8-PeCDD
0.0000052	0.000052	0.000025	0.00025	0.000039	0.00039	0.0000013	0.000013	0.000019	0.00019	1,2,3,7,8,9-HxCDF
0.0000016	0.000016	0.0000059	0.000059	0.0000097	0.000007	0.00000033	0.0000033	0.0000056	0.000056	1,2,3,7,8,9-HxCDD
0.000014	0.00014	0.000062	0.00062	0.00013	0.0013	0.000003	0.00003	0.000057	0.00057	1,2,3,6,7,8-HxCDF
0.0000035	0.000035	0.000012	0.00012	0.000019	0.00019	0.00000057	0.0000057	0.000012	0.00012	1,2,3,6,7,8-HxCDD
0.000014	0.00014	0.000039	0.00039	0.000067	0.00067	0.0000017	0.000017	0.000033	0.00033	1,2,3,4,7,8-HxCDF
0.0000015	0.000015	0.0000051	0.000051	0.0000074	0.000074	0.00000022	0.0000022	0.0000041	0.000041	1,2,3,4,7,8-HxCDD
0.00000041	0.000041	0.0000011	0.00011	0.0000017	0.00017	0.000000065	0.0000065	0.00000092	0.000092	1,2,3,4,7,8,9-HpCDF
0.000002	0.0002	0.0000051	0.00051	0.00001	0.001	0.00000035	0.000035	0.0000057	0.00057	1,2,3,4,6,7,8-HpCDF
0.000000	0.00009	0.0000027	0.00027	0.0000064	0.00064	0.00000021	0.000021	0.0000048	0.00048	1,2,3,4,6,7,8-HpCDD
Sample*TEF	SEU20 SED2001 122/2006 0_5-1	Sample*TEF	SED1901 6/22/2006 0-1	Sample*TEF	SED1801 SED1801 6/22/2006 0-1	Sample*TEF	SED1701 SED1701 6/22/2006 0_5-1	Sample*TEF	SED16 SED1601 6/22/2006 0-1	chemical_name
	SED20		SED19		SED18		SED17		SED16	

(1) - TEQ-Mammal is calculated by multipling each congener by its coressponding TEF then summing all of the results.
 Bolded and Shaded values indicat the TEQ-Mammal is greater than the sediment screening value standard.
 c Compound was not detected and half the detection limit was used to calculate the TEQ.

Calculation of Dioxin Toxic Equivalents (TEQ) for Sediment Samples Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island Table 5

			Sample*TEF	0.000000	0.000000059	0.00000000.0	0.0000000.0	0.00000024	0.00000036	0.0000000.0	0.00000017	0.00000000	0.0000001	0.00000003	0.00000000	0.0000008	0.00000014	0.00000016	4.3E-09	6.2E-10	3.21E-06
SED26	SED2601	6/22/2006		0.00002	0.0000059	< 0.0000014	< 0.0000014	0.0000024	0.0000036	< 0.0000014	0.0000017	< 0.0000014	< 0.0000014	< 0.0000014	< 0.0000014	0.0000017	< 0.00000028	0.0000016	0.000043	0.0000062	
			Sample*TEF	0.0000032	0.0000044	0.00000079	0.000003	0.000031	0.0000083	0.000038	0.0000038	0.000018	0.000063	1.225E-07	0.000031	0.0011	0.000018	0.0000053	0.00000019	0.000000017	1.33E-03
SED25	SED2501	6/22/2006	 -	0.00032	0.00044	0.000079	0.00003	0.00031	0.000083	0.00038	0.000038	0.00018	0.000063	< 0.0000049	0.00031	0.0022	0.000018	0.000053	0.0019	0.00017	
			Sample*TEF	0.00000029	0.00000029	0.000000045	0.00000013	0.0000012	0.00000054	0.0000016	0.00000028	0.0000007	0.0000024	0.000000275	0.0000012	0.0000475	0.00000072	0.000000013	0.000000017	1.7E-09	5.72E-05
SED24	SED2401	6/22/2006	6-	0.000029	0.000029	0.0000045	0.0000013	0.000012	0.0000054	0.000016	0.0000028	0.000007	0.0000024	0.0000055	0.000012	0.000095	0.00000072	< 0.00000026	0.00017	0.000017	
			Sample*TEF	3.4E-09	3.4E-09	3.4E-09	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.000000017	0.000000034	0.00000017	0.0000007	0.000000007	3.5E-10	7E-11	8.53E-07
SED23	SED2301	6/22/2006	0-1	< 0.00000068	< 0.00000068	< 0.00000068	< 0.0000068	< 0.0000068	< 0.00000068	< 0.0000068	< 0.0000068	< 0.0000068	< 0.00000068	< 0.0000068	< 0.0000068	< 0.0000068	< 0.00000014	< 0.00000014	0.0000035	< 0.0000014	
			Sample*TEF	0.0000011	0.0000016	0.00000025	0.000009	0.0000068	0.0000028	0.000016	0.000000	0.0000062	0.000018	0.00000205	0.000015	0.00065	0.0000068	0.0000027	0.0000005	4.4E-09	7.31E-04
SED22	SED2201	6/22/2006	0-1	0.00011	0.00016	0.000025	< 0.000018	0.000068	0.000028	0.00016	< 0.000018	0.000062	0.000018	0.000041	0.00015	0.0013	0.0000068	0.000027	0.0005	0.000044	
			Sample*TEF	0.000000045	0.000000065	0.000000012	0.000000042	0.00000034	0.00000013	0.00000073	0.00000042	0.00000024	0.0000005	0.000000115	0.0000016	0.000022	0.00000085	8.5E-09	2.5E-09	2.2E-10	2.64E-05
SED21	SED2101	6/22/2006	6-	0.0000045	0.0000065	0.0000012	< 0.00000084	0.0000034	0.0000013	0.0000073	< 0.00000084	0.0000024	0.00000095	0.0000023	0.000016	0.000044	< 0.00000017	< 0.00000017	0.000025	0.0000022	
			chemical name	1,2,3,4,6,7,8-HpCDD	1.2.3.4.6.7.8-HpCDF	1.2.3.4.7.8.9-HpCDF	1.2.3.4.7.8-HxCDD	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF	2,3,7,8-TCDD	2.3.7,8-TCDF	ocdd	OCDF	TEQ-Mammal (1)

(1) - TEQ-Mammal is calculated by multipling each congener by its coressponding TEF then summing all of the results.
 Bolded and Shaded values indicat the TEQ-Mammal is greater than the sediment screening value standard.
 - Compound was not detected and half the detection limit was used to calculate the TEQ.

Calculation of Dioxin Toxic Equivalents (TEQ) for Sediment Samples Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

2.36E-05		1.23E-03		5.32E-05		2.41E-04		1.84E-03		5.59E-04		
0.00000000	0.00008	0.000000015	0.00019	3.7E-09	0.000037	0.000000017	0.00017	0.000000021	0.00021	0000013	0.00(0.00013 0.000
0.000000081	0.00081	0.00000016	0.0016	0.000000054	0.00054	0.000000084	0.00084	0.00000029	0.0029	0000083	0.00	0.00083 0.00
0.000006	0.000006	0.0000076	0.000076	0.00000047	0.0000047	0.0000032	0.000032	0.0000084	0.000084	0000021	0.0	< 0.0000042 0.0
0.00000052	0.00000052	0.000033	0.000033	0.00000062	0.00000062	0.000012	0.000012	0.000022	0.000022	.0000081	0	0.0000081 0
0.000014	0.000028	0.0008	0.0016	0.000038	0.000076	0.00008	0.00016	0.00155	0.0031	0.000455		0.00091
0.0000012	0.000012	0.000064	0.00064	0.0000013	0.000013	0.000023	0.00023	0.000042	0.00042	0.000018		0.00018
1.825E-08	< 0.00000073	0.0000115	0.00023	1.75E-08	< 0.0000007	0.000000045 <	0.0000018	0.00000045 <	< 0.000018	.00000175	0	0.000035 0
0.0000022	0.0000022	0.00012	0.00012	0.0000052	0.0000052	0.000041	0.000041	0.000076	0.000076	0.000029		0.000029
0.00000053	0.0000053	0.000042	0.00042	0.00000096	0.0000096	0.000014	0.00014	0.00002	0.0002	0.0000075		0.000075
0.00000028	0.0000028	0.0000078	0.000078	0.00000072	0.0000072	0.0000031	0.000031	0.0000068	0.000068	0.0000022		0.000022
0.0000012	0.000012	0.000075	0.00075	0.0000014	0.000014	0.000029	0.00029	0.000052	0.00052	0.000015		0.00015
0.00000048	0.0000048	0.000015	0.00015	0.0000012	0.000012	0.000007	0.00007	0.000011	0.00011	0.0000037		0.000037
0.0000011	0.000011	0.000032	0.00032	0.0000018	0.000018	0.000021	0.00021	0.00003	0.0003	0.000013		0.00013
0.00000018	0.0000018	0.0000055	0.000055	0.00000034	0.0000034	0.0000018	0.000018	0.0000039	0.000039	.00000105	0	< 0.000021 0
0.000000051	0.0000051	0.0000017	0.00017	0.000000061	0.0000061	0.0000069	0.000069	0.0000099	0.000099	.00000036	0	0.000036 0
0.0000004	0.00004	0.0000071	0.00071	0.00000036	0.000036	0.0000035	0.00035	0.0000064	0.00064	0.0000023		0.00023
0.00000074	0.000074	0.0000043	0.00043	0.00000066	0.000066	0.0000018	0.00018	0.0000049	0.00049	0.0000018		0.00018
Sample*TEF	0_5-1	Sample*TEF	0_5-1	Sample*TEF	0_5-1	Sample*TEF	0_5-1	Sample*TEF	0_5-1	mple*TEF	Sai	0-1 Sai
	6/21/2006		6/21/2006		6/21/2006		6/21/2006		6/21/2006			6/22/2006
	SED3201		SED3101		SED3001		SED2901		SED2801			SED2701
	SED32		SED31		SED30		SED29		SED28			SED27

(1) - TEQ-Mammal is calculated by multipling each congener by its coressponding TEF then summing all of the results.
 Bolded and Shaded values indicat the TEQ-Mammal is greater than the sediment screening value standard.
 c Compound was not detected and half the detection limit was used to calculate the TEQ.

Selection of Chemicals of Potential Concern - Surface Water Former Gorham Manufacturing Site Supplemental Site Investigation Providence, Rhode Islande 333 Adelaide Avenue

Parameter	Frequency of Detection	Range of	Non Detects	Range of Concer	Detected itrations	Average of Samples (1)	Screening Value (mg/L) (2)	Max > Screening Value	Selected as COPC? (3)	Rational
Volatile Organics (mg/L)										
1,1,1-Trichloroethane	11 / 15	0.001	- 0.001	0.001	- 0.0018	0.0012	0.32 nc	°N N	Ŷ	BSL
1,1-Dichloroethane	5 / 15	0.001	- 0.001	0.001	- 0.0014	0.00073	0.081 nc	9	٩ No	BSL
1,2,4-Trimethylbenzene	2 / 15	0.001	- 0.001	0.001	- 0.0011	0.00057	0.0012 nc	No	٩ N	BSL
cis-1,2-Dichloroethene	15 / 15			0.0015	- 0.0108	0.0046	0.0061 nc	Yes	Yes	ASL
Ethylbenzene	3 / 15	0.001	- 0.001	0.001	- 0.001	0.00060	0.13 nc	9	°N N	BSL
Tetrachloroethene	1 / 15	0.001	- 0.001	0.0012	- 0.0012	0.00055	0.0001 ca	Yes	Yes	ASL
Toluene	12 / 15	0.001	- 0.001	0.0011	- 0.0043	0.0023	0.072 nc	No	Ŷ	BSL
Trichloroethene	11 / 15	0.001	- 0.001	0.001	- 0.0029	0.0013	0.000028 ca	Yes	Yes	ASL
Vinyl chloride	10 / 15	0.001	- 0.001	0.001	- 0.0021	0.0012	0.00002 ca	Yes	Yes	ASL
Xylene, M&P-	5 / 15	0.002	- 0.002	0.002	- 0.0028	0.0015	0.021 nc	No	°N N	BSL
Xylene, O-	3 / 15	0.001	- 0.001	0.001	- 0.0012	0.00062	0.021 nc	No	No	BSL
Xylenes, Total	15 / 15			0.003	- 0.004	0.0031	0.021 nc	9N N	٥N	BSL
Semivolatile Organics (mg/L)										
Benzo(a)anthracene	1 / 15	0.0002	- 0.0002	0.0002	- 0.0002	0.00011	0.000092 ca	Yes	Yes	ASL
Benzo(a)pyrene	1 / 15	0.0002	- 0.0002	0.00024	- 0.00024	0.00011	0.0000092 ca	Yes	Yes	ASL
Benzo(g,h,i)perylene	1 / 15	0.0002	- 0.0002	0.00038	- 0.00038	0.00012	0.018 nc	No	°N	BSL
Chrysene	1 / 15	0.0002	- 0.0002	0.00023	- 0.00023	0.00011	0.0092 ca	9N N	°N	BSL
Dibenz(a,h)anthracene	1 / 15	0.0002	- 0.0002	0.00031	- 0.00031	0.00011	0.0000092 ca	Yes	Yes	ASL
Naphthalene	4 / 15	0.0002	- 0.0002	0.0002	- 0.0003	0.00014	0.00062 nc	No	Ŷ	BSL
Pesticides/PCBs (mg/L)										
4,4'-DDT	1/3	0.000050	- 0.000050	0.000080	- 0.000080	0.000043	0.0002 ca*	No	٩ No	BSL
Metals, Total (mg/L)										
Chromium	3 / 15	0.02	- 0.02	0.034	- 0.06	0.017	0.11 ca	No	9N N	BSL
Copper	5 / 15	0.02	- 0.02	0.023	- 0.126	0.030	0.15 nc	9N N	g	BSL
Lead	5 / 15	0.005	- 0.005	0.0083	- 0.0318	0.0089			Yes	NSL
Silver	3 / 15	0.005	- 0.005	0.005	- 0.008	0.0033	0.018 nc	No	9N N	BSL
Zinc	4 / 15	0.05	- 0.05	0.068	- 0.146	0.046	1.1 nc	No	٩ ۷	BSL
Dioxins/Furans (mg/L)	3 / 3			1 27641E-08	6 2206F-08	0 00000000	4 5F-10 ca	Yes	Yes	ASI
I CQ-IVIAIIIIIIAI	2			>> 11 LO 17.1	0.44001 00		32.21 12:1	20-	22	LIVE

¹ Average calculated using half the detection limit for non detects.

² Screening Values are the Preliminary Remediation Goals (PRGs) for Tap Water from the USEPA Region IX PRG Table (October 2004).

BJR KJC

Prepared by: Checked by:

nc - PRG is based on a non-cancer hazard quotient of 0.1. ca - PRG is based on a cancer risk of 1 in 1 million.

³ Chemical is selected as a COPC if the maximum detect is greater than the screening value or if a screening value is not available. COPC - Chemical of Potential Concern

mg/L - milligrams per liter

Selection of Chemicals of Potential Concern - Sediment Supplemental Site Investigation Report for the Park Parcel/Mashapaug Cove Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

										Max >	Selected	
Parameter	Frequer	tion	Range	of Non ects	Range o Conce	f Detected ntrations	Average of Samples (1)	Residentia PRG (mg/)	al Soil (2)	Screening Value	As a COPC? (3)	Rational
Volatile Organics (mg/kg)												
1,1,1-Trichloroethane	5 /	28	0.004	. 0.15	0.3	- 1.3	0.15	1200	sat	٩	٩	BSL
1,1-Dichloroethane	1 6	28	0.004	. 1.1	0.011	- 7.92	0.64	51	пс	No	No	BSL
1,1-Dichloroethene	5 /	28	0.004	. 1.1	0.014	- 11.3	0.52	12	nc	No	No	BSL
Acetone	14 /	28	0.039	. 4.6	0.0757	- 1.9	0.32	1400	nc	٩	٩	BSL
Carbon Disulfide	6 /	28	0.004	. 1.1	0.0046	- 0.0576	0.033	36	nc	٩	٩	BSL
cis-1,2-Dichloroethene	1 6	28	0.004	. 1.1	0.0091	- 175	10.8	4.3	nc	Yes	Yes	ASL
Isopropyl Benzene	1 1 .	28	0.004	. 1.1	0.0514	- 0.0514	0.030	57	пс	°N N	٩	BSL
s-Butylbenzene	2 /	28	0.004	. 1.1	0.0197	- 0.0303	0.030			NSL	Yes	NSL
Tetrachloroethene	4 /	28	0.004	. 1.1	0.0081	- 18.1	0.71	0.48	ca*	Yes	Yes	ASL
Toluene	1 1	28	0.004	. 1.1	1.92	- 1.92	0.097	520	sat	No	No	BSL
trans-1,2-Dichloroethene	3 /	28	0.004	. 1.1	0.0053	- 3.62	0.26	6.9	nc	No	No	BSL
Trichloroethene	1 6	28	0.004	. 0.15	0.176	- 58.4	3.0	0.053	ca	Yes	Yes	ASL
Vinyl chloride	1 2	28	0.0081	. 2.3	0.0218	- 24.8	1.7	0.079	ca	Yes	Yes	ASL
Semivolatile Organics (mg/kg)												
Acenaphthene	6 /	28	0.03	0.183	0.024	- 0.26	0.062	370	nc	No	N	BSL
Acenaphthylene	3 /	28	- 6700.0	0.183	0.026	- 0.781	0.064	230	nc	No	٥N	BSL
Anthracene	13 /	28	0.0305 -	0.183	0.04	- 3.09	0.24	2200	nc	No	No	BSL
Benzo(a)anthracene	18 /	28	0.0305	0.183	0.0896	- 15.1	0.87	0.62	g	Yes	Yes	ASL
Benzo(a)pyrene	1 71	28	0.0305 -	0.183	0.0707	- 7.87	0.57	0.062	ca	Yes	Yes	ASL
Benzo(b)fluoranthene	21 /	28	0.0305 -	. 0.183	0.0378	- 14.8	1.0	0.62	ca	Yes	Yes	ASL
Benzo(g,h,i)perylene	14 /	28	0.0305 -	0.183	0.046	- 2.54	0.21	230	nc	No	N	BSL
Benzo(k)fluoranthene	12 /	28	0.0305 -	0.183	0.065	- 5.1	0.35	6.2	ca	No	No	BSL
Chrysene	1 71	28	0.0305 -	0.183	0.0896	- 8.94	0.66	62	ca	No	No	BSL
Dibenzo(a,h)anthracene	6 /	28	- 6700.0	0.183	0.0404	- 1.45	0.099	0.062	ca	Yes	Yes	ASL
Di-n-butylphthalate	2 /	5	0.2 -	0.74	0.48	- 1.1	0.44	610	ы	No	٥ N	BSL
Fluoranthene	23 /	28	0.0305	0.035	0.0833	- 28.8	1.8	230	ы	No	No	BSL
Fluorene	1 6	28	0.018 -	0.183	0.022	- 0.863	0.082	270	nc	٩	٩	BSL
Indeno(1,2,3-cd)pyrene	13 /	28	0.03	0.183	0.046	- 2.47	0.21	0.62	ca	Yes	Yes	ASL
Naphthalene	5 /	28	0.03 -	0.183	0.0342	- 0.28	0.054	5.6	nc	No	N0	BSL
Phenanthrene	19 /	28	0.0305 -	0.183	0.0333	- 11.8	1.0	230	nc	No	No	BSL
Pyrene	22 /	28	0.0305 -	0.0794	0.0513	- 15.2	1.2	230	пс	No	No	BSL
Pesticides/PCBs (mg/kg)												
4,4'-DDD	3 /	28	0.0008 -	0.0481	0.0214	- 0.0301	0.010	2.4	ca	No	٥N	BSL
4,4'-DDE	1 1	28	0.0008 -	0.0481	0.0109	- 0.0109	0.0084	1.7	ca	٩	No	BSL
4,4'-DDT	1 /	28	0.0008 -	0.0481	0.0635	- 0.0635	0.010	1.7	ca*	۹ No	٩	BSL
Endrin ketone	11	28	0.0008 -	0.0481	0.0431	- 0.0431	0.0092			NSL	No	FOD

7/31/2006

Page 1 of 2

Supplemental Site Investigation Report for the Park Parcel/Mashapaug Cove Selection of Chemicals of Potential Concern - Sediment Former Gorham Manufacturing Site 333 Adelaide Avenue

Providence, Rhode Island

	Frequ	ency of	Range	of Non	Range of	^f Detected	Average of	Residentia	al Soil	Screening	Asa	
Parameter	Dete	sction	Det	ects	Concer	ntrations	Samples (1)	PRG (mg/h	kg) (2)	Value	COPC? (3)	Rational
Aroclor-1254	2	/ 28	0.016	- 0.404	0.207	- 0.528	0.092	0.11	nc	Yes	Yes	ASL
Aroclor-1260	-	/ 28	0.016	- 0.404	0.605	- 0.605	0.086	0.11	ő	Yes	No	FOD
Inorganics (mg/kg)												
Antimony	2	/ 28	0.54	- 25.7	1.6	- 2.7	6.0	3.1	nc	No	No	BSL
Arsenic	22	/ 28	0.3	ع	2.1	- 47.6	16.8	0.39	ca*	Yes	Yes	ASL
Barium	28	/ 28			9.7	- 466	123	540	ЦС	No	No	BSL
Beryllium	22	/ 28	0.07	- 0.13	0.075	- 3.5	0.55	15	nc	No	No	BSL
Cadmium	20	/ 28	0.65	- 1.31	0.14	- 7.11	2.6	3.7	nc	Yes	Yes	ASL
Chromium	28	/ 28			2.9	- 640	192	210	ca	Yes	Yes	ASL
Copper	28	/ 28			4.1	- 2670	955	310	nc	Yes	Yes	ASL
Lead	24	/ 28	6.5	- 7.4	12.2	- 1120	364	400	nc	Yes	Yes	ASL
Mercury	17	/ 28	0.035	- 0.208	0.031	- 2.52	0.40	2.3	nc	Yes	Yes	ASL
Nickel	25	/ 28	3.7	- 6.6	3.6	- 853	132	160	ц	Yes	Yes	ASL
Selenium	3	/ 28	0.54	- 25.7	1.8	- 17.9	6.5	39	пс	No	No	BSL
Silver	22	/ 28	0.65	- 1.31	2.77	- 227	67.4	39	цс	Yes	Yes	ASL
Zinc	28	/ 28			9.5	- 1940	783	2300	рс	٥N	No	BSL
TPH (mg/kg)												
Total Petroleum Hydrocarbons (TPH)	19	/ 28	42.6	- 291	57.8	- 2600	543			NSL	Yes	NSL
Dioxins/Furans (mg/kg)												
TEQ-Mammal	28	/ 28			9E-07	- 0.0036	0.00052	0.0000039	ca	Yes	Yes	ASL

(2) Values are the Preliminary Remediation Goals (PRGs) from the USEPA Region IX PRG Table (October 2004). (1) Average concentration is the arithmetic mean calculated using 1/2 the detection limit for non-detects.

BJR KJC

Prepared by: Checked by:

nc - PRG is based on a non-cancer hazard quotient of 0.1.

ca - PRG is based on a cancer risk of 1 in 1 million. ca* - where nc PRG<100 x ca PRG.

ca** - where nc PRG<10 x ca PRG.

sat - PRG is based on the soil saturation line.

(3) Parameter is selected as a COPC if the maximum detected concentration is greater than the identified screening value

(or if a screening level is not available) unless the frequency of detection for that parameter is less than 5%.

ASL - Maximum detected concentration is above screening level. BSL - Maximum detected concentration is below screening level

FOD - Frequency of detection less than 5%.

NSL - No screening level available.

mg/Kg - milligrams per kilogram

Table 8 RME Values Used For Daily Intake Calculations - Surface Water Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

> ISCENARIO TIMEFRAME: CURRENT/FUTURE MEDIUM: SURFACE WATER EXPOSURE MEDIUM: SURFACE WATER

INTAKE EQUATION/ MODEL NAME	-INGESTION =	(IR-W × FI × ET × EF × ED × 1/BW × 1/AT				E.				-INGESTION =	k IR-W x FI x ET x EF x ED x 1/BW x 1/AT								-INGESTION =	<pre>cIR-W x FI x ET x EF x ED x 1/BW x 1/AT</pre>							
RATIONALE/ REFERENCE	EPC Table INTAKE-	USEPA, 1988 ¹ CW x	Professional Judgement ²	Professional Judgement ³	USEPA, 1994 ^{4,6}	USEPA, 1997 ⁵	USEPA, 1994	USEPA, 1989	USEPA, 1989	EPC Table INTAKE-	USEPA, 1988 ¹ CW ×	Professional Judgement ²	Professional Judgement ³	USEPA, 1994 ⁶	USEPA, 1997 ⁵	USEPA, 1997 ⁷	USEPA, 1989	USEPA, 1989	EPC Table INTAKE	USEPA, 1988 CW ×	Professional Judgement ²	Professional Judgement [®]	USEPA, 1994 ⁶	Professional Judgement	USEPA, 1994	USEPA, 1989	USEPA, 1989
UNITS	l/gm	l/hour	unitiess	event/yr	yr	hours/event	kg	day	day	ng/l	I/hour	unitiess	event/yr	уг	hours/event	kg	day	day	l/gm	l/hour	unitless	event/yr	yr	hours/event	kg	day	day
VALUE	chemical-specific	0.05	-	51	12	F	20	25550	4380	chemical-specific	0.05	-	51	12	- -	45	25550	4380	chemical-specific	0.005	N.	17	25	~	70	25550	9125
PARAMETER DEFINITION	CHEMICAL CONCENTRATION IN WATER	INGESTION RATE OF WATER	FRACTION INGESTED	EXPOSURE FREQUENCY	EXPOSURE DURATION	EXPOSURE TIME	BODY WEIGHT	AVERAGING TIME (CANCER)	AVERAGING TIME (NONCANCER)	CHEMICAL CONCENTRATION IN WATER	INGESTION RATE OF WATER	FRACTION INGESTED	EXPOSURE FREQUENCY	EXPOSURE DURATION	EXPOSURE TIME	BODY WEIGHT	AVERAGING TIME (CANCER)	AVERAGING TIME (NONCANCER)	CHEMICAL CONCENTRATION IN WATER	INGESTION RATE OF WATER	FRACTION INGESTED	EXPOSURE FREQUENCY	EXPOSURE DURATION	EXPOSURE TIME	BODY WEIGHT	AVERAGING TIME (CANCER)	AVERAGING TIME (NONCANCER)
PARAMETER CODE	CW	IR-W	E	Ц	B	Ш	BW	AT-C	AT-N	CW	IR-W	E	EF	ĒD	E	BW	AT-C	AT-N	CW	IR-W	E	Ц	B	태	BW	AT-C	AT-N
EXPOSURE POINT	INNER COVE	OUTER COVE	*				a.C			INNER COVE	OUTER COVE								INNER COVE	OUTER COVE							
RECEPTOR AGE	ADULT	(ages 19 and above)	(Swimming	and	(Wading)					ADOLESCENT	(ages 7 - 18)	(Swimming	and	Wading)					ADULT	(ages 19 and above)	(Wading only)						
RECEPTOR POPULATION	TRESPASSER				.0									ł					COMMERCIAL/INDUSTRIAL	WORKER							
EXPOSURE ROUTE	INGESTION												1						1								

Page 1 of 2

7/31/2006 Prepared by: BJR Checked by: MJM

RME Values Used For Daily Intake Calculations - Surface Water Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island Table 8

> SCENARIO TIMEFRAME: CURRENT/FUTURE EXPOSURE MEDIUM: SURFACE WATER MEDIUM: SURFACE WATER

EXPOSURE ROUTE	RECEPTOR POPULATION	RECEPTOR AGE	EXPOSURE POINT	PARAMETER CODE	PARAMETER DEFINITION	VALUE	UNITS	RATIONALE/ REFERENCE	INTAKE EQUATION/ MODEL NAME
DERMAL	TRESPASSER	ADULT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	MgM	EPC Table	INTAKE-DERMAL =
		(ages 19 and above)	OUTER COVE	PCevent	PERMEABILITY CONSTANT PER EVENT	chemical-specific	£	USEPA, 2001	CW x SA x PCevent x EF x ED x CF x 1/BW x 1/AT
		(Swimming		SA	SKIN SURFACE AREA AVAILABLE FOR C	9707	cm2	USEPA, 2001 ⁸	PCevent = PC x ET; calculated in PCevent table
		and		ET	EXPOSURE TIME	-	hr/event	USEPA, 1997 ⁵	가슴에 있는 것이 있는 것 같은 것 같
		Wading)		Ш	EXPOSURE FREQUENCY	51	event/yr	Professional Judgement ³	
				₿	EXPOSURE DURATION	12	Y	USEPA, 1994 ^{4.6}	
				BW	BODY WEIGHT	70	kg	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4380	day	USEPA, 1989	
				CF	CONVERSION FACTOR	0.001	Vcm3		
		ADOLESCENT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	l/gm	EPC Table	INTAKE-DERMAL =
		(ages 7 - 18)	OUTER COVE	PCevent	PERMEABILITY CONSTANT PER EVENT	chemical-specific	G	USEPA, 2001	CW x SA x PCevent x EF x ED x CF x 1/BW x 1/AT
		(Swimming		SA	SKIN SURFACE AREA AVAILABLE FOR C	7115	cm2	USEPA, 2001 ⁵	PCevent = PC x ET; calculated in PCevent table
		and		Б	EXPOSURE TIME	-	hr/event	USEPA, 1997 ⁵	· · · · · · · · · · · · · · · · · · ·
		(Mading)		Ш	EXPOSURE FREQUENCY	51	eventlyr	Professional Judgement ³	
				₿	EXPOSURE DURATION	12	yr	USEPA, 1994 ⁶	
				BW	BODY WEIGHT	45	kg	USEPA, 1997 ⁷	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4380	day	USEPA, 1989	
				CF	CONVERSION FACTOR	0.001	l/cm3		
	COMMERCIAL/INDUSTRIAL	ADULT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	VGm	EPC Table	INTAKE-DERMAL =
	WORKER	(ages 19 and above)	OUTER COVE	PCevent	PERMEABILITY CONSTANT PER EVENT	chemical-specific	ß	USEPA, 2001	CW x SA x PCevent x EF x ED x CF x 1/BW x 1/AT
		(Wading only)		SA	SKIN SURFACE AREA AVAILABLE FOR C	4860	cm2	USEPA, 1997 ¹⁰	PCevent = PC x ET; calculated in PCevent table
				Б	EXPOSURE TIME	-	hr/event	Professional Judgement	
				Ш	EXPOSURE FREQUENCY	17	eventlyr	Professional Judgement [®]	
				8	EXPOSURE DURATION	25	ž	, USEPA, 1994 ⁶	
				BW	BODY WEIGHT	70	ğ	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	9125	day	USEPA, 1989	
				СF	CONVERSION FACTOR	0.001	l/cm3		

USEPA, 1988. Superfund Exposure Assessment Manual. Office of Remedial Response; EPA(540/1-88/001; Washington, D.C. USEPA, 1989. "Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A); Office of Emergency and Remedial Response; EPA-540'1-89/002 (interim final); Washington, D.C., December. USEPA, 1994. "Risk Updates No. 2"; USEPA Region I, Waste Management Division; August. Values from "Attachment 2" to Risk Updates No. 2." USEPA, 1994. "Extoosure Factors Handbook, Volume 1"; Office of Research and Development; EPA-5600P-55:002Fa; Washington, D.C.; August.

USEPA, 2001. "Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540R/99(005.

1 - Value for swimming used

2 - 100% of daily incidental intake of surface water is attributable to incidental ingestion at the Site.

3 - Receptor assumed to visit area to wade or swim 3 days per week, mid May through mid September. Wading is assumed to occur all 3 days and swimming occurs on one of those days.

Sediment contact would occur during wading and swimming activites.

4 - Representing ages 19 and above of a 30-year residential exposure duration.

5 - Recommended value for swimming exposures

6 - The total RME exposure duration is 30 years, consistent with USEPA, 1994. The allocation of exposure duration for the three age groups is based on professional judgement.

7 - Values are the average of 50th percentile body weights for males and females ages 7 through 18.

8 - Value represents a weighted average for swimming and wading scenarios. Whole-body surface area values used for exposures during swimming (17 days); value for the adolescent is the average of 50th percentile whole-body

surface areas of males ages 7 through 18 (14,197 cm²). Surface area values used for exposure during wading (34 days) are the 50th percentile surface areas of males ages 7 through 18 for the hands, lower legs and feet (3.574 cm³).

Whole-body surface area values used for exposures during swimming (17 days); value for the adult is 19,400 cm². Surface area values used for exposure during wading (34 days) for the adult assume hands, lower legs and feet (4,860 cm²).

9 - Receptor assumed to wade 1 day per week, mid May to mid September.

10 - Surface area values used for the adult assume hands, lower legs, and feet.

mg - milligrams

cm² - square centimeters cm³ - cubic centimeters

kg - kilograms I - liter

Table 9	RME Values Used For Daily Intake Calculations - Sediment	Supplemental Site Investigation Report	Former Gorham Manufacturing Site	333 Adelaide Avenue	Providence, Rhode Island	
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SCENARIO TIMEFRAME: CURRENT/FUTURE MEDIUM: SEDIMENT EXPOSURE MEDIUM: SEDIMENT

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EXPOSURE ROUTE	RECEPTOR POPULATION	RECEPTOR AGE	EXPOSURE POINT	PARAMETER CODE	PARAMETER DEFINITION	VALUE	UNITS	RATIONALE/ REFERENCE	INTAKE EQUATION/ MODEL NAME
INGESTION	TRESPASSER	ADULT	INNER COVE	S	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-INGESTION =
		(ages 19 and above	OUTER COVE	IR-S	INGESTION RATE OF SEDIMENT	100	mg/day	USEPA, 1994 ¹	CS x IR-S x FI x EF x ED x CF x 1/BW x 1/AT
				Ē	FRACTION INGESTED	÷	unitless	Professional Judgement	
				Ш	EXPOSURE FREQUENCY	51	day/yr	Professional Judgement ³	
				G	EXPOSURE DURATION	12	уг	USEPA, 1994 ^{4.5}	
7				BW	BODY WEIGHT	20	kg.	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N CF	AVERAGING TIME (NONCANCER) CONVERSION FACTOR	4380 0.000001	day ka/ma	USEPA, 1989	
		ADOLESCENT	INNER COVE	SS	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-INGESTION =
		(ages 7 - 18)	OUTER COVE	IR-S	INGESTION RATE OF SEDIMENT	100	mg/day	USEPA, 1994 ¹	CS x IR-S x FI x EF x ED x CF x 1/BW x 1/AT
				E	FRACTION INGESTED	-	unitless	Professional Judgement	
				Ш	EXPOSURE FREQUENCY	51	day/yr	Professional Judgement ³	
				ED	EXPOSURE DURATION	12	уг	USEPA, 1994 ⁵	
				BW	BODY WEIGHT	45	kg	USEPA, 1997 ⁶	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4380	day	USEPA, 1989	
				СF	CONVERSION FACTOR	0.000001	kg/mg		
	COMMERCIALINDUSTRIAL		INNER COVE	SS	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-INGESTION =
	WORKER	ages 19 and above	OUTER COVE	IR-S	INGESTION RATE OF SEDIMENT	50	mg/day	RIDEM, 20041	CS x IR-S x FI x EF x ED x CF x 1/BW x 1/AT
				E	FRACTION INGESTED	0.5	unitless	Professional Judgement ²	
				出	EXPOSURE FREQUENCY	17	day/yr	Professional Judgement ¹⁰	
				ED	EXPOSURE DURATION	25	Y	USEPA, 1994	
				BW	BODY WEIGHT	70	Б¥	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	9125	day	USEPA, 1989	
				GF	CONVERSION FACTOR	0.000001	kg/mg		
DERMAL	TRESPASSER	ADULT	INNER COVE	S	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	B4/Bu	EPC Table	INTAKE-DERMAL =
		(ages 19 and above	OUTER COVE	AF	ADHERENCE FACTOR	0.07	mg/cm2	USEPA, 2001°	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
		(Wading)		AbF	ABSORPTION FACTOR	chemical-specific	unitless	USEPA, 2001 ⁹	
				SA	SKIN SURFACE AREA AVAILABLE FOR C	4860	cm2/day	USEPA, 1997 ⁷	Where DAevent =
				EV	EVENT DAY	-	unitless	Professional Judgement	CS x AF x AbF x CF
				ß	EXPOSURE FREQUENCY	51	day/yr	Professional Judgement ³	
				ED	EXPOSURE DURATION	12	У	USEPA, 1994 ^{4.5}	
				BW	BODY WEIGHT	20	kg	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4380	day	USEPA, 1989	
				CF	CONVERSION FACTOR	0.000001	kg/mg		
		ADOLESCENT	INNER COVE	S	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-DERMAL =
		(ages 7 - 18)	OUTER COVE	AF	ADHERENCE FACTOR	0.2	mg/cm2	USEPA, 2001 ⁸	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
		(Wading)		AbF	ABSORPTION FACTOR	chemical-specific	unitless	USEPA, 2001 ⁹	
				SA	SKIN SURFACE AREA AVAILABLE FOR C	3574	cm2/day	USEPA, 1997 ⁷	Where DAevent =
				Ę	EVENT DAY	-	unitless	Professional Judgement	CS x AF x AbF x CF
				Ш	EXPOSURE FREQUENCY	51	day/yr	Professional Judgement ²	
				8	EXPOSURE DURATION	4	уг	USEPA, 1994 [°]	
				BW	BODY WEIGHT	45	kg	USEPA. 1997 ⁶	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4380	day	USEPA, 1989	
				5		100000	Rinda		
W2-mfo/TEXTRON	GORHAM/SupplementSI 2006	WHH Risk July 2006	Tables/RiskCalcs/						//31/2006 Prepared by: BJR
ME-Intake, SD					Page 1 of 2				Checked by:

Table 9 RME Values Used For Daily Intake Calculations - Sedimer
Supplemental Site Investigation Report
Former Gorham Manufacturing Site
333 Adelaide Avenue
Providence, Rhode Island

CENARIO TIMEFRAME: CURRENT/FUTURE	IEDIUM: SEDIMENT	XPOSURE MEDIUM: SEDIMENT
SCENARIO TIMEFRAN	MEDIUM: SEDIMENT	EXPOSURE MEDIUM:

INTAKE EQUATION/ MODEL NAME	VTAKE-DERMAL =	DAevent x SA x EV x EF x ED x 1/BW x 1/AT		Vhere DAevent =	CS x AF x AbF x CF						
RATIONALE/ REFERENCE	EPC Table	USEPA, 2001 ^a	USEPA, 2001 ⁹	USEPA, 1997 ⁷ V	Professional Judgement	Professional Judgement ¹⁰	USEPA, 1994	USEPA, 1994	USEPA, 1989	USEPA, 1989	
UNITS	mg/kg	mg/cm2	unitiess	cm2/day	unitless	day/yr	х	Ę	day	day	kg/mg
VALUE	chemical-specific	0.07	chemical-specific	4860	-	17	25	70	25550	9125	0.000001
PARAMETER DEFINITION	CHEMICAL CONCENTRATION IN SEDIME	ADHERENCE FACTOR	ABSORPTION FACTOR	SKIN SURFACE AREA AVAILABLE FOR Q	EVENT DAY	EXPOSURE FREQUENCY	EXPOSURE DURATION	BODY WEIGHT	AVERAGING TIME (CANCER)	AVERAGING TIME (NONCANCER)	CONVERSION FACTOR
PARAMETER CODE	S	AF	AbF	SA	EV	EF.	ĒD	BW	AT-C	AT-N	CF
EXPOSURE POINT	INNER COVE	OUTER COVE									
RECEPTOR AGE	ADULT	ages 19 and above	(Wading)								
RECEPTOR POPULATION	COMMERCIAL/INDUSTRIAL	WORKER									
EXPOSURE ROUTE	DERMAL (cont)									_	

RIDEM, 2004. "Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases." State of Rhode Island and Providence Plantations Department of Environmental Management.

Office of Waste Management. February.

USEPA, 1989. "Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A)"; Office of Emergency and Remedial Response; EPA-640/1-89/002 (interim final); Washington, D.C., December.

USEPA, 1994. "Risk Updates No. 2", USEPA Region I, Waste Management Division; August. Values from "Attachment 2" to Risk Updates No. 2.

USEPA, 1997. "Exposure Factors Handbook, Volume 1", Office of Research and Development; EPA-600/P-95/002Fa; Washington, D.C.; August.

USEPA, 2001. "Risk Assessment Guldance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guldance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

1 - Soil ingestion rate used because ingestion rates for sediment are not available.

2 - 50% of daily incidental intake of soil and sediment is attributable to incidental sediment ingestion.

3 - Receptor assumed to visit area to wade or swim 3 days per week, mid May through mid September. Wading is assumed to occur all 3 days and swimming occurs on one of those days.

Sediment contact would occur during wading and swimming activites. 4 - Representing ages 19 and above of a 30-year residential exposure duration.

5 - The total RME exposure duration is 30 years, consistent with USEPA, 1994. The allocation of exposure duration for the firee age groups is based on professional judgement

6 - Values are the average of 50th percentile body weights for males and females ages 7 through 18.

7 - Values are the average of 50th percentile body surface areas (sum of areas for hands, lower legs, and feet) for males in the various age groups indicated.

8 - Values for residential exposure to soil used as conservative estimate of potential sediment adherence; sediment is submerged, so adherence is unlikely.

9 - Values are provided (Table 3-4 of USEPA, 2001) for arsenic, cadmium, chlordane, 2,4-D, DDT (used for DDD, DDE), TCDD, lindane (used for other BHC isomers). PAHs, PCBs, and pentachlorophenol. A single value is listed for all other SVOCs. No values are listed for VOCs, other pesticides, or other inorganics and, subsequently, no value will be assigned to the ABSd term for COPCs falling into those categories.

10 - Receptor assumed to wade 1 day per week, mid May to mid September.

mg - miligrams cm² - square centimeters kg - kilograms Table 10 CT Values Used For Daily Intake Calculations - Surface Water Supplemental Site investigation Report Former Genham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

> SCENARIO TIMEFRAME: CURRENT/FUTURE MEDIUM: SURFACE WATER EXPOSURE MEDIUM: SURFACE WATER

EXPOSURE ROUTE	RECEPTOR POPULATION	RECEPTOR AGE	EXPOSURE POINT	PARAMETER CODE	PARAMETER DEFINITION	VALUE	UNITS	RATIONALE/ REFERENCE	INTAKE EQUATION/ MODEL NAME
INGESTION	TRESPASSER	ADULT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	l/gm	EPC Table	INTAKE-INGESTION =
		(ages 19 and above)	OUTER COVE	IR-W	INGESTION RATE OF WATER	0.05	Whour	USEPA, 1988 ¹	CW x IR-W x FI x ET x EF x ED x 1/BW x 1/AT
		(Swimming		Ŀ	FRACTION INGESTED	7	unitiess	Professional Judgement ²	
		and		H	EXPOSURE FREQUENCY	34	evenVyr	Professional Judgement ³	
		(Wading)		Ð	EXPOSURE DURATION	4	yr	USEPA, 1994 ^{4.6}	
				티	EXPOSURE TIME	1.5	hours/event	USEPA, 1997 ⁵	
				BW	BODY WEIGHT	70	kg	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	1460	day	USEPA, 1989	
		ADOLESCENT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	l/gm	EPC Table	INTAKE-INGESTION =
		(ages 7 - 18)	OUTER COVE	IR-W	INGESTION RATE OF WATER	0.05	Whour	USEPA, 1988 ¹	CW x IR-W x FI x ET x EF x ED x 1/BW x 1/AT
		(Swimming		E	FRACTION INGESTED	-	unitiess	Professional Judgement ²	
		and		Ш	EXPOSURE FREQUENCY	34	evenUyr	Professional Judgement ³	
		(Mading)		ED	EXPOSURE DURATION	9	yr	USEPA, 1994 ⁶	
				Ш	EXPOSURE TIME	1.5	hours/event	USEPA, 1997 ⁵	
				BW	BODY WEIGHT	45	kg	USEPA, 1997 ⁷	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	1095	day	USEPA, 1989	
	COMMERCIALINDUSTRIAL	ADULT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	l/gm	EPC Table	INTAKE-INGESTION =
	WORKER	(ages 19 and above)	OUTER COVE	IR-W	INGESTION RATE OF WATER	0.005	Whour	USEPA, 1988	CW x IR-W x FI x ET x EF x ED x 1/BW x 1/AT
		(Wading only)		ū	FRACTION INGESTED	-	unitless	Professional Judgement ²	
				Ш	EXPOSURE FREQUENCY	8.5	evenUyr	Professional Judgement ⁹	
				8	EXPOSURE DURATION	12.5	yr	USEPA, 1994 ⁶	
				ᆸ	EXPOSURE TIME	-	hours/event	Professional Judgement	
				BW	BODY WEIGHT	70	kg	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4562.5	day	USEPA, 1989	

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CT Values Used For Daily Intake Calculations - Surface Water Supplemental Site Investigation Report Former Gorham Manufacturing Site Providence, Rhode Island 333 Adelaide Avenue Table 10

> SCENARIO TIMEFRAME: CURRENT/FUTURE MEDIUM: SURFACE WATER EXPOSURE MEDIUM: SURFACE WATER

EPTOR POPULATION	RECEPTOR AGE	EXPOSURE POINT	PARAMETER CODE	PARAMETER DEFINITION	VALUE	UNITS	RATIONALE	INTAKE EQUATION/ MODEL NAME
SSER	ADULT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	hgn	EPC Table	INTAKE-DERMAL =
	(ages 19 and above)	OUTER COVE	PCevent	PERMEABILITY CONSTANT PER EVENT	chemical-specific	5	USEPA, 2001	CW x SA x PCevent x EF x ED x CF x 1/BW x 1/AT
	(Swimming		SA	SKIN SURFACE AREA AVAILABLE FOR C	12130	cm2	USEPA, 2001°	PCevent = PC x ET; calculated in PCevent table
	and		Ē	EXPOSURE TIME	1.5	hr/event	USEPA, 1997 ⁵	
	Wading)		Ш	EXPOSURE FREQUENCY	34	eventyr	Professional Judgement ³	
			8	EXPOSURE DURATION	4	у	USEPA, 1994 ^{4.6}	
			BW	BODY WEIGHT	70	ƙġ	USEPA, 1994	
			AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
			AT-N	AVERAGING TIME (NONCANCER)	1460	day	USEPA, 1989	
		anna anna	5	CONVERSION FACTOR	100:0	l/cm3	-11-1-001	
	ADOLESCENT	INNER COVE	č.	CHEMICAL CONCENTRATION IN WATER	chemical-specific	l/gm	EPC Table	
	(ages 7 - 18)	OUTER COVE	PCevent	PERMEABILITY CONSTANT PER EVENT	chemical-specific	6	USEPA, 2001	CW x SA x PCevent x EF x ED x CF x 1/BW x 1/AT
	(Swimming		SA	SKIN SURFACE AREA AVAILABLE FOR C	8856	cm2	USEPA, 2001 ⁸	PCevent = PC x ET; calculated in PCevent table
	and		E	EXPOSURE TIME	1.5	hr/event	USEPA, 1997 ⁵	
	(Mading)		Ш	EXPOSURE FREQUENCY	34	event/yr	Professional Judgement ³	
			B	EXPOSURE DURATION	ę	уг	USEPA, 1994 ⁶	
			BW	BODY WEIGHT	45	kg	USEPA, 1997 ⁷	
			AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
			AT-N	AVERAGING TIME (NONCANCER)	1095	day	USEPA, 1989	
			CF	CONVERSION FACTOR	0.001	l/cm3		
NDUSTRIAL	ADULT	INNER COVE	CW	CHEMICAL CONCENTRATION IN WATER	chemical-specific	l/gm	EPC Table	INTAKE-DERMAL =
(ER	(ages 19 and above)	OUTER COVE	PCevent	PERMEABILITY CONSTANT PER EVENT	chemical-specific	5	USEPA, 2001	CW x SA x PCevent x EF x ED x CF x 1/BW x 1/AT
	(Wading only)		SA	SKIN SURFACE AREA AVAILABLE FOR Q	4860	cm2	USEPA, 1997 ¹⁰	PCevent = PC x ET; calculated in PCevent table
			E	EXPOSURE TIME	÷	hr/event	Professional Judgement	
			Ш	EXPOSURE FREQUENCY	8.5	eventyr	Professional Judgement ⁹	
	5		G	EXPOSURE DURATION	12.5	yr	USEPA, 1994 ⁶	
			BW	BODY WEIGHT	70	ę	USEPA, 1994	
			AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
			AT-N	AVERAGING TIME (NONCANCER)	4562.5	day	USEPA, 1989	
			Ъ	CONVERSION FACTOR	0.001	l/cm3		

USEPA, 1988. Supertund Exposure Assessment Manual. Office of Remedial Response; EPA/540/1-88/001; Washington, D.C. USEPA, 1989. Fick Assessment Guidance for Supertund, Volume 1, Human Health Evaluation Manual (Part A); Office of Emergency and Remedial Response; EPA-540/1-89/002 (Interim final); Washington, D.C., December. USEPA, 1994. "Fisk Updates No. 2": USEPA Region I, Waste Management Division; August. Values from "Attachment 2" to Risk Updates No. 2. USEPA, 1994. "Exposure Factors Handbook, Volume 1"; Office of Research and Development, EPA-5600P-55/002Fa; Washington, D.C.; August.

USEPA, 2001, "Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540R/99005.

1 - Value for swimming used

100% of daily incidental intake of surface water is attributable to incidental ingestion at the Site.

3 - Receptor assumed to visit area to wade or swim 2 days per week, mid May through mid September. Wading is assumed to occur both days and swimming occurs on one of those days.

Sediment contact would occur during wading and swimming activites.

4 - Representing ages 19 and above of a 30-year residential exposure duration.

5 - Recommended value for swimming exposures.

6 - The total RME exposure duration is 30 years, consistent with USEPA, 1994. The altocation of exposure duration for the three age groups is based on professional judgement.

7 - Values are the average of 50th percentile body weights for males and females ages 7 through 18.

8 - Value represents a weighted average for swimming and wading scenarios. Whole-body surface area values used for exposures during swimming (17 days); value for the adolescent is the average of 50th percentile whole-body

surface areas of males ages 7 through 18 (14,197 cm²). Surface area values used for exposure during wading (17 days) are the 50th percentile surface areas of males ages 7 through 18 for the hands, lower legs and feet (3.574 cm²).

Whole-body surface area values used for exposures during swimming (17 days); value for the adult is 19,400 cm². Surface area values used for exposure during wading (17 days) for the adult assume hands, lower legs and feet (4,860 cm²).

9 - Receptor assumed to wade 1 day every other week, mid May to mid September.

10 - Surface area values used for the adult assume hands, lower legs, and feet.

mg - milligrams

cm² - square centimeters cm³ - cubic centimeters

I - liter

kg - kilograms

Table 11	CT Values Used For Daily Intake Calculations - Sediment	Supplemental Site Investigation Report	Former Gorham Manufacturing Site	333 Adelaide Avenue	Providence, Rhode Island
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SCENARIO TIMEFRAME: CURRENT/FUTURE MEDIUM: SEDIMENT EXPOSURE MEDIUM: SEDIMENT

EXPOSURE ROUTE	RECEPTOR POPULATION	RECEPTOR AGE	EXPOSURE POINT	PARAMETER CODE	PARAMETER DEFINITION	VALUE	UNITS	RATIONALE/ REFERENCE	INTAKE EQUATION/ MODEL NAME
INGESTION	TRESPASSER	ADULT	INNER COVE	SS	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-INGESTION =
		(ages 19 and above	OUTER COVE	IR-S	INGESTION RATE OF SEDIMENT	100	yeb/gm	USEPA, 1994 ¹	CS x IR-S x FI x EF x ED x CF x 1/BW x 1/AT
				Œ	FRACTION INGESTED	-	unitless	Professional Judgement	
				Ш	EXPOSURE FREQUENCY	34	day/yr	Professional Judgement ³	
				Ð	EXPOSURE DURATION	4	уг	USEPA, 1994 ^{4.3}	
				BW	BODY WEIGHT	70	k9	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	1460	day	USEPA, 1989	
		ADOI ESCENT	INNER COVE	5 2	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	Munuka marka	EPC Table	INTAKE-INGESTION =
		foor 7 181		3 9	INCERTION BATE OF SEDIMENT	100	And And	IISEPA 1004	
		(0) - / cafip)		2 2 2	FRACTION INGESTED	-	unitiess	Professional Judgement	
				: 13	EXPOSURE FREQUENCY	34	dav/vr	Professional Judgement ³	
				8	EXPOSURE DURATION	e	. 5	USEPA, 1994 ⁵	
				BW	BODY WEIGHT	45	kg	USEPA, 1997 ⁶	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
		-		AT-N CF	AVERAGING TIME (NONCANCER) CONVERSION FACTOR	1095 0.000001	day ka/ma	USEPA, 1989	
	COMMERCIAL/INDUSTRIAL	ADULT	INNER COVE	S	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-INGESTION =
	WORKER	ages 19 and above	OUTER COVE	IR-S	INGESTION RATE OF SEDIMENT	50	kep/Bm	RIDEM, 20041	CS x IR-S x FI x EF x ED x CF x 1/BW x 1/AT
				E	FRACTION INGESTED	**	unitiess	Professional Judgement ²	
				出	EXPOSURE FREQUENCY	8.5	day/yr	Professional Judgement ¹⁰	
				Ð	EXPOSURE DURATION	12.5	У	USEPA, 1994	
				BW	BODY WEIGHT	70	6y	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	4562.5	day	USEPA, 1989	
				CF	CONVERSION FACTOR	0.000001	kg/mg		
DERMAL	TRESPASSER	ADULT	INNER COVE	S	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-DERMAL =
		(ages 19 and above	OUTER COVE	AF	ADHERENCE FACTOR	0.07	mg/cm2	USEPA, 2001 ⁸	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
		(Wading)		AbF	ABSORPTION FACTOR	chemical-specific	unitiess	USEPA, 2001	
				SA	SKIN SURFACE AREA AVAILABLE FOR 0	4860	cm2/day	USEPA, 1997'	Where DAevent =
				2	EVENT DAY	- ;	unitless	Professional Judgement	CS × AF × AbF × CF
				5	EXPOSURE FREQUENCY	45 4	dayryr	Professional Judgement	
				Ma	BODY WEIGHT	. 02	5	USEPA, 1994	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	1460	day horizot	USEPA, 1989	
		ADOLESCENT	INNER COVE	5 8	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	DX/DU	EPC Table	INTAKE-DERMAL =
		(ages 7 - 18)	OUTER COVE	AF	ADHERENCE FACTOR	02	mg/cm2	USEPA, 2001°	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
		(Wading)		AbF	ABSORPTION FACTOR	chemical-specific	unitiess	USEPA, 2001 ⁹	
				SA	SKIN SURFACE AREA AVAILABLE FOR C	3574	cm2/day	USEPA, 1997 ⁷	Where DAevent =
				ß	EVENT DAY	-	unitiess	Professional Judgement	CS × AF × AbF × CF
				Ш	EXPOSURE FREQUENCY	34	day/yr	Professional Judgement ³	
				ED	EXPOSURE DURATION	n	yr	USEPA, 1994 ⁵	
				BW	BODY WEIGHT	45	₿y .	USEPA, 1997°	
				AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
				AT-N	AVERAGING TIME (NONCANCER)	1095	day Volmo	USEPA, 1989	
				5	CONTENSION FOR CONTENSION		RR.		

P:W2-mfg/TEXTROM/GORHAM/SupplementSI 2006/HH_Risk_July_2006/Tables/RiskCalcs/ CT-Intake, SD

Page 1 of 2

T Values Used For Daily Intake Calculations - Sedime	Supplemental Site Investigation Report	Former Gorham Manufacturing Site	333 Adelaide Avenue	Providence, Rhode Island
	CT Values Used For Daily Intake Calculations - Sedime	CT Values Used For Daily Intake Calculations - Sedimer Supplemental Site Investigation Report	CT Values Used For Daily Intake Calculations - Sedimer Supplemental Site Investigation Report Former Gorham Manufacturing Site	CT Values Used For Daily Intake Calcuations - Sedime Supplemental Site Investigation Report Forme Gorham Manufacturing Site 333 Adelaide Avenue

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT

LATION	RECEPTOR AGE	EXPOSURE POINT	PARAMETER CODE	PARAMETER DEFINITION	VALUE	UNITS	RATIONALE/ REFERENCE	INTAKE EQUATION/ MODEL NAME
	ADULT	INNER COVE	S	CHEMICAL CONCENTRATION IN SEDIME	chemical-specific	mg/kg	EPC Table	INTAKE-DERMAL =
	ages 19 and above	OUTER COVE	AF	ADHERENCE FACTOR	0.07	mg/cm2	USEPA, 2001 ⁸	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
			AbF	ABSORPTION FACTOR	chemical-specific	unitless	USEPA, 2001 ⁹	
_			SA	SKIN SURFACE AREA AVAILABLE FOR C	4860	cm2/day	USEPA, 1997 ⁷	Where DAevent =
			P	EVENT DAY		unitiess	Professional Judgement	CS x AF x AbF x CF
-			ΕF	EXPOSURE FREQUENCY	8.5	day/yr	Professional Judgement ¹⁰	
			ED	EXPOSURE DURATION	12.5	yr	USEPA, 1994	
-			BW	BODY WEIGHT	70	kg	USEPA, 1994	
_			AT-C	AVERAGING TIME (CANCER)	25550	day	USEPA, 1989	
			AT-N	AVERAGING TIME (NONCANCER)	4562.5	day	USEPA, 1989	
			Ъ	CONVERSION FACTOR	0.000001	kg/mg		

RIDEM, 2004. "Rules and Regulations for the investigation and Remediation of Hazardous Material Releases". State of Rhode Island and Providence Plantations Department of Environmental Management,

USEPA, 1999. "Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A)"; Office of Emergency and Remedial Response: EPA-540/1-89/002 (Interim final); Washington, D.C., December. Office of Waste Management. February.

USEPA, 1994. "Risk Updates No. 2", USEPA Region I, Waste Management Division; August. Values from "Attachment 2" to Risk Updates No. 2.

USEPA, 1997. "Exposure Factors Handbook, Volume 1", Office of Research and Development, EPA-600/P-95/002Fa; Washington, D.C.; August.

USEPA, 2001. "Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/006.

1 - Soil ingestion rate used because ingestion rates for sediment are not available.

2 - 50% of daily incidental intake of soil and sediment is attributable to incidental sediment ingestion.

3 - Receptor assumed to visit area to wade or swim 2 days per week, mid May through mid September. Wading is assumed to occur both days and swimming occurs on one of those days.

4 - Representing ages 19 and above of a 30-year residential exposure duration. Sediment contact would occur during wading and swimming activites.

5 - The total RME exposure duration is 30 years, consistent with USEPA, 1994. The allocation of exposure duration for the three age groups is based on professional judgement.

6 - Values are the average of 50th percentile body weights for males and females ages 7 through 18.

7 - Values are the average of 50th percentile body surface areas (sum of areas for hands, lower legs, and feet) for males in the various age groups indicated.

8 - Values for residential exposure to soil used as conservative estimate of potential sediment adherence; sediment is submerged, so adherence is unlikely.

9 - Values are provided (Table 3-4 of USEPA, 2001) for arsenic, TCDD, PAHS A single value is listed for all other SVOCs.

No values are listed for VOCs, or other inorganics and, subsequently, no value will be assigned to the ABSd term for COPCs falling into those categories. 10 - Receptor assumed to wade 1 day every other week, mid May to mid September.

cm² - square centimeters mg • milligrams

kg - kilograms
Table 12 Exposure Point Concentration Summary - Surface Water Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

Exposure	Chemical	Arithmetic	95% U(CL (2)	Maximum	Ex	oosure Point	Concentration	
Point	of	Mean	(calcula	ation)	Detected	Reasonable N	laximum (3)	Central Ten	dency (4)
	Potential Concern (1)			50 	Concentration	Value	Statistic	Value	Statistic
Inner Cove	Volatile Organics (mg/L)				1				
	cis-1,2-Dichloroethene	0.0046	0.0052	N [a]	0.0062	0.0052	UCL	0.0046	Mean
	Tetrachloroethene	0.00056	0.00067	NP [b]	0.0012	0.00067	UCL	0.00056	Mean
	Trichloroethene	0.0013	0.0017	N [a]	0.0029	0.0017	UCL	0.0013	Mean
	Vinyl chloride	0.0013	0.0016	N [a]	0.0021	0.0016	UCL	0.0013	Mean
	Semivolatile Organics (mg/L)	1							
	Benzo(a)anthracene	0.00011	0.00012	NP [b]	0.0002	0.00012	UCL	0.00011	Mean
	Benzo(a)pyrene	0.00011	0.00013	NP [b]	0.00024	0.00013	UCL	0.00011	Mean
	Dibenz(a,h)anthracene	0.00012	0.00015	NP [b]	0.00031	0.00015	UCL	0.00012	Mean
	Metals, Total (mg/L)								
	Lead	0.011	0.026	NP [c]	0.0318	0.026	UCL	0.011	Mean
	Dioxins/Furans (mg/L)								
	TEQ-Mammal	0.00000038	NC		0.00000062	0.00000062	Max	0.00000038	Mean
Outer Cove	Volatile Organics (mg/L)							-	
	cis-1,2-Dichloroethene	0.0048	NC		0.011	0.011	Max	0.0048	Mean
	Tetrachloroethene	0.00050	NC		ND	0.00050	Mean	0.00050	Mean
	Trichloroethene	0.0011	NC		0.0023	0.0023	Max	0.0011	Mean
	Vinyl chloride	0.00050	NC		ND	0.00050	Mean	0.00050	Mean
	Semivolatile Organics (mg/L)		0.1.1.5°0	1	1997 - 19				
	Benzo(a)anthracene	0.00010	NC		ND	0.00010	Mean	0.00010	Mean
	Benzo(a)pyrene	0.00010	NC		ND	0.00010	Mean	0.00010	Mean
	Dibenz(a,h)anthracene	0.00010	NC		ND	0.00010	Mean	0.00010	Mean
	Metals, Total (mg/L)								
	Lead	0.0025	NC		ND	0.0025	Mean	0.0025	Mean
	Dioxins/Furans (mg/L)								
	TEQ-Mammal	0.00000013	NC	1	0.00000013	0.000000013	Max	0.000000013	Max

(1) Chemicals of Potential Concern (COPCs) are identified in the COPC selection tables.

(2) 95 % UCL is calculated using ProUCL software (V. 3.02); calculations presented in Appendix C.

N - Normal distribution

[a] - Student's-t UCL

NP - Non-Parametric distribution

[b] - Mod-t UCL (Adjusted for skewness)

[c] - 95% Chebyshev (Mean, Sd) UCL

(3) Reasonable Maximum Exposure (RME) concentration is the lesser of the maximum or 95% UCL. If analyte is not detected and UCL not calculated then RME is the mean.

(4) Central Tendency Exposure (CTE) concentration is the lesser of the arithmetic mean or maximum.

UCL - Upper Confidence Level

ND - Not Detected

NC - Not Calculated due to number of samples less than 10.

mg/L - milligrams per liter

Table 13 **Exposure Point Concentration Summary - Sediment** Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

Exposure	Chemical	Arithmetic	95% U(CL (2)	Maximum	E	xposure Point	Concentration	1
Point	of	Mean	(calcula	ation)	Detected	Reasonable	Maximum (3)	Central Te	ndency (4)
	Potential Concern (1)	-			Concentration	Value	Statistic	Value	Statistic
Inner Cove	Volatile Organics (mg/kg)			5					
	cis-1,2-Dichloroethene	13.7	173	NP [a]	175	173	UCL	13.7	Mean
	s-Butylbenzene	0.037	0.28	NP [b]	0.0303	0.030	Max	0.030	Max
	Tetrachloroethene	0.90	9.1	NP [b]	18.1	9,1	UCL	0.90	Mean
	Trichloroethene	3.7	40.3	NP [a]	58.4	40.3	UCL	3.7	Mean
	Vinvl chloride	22	14.5	NP [h]	24.8	14.5	UCL	22	Mean
	Semivolatile Organics (mg/kg)		11.0	[0]	2.1.0	1.03			mean
	Benzo(a)anthracene	11	23	LN [d]	15.1	23	UCL	11	Mean
	Benzo(a)pyrene	0.68	16	IN [d]	7.87	16	UCL	0.68	Mean
	Benzo(b)fluoranthene	12	23	G [e]	14.8	23	UCL	12	Mean
	Dibenzo(a h)anthracene	0.11	0.19	IN [d]	1 45	0.19	UCL	0.11	Mean
	Indepo(1.2.3-cd)pyrepe	0.24	0.48	LN [d]	2.47	0.48	UCL	0.24	Mean
	PCBs (mg/kg)	0.24	0.40	LIV [U]	4.71	0.40	000	0.24	Weah
	Araclar 1254	0.008	0.14	C IE	0.53	0.14	LICI	0.008	Mean
	Inorganics (malka)	0.050	0.14	60	0.00	0.14	UCL	0.050	Wearr
	Arconic	17.0	28.6	C III	45	28.6	lici	17.0	Moon
	Cadmium	20	20.0	C [f]	7 11	20.0	UCL	20	Moan
	Caumium	2.5	4.5	CI	640	4.5	UCL	2.8	Mean
	Chromum	201	300	G [I]	040	300	May	231	Mean
	Copper	400	5100		2070	2070	Wax	400	Mean
	Lead	423	551		1120	551	UCL	423	Mean
	Mercury	0.50	0.85	G[I]	2.52	0.85	UCL	0.50	Mean
	NICKEI	161	281	G[I]	853	281	UCL	161	Mean
	Silver	83.5	234	NP [D]	227	227	Max	83	Mean
	Dioxins/Furans (mg/kg)	0.00005	0.0040	0/1	0.0000	0.0040		0.00005	
	I EQ-Mammai	0.00065	0.0013	Glej	0.0036	0.0013	UCL	0.00065	Mean
Outer Cove	Volatile Organics (mg/kg)	0.0001							
	cis-1,2-Dichloroethene	0.0024	NC		ND	0.0024	Mean	0.0024	Mean
	s-Butylbenzene	0.0024	NC		ND	0.0024	Mean	0.0024	Mean
	Tetrachloroethene	0.0024	NC		ND	0.0024	Mean	0.0024	Mean
	Trichloroethene	0.0024	NC		ND	0.0024	Mean	0.0024	Mean
	Vinyl chloride	0.0049	NC		ND	0.0049	Mean	0.0049	Mean
	Semivolatile Organics (mg/kg)	1	1010004						
	Benzo(a)anthracene	0.24	NC		0.69	0.69	Max	0.24	Mean
	Benzo(a)pyrene	0.30	NC		0.86	0.86	Max	0.30	Mean
	Benzo(b)fluoranthene	0.49	NC		1.4	1.4	Max	0.49	Mean
	Dibenzo(a,h)anthracene	0.037	NC		0.081	0.081	Max	0.037	Mean
	Indeno(1,2,3-cd)pyrene	0.10	NC		0.26	0.26	Max	0.10	Mean
	PCBs (mg/kg)								
	Aroclor-1254	0.039	NC		ND	0.039	Mean	0.039	Mean
	Inorganics (mg/kg)								
	Arsenic	4.4	NC		11.5	11.5	Max	4.4	Mean
	Cadmium	0.42	NC		ND	0.42	Mean	0.42	Mean
	Chromium	4.9	NC		7.0	7.0	Max	4.9	Mean
	Copper	7.3	NC		12.5	13	Max	7.3	Mean
	Lead	9.1	NC		20.7	21	Max	9.1	Mean
	Mercury	0.024	NC		ND	0.024	Mean	0.024	Mean
	Nickel	9.7	NC		22.5	23	Max	9.7	Mean
	Silver	0.42	NC		ND	0.42	Mean	0.42	Mean
	Dioxins/Furans (mg/kg)			1					
	TEQ-Mammal	0.0000045	NC		0.000011	0.000011	Max	0.0000045	Mean

(1) Chemicals of Potential Concern (COPCs) are identified in the COPC selection tables.

(2) 95 % UCL is calculated using ProUCL software (V. 3.02); calculations presented in Appendix C.
 NP - Non-Parametric distribution

 [a] - Hall's Bootstrap UCL

[b] - 99% Chebyshev (Mean, Sd) UCL

N - Normal distribution

[c] - Student's-t UCL

LN - Log-normal distribution

[d] - 95% Chebyshev (MVUE) UCL

G - Garma Distribution [e] - Adjusted Garma UCL

[f] - Approximate Gamma UCL

(3) Reasonable Maximum Exposure (RME) concentration is the lesser of the maximum or 95% UCL.

If analyte is not detected and UCL not calculated then RME is the mean.

(4) Central Tendency Exposure (CTE) concentration is the lesser of the arithmetic mean or maximum.

UCL - Upper Confidence Level ND - Not Detected

NC - Not Calculated due to number of samples less than 10.

mg/kg - milligrams per kilogram

Table 14 Risk Assessment Summary - Reasonable Maximum Exposure Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Inner	Cove				
Trespasser	Older Child (ages 7 through 18) Sediment	Incidental ingestion Dermal contact	2E-05 5E-07	0.1 0.003
		Surface water	Incidental ingestion Dermal contact	1E-07 3E-07	0.001 0.004
			Total Risk:	2E-05	0.2
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion Dermal contact	1E-05 4E-07	0.09 0.003
		Surface water	Incidental ingestion Dermal contact	7E-08 3E-07	0.0009 0.003
			Total Risk:	1E-05	0.1
			Total Receptor Risk:	3E-05	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion Dermal contact	4E-06 8E-08	0.02 0.0003
		Surface water	Incidental ingestion Dermal contact	4E-08 8E-08	0.0002 0.0005
			Total Risk:	4E-06	0.02
			Total Receptor Risk:	4E-06	NC

Table 14 Risk Assessment Summary - Reasonable Maximum Exposure Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Pond	(Outer Cove)			H 1	
Trespasser	Older Child (ages 7 through 18) Sediment	Incidental ingestion	1E-06	0.01
			Dermal contact	2E-07	0.001
		Surface water	Incidental ingestion	7E-08	0.002
			Dermal contact	2E-07	0.005
			Total Risk:	2E-06	0.02
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion	9E-07	0.009
			Dermal contact	2E-07	0.001
		Surface water	Incidental ingestion	4E-08	0.001
			Dermal contact	2E-07	0.004
			Total Risk:	1E-06	0.02
			Total Receptor Risk:	3E-06	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion	3E-07	0.001
			Dermal contact	4E-08	0.00009
		Surface water	Incidental ingestion	2E-08	0.0003
			Dermal contact	6E-08	0.001
			Total Risk:	4E-07	0.003
			Total Receptor Risk:	4E-07	NC

Risk calculations are presented in Appendix D.

NC = Not calculated because Hazard Index is not summed across age groups.

Table 15Risk Assessment Summary - Central TendencySupplemental Site Investigation ReportFormer Gorham Manufacturing Site333 Adelaide AvenueProvidence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Inner	Cove				
Trespasser	Older Child (ages 7 through 18) Sediment	Incidental ingestion Dermal contact	1E-06 4E-08	0.04 0.001
		Surface water	Incidental ingestion Dermal contact	2E-08 5E-08	0.001 0.003
			Total Risk:	1E-06	0.04
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion Dermal contact	1E-06 5E-08	0.03 0.001
		Surface water	Incidental ingestion Dermal contact	2E-08 6E-08	0.0005 0.002
			Total Risk:	1E-06	0.03
			Total Receptor Risk:	2E-06	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion Dermal contact	4E-07 1E-08	0.003 0.00008
		Surface water	Incidental ingestion Dermal contact	8E-09 6E-08	0.00004 0.0004
			Total Risk:	5E-07	0.004
			Total Receptor Risk:	5E-07	NC

Table 15 Risk Assessment Summary - Central Tendency Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Outer	r Cove				
Trespasser	Older Child (ages 7 through 18)	Sediment	Incidental ingestion	9E-08	0.004
			Dermal contact	1E-08	0.0004
		Surface water	Incidental ingestion	9E-09	0.0007
			Dermal contact	4E-08	0.002
			Total Risk:	2E-07	0.007
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion	8E-08	0.003
			Dermal contact	2E-08	0.0003
		Surface water	Incidental ingestion	8E-09	0.0004
			Dermal contact	5E-08	0.002
			Total Risk:	1E-07	0.005
			Total Receptor Risk:	3E-07	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion	3E-08	0.0003
			Dermal contact	3E-09	0.00002
		Surface water	Incidental ingestion	4E-09	0.0001
			Dermal contact	1E-08	0.0002
			Total Risk:	5E-08	0.0006
			Total Receptor Risk:	5E-08	NC

Risk calculations are presented in Appendix D.

NC = Not calculated because Hazard Index is not summed across age groups.

Calculations of Blood Lead Concentrations (PbBs) - Trespasser Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island **Table 16**

	Pb	B			Values for Non-Reside	tial Exposure Scenario
Exposure	Equa	tion ¹			Using Ed	uation 1
Variable	1*	2**	Description of Exposure Variable	Units	GSDi = Hom	GSDi = Het
PbS ²	×	×	Soil lead concentration	ug/g or ppm	551	551
Rfetal/maternal	×	×	Fetal/maternal PbB ratio	1	0.0	0.0
BKSF	×	×	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD ₁	x	×	Geometric standard deviation PbB	1	2.1	2.3
PbB ₀	×	×	Baseline PbB	ug/dL	1.5	1.7
IRs	x		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR _{S+D}		×	Total ingestion rate of outdoor soil and indoor dust	g/day	2003 2003	
Ws		×	Weighting factor; fraction of IR+D ingested as outdoor soil	•		
K _{SD}		×	Mass fraction of soil in dust	•		
AF _{S, D}	×	×	Absorption fraction (same for soil and dust)	1	0.12	0.12
EF _{S.D}	x	×	Exposure frequency (same for soil and dust)	days/yr	51	51
AT _{S, D}	×	x	Averaging time (same for soil and dust)	days/yr	365	365
Pb B _{adult}			PbB of trespasser, geometric mean	ug/dL	1.7	1.9
PbBfetal, 0.95		5	5th percentile PbB among fetuses of adult workers	ug/dL	5.1	6.7
PbB_t			Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	10.0	10.0
$P(PbB_{fetal} > PbB_{t})$	Probab	ility th	at fetal PbB > PbB ₁ , assuming lognormal distribution	%	0.6%	1.7%
Equation 1 does not an	nortion e	XDOSUL	e between soil and dust investion (excludes AVK on).			

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² Reasonable Maximum Exposure concentration for lead presented on Table SED-EPC. When $IR_s = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbR_{thal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

PbB adult =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
PbB fetal, 0.95 =	$PbB_{adult} * (GSD_{1}^{1.645} * R)$

for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead

Calculations of Blood Lead Concentrations (PbBs) for Commercial/Industrial Worker Supplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Riode Island Table 17

	Pb	B			Values for Non-Resider	ntial Exposure Scenario
Exposure	Equa	tion ¹			Using Ec	quation 1
Variable	1*	2**	Description of Exposure Variable	Units	GSDi = Hom	GSDi = Het
PbS ²	х	x	Soil lead concentration	ug/g or ppm	551	551
R fetal/maternal	×	×	Fetal/maternal PbB ratio	1	0.0	0.0
BKSF	×	×	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD _i	×	×	Geometric standard deviation PbB	E	2.1	2.3
PbB ₀	×	×	Baseline PbB	ng/dL	1.5	1.7
IRS	x		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR _{S+D}		×	Total ingestion rate of outdoor soil and indoor dust	g/day		1
Ws		×	Weighting factor; fraction of IR _{5+D} ingested as outdoor soil	1		
K _{SD}		×	Mass fraction of soil in dust	1	ŧ	ł
AF _{S, D}	×	×	Absorption fraction (same for soil and dust)	1	0.12	0.12
EF _{S, D}	×	x	Exposure frequency (same for soil and dust)	days/yr	17	17
AT _{S, D}	x	×	Averaging time (same for soil and dust)	days/yr	365	365
PbBadult			PbB of adult worker, geometric mean	ug/dL	1.6	1.8
PbB _{fetal} , 0.95			95th percentile PbB among fetuses of adult workers	ug/dL	4.8	6.2
PbB,	1		Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	10.0	10.0
$P(PbB_{fetal} > PbB_t)$	Probabi	lity tha	at fetal PbB > PbB ₆ assuming lognormal distribution	0% 0	0.4%	1.4%
Terration I does not ann	ortion av	OCUTO	hotween soil and dust investion (excludes W = K)			

W S. NSD). חחזו ווהבפווו וכזה SUIC DOIMCON SOIL AND Equation 1 does not apportion expe

When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

² Reasonable Maximum Exposure concentration for lead presented on Table SED-EPC.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

adult =	$(PbS^*BKSF^*IR_{S+D}^*AF_{S,D}^*EF_S/AT_{S,D}) + PbB_0$
al, 0.95 =	$PbB_{adult} * (GSD_{1}^{1.645} * R)$

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for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead

APPENDIX A

Analytical Data Used in the Risk Assessment

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	SW10	SW11	SW12	SW16	SW17	SW18	SW19	SW20	SW21	SW22	SW23	SW24	SW25
Parameter	SW10 6/21/2006	SW11 6/21/2006	SW12 6/21/2006	SW16 6/21/2006	SW17 6/21/2006	SW18 6/21/2006	SW19 6/21/2006	SW20 6/21/2006	SW21 6/21/2006	SW22 6/21/2006	SW23 6/21/2006	SW24 6/21/2006	SW25 6/22/2006
Volatile Organics (mg/L)													
1.1.1.2-Tetrachloroethane	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	<0.001	<0.001	<0.001	0.0016	0.0018	0.0013	0.0014	<0.001	0.0012	0.001	0.001	0.0013	0.0018
1,1,2,2-Tetrachloroethane	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
1,1,2-Trichloroethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	<0.001	<0.001	<0.001	0.0011	0.0014	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012
1,1-Dichloroethene	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1.2.3-Trichloropropane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1.2.4-Trichlorobenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1.2-Dibromo-3-chloropropane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
1.2-Dibromoethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1.2-Dichloroethane	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	<0.001	<0,001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dioxane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1-Chlorohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Butanone	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
2-Chlorotoluene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Hexanone	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4-Chlorotoluene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Isopropyltoluene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Methyl-2-pentanone	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Acetone	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Benzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromobenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromochloromethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromoform	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Carbon disulfide	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbon tetrachloride	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chloroform	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethene	0.0022	0.0108	0.0015	0.0045	0.0045	0.0048	0.0062	0.0025	0.0054	0.0044	0.0044	0.0059	0.0045
cis-1,3-Dichloropropene	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Dibromochloromethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

	SW10	SW11	SW12	SW16	SW17	SW18	SW19	SW20	SW21	SW22	SW23	SW24	SW25
7	SW10	SW11	SW12	SW16	SW17	SW18	SW19	SW20	SW21	SW22	SW23	SW24	SW25
Parameter	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/22/2006
Dibromomethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Diethyl ether	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Diisopropyl ether	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethyl tertiary-butyl ether	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethvlbenzene	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
Isopropylbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methyl tert-butyl ether	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methylene chloride	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Naphthalene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Butvlbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Propylbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
sec-Butvlbenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Stvrene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Butvibenzene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tertiary-amyl methyl ether	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrahvdrofuran	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Toluene	<0.001	<0.001	<0.001	0.0043	0.0043	0.0024	0.0034	0.0017	0.0011	0.0014	0.0019	0.0029	0.0033
trans-1,2-Dichloroethene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Trichloroethene	<0.001	0.0023	<0.001	0.001	0.001	0.0015	0.0029	<0.001	0.0016	0.0013	0.0017	0.0014	0.0012
Trichlorofluoromethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Vinyl acetate	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vinyl chloride	<0.001	<0.001	<0.001	0.0015	0.0013	0.0013	0.0021	<0.001	0.0013	0.0011	0.001	0.0018	0.0015
Xvlene, M&P-	<0.002	<0.002	<0.002	0.0026	0.0024	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0023
Xylene, O-	<0.001	<0.001	<0.001	0.0011	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Xylenes, Total	0.003	0.003	0.003	0.0037	0.0034	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Semivolatile Organics (mg/L)													
2-Methylnaphthalene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Acenaphthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Acenaphthylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(a)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(a)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00024	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(b)fluoranthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(g,h,i)perylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00038	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(k)fluoranthene	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Chrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Dibenz(a,h)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00031	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluorene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Indeno(1,2,3-cd)pyrene	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Naphthalene	<0.0002	<0.0002	<0.0002	<0.0002	0.00026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003	0.00024
Phenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Page 2 of 8

Table A1	Surface Water Data	Supplemental Site Investigation Report	Former Gorham Manufacturing Site	333 Adelaide Avenue	Providence, Rhode Islande	
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	0LMS	LIND	SW12	9LMS	1 mg	21110	BI MO	02112	12000	77/10	57M2	4717C	SVVC
Parameter	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/22/
Pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0>
Pesticides/PCBs (mg/L)							10000 01						
4,4'-DDD		<0.00005					<0.00005						
4,4'-DDE		<00000>					20000.02						
4.4-DDT		0.00008					<0.00005						
							-00000						
alpha-BHC		200000					<0.00005						
apria-curouance beta-BHC		<0.00005					<0.00005						
Chlordane		<0.0005					<0.0005						
delta-BHC		<0.00005					<0.00005						
Dieldrin		<0.00005					<0.00005						
Endosulfan I		<0.00005					<0.00005						
Endosulfan II		<0.00005					<0.00005						
Endosulfan sulfate		<0.00005					<0.00005						
Endrin		<0.00005					<0.00005						
Endrin aldehyde		<0.00005					<0.00005						
Endrin ketone		<0.00005					<0.00005						
gamma-BHC (Lindane)		<0.00005					<0.00005						
gamma-Chlordane		<0.00005					<0.00005						
Heptachlor		<0.00005					<0.00005						
Heptachlor epoxide		<0.00005					<0.00005						
Hexachlorobenzene		<0.00005					<0.00005				-		
Methoxychlor		<0.00005					<0.00005						
Toxaphene		<0.0025					<0.0025						
Aroclor 1016		<0.0001					<0.0001						
Arocior 1221		<0.0001					<0.0001						
Arocior 1232		<0.0001					<0.0001						
Aroclor 1242		<0.0001					<0.0001						
Aroclor 1248		<0.0001					<0.0001						
Aroclor 1254		<0.0001					<0.0001						
Aroclor 1260		<0.0001					<0.0001						
Aroclor 1262		<0.0001					<0.0001						
Aroclor 1268		<0.0001					<0.0001						
Metals, Iotal (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
Arsenic	<0.005	<0.005	<0,005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01
Barium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.0>
Bervilium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0<
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
Chromium	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	0.034	0.046	<0.02	<0.02	0.0>
Copper	<0.02	<0.02	<0.02	<0.02	<0.02	0.099	0.029	<0.02	0.071	0.126	0.023	<0.02	<0.0>
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	0.0318	0.0121	<0.005	0.0258	0.0309	0.0083	<0.005	<0.05
Mercury	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00
Nickel	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0×
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0>

	SW10	SW11	SW12	SW16	SW17	SW18	SW19	SW20	SW21	SW22	SW23	SW24	SW25
	SW10	SW11	SW12	SW16	SW17	SW18	SW19	SW20	SW21	SW22	SW23	SW24	SW25
Parameter	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/22/2006
Silver	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	0.005	0.006	<0.005	<0.005	<0.005
Thallium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc	<0.05	<0.05	<0.05	<0.05	<0.05	0.107	0.068	<0.05	0.089	0.146	<0.05	<0.05	<0.05
Metals, Dissolved (mg/L)						10 Contraction of the other	- 1000 California						
Antimony	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Beryllium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thallium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Inorganics (mg/L)													
Hardness	70.8	71.9	67	78.4	73.6	87.3	76.1	77.3	86.7	86.7	86.6	83.4	7.77
Dioxins/Furans (mg/L)													
1,2,3,4,6,7,8-HpCDD		0.000000024					0.000000043						
1,2,3,6,7,8-HxCDD		<0.0000001					<0.00000001						
1,2,3,7,8,9-HxCDD		<0.00000001					<0.00000001						
1,2,3,7,8-PeCDD		<0.0000001					<0.00000001						
2,3,7,8-TCDD		<0.0000000021					<0.000000002						
2,3,7,8-TCDF		<0.0000000021					<0.000000002						
OCDD		0.00000018					0.00000032						
Total HpCDD		0.000000043					0.000000072						
Total HpCDF		0.000000012					0.000000021						
Total HxCDD		<0.0000001					<0.00000001						
Total PeCDD		<0.0000001					<0.00000001						
Total PeCDF		<0.0000001					<0.00000001						
Total TCDD		<0.0000000021					<0.000000002						
Total TCDF		<0.0000000021					0.0000000034						
TEQ-Mammal		0.000000013					0.000000013						

< - Compound not detected, Value is detection limit. mg/L - milligrams per liter

	SW26	SW27
	SW26	SW27
Parameter	6/21/2006	6/22/2006
Volatile Organics (mg/L)		
1,1,1,2-Tetrachloroethane	<0.001	<0.001
1,1,1-Trichloroethane	0.0015	0.0018
1,1,2,2-Tetrachloroethane	<0.0005	<0.0005
1,1,2-Trichloroethane	<0.001	<0.001
1,1-Dichloroethane	<0.001	0.0013
1,1-Dichloroethene	<0.001	<0.001
1,1-Dichloropropene	<0.002	<0.002
1,2,3-Trichlorobenzene	<0.001	<0.001
1,2,3-Trichloropropane	<0.001	<0.001
1,2,4-Trichlorobenzene	<0.001	<0.001
1,2,4-Trimethylbenzene	<0.001	0.0011
1,2-Dibromo-3-chloropropane	<0.005	<0.005
1.2-Dibromoethane	<0.001	<0.001
1,2-Dichlorobenzene	<0.001	<0.001
1,2-Dichloroethane	<0.001	<0.001
1,2-Dichloropropane	<0.001	<0.001
1.3.5-Trimethylbenzene	<0.001	<0.001
1,3-Dichlorobenzene	<0.001	<0.001
1,3-Dichloropropane	<0.001	<0.001
1.4-Dichlorobenzene	<0.001	<0.001
1,4-Dioxane	<0.5	<0.5
1-Chlorohexane	<0.001	<0.001
2,2-Dichloropropane	<0.001	<0.001
2-Butanone	<0.025	<0.025
2-Chlorotoluene	<0.001	<0.001
2-Hexanone	<0.01	<0.01
4-Chlorotoluene	<0.001	<0.001
4-Isopropyltoluene	<0.001	<0.001
4-Methyl-2-pentanone	<0.025	<0.025
Acetone	<0.025	<0.025
Benzene	<0.001	<0.001
Bromobenzene	<0.002	<0.002
Bromochloromethane	<0.001	<0.001
Bromodichloromethane	<0.001	<0.001
Bromoform	<0.001	<0.001
Bromomethane	<0.002	<0.002
Carbon disulfide	<0.001	<0.001
Carbon tetrachloride	<0.001	<0.001
Chlorobenzene	<0.001	<0.001
Chloroethane	<0.002	<0.002
Chloroform	<0.001	<0.001
Chloromethane	<0.002	<0.002
cis-1,2-Dichloroethene	0.0025	0.0054
cis-1,3-Dichloropropene	<0.0005	<0.0005
Dibromochloromothono	<0.001	<0.001

	SW26	SW27
	SW26	SW27
Parameter	6/21/2006	6/22/2006
Dibromomethane	<0.001	<0.001
Dichlorodifluoromethane	<0.002	<0.002
Diethyl ether	<0.001	<0.001
Diisopropyl ether	<0.001	<0.001
Ethyl tertiary-butyl ether	<0.001	<0.001
Ethylbenzene	<0.001	0.001
Hexachlorobutadiene	<0.0006	<0.0006
Isopropylbenzene	<0.001	<0.001
Methyl tert-butyl ether	<0.001	<0.001
Methylene chloride	<0.005	<0.005
Naphthalene	<0.001	<0.001
n-Butvlbenzene	<0.001	<0.001
n-Propvlbenzene	<0.001	<0.001
sec-Butylbenzene	<0.001	<0.001
Styrene	<0.001	<0.001
tert-Butylbenzene	<0.001	<0.001
Tertiary-amyl methyl ether	<0.001	<0.001
Tetrachloroethene	<0.001	<0.001
Tetrahydrofuran	<0.005	<0.005
Toluene	0.0015	0.0041
trans-1,2-Dichloroethene	<0.001	<0.001
trans-1,3-Dichloropropene	<0.0005	<0.0005
Trichloroethene	<0.001	0.0014
Trichlorofluoromethane	<0.002	<0.002
Vinyl acetate	<0.005	<0.005
Vinyl chloride	<0.001	0.002
Xylene, M&P-	<0.002	0.0028
Xylene, O-	<0.001	0.0012
Xylenes, Total	0.003	0.004
Semivolatile Organics (mg/L)		
2-Methylnaphthalene	<0.0002	<0.0002
Acenaphthene	<0.0002	<0.0002
Acenaphthylene	<0.0002	<0.0002
Anthracene	<0.0002	<0.0002
Benzo(a)anthracene	<0.0002	<0.0002
Benzo(a)pyrene	<0.0002	<0.0002
Benzo(b)fluoranthene	<0.0002	<0.0002
Benzo(g,h,i)perylene	<0.0002	<0.0002
Benzo(k)fluoranthene	<0.00031	<0.0003
Chrysene	<0.0002	<0.0002
Dibenz(a,h)anthracene	<0.0002	<0.0002
Fluoranthene	<0.0002	<0.0002
Fluorene	<0.0002	<0.0002
Indeno(1,2,3-cd)pyrene	<0.00031	<0.0003
Naphthalene	<0.0002	<0.0002
Phenanthrene	<0 0002	<0.0002

	SW26	SW27	
Parameter	SW26 6/21/2006	SW27 6/22/2006	
Pyrene	<0.0002	<0.0002	
Pesticides/PCBs (mg/L)		10.00 M M M M	
1,4'-DDD		<0.00005	
1,4'-DDE		<0.00005	
4,4'-DDT		<0.00005	
Aldrin		<0.00005	
alpha-BHC		<0.00005	
alpha-Chlordane		<0.00005	
oeta-BHC		<0.00005	
Chlordane		<0.0005	
delta-BHC		<0.00005	
Dieldrin		<0.00005	
Endosulfan I		<0.00005	
Endosulfan II		<0.00005	
Endosulfan sulfate		<0.00005	
Endrin		<0.00005	
Endrin aldehyde		<0.00005	
Endrin ketone		<0.00005	
gamma-BHC (Lindane)		<0.00005	
gamma-Chlordane		<0.00005	
Heptachlor		<0.00005	
Heptachlor epoxide		<0.00005	
Hexachlorobenzene		<0.00005	
Methoxychlor		<0.00005	
Toxaphene		<0.0025	
Aroclor 1016		<0.0001	
Aroclor 1221		<0.0001	
Aroclor 1232		<0.0001	
Aroclor 1242		<0.0001	
Aroclor 1248		<0.0001	
Aroclor 1254		<0.0001	
Aroclor 1260		<0.0001	
Aroclor 1262		<0.0001	
Aroclor 1268		<0.0001	
Metals, Total (mg/L)			
Antimony	<0.005	<0.005	
Arsenic	<0.005	<0.005	
Barium	<0.05	<0.05	
Beryllium	<0.001	<0.001	
Cadmium	<0.005	<0.005	
Chromium	<0.02	<0.02	
Copper	<0.02	<0.02	
ead	<0.005	<0.005	
Mercury	<0.0005	<0.0005	
Nickel	<0.05	<0.05	
Selenium	<0.05	<0.05	

	SW26	SW27
	SW26	SW27
Parameter	6/21/2006	6/22/2006
Silver	<0.005	<0.005
Thallium	<0.002	<0.002
Zinc	<0.05	<0.05
Metals, Dissolved (mg/L)		
Antimony	<0.005	<0.005
Arsenic	<0.005	<0.005
Barium	<0.05	<0.05
Beryllium	<0.001	<0.001
Cadmium	<0.005	<0.005
Chromium	<0.02	<0.02
Copper	<0.02	<0.02
Lead	<0.005	<0.005
Mercury	<0.0005	<0.0005
Nickel	<0.05	<0.05
Selenium	<0.05	<0.05
Silver	<0.005	<0.005
Thallium	<0.002	<0.002
Zinc	<0.05	<0.05
Inorganics (mg/L)		
Hardness	73.7	80
Dioxins/Furans (mg/L)		
1.2.3.4.6.7.8-HpCDD		0.000000043
1.2,3.6.7.8-HxCDD		0.000000013
1,2,3,7,8,9-HxCDD		0.000000051
1,2,3,7,8-PeCDD		0.000000046
2,3,7,8-TCDD		0.0000000031
2,3,7,8-TCDF		0.000000089
OCDD		0.00000035
Total HpCDD		0.000000061
Total HpCDF		0.000000013
Total HxCDD		0.000000064
Total PeCDD		0.000000046
Total PeCDF		0.000000029
Total TCDD		0.0000000031
Total TCDF		0.000000032
TEQ-Mammal		0.000000062

 - Compound not detected, Value is detection limit. mg/L - milligrams per liter

Page 8 of 8

SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED1001	SED1003	SED1101 6/22/2006	SED1103 6/22/2006	SED1201 6/22/2006	SED1203 6/22/2006
101001000	3000/80/01	ADDCIGCICE	10/06/06/01	10/00/00/01	SULLICIS		000717710	ODD I I I I I I I I I I I I I I I I I I	in the second se	
0-2	0-2	0-2	0-2	0-2	0.5-1	2.5-3	0-1	2.5-3	0.5-1	2.5-3
								i trafficiere de la companya de la c		
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	1.3	0.3	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	1.4	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	0.014	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15		< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15		< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15		< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15		< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
					< 0.201	< 0.231	< 2.14	< 0.228	< 0.302	< 0.198
					< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0403	< 0.0463	< 0.427	< 0.0457	< 0.0604	< 0.0396
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0403	< 0.0463	< 0.427	< 0.0457	< 0.0604	< 0.0396
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0403	< 0.0463	< 0.427	< 0.0457	< 0.0604	< 0.0396
< 0.052	< 0.039	0.87	< 4.6	< 0.048	< 0.0403	< 0.0463	0.649	0.079	0.0757	< 0.0396
< 0.065	< 0.049	< 0.76	< 5.7	< 0.06						
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0081	< 0.0093	< 0.0855	< 0.0091	< 0.0121	< 0.0079
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0081	< 0.0093	< 0.0855	< 0.0091	< 0.0121	< 0.0079
< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
	 < 0.013 	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	\$0.013 \$0.0098 \$0.15 \$1.3 \$0.013 \$0.0098 \$0.15 \$1.3 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.0098 \$0.15 \$1.1 \$0.013 \$0.098 \$0.15 \$1.1 \$0.013 \$0.098 \$0.15 \$1.1 \$0.013	0.013 0.0098 0.15 -1.1 -0.012 0.0013 0.0098 -0.15 -1.1 -0.012 0.0013 0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.0013 -0.0098 -0.15 -1.1 -0.012 0.013 -0.0098 -0.15 -1.1 -0.012 <	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		<0013	< 0.003 < 0.0036 < 0.0045 < 0.0427 < 0.0046 < 0.0013	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED10	SED10	SED11	SED11	SED12	SED12
	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED1001	SED1003	SED1101	SED1103	SED1201	SED1203
	12/28/2005	12/28/2005	12/28/2005	12/28/2005	12/28/2005	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006
chemical.name	0-2	0-2	0-2	0-2	0-2	0.5-1	2.5-3	0-1	2.5-3	0.5-1	2.5-3
Chloromethane	< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0081	< 0.0093	< 0.0855	< 0.0091	< 0.0121	< 0.0079
cis-1,2-Dichloroethene	< 0.013	< 0.0098	0.42	< 1.1	0.016	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
cis-1,3-Dichloropropene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Dibromochloromethane	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Dibromomethane	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Dichlorodifluoromethane	< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.0081	< 0.0093	< 0.0855	< 0.0091	< 0.0121	< 0.0079
Diethyl ether						< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Diisopropyl ether						< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Ethyl tertiary-butyl ether						< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Ethylbenzene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Hexachlorobutadiene	< 0.013	< 0.0098	< 0.15		< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Isopropyl Benzene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
m.p-Xylene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.0081	< 0.0093	< 0.0855	< 0.0091	< 0.0121	< 0.0079
Methylene Chloride	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.0201	< 0.0231	< 0.214	< 0.0228	< 0.0302	< 0.0198
Methyl-t-butyl ether	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Naphthalene						< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
n-Butylbenzene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
n-Propyl Benzene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
o-Xylene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
p-Isopropyl Toluene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
s-Butylbenzene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Styrene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
t-Butylbenzene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Tertiary-amyl methyl ether						< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Tetrachloroethene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Tetrahydrofuran						< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Toluene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
trans-1,2-Dichloroethene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
trans-1,3-Dichloropropene	< 0.013	< 0.0098	< 0.15	< 1.1	< 0.012	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Trichloroethene	< 0.013	< 0.0098	< 0.15	5.6	0.21	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Trichlorofluoromethane	< 0.026	< 0.02	< 0.3	< 2.3	< 0.024	< 0.004	< 0.0046	< 0.0427	< 0.0046	< 0.006	< 0.004
Vinyl acetate											
Vinyl Chloride	< 0.026	< 0.02	പ	< 2.3	< 0.024	< 0.0081	< 0.0093	< 0.0855	< 0.0091	< 0.0121	< 0.0079
Xylenes, Total						< 0.0121	< 0.0139	< 0.128	< 0.0137	< 0.0181	< 0.0119
Semivolatile Organics (mg/kg)											
1,2,4-Trichlorobenzene				< 0.74							
1,2-Dichlorobenzene				< 0.74							
1,3-Dichlorobenzene				< 0.74							
1,4-Dichlorobenzene				< 0.74							
1-Methylnaphthalene						< 0.0305	< 0.0344	< 0.163	< 0.0317	< 0.0553	< 0.0324
2,4,5-Trichlorophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2,4,6-Trichlorophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						

	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED10	SED10	SEU11	SEU11	SED12	SEU12
	SD-1001 12/28/2005	SD-1002 12/28/2005	SD-1003 12/28/2005	SD-1004 12/28/2005	SD-1005 12/28/2005	SED1001 6/22/2006	SED1003 6/22/2006	SED1101 6/22/2006	SED1103 6/22/2006	SED1201 6/22/2006	SED1203 6/22/2006
chemical.name	0-2	0-2	0-2	0-2	0-2	0.5-1	2.5-3	0-1	2.5-3	0.5-1	2.5-3
2.4-Dichlorophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2,4-Dimethylphenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2,4-Dinitrophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2,4-Dinitrotoluene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2,6-Dinitrotoluene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2-Chloronaphthalene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2-Chlorophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2-Methylnaphthalene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2	< 0.0305	< 0.0344	< 0.163	< 0.0317	< 0.0553	< 0.0324
2-Methylphenol (o-Cresol)	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
2-Nitroaniline	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
2-Nitrophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
3&4-Methylphenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
3,3'-Dichlorobenzidine	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
3-Nitroaniline	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
4,6-Dinitro-2-methylphenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
4-Bromophenyl-phenylether	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
4-Chloro-3-methylphenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
4-Chloroaniline	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
4-Chlorophenyl-phenylether	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
4-Nitroaniline	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
4-Nitrophenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Acenaphthene	0.25	0.26	< 0.039	< 0.03	0.024	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.0564	< 0.0324
Acenaphthylene	0.07	0.026	< 0.039	< 0.03	< 0.0079	< 0.0305	< 0.0344	< 0.163	< 0.0317	< 0.0553	< 0.0324
Aniline	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
Anthracene	0.83	0.36	0.11	0.04	0.079	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.276	< 0.0324
Azobenzene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						All the second sec
Benzo(a)anthracene	2	0.69	0.29	0.16	0.15	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.685	< 0.0324
Benzo(a)pyrene	1.8	0.59	0.24	0.15	0.12	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.862	< 0.0324
Benzo(b)fluoranthene	2.9	0.86	0.34	0.25	0.17	< 0.0305	< 0.0344	0.245	< 0.0317	1.41	< 0.0324
Benzo(g,h,i)perylene	0.73	0.26	0.11	0.088	0.046	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.244	< 0.0324
Benzo(k)fluoranthene	0.97	0.25	0.18	0.11	0.065	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.636	< 0.0324
Benzoic acid	< 2.2	< 1.6	< 4.9	< 3.7	< 0.98						
Benzyl alcohol	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
Bis(2-chloroethoxy)methane	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Bis(2-chloroethyl)ether	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Bis(2-chloroisopropyl)ether	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
bis(2-Ethylhexyl)phthalate	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Butylbenzylphthalate	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						A CONTRACTOR OF A
Chrysene	2.4	0.84	0.43	0.24	0.16	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.625	< 0.0324
Dibenzo(a,h)anthracene	0.22	< 0.013	< 0.039	< 0.03	< 0.0079	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.0807	< 0.0324
Dibenzofuran	< 0.88	< 0.66	<2	< 1.5	< 0.39						
Diethylphthalate	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						

P.W.2.mfg/TEXTRONGORHAM/SupplementSI 2008/HH_Risk_July_2006/Tables/ SedimentSummary-Cove2008, AlData

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	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED10	SED10	SED11	SED11	SED12	SED12
	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED1001	SED1003	SED1101	SED1103	SED1201	SED1203
	12/28/2005	12/28/2005	12/28/2005	12/28/2005	12/28/2005	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006
chemical.name	0-2	0-2	0-2	0-2	0-2	0.5-1	2.5-3	0-1	2.5-3	0.5-1	2.5-3
Dimethylphthalate	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Di-n-butylphthalate	0.48	< 0.33	1.1	< 0.74	< 0.2						
Di-n-octylphthalate	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Fluoranthene	4.3	1.6	0.71	0.45	0.39	< 0.0305	< 0.0344	0.327	< 0.0317	1.92	< 0.0324
Fluorene	< 0.018	0.022	0.081	0.036	0.025	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.107	< 0.0324
Hexachlorobenzene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Hexachlorobutadiene	and Spaces and Space and Space and Space			< 0.74							
Hexachlorocyclopentadiene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Hexachloroethane	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Indeno(1,2,3-cd)pyrene	0.74	0.22	0.11	< 0.03	0.046	< 0.0305	< 0.0344	< 0.163	< 0.0317	0.259	< 0.0324
Isophorone	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Naphthalene	0.21	0.28	< 0.039	< 0.03	0.045	< 0.0305	< 0.0344	< 0.163	< 0.0317	< 0.0553	< 0.0324
Nitrobenzene	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
N-Nitrosodimethylamine	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
N-Nitroso-di-n-propylamine	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
N-Nitrosodiphenvlamine	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Pentachlorophenol	< 0.88	< 0.66	< 2	< 1.5	< 0.39						
Phenanthrene	4	2.1	0.48	0.23	0.41	< 0.0305	< 0.0344	< 0.163	< 0.0317	1.14	< 0.0324
Phenol	< 0.44	< 0.33	< 0.99	< 0.74	< 0.2						
Pyrene	5.3	2.3	0.76	0.45	0.4	< 0.0305	< 0.0344	0.258	< 0.0317	1.01	< 0.0324
Pesticides/PCBs (mg/kg)											
4,4'-DDD	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		0.0214	
4,4'-DDE	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
4,4*-DDT	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Aldrin	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
alpha-BHC	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
alpha-Chlordane	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Aroclor-1016	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1221	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1232	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1242	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1248	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1254	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1260	< 0.034	< 0.066	< 0.04	< 0.03	< 0.016	< 0.056		< 0.351		< 0.112	
Aroclor-1262						< 0.056		< 0.351		< 0.112	
Aroclor-1268						< 0.056		< 0.351		< 0.112	
beta-BHC	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Chlordane						< 0.056		< 0.351		< 0.112	
delta-BHC	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Dieldrin	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Endosulfan I	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Endosulfan II	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	

	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED10	SED10	SED11	SED11	SED12	SED12
	SD-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED1001	SED1003	SED1101	SED1103	SED1201	SED1203
	12/28/2005	12/28/2005	12/28/2005	12/28/2005	12/28/2005	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006
chemical.name	0-2	0-2	0-2	0-2	0-2	0.5-1	2.5-3	0-1	2.5-3	0.5-1	2.5-3
Endosulfan sulfate	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Endrin	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Endrin aldehyde	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Endrin ketone	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
damma-BHC (Lindane)	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
gamma-Chlordane	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Heptachlor	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Heptachlor epoxide	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Hexachlorobenzene						< 0.0056		< 0.0351		< 0.0112	
Methoxychlor	< 0.0017	< 0.0013	< 0.004	< 0.003	< 0.00081	< 0.0056		< 0.0351		< 0.0112	
Toxaphene	< 0.086	< 0.066	< 0.2	< 0.15	< 0.04	< 0.28		< 1.75		< 0.558	
Antimony	2.7	1.6	< 2.7	< 2	< 0.54	< 6.5	< 7.4	< 25.7	< 6.8	< 11.9	< 7.2
Arsenic	19	12	45	32	3.8	< 0.3	1.1	4.8	. 7.1	× ع	< 1.8
Barium	190	76	250	69	19	10.2	19.9	156	7.1	33.1	14.5
Beryllium	1.1	0.46	1.4	3.5	0.075	< 0.07	< 0.07	0.47	< 0.07	0.31	< 0.07
Cadmium	1.8	0.91	4.1	3.2	0.14	< 0.65	< 0.74	3.24	< 0.68	< 1.19	< 0.72
Chromium	71	12	100	59	4.8	ę	5	213	3.1	7	S
Copper	1200	180	740	1500	19	4.1	4	423	1.7	12.5	5.1
Lead	340	140	590	140	23	< 6.5	< 7.4	590	< 6.8	20.7	< 7.2
Mercury	0.3	0.087	1.3	0.2	0.031	< 0.035	< 0.044	< 0.208	< 0.037	< 0.068	< 0.042
Nickel	48	20	120	810	10	3.6	4	85.7	< 3.4	< 5.9	5.7
Selenium	3.2	1.8	< 2.7	< 2	< 0.54	< 6.5	< 7.4	< 25.7	< 6.8	< 11.9	< 7.2
Silver	120	15	95	24	2.9	< 0.65	< 0.74	29.7	< 0.68	< 1.19	< 0.72
Thallium	< 0.58	< 0.44	< 1.4	۲ ۰	< 0.27	< 1.6	< 1.9	< 6.4	< 1.7	< 3	< 1.8
Zinc	570	200	770	1200	34	28.1	12.4	620	5.3	34.7	61.2
Total Cvanide	< 1.3	< 0.98	د م م	< 2.3	< 0.6						
Total Organic Carbon (TOC)	And and a second s					780		65000		2300	
TPH (mg/kg)											
Total Petroleum Hydrocarbons (TPH)	1900	2600	1700	740	370	< 42.6		< 253		< 85	
Dioxins/Furans (mg/kg)			11100								
1,2,3,4,6,7,8-HpCDD	0.00011	0.000059	0.00013	0.00014	0.000017	< 0.00000075		0.00028		0.0000074	
1.2,3,4,6,7,8-HpCDF	0.000092	0.00016	0.00027	0.00021	0.00003	< 0.00000075		0.00014		0.000002	
1,2,3,4,7,8,9-HpCDF	0.0000099	0.000014	0.000049	0.000047	0.0000041	< 0.00000075		0.000018		< 0.00000071	
1,2,3,4,7,8-HxCDD	0.0000049	0.0000061	0.000016	< 0.000014	< 0.0000018	< 0.00000075		0.0000095		< 0.00000071	
1.2.3.4.7.8-HxCDF	0.00003	0.000057	0.00017	0.00011	0.000017	< 0.00000075		0.000036		< 0.00000071	
1.2.3.6.7.8-HxCDD	0.000013	0.000012	0.000042	0.000039	0.0000047	< 0.00000075		0.000025		< 0.00000071	
1.2.3.6.7.8-HxCDF	0.000037	0.000059	0.00023	0.00026	0.000033	< 0.00000075		0.000086		< 0.00000071	
1,2,3,7,8,9-HxCDD	0.0000082	0.000008	0.000021	0.00002	< 0.0000027	< 0.00000075		0.000017		< 0.00000071	
1,2,3,7,8,9-HxCDF	< 0.0000031	< 0.0000028	0.0000086	< 0.0000071	< 0.00000001 >	< 0.00000075		0.00003		< 0.00000071	
1,2,3,7,8-PeCDD	0.0000097	0.0000074	0.000031	0.000033	< 0.000003	< 0.00000075		0.000011		< 0.00000071	
1,2,3,7,8-PeCDF	0.000016	0.000028	0.00006	0.000055	0.0000083	< 0.00000075		0.000032		< 0.00000071	
2,3,4,6,7,8-HxCDF	0.000036	0.000051	0.00018	0.00022	0.000028	< 0.00000075		0.00008		< 0.00000071	

Page 5 of 30

SC 127		400-00	2000	100-00	2001-200	SELUN	0000	0001	SEUL	SEUIZ	SEUTZ	
12/	D-1001	SD-1002	SD-1003	SD-1004	SD-1005	SED1001	SED1003	SED1101	SED1103	SED1201	SED1203	
	/28/2005	12/28/2005	12/28/2005	12/28/2005	12/28/2005	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	
chemical.name	0-2	0-2	0-2	0-2	0-2	0.5-1	2.5-3	0-1	2.5-3	0.5-1	2.5-3	
2.3.4.7.8-PeCDF 0.0	000036	0.000043	0.00016	0.00017	0.000023	< 0.00000075		0.00043		0.00000073		
2.3.7.8-TCDD 0.0	0000053	0.0000025	0.0000095	0.0000092	0.00000098	< 0.00000015		0.0000042		< 0.00000014		
2.3.7.8-TCDF 0.0	000018	0.000015	0.000027	0.000029	0.0000043	< 0.00000015		< 0.0000005.		0.00000024		
OCDD 0.	00075	0.00024	0.00042	0.00048	0.000077	0.0000044		0.0018		0.000064		
OCDF 0.0	000075	0.00019	0.00019	0.00007	0.0000076	< 0.0000015		0.000087		0.0000031		
TOTAL HpCDD 0	0.0002	0.00012	0.00027	0.00026	0.000036	< 0.00000075		0.00063		0.000013		
TOTAL HPCDF 0.	00018	0.00024	0.00062	0.00055	0.000073	< 0.00000075		0.00033		0.000002		
TOTAL HxCDD 0.	.00012	0.00013	0.00049	0.00042	0.000048	< 0.00000075		0.0003		0.0000011		
TOTAL HxCDF 0.	00078	0.001	0.0055	0.0058	0.00079	< 0.00000075		0.0023		0.0000039		
TOTAL PECDD 0.0	000074	0.000056	0.00031	0.00029	0.000022	< 0.00000075		0.00014		< 0.00000071		
TOTAL PECDF 0.	00068	0.00088	0.0051	0.0054	0.00075	< 0.00000075		0.0055		0.0000056		
TOTAL TCDD 0.0	770000.	0.000045	0.00012	0.00011	0.000011	< 0.00000015		0.000089		0.00000031		
TOTAL TCDF 0.	00029	0.00029	0.0013	0.0013	0.00017	< 0.00000015		0.0016		0.0000037		

Compound not detected.
 Value is detection limit.
 mg/kg - milligrams per kilogram

SED1801 6/22/2006 < 0.0506 < 0.0506 < 0.0506 < 0.101 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 0.0506 < 2.53 < 0.0506 < 0.0506 < 0.506 < 0.0506 < 0.506 1.9 < 0.0506 < 0.101 < 0.506 SED18 5 SED1704 6/22/2006 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0091 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.227 < 0.0045 < 0.0045 < 0.0454 < 0.0045 < 0.0454 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 0.0358 < 0.0045 < 0.0454 < 0.0454 < 0.0091 SED17 0.555 3-3.8 0.031 SED1701 6/22/2006 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0093 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0093 < 0.0046 0.0555 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0463 < 0.0046 < 0.0463 < 0.0046 < 0.0463 < 0.0463 < 0.0046 < 0.0046 < 0.232 SED17 0.732 0.137 0.007 0.5-1 SED1603 6/22/2006 < 0.0453 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0453 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.226 < 0.0045 < 0.0453 < 0.0045 < 0.0045 < 0.0453 < 0.0091 < 0.0045 < 0.0091 < 0.0045 SED16 2.5-3 SED1601 6/22/2006 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.0235 < 0.235 < 0.0235 < 0.235 < 0.0235 < 0.0235 < 0.0235 < 0.047 < 0.0235 < 0.0235 < 0.047 < 0.0235 SED16 < 0.235 < 0.235 < 1.17 3 SED1503 6/22/2006 < 0.0037 < 0.0074 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.185 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.037 < 0.0037 < 0.0037 < 0.0074 SED15 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.0037 0.0174 < 0.0037 < 0.0037 < 0.0037 < 0.0037 < 0.037 0.234 < 0.037 0.0061 2-3 < 0.0046 < 0.0046 < 0.0461 < 0.0092 6/22/2006 SED1501 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0092 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0461 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0461 < 0.0461 SED15 0.0518 < 0.23 0.863 0.0467 0.021 5 < 0.0051 < 0.0102 SED1403 6/22/2006 < 0.0051 < 0.0102 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.255 < 0.0051 < 0.0051 < 0.0051 SED14 < 0.005' < 0.005' < 0.005 < 0.051 < 0.005 < 0.051 0.164 2.5-3 < 0.051 6/22/2006 SED1401 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.024 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.12 0.202 < 0.012 < 0.012 < 0.024 < 0.012 SED14 < 0.012 < 0.012 < 0.012 < 0.012 < 0.12 < 0.012 < 0.601 < 0.12 5 SED1303 6/22/2006 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.0504 < 0.0504 < 0.0504 < 0.0504 < 0.005 < 0.0101 < 0.005 < 0.0101 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.252 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 SED13 < 0.005 2-2.5 SED1301 6/22/2006 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0446 < 0.0045 < 0.0446 < 0.0045 < 0.0446 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0045 < 0.0089 < 0.0045 < 0.0045 < 0.0089 < 0.0045 < 0.223 0.0046 SED13 0.105 0-0.5 ,2-Dibromo-3-Chloropropane Volatile Organics (mg/kg) chemical.name 1,1,1,2-Tetrachloroethane ,1,2,2-Tetrachloroethane ,3,5-Trimethylbenzene ,2,4-Trimethylbenzene 1,2,3-Trichlorobenzene ,2,3-Trichloropropane ,2,4-Trichlorobenzene Bromodichloromethane 4-Methyl-2-Pentanone Bromochloromethane 1.1.1-Trichloroethane 1,1,2-Trichloroethane ,2-Dichlorobenzene ,2-Dichloropropane .3-Dichlorobenzene ,4-Dichlorobenzene 1,1-Dichloropropene ,2-Dichloropropane ,3-Dichloropropane Carbon tetrachloride ,2-Dibromoethane ,2-Dichloroethane 1,1-Dichloroethane ,1-Dichloroethene Carbon Disulfide -Chlorohexane 2-Chlorotoluene 4-Chlorotoluene Bromomethane Chlorobenzene Bromobenzene Chloroethane 2-Hexanone ,4-Dioxane Acrylonitrile 2-Butanone Bromoform Chloroform Benzene Acetone

P WV2-mfg/TEXTRON/GORHAM/SupplementSt 2006/vHL_Risk_July_2006/Tables/ SedmentSummary-Cove2006, AllData

Page 7 of 30

	SED13	SED13	SED14	SED14	SED15	SED15	SED16	SED16	SED17	SED17	SED18
	SED1301	SED1303	SED1401	SED1403	SED1501	SED1503	SED1601	SED1603	SED1701	SED1704	SED1801
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006
chemical.name	0-0.5	2-2.5	9-1-	2.5-3	0-1	2-3	0-1	2.5-3	0.5-1	3-3.8	0-1
Chloromethane	< 0.0089	< 0.0101	< 0.024	< 0.0102	< 0.0092	< 0.0074	< 0.047	< 0.0091	< 0.0093	< 0.0091	< 0.101
cis-1,2-Dichloroethene	< 0.0045	< 0.005	< 0.012	< 0.0051	0.296	0.004	< 0.0235	< 0.0045	0.0298	< 0.0045	< 0.0506
cis-1,3-Dichloropropene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Dibromochloromethane	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Dibromomethane	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Dichlorodifluoromethane	< 0.0089	< 0.0101	< 0.024	< 0.0102	< 0.0092	< 0.0074	< 0.047	< 0.0091	< 0.0093	< 0.0091	< 0.101
Diethyl ether	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Diisopropyl ether	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Ethyl tertiary-butyl ether	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Ethylbenzene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Hexachlorobutadiene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Isopropyl Benzene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
m.p-Xylene	< 0.0089	< 0.0101	< 0.024	< 0.0102	< 0.0092	< 0.0074	< 0.047	< 0.0091	< 0.0093	< 0.0091	< 0.101
Methylene Chloride	< 0.0223	< 0.0252	< 0.0601	< 0.0255	< 0.023	< 0.0185	< 0.117	< 0.0226	< 0.0232	< 0.0227	< 0.253
Methyl-t-butyl ether	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Naphthalene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
n-Butylbenzene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
n-Propyl Benzene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
o-Xylene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
p-Isopropyl Toluene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
s-Butylbenzene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Styrene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
t-Butylbenzene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Tertiary-amyl methyl ether	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Tetrachloroethene	< 0.0045	< 0.005	< 0.012	< 0.0051	0.0161	0.004	< 0.0235	< 0.0045	0.0081	< 0.0045	< 0.0506
Tetrahydrofuran	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Toluene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
trans-1,2-Dichloroethene	< 0.0045	< 0.005	< 0.012	< 0.0051	0.0053	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
trans-1,3-Dichloropropene	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Trichloroethene	< 0.0045	< 0.005	< 0.012	< 0.0051	1.47	0.224	< 0.0235	< 0.0045	1.22	0.407	< 0.0506
Trichlorofluoromethane	< 0.0045	< 0.005	< 0.012	< 0.0051	< 0.0046	< 0.0037	< 0.0235	< 0.0045	< 0.0046	< 0.0045	< 0.0506
Vinyl acetate					< 0.259	< 0.195			< 0.36	< 0.305	< 4.59
Vinyl Chloride	< 0.0089	< 0.0101	< 0.024	< 0.0102	< 0.0092	< 0.0074	< 0.047	< 0.0091	< 0.0093	< 0.0091	< 0.101
Xylenes, Total	< 0.0134	< 0.0151	< 0.036	< 0.0153	< 0.0138	< 0.0111	< 0.0705	< 0.0136	< 0.0139	< 0.0136	< 0.152
Semivolatile Organics (mg/kg)	000 000 000 000 000 000 000 000 000 00					With the data such that we want					
1,2,4-Trichlorobenzene											
1,2-Dichlorobenzene											
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
1-Methylnaphthalene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
2,4,5-Trichlorophenol											
2,4,6-Trichlorophenol											

chemical.name	SED13 SED1301 6/22/2006 0-0.5	SED13 SED1303 6/22/2006 2-2.5	SED14 SED1401 6/22/2006 0-1	SED14 SED1403 6/22/2006 2.5-3	SED15 SED1501 6/22/2006 0-1	SED15 SED1503 6/22/2006 2-3	SED16 SED1601 6/22/2006 0-1	SED16 SED1603 6/22/2006 2.5-3	SED17 SED1701 6/22/2006 0.5-1	SED17 SED1704 6/22/2006 3-3.8	SED18 SED1801 6/22/2006 0-1
2,4-Dichlorophenol											
2,4-Dimethylphenol											10
2,4-Dinitrophenol				-							
2,4-Dinitrotoluene											
2,6-Dinitrotoluene											
2-Chloronaphthalene											
2-Chlorophenol					1000			1			
2-Methylnaphthalene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
2-Methylphenol (o-Cresol)											
2-Nitroaniline											
2-Nitrophenol											
3&4-Methylphenol											
3,3'-Dichlorobenzidine											
3-Nitroaniline											
4,6-Dinitro-2-methylphenol											
4-Bromophenyl-phenylether											
4-Chloro-3-methylphenol											
4-Chloroaniline											
4-Chlorophenyl-phenylether											
4-Nitroaniline											
4-Nitrophenol											11 110001
Acenaphthene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Acenaphthylene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Aniline			0100 0			1000 0			100 0	2000 0	
Anthracene	< 0.0321	< 0.0311	< 0.0943	< 0.033/	< 0.0315	<82U.U >	< U.1/9	< U.U3Ub	< 0.035	< 0.0306	< 0.103
Azobenzene	10000	11000	0.0013	10000	< 0.031E	20000	< 0.470	~ 0.0306	~ 0.03E	~ 0.0306	< 0 183
Derizo(a)ariniracene	1200.0 1	10000	C+E0'0 -	100000						00000	10100
Benzo(a)pyrene	< U.U3Z1	< 0.0314< 0.0314	< 0.0343	< 0.0337	< 0.0315 < 0.0315	20000	0.001	< 0.0306 < 0.0306	> 0.000	< 0.0306	< 0.183
Derizo(U)iluorarinterie	0.000 v	11000 2	0.0003	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Benzo(8,11,1)erg tene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Benzoic acid											
Benzvi alcohol											
Bis(2-chloroethoxy)methane											
Bis(2-chloroethyl)ether											
Bis(2-chloroisopropyl)ether											
bis(2-Ethylhexyl)phthalate											
Butylbenzylphthalate				10.000		(a) US (A)				A CONTRACTOR OF A CONTRACT	and the second second
Chrysene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Dibenzo(a,h)anthracene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Dibenzofuran											
Diethylphthalate											

chemical.name	SED13 SED1301 6/22/2006 0-0.5	SED13 SED1303 6/22/2006 2-2.5	SED14 SED1401 6/22/2006 0-1	SED14 SED1403 6/22/2006 2.5-3	SED15 SED1501 6/22/2006 0-1	SED15 SED1503 6/22/2006 2-3	SED16 SED1601 6/22/2006 0-1	SED16 SED1603 6/22/2006 2.5-3	SED17 SED1701 6/22/2006 0.5-1	SED17 SED1704 6/22/2006 3-3.8	SED18 SED1801 6/22/2006 0-1
Dimethylphthalate Di-n-butylphthalate											
Di-n-octylphthalate			And								
Fluoranthene	0.0833	< 0.0311	0.204	< 0.0337	< 0.0315	< 0.0285	0.33	< 0.0306	< 0.035	< 0.0306	0.267
Fluorene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Hexachlorobenzene											
Hexachlorobutadiene											
Hexacinorocyclopentaulene											
Indeno(1 2 3-cd)nvrene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Isophorone			2		Construction of the second sec	and a constant of the constant					
Naphthalene	< 0.0321	< 0.0311	< 0.0943	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Nitrobenzene											مستعد من في العربية الأراب الإرابية المرابع
N-Nitrosodimethylamine											
N-Nitroso-di-n-propylamine											
N-Nitrosodiphenylamine											
Pentachlorophenol											
Phenanthrene	0.0333	< 0.0311	0.0999	< 0.0337	< 0.0315	< 0.0285	< 0.179	< 0.0306	< 0.035	< 0.0306	< 0.183
Phenol											100-100 C
Pyrene	0.0513	< 0.0311	0.153	< 0.0337	< 0.0315	< 0.0285	0.244	< 0.0306	< 0.035	< 0.0306	0.187
Pesticides/PCBs (mg/kg)											
4,4'-DDD	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
4,4'-DDE	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
4,4'-DDT	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
Aldrin	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
alpha-BHC	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
alpha-Chlordane	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
Aroclor-1016	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1221	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1232	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1242	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1248	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1254	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1260	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1262	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
Aroclor-1268	< 0.0631		< 0.192		< 0.0593		< 0.357		< 0.067		< 0.404
beta-BHC	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
Chlordane	< 0.0631		< 0.192		< 0.0594		< 0.357		< 0.0671		< 0.405
delta-BHC	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
Dieldrin	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
Endosulfan I	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405
Endosulfan II	< 0.00631		< 0.0192		< 0.00594		< 0.0357		< 0.00671		< 0.0405

0.00091		0.000075	State in the second	0.0004		< 0.0000008		0.000051		< 0.00000076	2.3.4,6.7.8-HxCDF
< 0.0000032		0.0000081		< 0.0000034		< 0.0000008		0.0000084		< 0.00000076	1,2,3,7,8-PeCDF
0.000098		0.0000033		0.000056		< 0.0000008		0.0000048		< 0.00000076	1,2,3,7,8-PeCDD
0.00039		0.000013		0.00019		< 0.0000008		0.0000084		< 0.00000076	1,2,3,7,8,9-HxCDF
0.000097		0.0000033		0.000056		< 0.0000008		0.0000034		< 0.00000076	1,2,3,7,8,9-HxCDD
0.0013		0.00003		0.00057		< 0.0000008		0.000026		< 0.00000076	1,2,3,6,7,8-HxCDF
0.00019		0.0000057		0.00012		< 0.0000008		0.0000068		< 0.00000076	1,2,3,6,7,8-HxCDD
0.00067		0.000017		0.00033		< 0.0000008		< 0.0000017		< 0.00000076	1,2,3,4,7,8-HxCDF
0.000074		0.0000022		0.000041		< 0.0000008		0.0000033		< 0.00000076	1,2,3,4,7,8-HxCDD
0.00017		0.0000065		0.000092		< 0.0000008		0.0000044		< 0.00000076	1,2,3,4,7,8,9-HpCDF
0.001		0.000035		0.00057		< 0.0000008		0.000037		< 0.00000076	1,2,3,4,6,7,8-HpCDF
0.00064		0.000021		0.00048		< 0.0000008		0.000071		0.0000022	1,2,3,4,6,7,8-HpCDD
											Dioxins/Furans (mg/kg)
< 291		83.4		< 275		< 44.9		< 147		< 48.1	Total Petroleum Hydrocarbons (TPH)
											TPH (mg/kg)
115000		5800		73000		7000		31000		2700	Total Organic Carbon (TOC)
											Total Cyanide
1940	13.8	39.3	10.8	1630	21.3	12.6	6.4	363	20.9	41.4	Zinc
< 6.4	< 1.6	< 1.9	< 1.8	< 5.6	< 1.6	< 1.6	<2	< 3.8	< 1.7	< 1.7	Thallium
227	< 0.63	5.27	< 0.71	164	< 0.63	< 0.66	< 0.78	18.5	< 0.69	< 0.67	Silver
< 25.7	< 6.3	< 7.6	< 7.1	< 22.6	< 6.3	< 6.6	< 7.8	< 15.1	< 6.9	< 6.7	Selenium
157	5.1	5.7	3.5	130	11.3	6.8	< 3.9	31.4	8.9	22.5	Nickel
0.163	< 0.041	< 0.047	< 0.039	0.162	< 0.037	< 0.041	< 0.045	< 0.116	< 0.037	< 0.04	Mercury
961	< 6.3	20.9	< 7.1	763	< 6.3	< 6.6	< 7.8	250	< 6.9	< 6.7	Lead
2590	3.2	34.8	3.7	2050	4.2	5.8	2.1	215	5.3	5.3	Copper
640	3.5	11.1	3.9	565	2.8	2.9	2.1	49.1	3.5	4.7	Chromium
6.9	< 0.63	< 0.76	< 0.71	5.66	< 0.63	< 0.66	< 0.78	2.26	< 0.69	< 0.67	Cadmium
0.72	< 0.06	< 0.08	< 0.07	0.6	< 0.06	< 0.07	0.1	0.35	0.14	< 0.07	Beryllium
278	11.1	12.4	18.6	194	6	9.7	18.5	130	10.5	11.5	Barium
22.2	< 0.3	< 0.4	6.4	20	< 1.6	12.6	16.7	47.6	5.3	11.5	Arsenic
< 25.7	< 6.3	< 7.6	< 7.1	< 22.6	< 6.3	< 6.6	< 7.8	< 15.1	< 6.9	< 6.7	Antimony
< 2.02		< 0.335		< 1.79		< 0.297		< 0.962		< 0.316	Toxaphene
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Methoxychlor
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Hexachlorobenzene
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Heptachlor epoxide
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Heptachlor
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	gamma-Chlordane
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	gamma-BHC (Lindane)
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Endrin ketone
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Endrin aldehyde
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Endrin
< 0.0405		< 0.00671		< 0.0357		< 0.00594		< 0.0192		< 0.00631	Endosulfan sulfate
0-1	3-3.8	0.5-1	2.5-3	0-1	2-3	0-1	2.5-3	0-1	2-2.5	0-0.5	chemical.name
6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	
SED1801	SED1704	SED1701	SED1603	SED1601	SFD1503	SFD1501	SFD1403	SED1401	SED1303	SED1301	
SED18	SED17	SED17	SED16	SED16	SED15	SED15	SED14	SED14	SED13	SED13	

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	SED1301	SED1303	SED1401	SED1403	SED1501	SED1503	SED1601	SED1603	SED1701	SED1704	SED1801
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006
chemical.name	0-0.5	2-2.5	0-1	2.5-3	0-1	2-3	0-1	2.5-3	0.5-1	3-3.8	0-1
2,3,4,7,8-PeCDF	0.00000086		0.00015	G	< 0.0000008		0.0028		0.00019		0.0062
2,3,7,8-TCDD	< 0.00000015		0.0000014		< 0.00000016		0.000016		0.0000011		0.00003
2,3,7,8-TCDF	0.00000019		0.0000076		< 0.00000016		0.000082		< 0.00000014		0.00012
OCDD	0.000016		0.00047		0.0000044		0.0023		0.00007		0.0027
OCDF	0.0000016		0.000036		< 0.0000016		0.00025		0.000008		0.0003
TOTAL HpCDD	0.0000039		0.00014		< 0.0000008		0.00097		0.000044		0.0013
TOTAL HPCDF	0.0000011		0.000089		< 0.0000008		0.0014		0.000087		0.0028
TOTAL HxCDD	< 0.00000076		0.000087		< 0.0000008		0.0014		0.00007		0.0026
TOTAL HxCDF	0.000003		0.00051		0.0000011		0.016		0.0009		0.023
TOTAL PeCDD	< 0.00000076		0.000047		< 0.0000008		0.001		0.000041		0.002
TOTAL PeCDF	0.0000074		0.0013		0.0000031		0.0073		0.0021		0.0096
TOTAL TCDD	< 0.00000015		0.000029	T	< 0.00000016		0.00038		0.000023		0.0008
TOTAL TCDF	0.0000031		0.00042		0.0000013		0.0069		0.0006		0.012

Compound not detected.
 Value is detection limit.
 mg/kg - milligrams per kilogram

SED2303 6/22/2006 < 0.0406 < 0.0406 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0406 < 0.0041 < 0.0406 < 0.0041 < 0.0041 < 0.0081 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0081 < 0.0041 < 0.0041 < 0.0041 < 0.203 < 0.0041 < 0.0041 SED23 2-3 SED2301 6/22/2006 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0406 < 0.0406 < 0.0041 < 0.0406 < 0.0406 < 0.0081 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0081 < 0.0041 < 0.0041 SED23 < 0.004 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.203 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.004 0-1 SED2203 6/22/2006 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 1.79 < 0.0357 < 0.0714 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0714 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.357 < 0.0357 < 0.357 1.08 < 0.0357 < 0.0357 < 0.0357 < 0.0357 SED22 < 0.0357 < 0.0357 < 0.0357 < 0.357 2-3 SED2201 6/22/2006 < 0.0253 < 0.0126 < 0.0126 < 0.0126 < 0.126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0253 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.126 < 0.126 SED22 < 0.631 0.294 5 SED2103 6/22/2006 < 0.0043 < 0.0086 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0428 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.214 < 0.0043 < 0.0043 < 0.0043 < 0.0428 < 0.0043 < 0.0428 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0086 < 0.0043 < 0.0043 SED21 0.0608 2.5-3 SED2101 6/22/2006 < 0.0044 < 0.0089 < 0.0044 < 0.0044 < 0.0445 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0445 < 0.0044 < 0.0445 < 0.0445 < 0.0044 < 0.0089 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.222 SED21 5 SED2003 6/22/2006 < 0.0209 < 0.0418 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.209 0.57 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0418 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.209 < 0.0209 < 0.0209 < 1.05 < 0.209 SED20 2.5-3 SED2001 6/22/2006 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0298 < 0.0149 < 0.0149 < 0.0149 < 0.0298 0.0149 < 0.0149 < 0.745 < 0.149 < 0.149 < 0.149 SED20 0.421 0.5-1 < 0.0579 SED1903 6/22/2006 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.116 < 0.0579 < 2.89 < 0.579 < 0.579 < 0.116 SED19 0.299 0.936 0.212 6.65 1.94 0.8 2-3 6/22/2006 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 SED1901 < 0.017 < 0.017 < 0.17 < 0.034 < 0.017 < 0.017 < 0.034 < 0.017 SED19 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 0.0576 < 0.017 0.635 < 0.85 < 0.17 0.242 < 0.017 < 0.17 7.92 2 SED1804 6/22/2006 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0626 < 0.0313 < 0.0313 < 0.0313 < 0.0626 < 0.0313 SED18 < 0.313 < 0.313 < 0.313 < 1.56 0.796 3.5-4 1,2-Dibromo-3-Chloropropane /olatile Organics (mg/kg) chemical.name 1,1,1,2-Tetrachloroethane .1,2,2-Tetrachloroethane I,3,5-Trimethylbenzene ,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene 1,2,3-Trichlorobenzene I.2.3-Trichloropropane Bromodichloromethane 4-Methyl-2-Pentanone 1,1,1-Trichloroethane Bromochloromethane 1,1,2-Trichloroethane ,1-Dichloropropene 1,2-Dichlorobenzene I,2-Dichloropropane 1,3-Dichlorobenzene I, 3-Dichloropropane ,4-Dichlorobenzene 2,2-Dichloropropane Carbon tetrachloride 1.2-Dichloroethane 1,1-Dichloroethane .1-Dichloroethene ,2-Dibromoethane Carbon Disulfide 1-Chlorohexane 2-Chlorotoluene 4-Chlorotoluene Bromobenzene Bromomethane Chlorobenzene Chloroethane .4-Dioxane 2-Hexanone Acrylonitrile 2-Butanone Bromoform Chloroform Benzene Acetone

P.W.2-mfg/TEXTROWGORHAM/SupplementSI_2006/tHI_Risk_July_2006/Tables/ SedimentSummary-Cove2006, AllData

Providence, Rhode Island

5/22/2006 SED2303 < 0.0041 < 0.0041 < 0.0041 < 0.0311 < 0.0081 < 0.0041 < 0.0203 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 0.0636 < 0.0041 < 0.0122 < 0.0081 < 0.0041 < 0.0041 < 0.0041 < 0.0081 < 0.0041 < 0.004 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.004 < 0.0041 < 0.0081 0.0046 SED23 0.0255 2-3 SED2301 6/22/2006 < 0.0322 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0203 < 0.0041 < 0.0041 < 0.0122 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.0081 SED23 < 0.0081 < 0.008 < 0.0041 < 0.0041 < 0.0081 < 0.0041 < 0.0041 < 0.0041 < 0.0041 < 0.004 < 0.0041 < 0.0041 < 0.0041 < 0.0041 0.176 0.0091 1.04 < 0.26 5 SED2203 6/22/2006 < 0.0714 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.179 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0714 < 0.0357 < 0.0714 < 0.0357 < 0.0714 < 0.0357 < 0.119 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 < 0.0357 SED22 < 0.0357 < 0.0357 < 0.107 2-3 SED2201 6/22/2006 < 0.0379 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0253 < 0.0794 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0253 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0253 < 0.0126 < 0.0253 < 0.0126 < 0.0126 < 0.0126 < 0.0126 < 0.0631 SED22 5 SED2103 6/22/2006 < 0.0043 < 0.0043 < 0.0043 < 0.0214 < 0.0043 < 0.0043 < 0.0043 < 0.0301 2.5-3 < 0.0086 < 0.0043 < 0.0086 < 0.0043 < 0.0086 < 0.0129 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0086 SED21 0.0267 SED2101 6/22/2006 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0133 < 0.0328 < 0.0089 < 0.0089 < 0.0044 < 0.0044 < 0.0089 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0089 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0222 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 < 0.0044 SED21 5 SED2003 6/22/2006 < 0.0418 < 0.0209 < 0.0418 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0418 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0627 < 0.0209 < 0.0418 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.0209 < 0.105 < 0.104 SED20 2.5-3 3/22/2006 < 0.0149 < 0.0612 < 0.0298 < 0.0149 < 0.0149 < 0.0149 < 0.0298 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0298 < 0.0745 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0149 < 0.0298 SED2001 < 0.0149 < 0.0447 SED20 0.5-1 < 0.0579 6/22/2006 < 0.0579 SED1903 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.116 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.174 < 0.0579 < 0.0579 < 0.289 < 0.0579 < 0.0579 < 0.0579 < 0.0579 < 0.116 < 0.116 < 0.116 0.0688 7790.0 0.266 SED19 5.78 0.153 < 4.53 2-3 27 88 5/22/2006 SED19 SED1901 < 0.034 < 0.085 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 18.1 < 0.034 < 0.017 < 0.017 < 0.017 < 0.034 < 0.017 < 0.017 0.0197 < 0.017 < 0.017 < 0.017 < 2.48 < 0.051 < 0.124 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 < 0.017 2.79 0.148 175 58.4 5 3/22/2006 < 0.0939 SED1804 < 0.0626 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0626 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0626 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.0313 < 0.148 < 0.156 SED18 0.107 3.5-4 Semivolatile Organics (mg/kg) chemical.name Fertiary-amyl methyl ether trans-1,3-Dichloropropene trans-1,2-Dichloroethene cis-1,3-Dichloropropene Dichlorodifluoromethane Ethyl tertiary-butyl ether Dibromochloromethane **Frichlorofluoromethane** 1,2,4-Trichlorobenzene cis-1,2-Dichloroethene Hexachlorobutadiene 2,4,5-Trichlorophenol 1-Methylnaphthalene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4,6-Trichlorophenol p-Isopropyl Toluene Methylene Chloride Methyl-t-butyl ether sopropyl Benzene **Tetrachloroethene** n-Propyl Benzene Dibromomethane Diisopropyl ether s-Butylbenzene **Fetrahydrofuran** n-Butylbenzene **Frichloroethene** Chloromethane -Butylbenzene Xylenes, Total Ethylbenzene Vinyl Chloride /inyl acetate Naphthalene Diethyl ether m,p-Xylene o-Xylene Styrene Foluene

24-Ontrophenic 35-4 0-1 2-3 0-1 2-3-3	7	SED1804 6/22/2006	SED19 SED1901 6/22/2006	SED19 SED1903 6/22/2006	SED20 SED2001 6/22/2006	SED2003 SED2003 6/22/2006	SED2101 SED2101 6/22/2006	SED2103 SED2103 6/22/2006	SED22 SED2201 6/22/2006	SED22 SED2203 6/22/2006	SED23 SED2301 6/22/2006	SED23 SED2303 6/22/2006
2.4.20/methologenerol 2.4.20/methologenerol 4.4.20/methologenerol 4.4.2.4.2.4 4.0.198 <0.0001 <0.0001 <0.0001 <0.0001 <0.0119 4.0 2.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	chemical.name	3.5-4	0-1	2-3	0.5-1	2.5-3	0-1	2.5-3	0-1	2-3	0-1	2-3
2.4.Dimotropendo 2.4.Dimotropendo 2.4.Dimotropendo 2.6.Dimotropendo 2.6.Dimot	2,4-Uichiorophenol											
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Anterprinatination Constraint Curve Curve <thcurve< th=""> Curve Curve</thcurve<>	2-Chlorophenol		10101		0000		00000	10000	1000	01101	00000	
2-Methylphenol (Creaci) 2-Methylphenol (Creaci) 1 </td <td>z-Metnyinaphtnalene</td> <td>< U.148</td> <td>< 0, 124</td> <td>< 0.130</td> <td>> 0.0012</td> <td>< 0. IU4</td> <td>0700.0 ×</td> <td>> 0.0001</td> <td>10.0184</td> <td>~ 0.118</td> <td>27CD.0 ~</td> <td>1100.0 1</td>	z-Metnyinaphtnalene	< U.148	< 0, 124	< 0.130	> 0.0012	< 0. IU4	0700.0 ×	> 0.0001	10.0184	~ 0.118	27CD.0 ~	1100.0 1
2-Mitonenilie 2-Mitone	2-Methylphenol (o-Cresol)											
2-Microbined 2-Microbin 2-Microbined 2-Microbined <td>2-Nitroaniline</td> <td></td>	2-Nitroaniline											
3.4.4.Metrylphendi 3.4.4.Metrylphendi 3.4.4.Metrylphendi 3.4.4.Metrylphendi 3.4.1.Metrylphendi 3.4.4.Metrylphendi 4.5.Mintosenzidina	2-Nitrophenol											
3.3.Dichloroberzidine 3.3.Dichloroberzidine 3.3.Dichloroberzidine 3.3.Dichloroberzidine 4. Entomoline 4. Entomoline 4. Entomoline 4. Entomoline 4. Entomoline 4. Entomoline 0.138 4. Entomoline 4. Entomoline 4. Entomoline 0.138 4. Entomoline 5. Entomoline 4. Entomoline	3&4-Methylphenol											
Sixteraniline Sixteran	3.3'-Dichlorobenzidine											
4.6-Dinitro-Zmethylphendi 4.	3-Nitroaniline											
4-Enconsplexy/phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Chlorophenyl-phenyletter 4-Nitrophene 4-Nit	4 6-Dinitro-2-methylohenol											
4-Chloro-3-methylphendi 4-Chloro-3-met	4-Bromonhenvl-phenvlether											
4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Chiocontine 4-Nitrophenol <0.148	4-Chloro-3-methylohenol											
4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-Chioopheny-phenylether 4-MirroPhenylether	4-Chloroaniline											
4-Miroanline 4-Miroanline 6-0134 C0.134 C0.133 C0.0328 C0.0301 C0.0794 C0.119 C0 4-Miroanline < 0.148	4-Chloronhenvl-nhenvlether											
4-Nitrophenci 4-Nitrop	4-Nitroaniline											
Acenaphthene < 0.148 < 0.124 < 0.193 0.153 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Acenaphthene < 0.148	4-Nitronhanol											
Accompatitive < 0.148 < 0.124 < 0.198 0.781 < 0.003 < 0.0034 < 0.119 < 0 Antiline < 0.148	Accoration	< 0 148	× 0 124	< 0.108	0.153	< 0 104	< 0.0328	< 0.0301	< 0.0794	< 0 119	< 0.0322	< 0.0311
Antime Antin Antin Antin <td>Acenaphiliane</td> <td>< 0.148</td> <td>< 0 124</td> <td>< 0.198</td> <td>0.781</td> <td>< 0.104</td> <td>< 0.0328</td> <td>< 0.0301</td> <td>< 0.0794</td> <td>< 0.119</td> <td>< 0.0322</td> <td>< 0.0311</td>	Acenaphiliane	< 0.148	< 0 124	< 0.198	0.781	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Antimue < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < <td>Anilian</td> <td>2</td> <td></td>	Anilian	2										
Acobenizene Co.148 0.218 <0.198 15.1 <0.0328 <0.0301 0.108 <0.119 <0 Benzo(a)anthracene <0.148	Anthracene	< 0.148	< 0.124	< 0.198	3.09	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Paraceletion < 0.148 0.218 < 0.198 15.1 < 0.104 < 0.0328 < 0.0301 0.108 < 0.119 < 0 Benzo(a)prime < 0.148	Azohanzena											
Benzo(a)yrene < 0.148 0.151 < 0.198 7.87 < 0.0328 < 0.0301 0.102 < 0.119 < 0 Benzo(b)fluoranthene < 0.148	Renzofalanthracene	< 0.148	0.218	< 0.198	15.1	< 0.104	< 0.0328	< 0.0301	0.108	< 0.119	< 0.0322	< 0.0311
Benzol(h)/orante < 0.148 0.32 < 0.198 14.8 < 0.104 < 0.0301 0.114 < 0.119 < 0 Benzol(h)/province < 0.148	Renzo(a)ovrene	< 0 148	0 151	< 0.198	7.87	< 0.104	< 0.0328	< 0.0301	0.102	< 0.119	< 0.0322	< 0.0311
Berzo(g,h.)perylene < 0.148 < 0.124 < 0.139 2.54 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Berzo(g,h.)perylene < 0.148	Benzo(b)fluoranthene	< 0.148	0.32	< 0.198	14.8	< 0.104	< 0.0328	< 0.0301	0.114	< 0.119	< 0.0322	< 0.0311
Benzols/Informathene < 0.148 < 0.124 < 0.198 5.1 < 0.0301 < 0.0794 < 0.119 < 0 Benzols acid Benzols acid < 0.124	Banzo(a h i)harvlene	< 0 148	< 0.124	< 0.198	2.54	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Benzols acid Benzols acid Benzyl alcohol Benzyl alcohol Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Controls option Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Controls option Dibenzola, honthanate Controls option Chrysene Controls option Controls option Controls option Dibenzola, honthane Controls option Dibenzola, honthane Controls option Controls option Controls option Controls option Controls option Dibenzola, honthane Controt	Benzo(k)fluoranthene	< 0.148	< 0.124	< 0.198	5.1	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Benzyl alcohol Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)pether Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)pether Bis(2-chloroethoxy)methane Bis(2-chloroethoxy)pether Bis(2-chloroethoxy)pether Bis(2-chloroethoxy)pether Bis(2-chloroethoxy)pether Bis(2-chloroethoxy)pether Coloroethoxy Chlosenco(a, h)anthracene Coloroethoxy Coloroethoxy Coloroethox Diberoroethoxy <t< td=""><td>Benzoic acid</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Benzoic acid											
Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-chloroisopropyl)ether Bis(2-chloroisopropyl)ether Butylbenzylphthalate Butylbenzylphthalate Chrysene < 0.148 0.201 < 0.198 8.94 < 0.104 < 0.0328 < 0.0301 0.119 < 0.119 < 0.010 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0.0000000000000000000000000000000000	Benzyl alcohol											
Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-chloroisopropyl)ether Butylbenzylphthalate Butylbenzylphthalate Chrysene < 0.148 0.201 < 0.198 8.94 < 0.104 < 0.0328 < 0.0301 0.119 < 0.119 < 0.119 < 0.119 is 0.010 = 0.00000000000000000000000000000	Bis(2-chloroethoxy)methane											
Bis(2-chloroisopropyl)ether bis(2-Ethylhexyl)phthalate Butylbenzylphthalate Chrysene < 0.148 0.201 < 0.198 8.94 < 0.104 < 0.0328 < 0.0301 0.119 < 0.119 < 0 Chrysene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.0301 < 0.0794 < 0.119 < 0	Bis(2-chloroethyl)ether											
bis/2-Ethylhatate bis/2-Ethylhatate But/benzylphthalate Chysene < 0.148 0.201 < 0.198 8.94 < 0.104 < 0.0328 < 0.0301 0.119 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.148 < 0.124 < 0.198 1.45 < 0.104 < 0.0328 < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.0301 < 0.0794 < 0.119 < 0 Dibenzo(a,h)anthracene < 0.0301 < 0.0794 < 0.119 < 0	Ris(2-chloroisonronvl)ether											
Buttle Constraint Constra Constraint <td>bis/2-Ethvlhexvlinhthalate</td> <td></td>	bis/2-Ethvlhexvlinhthalate											
Conversion < 0.148 0.201 < 0.198 8.94 < 0.0328 < 0.0301 0.119 < 0.119 < 0 Chrystene < 0.148	Butvihenzvinhthalate											
Dibenzou:	Chrysene	< 0.148	0.201	< 0.198	8.94	< 0.104	< 0.0328	< 0.0301	0.119	< 0.119	< 0.0322	< 0.0311
	Dihenzo(a h)anthracene	< 0 148	< 0 124	< 0 198	1 45	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
	Dibenzofirran	-						•				
	Diathvlnhthalate											

P.WZ-mfg/TEXTROWGORHAM/SupplementSI 2006/HH_Risk_July_2006/Tables/ SedimentSummary-Cove2006, AllData

chemical.name	SED18 SED1804 6/22/2006 3.5-4	SED19 SED1901 6/22/2006 0-1	SED19 SED1903 6/22/2006 2-3	SED20 SED2001 6/22/2006 0.5-1	SED20 SED2003 6/22/2006 2.5-3	SED21 SED2101 6/22/2006 0-1	SED21 SED2103 6/22/2006 2.5-3	SED22 SED2201 6/22/2006 0-1	SED22 SED2203 6/22/2006 2-3	SED23 SED2301 6/22/2006 0-1	SED23 SED2303 6/22/2006 2-3
Dimethylphthalate Di-n-butylphthalate					1 1 1						
UI-n-octylprinalate	< 0 148	0 533	< 0.108	28 R	< 0.104	< 0.0328	< 0.0301	0 235	< 0.119	< 0.0322	< 0.0311
Fluorene	< 0.148	< 0.124	< 0.198	0.863	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Hexachlorobenzene											And
Hexachlorobutadiene											
Hexachlorocyclopentadiene											
Hexachloroethane											
Indeno(1,2,3-cd)pyrene	< 0.148	< 0.124	< 0.198	2.47	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Isophorone											
Naphthalene	< 0.148	< 0.124	< 0.198	< 0.0612	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Nitrobenzene											
N-Nitrosodimethylamine											
N-Nitroso-di-n-propylamine											
N-Nitrosodiphenylamine											
Pentachlorophenol											ALC: NOT ALC
Phenanthrene	< 0.148	0.218	< 0.198	11.8	< 0.104	< 0.0328	< 0.0301	0.121	< 0.119	< 0.0322	< 0.0311
Phenol											
Pyrene	< 0.148	0.35	< 0.198	15.2	< 0.104	< 0.0328	< 0.0301	< 0.0794	< 0.119	< 0.0322	< 0.0311
Pesticides/PCBs (mg/kg)											
4,4'-DDD		< 0.0247		0.0292		< 0.00692		< 0.0327		< 0.00685	
4,4'-DDE		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
4,4-DDT		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
Aldrin		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
alpha-BHC		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
alpha-Chlordane		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
Aroclor-1016		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1221		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1232		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1242		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1248		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1254		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1260		0.605		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1262		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
Aroclor-1268		< 0.246		< 0.112		< 0.0691		< 0.163		< 0.0685	
beta-BHC		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
Chlordane		< 0.247		< 0.112		< 0.0692		< 0.327		< 0.0685	
delta-BHC		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
Dieldrin		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	
Endosulfan I		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	100 - 100 (00
Endosulfan II		< 0.0247		< 0.0112		< 0.00692		< 0.0327		< 0.00685	

P.WV2-mig/TEXTRONIGORHAM/SupplementSI 2006/JHL_Filsk_July_2006/Tables/ SedimentSummary-Cove2006, AlData

SED23 SED2303 6/22/2006 < 6.6
< 1.7
< 1.7
< 0.66
73.5
< 0.66
73.5
< 4.7
< 6.6
< 0.04 < 3.3< 6.6< 0.66 < 1.7 7.9 2-3 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00000068 < 0.00685< 0.00685< 0.00685 SED2301 6/22/2006 < 0.00685 < 0.00685 < 0.00685 < 0.00685 < 0.00685 < 0.00685 < 0.0068 < 0.343 < 7.4 < 0.044 < 1.8
13.1
< 0.07
< 0.74
< 0.74
333
8.6 < 0.74 < 1.8 9.5 < 50.1 SED23 < 7.4 < 3.7 < 7.4 2800 5-0 SED22 SED2203 6/22/2006 < 27.6 < 0.156 < 13.8
< 27.6
< 2.76
< 6.9
37.3 < 27.6 < 2.76 16.2 < 6.9 33.6 2-3 46 SED22 SED2201 6/22/2006 < 0.000018 < 0.000018 0.000018 0.000041 < 0.0327 < 0.0327 < 0.0327 < 0.0327 0.000028 0.000068 0.000025 0.000062 0.00016 0.00016 < 0.0327 < 0.0327 < 0.0327 < 0.0327 < 0.0327 < 1.63 < 15.9 0.00011 0.00015 < 0.0327 12 125 0.32 2.8 616 1970 426 0.677 86 86 24000 1360 190 163 < 4 2 SED21 SED2103 6/22/2006 < 0.039 5.4 < 0.07 < 0.68 3 2.3 < 0.68 < 3.4 < 6.8 2.5-3 < 6.8 < 1.7 < 6.8 < 1.7 9.6 < 0.00000084 < 0.00000084 0.00000095 < 0.00692 < 0.00692 0.0000045 0.0000012 0.0000034 0.0000013 0.0000073 0.0000024 0.0000065 0.0000023 SED2101 6/22/2006 < 0.00692 < 0.00692 < 0.00692 < 0.00692 < 0.00692 < 0.00692 < 0.00692 0.000016 < 0.00692 < 0.346 < 7.4 < 0.043 SED21 < 0.74 7.1 20.1 12.2 2.1 13 0.14 < 7.4 < 1.8 71.6 5300 57.8 2.77 6.8 --SED2003 6/22/2006 SED20 < 24.4 2.2 < 12.2 < 0.25 < 2.44 11.8 < 24.4 < 0.14 < 12.2 < 24.4 < 2.44 < 6.1 < 12.2 < 2.5-3 5.9 < 0.0000012 < 0.0112 < 0.0112 SED2001 6/22/2006 < 0.0112 < 0.0112 < 0.0112 < 0.0112 0.000041 0.000015 0.000035 0.000016 0.000052 < 0.0112 < 0.0112 < 0.0112 < 0.0112 0.00009 0.00014 0.00014 0.00003 < 0.562 0.00012 25.3 < 0.13 < 1.31 7.5 14.6 34.1 < 0.067 26000 1810 SED20 < 13.1 < 6.6 < 1.31 0.0002 < 0.7 < 13.1 < 3.3 0.5-1 38.8 SED1903 6/22/2006 < 0.269 SED19 < 47.4 < 47.4 < 47.4 < 11.8 588 244 89.2 0.52 6.35 14.2 33 4.87 458 2-3 < 0.0000027 6/22/2006 < 0.0247 < 0.0247 0.000069 < 0.0247 < 0.0247 0.00027 0.000051 0.000059 < 0.0247 < 0.0247 < 0.0247 < 0.0247 < 0.0247 0.00039 0.00012 0.00062 0.00025 SED1901 0.00011 0.00054 < 23.6 36 0.00051 SED19 0.0431 < 1.23 69600 < 23.6 7.11 387 387 1880 927 927 2.52 433 192 < 5.9 224 1.03 1830 756 5 SED18 SED1804 6/22/2006 3.5-4 < 3.23
10.3
10.3
13
< 32.3
< 0.196
17.7
< 32.3
< 3.23 < 32.3 18.7 < 0.32 < 8.1 27.9 Total Petroleum Hydrocarbons (TPH) otal Organic Carbon (TOC) chemical.name Dioxins/Furans (mg/kg) gamma-BHC (Lindane) 1,2,3,4,6,7,8-HpCDD 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Hexachlorobenzene Heptachlor epoxide ,2,3,4,7,8-HxCDD 1,2,3,4,7,8-HxCDF ,2,3,6,7,8-HxCDD Endosulfan sulfate gamma-Chlordane .2.3,6.7,8-HxCDF ,2,3,7,8,9-HxCDD 1,2,3,7,8,9-HxCDF 2,3,4,6,7,8-HxCDF ,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF Endrin aldehyde Endrin ketone otal Cyanide Methoxychlor **FPH (mg/kg)** oxaphene Heptachlor Chromium Antimony Cadmium Selenium Beryllium Mercury hallium Arsenic Barium Copper Endrin Nickel Silver Lead Zinc

P-W2-mIg/TEXTRON/GORHAM/SupplementSI 2006/HH_Risk_Jury_2006/Tables/ SedmentSummary-Cove2006, AllData

Page 17 of 30

7/31/2006

Sediment Data (0-7 ft)	upplemental Site Investigation Report	Former Gorham Manufacturing Site	333 Adelaide Avenue	Providence, Rhode Island	
	Sediment Data (0-7 ft)	Sediment Data (0-7 ft) upplemental Site Investigation Report	Sediment Data (0-7 ft) upplemental Site Investigation Report Former Gorham Manufacturing Site	Sediment Data (0-7 ft) upplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue	Sediment Data (0-7 ft) upplemental Site Investigation Report Former Gorham Manufacturing Site 333 Adelaide Avenue Providence, Rhode Island

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	0000	SEU19	SED19	SEUZO	SEU20	SEU21	SEU21	SED22	SED22	SED23	SED23
	SED1804	SED1901	SED1903	SED2001	SED2003	SED2101	SED2103	SED2201	SED2203	SED2301	SED2303
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006
chemical.name	3.5-4	9-1-	2-3	0.5-1	2.5-3	0-1	2.5-3	0-1	2-3	0-1	2-3
2.3.4.7.8-PeCDF		0.0035		0.00014		0.000044		0.0013		< 0.00000068	
2,3,7,8-TCDD		0.000021		0.0000073		< 0.00000017		0.0000068		< 0.00000014	
2.3.7.8-TCDF		0.000058		0.0000093		< 0.00000017		0.000027		< 0.00000014	
ocdd		0.00093		0.00024		0.000025		0.0005		0.0000035	
OCDF		0.0001		0.000082		0.0000022		0.000044		< 0.0000014	
TOTAL HpCDD		0.00058		0.00019		0.0000088		0.00024		< 0.00000068	
TOTAL HPCDF		0.0014		0.0005		0.000017		0.00042		< 0.00000068	
TOTAL HxCDD		0.0016		0.00047		0.000013		0.00031		< 0.00000068	
TOTAL HxCDF		0.012		0.0046		0.0002		0.0055		0.0000017	
TOTAL PeCDD		0.0014		0.00039		0.0000081		0.0002		< 0.00000068	
TOTAL PeCDF		0.0088		0.0069		0.00046		0.014		0.0000044	
TOTAL TCDD		0.00051		0.00016		0.0000036		0.00015		< 0.00000014	
TOTAL TCDF		0.0065		0.0014		0.00014		0.0045		0.0000012	

Compound not detected.
 Value is detection limit.
 mg/kg - milligrams per kilogram

2

	SED24	SED24	SED25	SED25	SED25	SED26	SED26	SED26	SED27	SED27	SED28
	SED2401	SED2403	SED2501	SED2503	SED2507	SED2601	SED2602	SED2605	SED2701	SED2703	SED2801
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/23/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/21/2006
chemical.name	0-1	2-3	0-1	2.5-3	6-7	0-1	1.5-2	4-5	0-1	2.5-3	0.5-1
Volatile Organics (mg/kg)											and a second sec
1,1,1,2-Tetrachloroethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,1,1-Trichloroethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	0.384	< 0.0226
1.1.2.2-Tetrachloroethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,1,2-Trichloroethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1.1-Dichloroethane	0.011	0.0544	1.09	0.051	< 0.0521	< 0.008	< 0.0118		4.67	0.0054	0.0266
1.1-Dichloroethene	- < 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		2.34	0.0144	< 0.0226
1.1-Dichloropropene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1.2.3-Trichlorobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1.2.3-Trichloropropane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1.2.4-Trichlorobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1.2.4-Trimethylbenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1.2-Dibromo-3-Chloropropane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,2-Dibromoethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,2-Dichlorobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,2-Dichloroethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,2-Dichloropropane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,3,5-Trimethylbenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,3-Dichlorobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,3-Dichloropropane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,4-Dichlorobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
1,4-Dioxane	< 0.396	< 1.27	< 0.439	< 1.55	< 2.6	< 0.399	< 0.591		< 0.992	< 0.229	< 1.13
1-Chlorohexane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
2,2-Dichloropropane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
2-Butanone	< 0.0791	< 0.253	< 0.0877	0.442	< 0.521	< 0.0798	< 0.118		< 0.198	< 0.0459	< 0.226
2-Chlorotoluene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
2-Hexanone	< 0.0791	< 0.253	< 0.0877	< 0.311	< 0.521	< 0.0798	< 0.118		< 0.198	< 0.0459	< 0.226
4-Chlorotoluene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
4-Methyl-2-Pentanone	< 0.0791	< 0.253	< 0.0877	< 0.311	< 0.521	< 0.0798	< 0.118		< 0.198	< 0.0459	< 0.226
Acetone	< 0.0791	0.834	0.128	1.68	0.892	0.0856	< 0.118		< 0.198	< 0.0459	0.384
Acrylonitrile											
Benzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Bromobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Bromochloromethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Bromodichloromethane	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Bromoform	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Bromomethane	< 0.0158	< 0.0507	< 0.0175	< 0.0622	< 0.104	< 0.016	< 0.0236		< 0.0397	< 0.0092	< 0.0452
Carbon Disulfide	< 0.0079	< 0.0253	0.0111	< 0.0311	0.0729	< 0.008	< 0.0118		0.0398	0.0068	< 0.0226
Carbon tetrachloride	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Chlorobenzene	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Chloroethane	< 0.0158	< 0.0507	< 0.0175	< 0.0622	< 0.104	< 0.016	< 0.0236		< 0.0397	< 0.0092	< 0.0452
Chloroform	< 0.0079	< 0.0253	< 0.0088	< 0.0311	< 0.0521	< 0.008	< 0.0118		< 0.0198	< 0.0046	< 0.0226
Providence, Rhode Island

SED2801 6/21/2006 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0912 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0678 < 0.0452 < 0.0226 < 0.0226 < 0.0226 < 0.0452 < 0.0226 < 0.0226 < 0.0226 0.0514 < 0.0452 < 0.113 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 < 0.0226 0.0499 0.0303 SED28 0.5-1 SED2703 6/22/2006 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0229 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0046 < 0.0092 < 0.0138 0.0386 < 0.0092 < 0.0092 0.0154 < 0.0092 < 0.314 < 0.031 SED27 2.5-3 0.691 SED2701 6/22/2006 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0397 < 0.0992 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0198 < 0.0595 < 0.124 < 0.0397 < 0.0397 < 2.58 SED27 5.42 15.1 3.62 103 5 SED2605 6/22/2006 < 0.137 SED26 4-5 SED2602 6/22/2006 < 0.0118 < 0.0518 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0236 < 0.0118 < 0.0236 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0236 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0118 < 0.0236 < 0.0591 < 0.0354 SED26 1.5-2 SED2601 6/22/2006 < 0.0399 < 0.0463 < 0.016 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.016 < 0.008 < 0.008 < 0.008 < 0.016 < 0.024 SED26 < 0.008 < 0.008 < 0.016 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 0-1 SED2507 6/23/2006 < 0.0521 < 0.0521 SED25 < 0.0521 < 0.0521 < 0.0521 < 0.0521 < 0.104 < 0.0521 < 0.0521 < 0.0521 < 0.0521 < 0.0521 < 0.0521 < 0.156 < 0.209 < 0.104 0.56 < 0.0521 < 0.0521 < 0.26 < 0.0521 < 0.0521 < 0.0521 < 0.0521 < 0.052 < 0.104 < 0.052 < 0.052 < 0.052 < 0.052 < 0.052 < 0.052 < 0.052 0.591 6-7 SED2503 6/22/2006 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311
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< 0.0311 < 0.0933 < 0.0622 < 0.0311 < 0.0311 < 0.0622 < 0.0311 < 0.0311 < 0.0311 0.0738 < 0.0622 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.215 < 0.155 0.0563 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 0.0313 < 0.031 SED25 2.5-3 0.0822 < 0.031 0.91 SED2501 6/22/2006 < 0.0829 < 0.0088 < 0.0088 < 0.0088 < 0.0175 < 0.0263 < 0.0088 < 0.0088 < 0.0088 < 0.0175 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0175 < 0.0439 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 0.0088 < 1.38 SED25 11.5 0.276 24.8 5-0 < 0.0253 6/22/2006 SED2403 < 0.0253 < 0.076 < 0.0507 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0507 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.0253 < 0.125 < 0.0507 < 0.127 SED24 0.191 2-3 5/22/2006 < 0.0631 SED2401 < 0.0237 < 0.0158 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0158< 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0158 < 0.0396 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0079 < 0.0075 0.0218 SED24 5 Semivolatile Organics (mg/kg) chemical.name trans-1,3-Dichloropropene Fertiary-amyl methyl ether trans-1,2-Dichloroethene Dichlorodifluoromethane Ethyl tertiary-butyl ether cis-1,3-Dichloropropene Dibromochloromethane **Frichlorofluoromethane** 1,2,4-Trichlorobenzene cis-1,2-Dichloroethene 2,4,5-Trichlorophenol Hexachlorobutadiene 1.3-Dichlorobenzene 1.4-Dichlorobenzene 1-Methylnaphthalene 2,4,6-Trichlorophenol 1,2-Dichlorobenzene p-Isopropyl Toluene Methylene Chloride Methyl-t-butyl ether Isopropyl Benzene **Tetrachloroethene** n-Propyl Benzene Dibromomethane Diisopropyl ether n-Butylbenzene **Tetrahydrofuran** s-Butylbenzene **Frichloroethene** Chloromethane -Butylbenzene Xylenes, Total **/inyl Chloride** Ethylbenzene /inyl acetate Naphthalene Diethyl ether m.p-Xylene o-Xvlene **Foluene** Styrene

P WV2-mfg/TEXTROM/GORHAM/SupplementSI 2006/HH_Risk_July_2006/Tables/ SedimentSummary-Cove2006, AllData

SED28 SED2801 6/21/2006 < 0.0912 < 0.0912 < 0.0912 1.16 0.0912 0.5-1 0.403 1.29 0.993 1.49 0.296 0.668 SED2703 6/22/2006 < 0.031 < 0.031 < 0.031 < 0.031
< 0.031 < 0.031 < 0.031< 0.031< 0.031< 0.031< 0.031 SED27 2.5-3 < 0.031 SED2701 6/22/2006 < 0.124 < 0.124 0.134 < 0.124 0.285 < 0.124 < 0.124 < 0.124 < 0.124 < 0.124 < 0.124 SED27 5 SED2605 6/22/2006 < 0.137 < 0.137 < 0.137 < 0.137
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< 0.125 < 0.125 < 0.125 < 0.125 < 0.125 SED24 2-3 SED24 SED2401 6/22/2006 0.0896 < 0.0631 < 0.0631 < 0.0631 < 0.0631 < 0.0631 < 0.0631 < 0.0631 0.0732 0.0896 0.0707 5 Bis(2-chloroethoxy)methane 4-Bromophenyl-phenylether 4-Chlorophenyl-phenylether Bis(2-chloroisopropyl)ether bis(2-Ethylhexyl)phthalate chemical.name 4,6-Dinitro-2-methylphenol 2-Methylphenol (o-Cresol) 4-Chloro-3-methylphenol Dibenzo(a,h)anthracene Bis(2-chloroethyl)ether 3,3'-Dichlorobenzidine Benzo(b)fluoranthene Benzo(k)fluoranthene 2-Methylnaphthalene Benzo(g,h,i)perylene Butylbenzylphthalate 2-Chloronaphthalene Benzo(a)anthracene 2,4-Dimethylphenol 2,4-Dichlorophenol 2,4-Dinitrotoluene 3&4-Methylphenol 2,6-Dinitrotoluene 2,4-Dinitrophenol Acenaphthylene Diethylphthalate Benzo(a)pyrene 2-Chlorophenol 4-Chloroaniline Benzyl alcohol Acenaphthene **3-Nitroaniline** 2-Nitrophenol 4-Nitroaniline 4-Nitrophenol Dibenzofuran 2-Nitroaniline Benzoic acid Azobenzene Anthracene Chrysene Aniline

Page 21 of 30

7/31/2006

	SED24	SED24	SED25	SED25	SED25	SED26	SED26	SED26	SED27	SED27	SED28
	SED2401 6/22/2006	SED2403 6/22/2006	SED2501 6/22/2006	SED2503 6/22/2006	SED2507 6/23/2006	SED2601 6/22/2006	SED2602 6/22/2006	SED2605 6/22/2006	SED2701 6/22/2006	SED2703 6/22/2006	SED2801 6/21/2006
chemical.name	0-1	2-3	0-1	2.5-3	6-7	0-1	1.5-2	4-5	0-1	2.5-3	0.5-1
Dimethylphthalate											
Di-n-butylphthalate											
Di-n-octylphthalate											Contraction and Contraction
Fluoranthene	0.211	0.211	3.17	< 0.215	< 0.209	0.419	< 0.0518	< 0.137	0.354	< 0.031	2.31
Fluorene	< 0.0631	< 0.125	< 0.0829	< 0.215	< 0.209	< 0.0463	< 0.0518	< 0.137	< 0.124	< 0.031	0.135
Hexachlorobenzene											
Hexachlorobutadiene											
Hexachlorocyclopentadiene											
Hexachloroethane											
Indeno(1,2,3-cd)pyrene	< 0.0631	< 0.125	0.27	< 0.215	< 0.209	0.133	< 0.0518	< 0.137	< 0.124	< 0.031	0.314
Isophorone											
Naphthalene	< 0.0631	< 0.125	< 0.0829	< 0.215	< 0.209	< 0.0463	< 0.0518	< 0.137	< 0.124	< 0.031	< 0.0912
Nitrobenzene											
N-Nitrosodimethylamine											
N-Nitroso-di-n-propylamine											
N-Nitrosodiphenylamine											
Pentachlorophenol											
Phenanthrene	0.169	0.135	2.46	< 0.215	< 0.209	0.158	< 0.0518	< 0.137	< 0.124	< 0.031	1.14
Phenol											
Pvrene	0.177	< 0.125	2.4	< 0.215	< 0.209	0.348	< 0.0518	< 0.137	0.196	< 0.031	1.29
Pesticides/PCBs (ma/ka)											
4 4'-DDD	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
4.4'-DDE	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
4.4'-DDT	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Aldrin	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
aloha-BHC	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
aloha-Chlordane	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Aroclor-1016	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1221	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1232	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1242	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1248	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1254	0.207		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1260	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1262	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
Aroclor-1268	< 0.125		< 0.168			< 0.093			< 0.245		< 0.193
beta-BHC	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Chlordane	< 0.229		< 0.309			< 0.189			< 0.481		< 0.193
delta-BHC	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Dieldrin	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Endosulfan I	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Endosulfan II	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193

	SED24	SED24	SED25	SED25	SED25	SED26	SED26	SED26 CED2606	SED27	SED27	SED28
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/23/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/21/2006
chemical.name	0-1	2-3	0-1	2.5-3	6-7	0-1	1.5-2	4-5	0-1	2.5-3	0.5-1
Endosulfan sulfate	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Endrin	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Endrin aldehyde	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Endrin ketone	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
gamma-BHC (Lindane)	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
gamma-Chlordane	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Heptachlor	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Heptachlor epoxide	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Hexachlorobenzene	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Methoxychlor	< 0.0229		< 0.0309			< 0.0189			< 0.0481		< 0.0193
Toxaphene	< 1.15		< 1.54			< 0.945			< 2.4		< 0.965
Antimony	< 9.8	< 25.3	< 13.1	< 46.3	< 46.3	< 10.1	< 12.2	< 28.9	< 16.6	< 7.2	< 19.7
Arsenic	9.3	20.7	22.4	115	78.6	36.1	55.2	< 7.2	36.6	4.1	33.8
Barium	82.4	73.8	207	85.7	< 23.1	466	2430	93.2	123	14.2	202
Beryllium	0.28	0.41	0.58	< 0.47	< 0.47	0.87	1.75	0.29	0.85	< 0.07	0.64
Cadmium	2.87	< 2.53	4.56	< 4.63	< 4.63	1.57	2.06	< 2.89	4.39	< 0.72	4.73
Chromium	532	34.3	300	19.6	10.4	18.8	25.3	8.4	148	4.6	372
Copper	1930	200	1890	51.8	10.7	180	144	19.7	892	454	1930
Lead	520	76.4	672	< 46.3	< 46.3	219	182	< 28.9	507	< 7.2	659
Mercury	0.653	0.171	0.159	< 0.278	< 0.269	0.637	0.477	< 0.17	< 0.12	< 0.042	1.21
Nickel	55.6	16.3	113	46.4	43.8	274	33.1	< 14.4	853	18.6	118
Selenium	< 9.8	< 25.3	< 13.1	< 46.3	< 46.3	17.9	38.7	< 28.9	< 16.6	< 7.2	< 19.7
Silver	107	31.9	140	< 4.63	< 4.63	37.9	14.1	< 2.89	78.3	< 0.72	132
Thallium	< 2.5	< 6.3	< 3.3	< 11.6	< 11.6	< 2.5	3.2	< 7.2	< 4.1	< 1.8	< 4.9
Zinc	1920	157	1360	77.6	84.8	209	166	19.8	1300	24.3	1420
Total Cyanide			00101			00000			00007		00001
I otal Urganic Carbon (I UC)	23000		46100			73000			4000		41000
TPH (mg/kg) Total Petroleum Hydrocarhons (TPH)	226		380			88.8			413		394
Dioxins/Furans (ma/ka)	2		}								
1.2.3.4.6.7.8-HpCDD	0.000029		0.00032			0.00002			0.00018		0.00049
1.2.3.4.6.7.8-HpCDF	0.000029		0.00044			0.0000059			0.00023		0.00064
1,2,3,4,7,8,9-HpCDF	0.0000045		0.000079			< 0.0000014			0.000036		0.000099
1,2,3,4,7,8-HxCDD	0.0000013		0.00003			< 0.0000014			< 0.000021		0.000039
1,2,3,4,7,8-HxCDF	0.000012		0.00031			0.0000024			0.00013		0.0003
1,2,3,6,7,8-HxCDD	0.0000054		0.000083			0.0000036			0.000037		0.00011
1,2,3,6,7,8-HxCDF	0.000016		0.00038			< 0.0000014			0.00015		0.00052
1,2,3,7,8,9-HxCDD	0.0000028		0.000038			0.0000017			0.000022		0.000068
1,2,3,7,8,9-HxCDF	0.000007		0.00018			< 0.0000014			0.000075		0.0002
1,2,3,7,8-PeCDD	0.0000024		0.000063			< 0.0000014			0.000029		0.000076
1.2,3,7,8-PeCDF	0.0000055		< 0.0000049			< 0.0000014			0.000035		< 0.000018
2,3,4,6,7,8-HxCDF	0.000012		0.00031			< 0.0000014			0.00018		0.00042

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	SED24	SED24	SED25	SED25	SED25	SED26	SED26	SED26	SED27	SED27	SED28
	SED2401	SED2403	SED2501	SED2503	SED2507	SED2601	SED2602	SED2605	SED2701	SED2703	SED2801
	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/23/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/22/2006	6/21/2006
chemical.name	0-1	2-3		2.5-3	6-7	0-1	1.5-2	4-5	0-1	2.5-3	0.5-1
2.3.4.7.8-PeCDF	0.000095		0.0022			0.0000017			0.00091		0.0031
2,3,7,8-TCDD	0.00000072		0.000018			< 0.00000028			0.0000081		0.000022
2.3.7.8-TCDF	< 0.00000026		0.000053			0.0000016			< 0.0000042		0.000084
ocdd	0.00017		0.0019			0.000043			0.00083		0.0029
OCDF	0.000017		0.00017			0.0000062			0.00013		0.00021
TOTAL HPCDD	0.000058		0.00065			0.000033			0.00038		0.001
TOTAL HPCDF	0.000066		0.0011			0.0000059			0.00051		0.0016
TOTAL HXCDD	0.00005		0.0011			0.000064			0.00045		0.0014
TOTAL HXCDF	0.00049		0.012			0.0000054			0.0048		0.01
TOTAL PeCDD	0.000029		0.00091			0.000022			0.00024		0.00095
TOTAL PeCDF	0.0011		0.012			0.0000061			0.0098		0.024
TOTAL TCDD	0.000017		0.0005			0.000021			0.00013		0.00042
TOTAL TCDF	0.00032		0.0069			0.000021			0.003		0.0088

Compound not detected.
 Value is detection limit.
 mg/kg - milligrams per kilogram

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Providence, Rhode Island

6/21/2006 < 0.0123 < 0.0061 SED3204 SED32 < 0.0061 < 0.0061 < 0.306 < 0.0613 < 0.0613 < 0.0613 < 0.0613 < 0.0061 < 0.0123 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.0061 < 0.006 < 0.006 3.5-4 SED3201 6/21/2006 < 0.0099 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.248 < 0.0496 < 0.0496 < 0.0496 < 0.0496 < 0.005 < 0.005 < 0.0099 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 SED32 0.5-1 SED3104 6/21/2006 < 0.0505 < 0.0051 < 0.253 < 0.0505 < 0.0505 < 0.0505 < 0.0051 < 0.0051 < 0.0101 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0101 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.0051 < 0.005' < 0.005 < 0.005' < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 SED3 3-3.6 SED3101 6/21/2006 < 0.0289 < 0.0579 < 0.0289 < 0.0289 < 0.289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0289 < 0.0579 < 0.0289 < 0.0289 < 1.45 SED31 < 0.289 < 0.289 0.522 0.5-1 1.92 SED3004 6/21/2006 < 0.0111 < 0.0222 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.554 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0222 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 < 0.0111 SED30 < 0.0111 < 0.111 < 0.111 0.0285 < 0.111 3.6-4 0.147 6/21/2006 < 0.0087 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 SED3001 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.0043 < 0.217 < 0.0043 < 0.0043 < 0.0434 < 0.0043 < 0.0434 < 0.0043 < 0.0434 < 0.0434 < 0.0043 < 0.0043 < 0.0043 < 0.0087 < 0.0043 < 0.0043 SED30 0.5-1 SED2904 6/21/2006 SED29 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 2.45 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.98 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.49 < 0.98 < 12.2 < 0.49 < 0.49 < 12.2 < 0.49 < 0.98 < 0.49 < 0.98 < 0.49 < 0.49 < 49 < 4.9 < 4.9 3-4 SED2901 6/21/2006 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.05 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 1.25 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 < 0.25 < 0.025 < 0.25 < 0.025 < 0.25 < 0.025 < 0.025 < 0.025 < 0.025 < 0.025 SED29 < 0.025 < 0.05 0.27 0.5-1 SED2803 6/21/2006 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.758 < 0.0758 < 0.0758 < 0.0758 < 0.152 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 0.0758 < 3.79 < 0.758 < 0.0758 < 0.758 < 0.152 SED28 2.5-3 1.57 I.2-Dibromo-3-Chloropropane chemical.name Volatile Organics (mg/kg) 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane I, 3, 5-Trimethylbenzene I,2,4-Trichlorobenzene I,2,4-Trimethylbenzene Bromodichloromethane 1,2,3-Trichlorobenzene I,2,3-Trichloropropane 4-Methyl-2-Pentanone 1,1,1-Trichloroethane I,1,2-Trichloroethane Bromochloromethane ,2-Dichlorobenzene I,3-Dichlorobenzene .4-Dichlorobenzene ,1-Dichloropropene I.2-Dichloropropane ,3-Dichloropropane 2.2-Dichloropropane Carbon tetrachloride ,2-Dibromoethane I,2-Dichloroethane 1.1-Dichloroethane ,1-Dichloroethene Carbon Disulfide 1-Chlorohexane 2-Chlorotoluene 4-Chlorotoluene Bromomethane Chlorobenzene Bromobenzene Chloroethane 4-Dioxane 2-Hexanone 2-Butanone Acrylonitrile Bromoform Chloroform Benzene Acetone

	SED28 SED2803	SED29 SED2901	SED29 SED2904	SED30 SED3001	SED30 SED3004	SED31 SED3101	SED31 SED3104		SED32 SED3201
	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/	2006	2006 6/21/2006
chemical.name	2.5-3	0.5-1	3-4	0.5-1	3.6-4	0.5-1	3-3.6	-	0.5-1
Chloromethane	< 0.152	< 0.05	< 0.98	< 0.0087	< 0.0222	< 0.0579	< 0.01	5	01 < 0.0099
cis-1,2-Dichloroethene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	10.6	< 0.005	5	51 < 0.005
cis-1,3-Dichloropropene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.005	5	51 < 0.005
Dibromochloromethane	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.005	5	51 < 0.005
Dibromomethane	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.005	-	1 < 0.005
Dichlorodifluoromethane	< 0.152	< 0.05	< 0.49	< 0.0087	< 0.0222	< 0.0579	< 0.010	_	1 < 0.0099
Diethyl ether	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.005'		I < 0.005
Diisopropyl ether	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Ethyl tertiary-butyl ether	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Ethylbenzene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Hexachlorobutadiene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Isopropyl Benzene	0.332	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
m.p-Xvlene	< 0.152	< 0.05	< 0.98	< 0.0087	< 0.0222	< 0.0579	< 0.0101		< 0.0099
Methylene Chloride	< 0.379	< 0.125	< 2.45	< 0.0217	< 0.0554	< 0.145	< 0.0253		< 0.0248
Methyl-t-butyl ether	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Naphthalene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
n-Butvlbenzene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
n-Propyl Benzene	0.0955	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
o-Xvlene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
p-Isopropyl Toluene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
s-Butylbenzene	0.173	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Styrene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
t-Butylbenzene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Tertiary-amyl methyl ether	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Tetrachloroethene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Tetrahydrofuran	< 0.0758	< 0.025	< 2.45	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Toluene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	1.92	< 0.0051		< 0.005
trans-1,2-Dichloroethene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
trans-1,3-Dichloropropene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Trichloroethene	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	0.797	< 0.0051		< 0.005
Trichlorofluoromethane	< 0.0758	< 0.025	< 0.49	< 0.0043	< 0.0111	< 0.0289	< 0.0051		< 0.005
Vinyl acetate			< 2.45			< 2.85			
Vinyl Chloride	< 0.152	< 0.05	< 0.49	< 0.0087	0.224	11.7	< 0.0101		< 0.0099
Xylenes, Total	< 0.228	< 0.075	< 1.47	< 0.013	< 0.0333	< 0.0868	< 0.0152		< 0.0149
Semivolatile Organics (mg/kg)									
1,2,4-Trichlorobenzene									
1,2-Dichlorobenzene									
1, 3-Dichlorobenzene									
1,4-Dichlorobenzene									
1-Methylnaphthalene	< 0.232	< 0.101	< 0.0957	< 0.0311	< 0.0507	< 0.109	< 0.0335		< 0.034
2,4,5-Trichlorophenol									
2.4.6-Trichlorophenol									

Chernolitation Value		SED28 SED2803	SED29 SED2901	SED29 SED2904	SED30 SED3001	SED30 SED3004	SED3101 SED3101	SED31 SED3104	SED32 SED3201	SED32 SED3204
4. Denikophened 4. Denikop	chemical.name	6/21/2006 2.5-3	6/21/2006 0.5-1	6/21/2006 3-4	6/21/2006 0.5-1	5/21/2006 3.6-4	0.5-1	6/21/2006 3-3.6	0.5-1	5/21/2005
4. Dimensione 4. Dimen	2.4-Dichlorophenol									
4. Dilinolate 6. Dilato dilatti alla 6. Dilatti alla <td>2.4-Dimethylphenol</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	2.4-Dimethylphenol									
9.000000000000000000000000000000000000	2,4-Dinitrophenol									
Collocatione < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < <	2,4-Dinitrotoluene									
Concompatibale < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < <td>2,6-Dinitrotoluene</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	2,6-Dinitrotoluene									
Chloriophendic <0.232 <0.101 <0.0367 <0.0311 <0.0335 <0.034 <0.0304 Methylphendic	2-Chloronaphthalene									
Mellynjenedic < 0.022 < 0.0101 < 0.0305 < 0.0335 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336 < 0.0336	2-Chlorophenol									
Methyphenol (o-Creso) Methyphenol (o-Creso) Methyphenol (o-Creso) Methyphenol (o-Creso) Althronibaris Althronibaris Althronibaris Althronibaris Althronibaris Colorostaniba Colorostaniba Althronibaris Althronibaris </td <td>2-Methylnaphthalene</td> <td>< 0.232</td> <td>< 0.101</td> <td>< 0.0957</td> <td>< 0.0311</td> <td>< 0.0507</td> <td>< 0.109</td> <td>< 0.0335</td> <td>< 0.034</td> <td>< 0.0309</td>	2-Methylnaphthalene	< 0.232	< 0.101	< 0.0957	< 0.0311	< 0.0507	< 0.109	< 0.0335	< 0.034	< 0.0309
Altronatione Altronatione<	2-Methylphenol (o-Cresol)									
Mitrophendlic Nutrophendlic Nutrophe	2-Nitroaniline									
Mathylphendle Mathylph	2-Nitronhenol									
Actionologeneratione cholonophenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenylphenol -Bromophenylphenol -Bromophenylphenol -Bromophenylphenylphenol -Bromophenol -Bromophenylphenol -Bromophenol -Bromophenol -Bromophenylphenol -Bromophenol -Bromophenylphenol -Bromophylphenol -Bromophenol -Bromophylphylphenol -Bromophylphenol -Bromophylphenol -Bromoph	22 4 Mothylahonal									
Antiminating Antiminating<										
Chanto-2-methylphenol =formoline/phenylphenol Choro3-methylphenol Choro3-methylphenol Choro3-methylphenol Choro3-methylphenol Chanto-2-methylphenol =formoline Chanto-2-methylphenol Choro3-methylphenol Choro3-methylphenol Choro3-methylphenol Choro3-methylphenol Choro33 0.12 <0.0030	-Nitroaniine									
-Intromblenty-phenyletter -I	,6-Dinitro-2-methylphenol									
Chloro-3-methylphandl Chloro-3-methylphandl Chlorophanyl-phanylether Chlorophanyl-phanylether Chlorophanylether Chlorophanyl-phanylether Chlorophanylether Chlorophanylether Altroaniline Altroaniline Altroaniline Altroaniline Altroaniline Altroaniline Altroaniline Altroaniline Altroaniline Altroaniline (0.0357 <0.0311	-Bromophenyl-phenylether									
Chloroanline Chloroanline Altrophenol	-Chloro-3-methylphenol									
Chlorophenyt-phenytether Image: controphenyt-phenytether Image: controphenytether Image: controp	-Chloroaniline									
Nitroartine Nitroartine 0.0031 < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < <th< td=""><td>-Chlorophenvl-phenvlether</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	-Chlorophenvl-phenvlether									
Nitrophenol Nitrophenol 0.12 0.0335 0.12 0.0336 0.12 <	-Nitroaniline									
caraptitiene < 0.232 < 0.101 < 0.0957 < 0.0311 < 0.0335 0.12 < 0.0306 cenaptitiene < 0.232	-Nitrophenol									
cenaphthylene < 0.232 < 0.101 < 0.0357 < 0.035 < 0.0335 < 0.0345 < 0.0305 niline < 0.232 0.169 < 0.0357 0.0335 0.1335 < 0.0335 < 0.0305 nihracene < 0.232 0.169 < 0.0957 0.0357 0.0507 0.171 < 0.0335 0.437 < 0.0305 obstracene < 0.232 0.687 < 0.0957 0.376 < 0.0507 0.671 < 0.0335 0.497 < 0.0305 enzo(a)putene < 0.232 0.582 0.0957 0.137 < 0.0507 0.124 < 0.0335 0.497 < 0.0305 enzo(a)putene < 0.232 0.382 0.137 < 0.0507 0.124 < 0.0335 0.437 < 0.0305 enzo(b)fluoranthene < 0.232 0.382 0.137 < 0.0507 0.124 < 0.0335 0.437 < 0.0305 enzo(b)fluoranthene < 0.232 0.382 0.137 < 0.0335 0.437 < 0.0335 0.437 < 0.0335 enzo(b)fl	cenaphthene	< 0.232	< 0.101	< 0.0957	< 0.0311	< 0.0507	< 0.109	< 0.0335	0.12	< 0.0309
nille nille 0.111 < 0.0335 0.438 < 0.0305 nthracene < 0.232	cenaphthylene	< 0.232	< 0.101	< 0.0957	< 0.0311	< 0.0507	< 0.109	< 0.0335	< 0.034	< 0.0309
Intracene < 0.232 0.169 < 0.0957 0.0852 < 0.0507 0.171 < 0.0335 0.438 < 0.0305 zobenzene < 0.232	niline									
zobenzenezobenzenec0.332 0.687 $\circ 0.0957$ 0.376 $\circ 0.0507$ 0.671 $\circ 0.0335$ 0.64 $\circ 0.0309$ enzo(a)anthracene $\circ 0.232$ 0.687 0.0577 0.137 0.0537 0.497 $\circ 0.0309$ enzo(a)pyrene $\circ 0.232$ 0.822 0.0957 0.323 0.0527 1.18 $\circ 0.0335$ 0.3822 $\circ 0.0309$ enzo(b)fluoranthene $\circ 0.232$ 0.882 $\circ 0.0957$ 0.137 0.0527 1.18 $\circ 0.0335$ 0.497 $\circ 0.0309$ enzo(b)fluoranthene $\circ 0.232$ 0.0367 0.124 $\circ 0.0335$ 0.431 $\circ 0.0309$ enzo(b)fluoranthene $\circ 0.232$ 0.396 $\circ 0.0357$ 0.124 $\circ 0.0335$ 0.431 $\circ 0.0309$ enzo(b)fluoranthene $\circ 0.232$ 0.396 $\circ 0.0957$ 0.137 $\circ 0.0507$ 0.124 $\circ 0.0335$ 0.433 $\circ 0.0309$ enzo(b)fluoranthene $\circ 0.232$ 0.396 $\circ 0.0957$ 0.152 $\circ 0.0507$ 0.124 $\circ 0.0335$ 0.43 $\circ 0.0309$ enzolic acidenzy alcohol $\circ 0.232$ 0.647 $\circ 0.0357$ 0.124 $\circ 0.0335$ 0.43 $\circ 0.0309$ enzolic acidenzy alcohol $\circ 0.0507$ 0.124 $\circ 0.0335$ 0.43 $\circ 0.0399$ enzolic acidenzy alcohol $\circ 0.0507$ 0.326 $\circ 0.0335$ 0.43 $\circ 0.0399$ enzolic acidenzy alcohol $\circ 0.0507$ 0.232 $\circ 0.0335$ 0.647 $\circ 0.0336$ $\circ 0.0335$ $\circ 0.03$	nthracene	< 0.232	0.169	< 0.0957	0.0852	< 0.0507	0.171	< 0.0335	0.438	< 0.0309
enzo(a)anthracene < 0.232 0.687 < 0.0957 0.376 < 0.0507 0.671 < 0.0335 0.64 < 0.0309 enzo(a)pyrene < 0.232 0.543 < 0.0957 0.0357 0.133 0.647 < 0.0336 enzo(a)pyrene < 0.232 0.543 < 0.0957 0.133 0.0527 1.18 < 0.0335 0.497 < 0.0309 enzo(b)fluoranthene < 0.232 0.882 < 0.0957 0.152 < 0.0507 0.124 < 0.0335 0.191 < 0.0309 enzo(g),h)perylene < 0.232 0.396 < 0.0957 0.137 < 0.0507 0.124 < 0.0335 0.191 < 0.0309 enzo(k)fluoranthene < 0.232 0.396 < 0.0957 0.137 < 0.0507 0.124 < 0.0335 0.191 < 0.0309 enzo(k)fluoranthene < 0.232 0.396 < 0.0957 0.137 < 0.0507 0.124 < 0.0335 < 0.0399 enzold < 0.232 0.396 < 0.0957 0.137 < 0.0507 0.124 < 0.0335 < 0.0399 enzold < 1.18 < 0.0307 0.124 < 0.0335 0.43 < 0.0399 < 0.0399 enzold < 1.18 < 0.0307 0.124 < 0.0335 0.43 < 0.0399 enzold < 1.00091 < 0.0307 0.124 < 0.0335 0.43 < 0.0399 enzold < 0.0319 < 0.0232 < 0.0109 < 0.0335 0.0335 0.0517 < 0.0399 enzold </td <td>zobenzene</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	zobenzene									
enzo(a)pyrene < 0.232 0.543 < 0.0957 0.239 < 0.0507 0.503 < 0.0355 0.497 < 0.0305 enzo(b)fluoranthene < 0.232	enzo(a)anthracene	< 0.232	0.687	< 0.0957	0.376	< 0.0507	0.671	< 0.0335	0.64	< 0.0309
enzo(b)filuoranthene< 0.232 0.882 0.0357 0.433 0.0527 1.18 < 0.0335 0.892 < 0.0309 enzo(g,h,j)perylene< 0.232 0.117 < 0.0957 0.152 < 0.0507 0.124 < 0.0335 0.191 < 0.0309 enzo(k)filuoranthene< 0.232 0.117 < 0.0957 0.152 < 0.0507 0.124 < 0.0335 0.191 < 0.0309 enzo(k)filuoranthene< < 0.232 0.396 < 0.0957 0.157 < 0.0507 0.124 < 0.0335 0.43 < 0.0309 enzola < 0.0357 0.137 < 0.0507 0.124 < 0.0335 < 0.0309 enzola caid < 0.0357 0.137 < 0.0335 < 0.0309 enzola caid < 0.0335 < 0.0335 < 0.0309 is (2-ethorosepropy)pithate<	enzo(a)pyrene	< 0.232	0.543	< 0.0957	0.239	< 0.0507	0.503	< 0.0335	0.497	< 0.0309
enzo(g, h, j)perylene < 0.232 0.117 < 0.0957 0.152 < 0.0507 0.124 < 0.0335 0.191 < 0.0309 enzo(k)filuoranthene < 0.232	enzo(b)fluoranthene	< 0.232	0.882	< 0.0957	0.433	0.0527	1.18	< 0.0335	0.892	< 0.0309
enzo(k)filuoranthene < 0.232 0.396 < 0.0957 0.137 < 0.0507 0.326 < 0.0335 0.43 < 0.0309 enzoic acid enzyl alcohol < 0.0356	enzo(a,h.i)pervlene	< 0.232	0.117	< 0.0957	0.152	< 0.0507	0.124	< 0.0335	0.191	< 0.0309
enzoic acid	tenzo(k)fluoranthene	< 0.232	0.396	< 0.0957	0.137	< 0.0507	0.326	< 0.0335	0.43	< 0.0309
enzyl alcohol enzyl alcohol enzyl alcohol is(2-chloroethoxy)methane is(2-chloroethoxy)methane is(2-chloroethyl)ether is(2-chloroethyl)ether is(2-chloroethyl)ether is(2-chloroethyloethyl)ether is(2-chloroethyl)ether is(2-chloroethylo	ienzoic acid									
is(2-chloroethoxy)methane is(2-chloroethyl)ether is(2-chloroisopropyl)ether is(2-chloroisopropyl)ether is(2-Ethylhexyl)phthalate utylbenzylphthalate utylbenzylphthalate is(2-Ethylhexyl)phthalate utylbenzylphthalate is(2-Ethylhexyl)phthalate is(2-Ethylh	enzyl alcohol									
is(2-chloroethyl)ether is(2-chloroisopropyl)ether is(2-chloroisopropyl)ether is(2-Ethylhexyl)phthalate utylbenzylphthalate utylbenzylphthalate ibenzo(a,h)anthracene ibenzo(a,h)anthracene ibenzo(a,n)anthracene ibenzo(a,n)anthracene	is(2-chloroethoxy)methane									
is(2-chloroisopropy)lether is(2-Ethylhexyl)phthalate utylbenzylphthalate utylbenzylphthalate ibenzo(a,h)anthracene ibenzo(a,h)anthracene ibenzo(a,n)anthracene ibenzo(a,n)anthracene	is(2-chloroethyl)ether									
is(2-Ethylhexyl)phthalate utylbenzylphthalate hysene ibenzo(a,h)anthracene ibenzo(a,h)anthracene ibenzo(a,h)anthracene ibenzo(a,h)anthracene	is(2-chloroisopropyl)ether									
utylbenzylphthalate 0.617 < 0.0957 0.579 < 0.0335 0.551 < 0.0309 http://doi.org/10.299 http://doi.org/10.209 http://doi.org/10.209 http://doi.org/10.209 http://doi.org/10.209 http://doi.org/10.200 http://doi.org/10.200 http://doi.org/10.200 http://doi.org/10.209 http://doi.org/10.209 http://doi.org/10.209 http://doi.org/10.200	is(2-Ethylhexyl)phthalate									
Chrysene < 0.232 0.617 < 0.0957 0.299 < 0.0507 0.579 < 0.0335 0.551 < 0.0309 Nibenzo(a,h)anthracene < 0.232	Sutylbenzylphthalate									
libenzo(a,h)anthracene <a> < 0.232	hrysene	< 0.232	0.617	< 0.0957	0.299	< 0.0507	0.579	< 0.0335	0.551	< 0.0309
Jibenzofuran	Dibenzo(a,h)anthracene	< 0.232	< 0.101	< 0.0957	0.0404	< 0.0507	< 0.109	< 0.0335	0.0667	< 0.0309
	Dibenzofuran									

chemical.name	SED28 SED2803 6/21/2006 2.5-3	SED29 SED2901 6/21/2006 0.5-1	SED29 SED2904 6/21/2006 3-4	SED30 SED3001 6/21/2006 0.5-1	SED30 SED3004 6/21/2006 3.6-4	SED31 SED3101 6/21/2006 0.5-1	SED31 SED3104 6/21/2006 3-3.6	SED32 SED3201 6/21/2006 0.5-1	SED32 SED3204 6/21/2006 3.5-4
Dimethylphthalate Di-n-butylphthalate									
Di-n-octylphthalate									
Fluoranthene	< 0.232	1.34	< 0.0957	0.535	0.0821	1.51	< 0.0335	1.56	< 0.0309
Fluorene	< 0.232	< 0.101	< 0.0957	0.0802	< 0.0507	< 0.109	< 0.0335	0.156	< 0.0309
Hexachlorobenzene									
Hexachlorobutadiene									
Hexachlorocyclopentadiene									
Hexachloroethane									
Indeno(1,2,3-cd)pyrene	< 0.232	0.125	< 0.0957	0.124	< 0.0507	0.128	< 0.0335	0.207	< 0.0309
Isophorone									
Naphthalene	< 0.232	< 0.101	< 0.0957	0.0342	< 0.0507	< 0.109	< 0.0335	0.0456	< 0.0309
Nitrobenzene									
N-Nitrosodimethylamine									
N-Nitroso-di-n-propylamine									
N-Nitrosodiphenylamine									
Pentachlorophenol									
Phenanthrene	< 0.232	0.689	< 0.0957	0.466	< 0.0507	0.757	< 0.0335	1.23	< 0.0309
Phenol									
Pyrene	< 0.232	0.874	< 0.0957	0.81	0.0659	0.953	< 0.0335	1.07	< 0.0309
Pesticides/PCBs (mg/kg)									
4,4'-DDD		< 0.0211		< 0.00635		< 0.0207		0.0301	
4,4'-DDE		< 0.0211		< 0.00635		< 0.0207		0.0109	
4,4'-DDT		< 0.0211		< 0.00635		< 0.0207		0.0635	
Aldrin		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
alpha-BHC		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
alpha-Chlordane		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Aroclor-1016		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1221		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1232		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1242		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1248		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1254		< 0.21		0.528		< 0.207		< 0.0677	
Aroclor-1260		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1262		< 0.21		< 0.0634		< 0.207		< 0.0677	
Aroclor-1268		< 0.21		< 0.0634		< 0.207		< 0.0677	
beta-BHC		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Chlordane		< 0.211		< 0.0635		< 0.207		< 0.0678	
delta-BHC		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Dieldrin		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Endosulfan 1		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Endosulfan II		< 0.0211		< 0.00635		< 0.0207		< 0.00678	

	SED28 SED2803 6/21/2006	SED29 SED2901 6/21/2006	SED29 SED2904 6/21/2006	SED30 SED3001 6/21/2006	SED30 SED3004 6/21/2006	SED31 SED3101 6/21/2006	SED31 SED3104 6/21/2006	SED32 SED3201 6/21/2006	SED32 SED3204 6/21/2006
chemical.name	2.5-3	0.5-1	3-4	0.5-1	3.6-4	0.5-1	3-3.6	0.5-1	3.5-4
Endosulfan sulfate		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Endrin		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Endrin aldehyde		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Endrin ketone		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
gamma-BHC (Lindane)		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
gamma-Chlordane		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Heptachlor		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Heptachlor epoxide		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Hexachlorobenzene		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Methoxychlor		< 0.0211		< 0.00635		< 0.0207		< 0.00678	
Toxaphene		< 1.05		< 0.317		< 1.04		< 0.339	
Antimony	< 50.8	< 20.4	< 21.7	< 7	< 11.8	< 21.3	< 7.2	< 7.4	< 7.1
Arsenic	51.4	31.7	24.7	2.2	< 3	14.8	< 1.8	< 1.8	5.6
Barium	115	372	13.5	25.1	10.2	113	6.1	13.4	11.1
Beryllium	0.81	0.65	< 0.22	0.11	< 0.12	0.61	< 0.07	0.1	0.2
Cadmium	< 5.08	6.44	< 2.17	0.75	< 1.18	4.13	< 0.72	0.93	< 0.71
Chromium	19.6	252	14.7	172	10.3	449	3.2	28.9	7.1
Copper	48.4	1260	57.9	1320	33.6	1790	2.8	2670	8.5
Lead	101	772	< 21.7	159	23	1120	< 7.2	304	< 7.1
Mercury	< 0.284	1.53	< 0.115	0.113	< 0.07	1.11	< 0.044	0.061	< 0.037
Nickel	< 25.4	147	35.1	19.2	7.2	99.8	< 3.6	22.8	4.3
Selenium	< 50.8	< 20.4	< 21.7	< 7	< 11.8	< 21.3	< 7.2	< 7.4	< 7.1
Silver	< 5.08	130	< 2.17	38.4	3.34	131	< 0.72	30.3	< 0.71
Thallium	< 12.7	< 5.1	< 5.4	< 1.7	< 3 <	< 5.3	< 1.8	< 1.8	< 1.8
Zinc	45.5	1480	54.8	893	43.3	1440	5.8	1110	19.5
Total Cyanide									
Total Organic Carbon (TOC)		45000		6700		46000		7000	
TPH (mg/kg)									
Total Petroleum Hydrocarbons (TPH)		459		1240		961		209	
Dioxins/Furans (mg/kg)									
1,2,3,4,6,7,8-HpCDD		0.00018		0.000066		0.00043		0.000074	
1,2,3,4,6,7,8-HpCDF		0.00035		0.000036		0.00071		0.00004	
1,2,3,4,7,8,9-HpCDF		0.000069		0.0000061		0.00017		0.0000051	
1,2,3,4,7,8-HxCDD		0.000018		0.0000034		0.000055		0.0000018	
1,2,3,4,7,8-HxCDF		0.00021		0.000018		0.00032		0.000011	
1,2,3,6,7,8-HxCDD		0.00007		0.000012		0.00015		0.0000048	
1,2,3,6,7,8-H×CDF		0.00029		0.000014		0.00075		0.000012	
1,2,3,7,8,9-HxCDD		0.000031		0.0000072		0.000078		0.0000028	
1,2,3,7,8,9-HxCDF		0.00014		0.0000096		0.00042		0.0000053	
1,2,3,7,8-PeCDD		0.000041		0.0000052		0.00012		0.0000022	
1,2,3,7,8-PeCDF		< 0.0000018		< 0.0000007		0.00023		< 0.00000073	To all the second se
2,3,4,6,7,8-HxCDF		0.00023		0.000013		0.00064		0.000012	

	SED28	SED29	SED29	SED30	SED30	SED31	SED31	SED32	SED32	
	SED2803	SED2901	SED2904	SED3001	SED3004	SED3101	SED3104	SED3201	SED3204	
	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	6/21/2006	
chemical.name	2.5-3	0.5-1	3-4	0.5-1	3.6-4	0.5-1	3-3.6	0.5-1	3.5-4	
2,3,4,7,8-PeCDF		0.00016		0.000076		0.0016		0.000028		
2,3,7,8-TCDD		0.000012		0.00000062		0.000033		0.00000052		
2,3,7,8-TCDF		0.000032		0.0000047		0.000076		0.000006		
OCDD		0.00084		0.00054		0.0016		0.00081		
OCDF		0.00017		0.000037		0.00019		0.00008		
TOTAL HPCDD		0.0004		0.00013		0.00094		0.00017		
TOTAL HPCDF		0.00087		0.000094		0.002		0.00012		_
TOTAL HXCDD		0.0009		0.00013		0.002		0.000051		
TOTAL HXCDF		0.0083		0.00038		0.025		0.00032		
TOTAL PeCDD		0.00053		0.000055		0.0016		0.000025		_
TOTAL PeCDF		0.014		0.00059		0.04		0.0005		
TOTAL TCDD		0.00027		0.000021		0.00064		0.000012		
TOTAL TCDF		0.0037		0.00017		0.015		0.00016		
	(

Compound not detected.
 Value is detection limit.
 mg/kg - milligrams per kilogram

Prepared by: BJR Checked by: KJC

> P.W.2-m[g)TEXTRON/GORHAMSupplementSI 2006/HH_Risk_July_2006/Tables/ SedimentSummary-Cove2006, AllData

Page 30 of 30

APPENDIX B

Dose-Response Information and Toxicity Data

TABLE B1

CANCER TOXICITY DATA – ORAL/DERMAL SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORHAM MANUFACTURING SITE 333 ADELAIDE AVENUE PROVIDENCE, RHODE ISLAND

Chemical	Oral Cancer	Slope Factor	Oral Absorption	Absorbed Canc	er Slope Factor	Weight of Evidence/	Oral Cance	r Slope Factor
of Potential			Efficiency for Dermal (1)	for Der	mal (2)	Cancer Guideline		
Concern	Value	Units		Value	Units	Description	Source(s)	Date(s)
BASE NEUTRAL COMPOUNDS	_							
Benzo(a)anthracene	7.3E-01	(mg/kg/day) ⁻¹	89%	7.3E-01	(mg/kg/day) ⁻¹	B2	NCEA	April, 2006
Benzo(a)pyrene	7.3E+00	(mg/kg/day) ⁻¹	89%	7.3E+00	(mg/kg/day) ⁻¹	B2	IRIS	July, 2006
Benzo(b)fluoranthene	7.3E-01	(mg/kg/day) ⁻¹	89%	7.3E-01	(mg/kg/day) ⁻¹	B2	NCEA	April, 2006
Dibenzo(a,h)anthracene	7.3E+00	(mg/kg/day) ⁻¹	89%	7.3E+00	(mg/kg/day) ⁻¹	B2	NCEA	April, 2006
Indeno(1,2,3-cd)pyrene	7.3E-01	(mg/kg/day) ⁻¹	89%	7.3E-01	(mg/kg/day) ⁻¹	B2	NCEA	April, 2006
INORGANICS/METALS								
Arsenic	1.5E+00	(mg/kg/day) ⁻¹	95%	1.5E+00	(mg/kg/day) ⁻¹	A	IRIS	July, 2006
Cadmium	Q			QN		QN	IRIS	July, 2006
Chromium VI	NA			NA		Cannot be determined	IRIS	July, 2006
Copper	NA			NA		۵	IRIS	July, 2006
Lead	NA			NA		B2	IRIS	July, 2006
Mercury (as elemental mercury)	NA			NA		٩	IRIS	July, 2006
Nickel	QN			QN		QN	IRIS	July, 2006
Silver	NA			NA		D	IRIS	July, 2006
PESTICIDES/PCBs								
Aroclor-1254	2.0E+00	(mg/kg/day) ⁻¹	80%	2.0E+00	(mg/kg/day) ⁻¹	See PCBs		
DIOXINS/FURANS								
2,3,7,8-tetrachlorobenzo-p-dioxin (TCDD)	1.5E+05	(mg/kg/day) ⁻¹	20%	1.5E+05	(mg/kg/day) ⁻¹	B2	HEAST	Y 1997 / April, 2006
VOLATILES								
1,2-Dichloroethene (cis)	Q			QN		D	IRIS	July, 2006
Butylbenzene, sec-	QN			QN		QN		
Tetrachloroethene	5.4E-01	(mg/kg/day) ⁻¹	100%	5.4E-01	(mg/kg/day) ⁻¹	NA	CALEPA	August, 2005
Trichloroethene	4.0E-01	(mg/kg/day) ⁻¹	100%	4.0E-01	(mg/kg/day) ⁻¹	NA	NCEA	April, 2006
Vinyl Chloride (child and adult)	1.4E+00	(mg/kg/day) ⁻¹	100%	1.4E+00	(mg/kg/day) -1	Known carcinogen	IRIS	July, 2006
Vinyl Chloride (adult only)	7.2E-01	(mg/kg/day) ⁻¹	100%	7.2E-01	(mg/kg/day) ⁻¹	Known carcinogen	IRIS	July, 2006

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		SUPPLEM FORME	ENTAL SITE INVESTIGATI R GORHAM MANUFACTU 333 ADELAIDE AVENUE ROVIDENCE, RHODE ISL	ION REPORT RING SITE E AND				
Chemical	Oral Cancer SI	ope Factor	Oral Absorption	Absorbed Cancer	Slope Factor	Weight of Evidence/	Oral Cancer S	lope Factor
of Potential			Efficiency for Dermal (1)	for Derma	1 (2)	Cancer Guideline		
Concern	Value	Units		Value	Units	Description	Source(s)	Date(s)
Notes:								
IRIS = Integrated Risk Information System:	July, 2006				>	Veight of Evidence:		
PPRTV = Preliminary Peer-Reviewed Reference Toxicity Value	April, 2006					A - Human carcinogen		
HEAST= Health Effects Assessment Summary Tables:	FY 1997 / April, 2006					B1 - Probable human carcinoge	en - indicates that lin	iited human data ɛ
NCEA = National Center for Environmental Assessment:	April, 2006	April, 2006				B2 - Probable human carcinog	en - indicates sufficie	int evidence in anii
NCEA provisional values are obtained from the USEPA Regior	III RBC Table dated:					inadequate or no evidence	e in humans	
CALEPA - California Environmental Protection Agency	August, 2005					C - Possible human carcinogen		
ND = no data available						D - Not classifiable as a human	carcinogen	
(1) Values obtained from RAGS Volume 1 (Part E, Supplemental (Suidance for Dermal Ri	isk Assessment, Inte	rim Guidance) (EPA, 2004)			E - Evidence of noncarcinogenic	city	
Per this guidance, a value of 100% is used for analytes withou	t published values.				c	ng = milligram		
(2) Adjusted Dermal SF = Oral SF / Oral to Dermal Adjustment F_4	actor. Per RAGS Part E	E (USEPA, 2004), ad	justments are only performe	pe				
for chemicals that have an oral absorption efficiency of less the	an 50%.				×	g = kilogram		
Values for 2,4- and 2,6-dinitrotoluene based on IRIS for 2,4/2,6-Di	nitrotaluene mixture				D	W = body weight		
The value for chlordane is used as surrogate for the isomers.								
Slope Factor for Benzo(a)Pyrene used for other carcinogenic								
PAHs, adjusted by Relative Potency Factors of 1.0 [benzo(a)py	rene,							
dibenz(a,h)anthracene]; 0.1 [benzo(a)anthracene, benzo(b)flou	oranthene,							
indeno(1,2,3-c,d)pyrene]; 0.01 [benzo(k)fluoranthene]; 0.001 [cl	ırysene].							
PCB slope factors are applicable to Aroclors 1016, 1248, 1254, ar	id 1260.				0	hecked by: JHP 7/2006		
[a] - The RfD for chloroform is protective for cancer risk.								
					10			
			23					

TABLE B1 CANCER TOXICITY DATA - ORAL/DERMAL

REG1-DR

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7/31/2006

TABLE B2 NON-CANCER TOXICITY DATA – ORALDERMAL SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORHAM MANUFACTURING SITE 333 ADELAIDE AVENUE PROVIDENCE, RHODE ISLAND

et Organ(s)	Date(s)													September, 2004	FY 1997	September, 2004		September, 2004	FY 1997	September, 2004		September, 2004		September, 2004	January, 2004	September, 2004	FY 1997	September, 2004		September, 2004	FY 1997		September, 2004			September, 2004	September, 2004	April, 2004	144	September, 2004	FY 1997	April, 2004		Sentember, 2004
RID: Targ	Source(s)		Surrogate (2)		IRIS	HEAST	IRIS	Chronic	IRIS	HEAST	IRIS		IRIS		IRIS	MRL	IRIS	HEAST	IRIS		IRIS	HEAST		IRIS			PPRTV	PPRTV	NCEA	Chronic	IRIS	HEAST	NCEA	Chronic	IRIS									
Combined	Uncertainty/Modifying Factors		3,000/1	300/1	3,000/1	300/1	3,000/1	300/1	3,000/1	300/1	3,000/1	300/1		иc	3/1	10/1	10/1	300/3	300/1					1,000/1	100/1	300/1	300/1	3/1		300	300					3,000	300			1,000	100			30
Primary Target Organ or System / Critical Effect			Kidney/Renal tubluar pathology	Kidney/Renal tubluar pathology	Kidney/Renal tubluar pathology	Kidney/Renal tubluar pathology	Kidney/Renal tubtuar pathology	Kidney/Renal tubluar pathology	Kidney/Renal tubiuar pathology	Kidney/Renal tubluar pathology	Kidney/Renal tubluar pathology	Kidney/Renal tubluar pathology		Skin/Keratosis and hyperpigmentation	Skin/Keratosis and hyperpigmentation	Kidney/Proteinuria	Kidney/Proteinuria	No effects observed	No effects observed					Immune system/Autoimmune effects	Kidney	Decreased body and organ weights	Decreased body and organ weights	Skin, eye, and respiratory tract/Argyria		Immune system/Immunotoxicity	Immune system/Immunotoxicity					Hematological	Hematological			Liver/Hepatotoxicity	Liver/Hepatotoxicity	Liver and kidney	Liver and kidney	I there are no homorphism
mal RfD (2)	Units		mg/kg/day		mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day					mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day		mg/kg/day	mg/kg/day					mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	molkalday									
Adjusted De	Value		3.0E-02	3.0E-01		3.0E-04	3.0E-04	2.5E-05	2.5E+05	7.5E-05	5.0E-04	QN	Q	QN	QN	2.1E-05	1.4E-04	8.0E-04	8.0E-04	2.0E-04		2.0E-05	5.0E-05					1.0E-02	1.0E-01	1.0E-02	1.0E+02	1.0E-02	1.0E-01	3.0E-04	3.0E-04	3 0F-03								
Oral Absorption	Efficiency for Dermal (1)		89%	89%	89%	89%	89%	89%	89%	89%	89%	89%		95%	95%	5%	5%	2.5%	2.5%					7%	7%	4%	4%	4%		80%	80%					100%	100%	100%	100%	100%	100%	100%	100%	100%
D2	Units		mg/kg/day		mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day					mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day		mg/kg/day	mg/kg/day					mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	malandau									
Oral	Value		3.0E-02	3.0E-01		3.0E-04	3.0E-04	5.0E-04	5.0E-04	3.0E-03	2.0E-02	QN	QN	QN	QN	3.0E-04	2.0E-03	2.0E-02	2.0E-02	5.0E-03		2.0E-05	5.0E-05		QN	QN		1.0E-02	1.0E-01	1.0E-02	1.0E-02	1.0E-02	1.0E-01	3.0E-04	3.0E-04	1.05-03								
Chronic/	Subchronic		chronic	subchranic	chronic	subchronic	chronic	subchranic	chronic	subchronic	chronic	subchronic		chronic	subchronic	chronic	subchronic	chronic	subchronic	chronic	subchronic	chronic	subchronic	chronic	subchronic	chronic	subchronic	chronic		chronic	subchronic		chronic	subchronic		chronic	subchronic	chronic	subichronic	chronic	subchronic	chronic	subchronic	chronic
Chemical	of Potential Concern	BASE NEUTRAL COMPOUNDS	3enzo(a)anthracene		Benzo(a)pyrene		Benzo(b)fluoranthene		Dibenzo(a,h)anthracene		ndeno(1,2,3-cd)pyrene		NORGANICS/METALS	Arsenic		Cadmium (water)		Chromium VI		Copper		ead		Mercury (as mercuric chloride)		vickel		Silver	PESTICIDES/PCBs	vroclor-1254		DOXINS/FURANS	.,3.7,8-tetrachlorobenzo-p-dioxin (TCDD)		/OLATILES	.2-Dichloroethene (cis)		autylbenzene, sec-		Tetrachloroethene		richtoroethene		find Chandle

FORMER GORHAM MANUFACTURING SITE	333 ADELAIDE AVENUE	PROVIDENCE, RHODE ISLAND
	FORMER GORHAM MANUFACTURING SITE	SUPPLEMENTIAL SILE INVESTIGATION REPORT FORMER GORHAM MANUFACTURING SITE 333 ADELAIDE AVENUE

Chemical	Chronic/	Oral R	0	Oral Absorption	Adjusted Der	rmal KtD (2)	Primary Larget Organ of System / Unitical Effect	Compiled	KIU: Large	I Organ(s)
of Potential	Subchronic	Value	Units	Efficiency for Dermal (1)	Value	Units		Uncertainty/Modifying	Source(s)	Date(s)
Concern				10 10 10 10 10 10 10 10 10 10 10 10 10 1				Factors		

Votes:	RIS = Integrated Risk Information System:	HEAST= Health Effects Assessment Summary Tables:	NCEA = National Center for Environmental Assessment:
z	Ľ,	r	z

BW = body weight NCEA provisional values are obtained from the USEPA Region III RBC Table datec April, 2004 September, 2004 April, 2004

mg = mitligram

September, 2004

FY 1997

kg = kilogram

surrogate - a value for a closely related chemical is used as the RfD chronic - the chronic value is used as the subchronic RID

ND = no data available

PPRTV = Peer-Reviewed Reference Toxicity Value:

MRL = Minimum Risk Level (ATSDR):

(1) Values obtained from RAGS Volume 1 (Part E. Supplemental Guidance for Dermal Risk Assessment, Interim Guidance) (EPA, 1999)

January, 2004

Per this guidance, a value of 100% is used for analytes without published values.

(2) Adjusted Dermal RtD = Oral RtD x Oral to Dermal Adjustment Factor. Per RAGS Part E (USEPA, 1999), adjustments are only performed for chemicals that have an oral absorption efficiency of less than 50%.

Per USEPA Region I "Risk Updates, No. 5", (August, 1999), Non-carcinogenic PAHs without published RIDs should be evaluated using the published RID for a structurally similar PAH.

Surrogate (1) - Value for acenaphthene used as a surrogate

Surrogate (2) - Value for pyrene used as a surrogate

RfD for DDT is used as surrogate for DDD and DDE

RfD for Aroclor 1254 used as surrogate for other PCB congeners with no published RfDs

RID for Endosultan used as surrogate for other endosultan compounds

RfD for Endrin used as surrogate for other endrin compounds

For Manganese in drinking water: As recommended by USEPA Region I Risk Update, a non-distary RtD is obtained by subtracting typical

dietary intake of mangarese (5 mg/kday) from critical dose (10 mg/day). Non-dietary RfD is then adjusted with

a modifying factor of 3, as recommended by IRIS for drinking water exposures.

For manganese in non-drinking water media: As recommended by USEPA Region I Risk Update, a non-dietary RrD is obtained by subtracting typical

dietary intake of mangarese (5 mg/kday) from critical dose (10 mg/day). A modifying factor of 1 is then applied, per USEPA Region 1.

Value for chlordane used for alpha- and gamma- isomers.

2

APPENDIX C

Methods for Computing the Exposure Point Concentration Term

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: cis-1,2-Dichloroethene	∍ N
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0 882715
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0025	Data are normal at 5% significance level	
Maximum	0.0062	Butta are normal at ene signmeaner tere.	
Mean	0.004583	95% UCL (Assuming Normal Distribu	tion)
Median	0.001000	Student's-t LICI	0.005178
Standard Deviation	0.001148	Oldernig-t OCL	0.000110
Variance	1.32E-006	Gamma Distribution Test	
Coefficient of Variation	0 25047	A-D Test Statistic	0 908984
Skewness	-0 756479	A-D 5% Critical Value	0.730993
		K-S Test Statistic	0.307039
Gamma Statistics		K-S 5% Critical Value	0.2453
k hat	14 44427	Data do not follow gamma distribution	
k star (bias corrected)	10.88876	at 5% significance level	
Theta hat	0.000317	ut e / olgi modilice le tel	
Theta star	0.000421	95% UCLs (Assuming Gamma Distributi	on)
nu hat	346,6626	Approximate Gamma UCL	0.005326
nu star	261,3303	Adjusted Gamma UCL	0.005451
Approx Chi Square Value (.05)	224 8895		0.000.0
Adjusted Level of Significance	0.02896	Lognormal Distribution Test	
Adjusted Chi Square Value	219 7299	Shaniro-Wilk Test Statisitic	0 807832
	LIGHTER	Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics		Data not lognormal at 5% significance lev	ol 0.000
Minimum of log data	-5 991465	Duta not lognormal at 676 olgninou los los.	
Maximum of log data	-5.083206	95% UCLs (Assuming Lognormal Distri	bution)
Mean of log data	-5 420344	95% H-UCI	0.005467
Standard Deviation of log data	0 291608	95% Chebyshev (MVUE) UCI	0.006304
Variance of log data	0.085035	97.5% Chebyshev (MVUE) UCI	0.007041
Vanance of log data	0.000000	99% Chebyshev (MVUE) UCI	0.008488
			0.000100
		95% Non-parametric UCLs	
		CLT UCL	0.005128
		Adi-CLT UCL (Adjusted for skewness)	0.005051
		Mod-t UCL (Adjusted for skewness)	0.005166
		Jackknife UCI	0.005178
		Standard Bootstrap UCL	0.005106
		Bootstrap-t UCL	0.005098
RECOMMENDATION		Hall's Bootstrap UCL	0.005077
Data are normal (0.05)		Percentile Bootstrap UCL	0.0051
		BCA Bootstrap UCL	0 005058
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.006028
		97.5% Chebyshev (Mean, Sd) UCL	0.006653
		99% Chebyshev (Mean, Sd) UCL	0.007881
			0.007.007

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\PVariable: Tetrachloroethene N	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0.327007
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0005	Data not normal at 5% significance level	
Maximum	0.0012		
Mean	0.000558	95% UCL (Assuming Normal Distribu	tion)
Median	0,0005	Student's-t UCL	0 000663
Standard Deviation	0.000202		0.000000
Variance	4.08E-008	Gamma Distribution Test	
Coefficient of Variation	0.361921	A-D Test Statistic	4.097373
Skewness	3 464102	A-D 5% Critical Value	0 730852
		K-S Test Statistic	0.537281
Gamma Statistics		K-S 5% Critical Value	0 245316
k hat	13 53628	Data do not follow gamma distribution	<u>v.= (v.v.)</u>
k star (bias corrected)	10 20776	at 5% significance level	
Theta hat	4 12E-005	ut o / olg/inicarioo level	
Theta star	5 47E-005	95% UCLs (Assuming Gamma Distributi	on)
nu hat	324 8707	Approximate Gamma UCI	0.000652
nu star	244 9863	Adjusted Gamma LICI	0.000668
Approx Chi Square Value (05)	209 7418	Adjusted Gamma COL	0.000000
Adjusted Level of Significance 0.02896		Loopormal Distribution Test	
Adjusted Chi Square Value	204 7648	Shapiro-Wilk Test Statisitic	
	207.1040	Shapiro-Wilk 5% Critical Value	0.027007
Log_transformed Statistics	1	Data not lognormal at 5% significance lev	0.000 Al
Minimum of log data	7 600002	Data not lognormal at 576 significance lev	ei
Maximum of log data	6 725434	05% LICLs (Assuming Lognormal Distr	ibution)
Maximum of log data	7 527047		0.000641
Standard Doviation of log data	-1.021941		0.000041
Standard Deviation of log data	0.232720	95% Chebyshev (MVUE) UCL	0.000731
Variance of log data	0.00007		0.000000
		99% Chebysnev (WVOE) OCL	0.000956
		95% Non-parametric UCLs	
		CLT UCL	0.000654
		Adi-CLT UCL (Adjusted for skewness)	0.000717
		Mod-t UCL (Adjusted for skewness)	0.000673
		Jackknife UCL	0.000663
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/A
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Student's-t UCL		95% Chebyshey (Mean, Sd) UCL	0.000813
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCI	0.000923
		99% Chebyshev (Mean, Sd) UCI	0.001139
			0.001100

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\PVariable: Trichloroethene N	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0.882994
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0005	Data are normal at 5% significance level	
Maximum	0.0029	-	
Mean	0.001333	95% UCL (Assuming Normal Distribu	tion)
Median	0.00135	Student's-t UCL	0.001658
Standard Deviation	0.000627		highwight of the
Variance	3.93E-007	Gamma Distribution Test	
Coefficient of Variation	0.470372	A-D Test Statistic	0.475079
Skewness	1.187336	A-D 5% Critical Value	0.732141
		K-S Test Statistic	0.156878
Gamma Statistics		K-S 5% Critical Value	0.245949
k hat	4.960468	Data follow gamma distribution	
k star (bias corrected)	3.775907	at 5% significance level	
Theta hat	0.000269		
Theta star	0.000353	95% UCLs (Assuming Gamma Distributi	on)
nu hat	119.0512	Approximate Gamma UCL	0.001734
nu star	90.62176	Adjusted Gamma UCL	0.001807
Approx.Chi Square Value (.05)	69.66748		
Adjusted Level of Significance	0.02896	Lognormal Distribution Test	
Adjusted Chi Square Value	66.86894	Shapiro-Wilk Test Statisitic	0.906582
		Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics		Data are lognormal at 5% significance lev	el
Minimum of log data	-7.600902		
Maximum of log data	-5.843045	95% UCLs (Assuming Lognormal Distri	bution)
Mean of log data	-6.724243	95% H-UCL	0.001865
Standard Deviation of log data	0.494126	95% Chebyshev (MVUE) UCL	0.002196
Variance of log data	0.244161	97.5% Chebyshev (MVUE) UCL	0.002566
		99% Chebyshev (MVUE) UCL	0.003292
		95% Non-parametric UCLs	
		CLT UCL	0.001631
		Adj-CLT UCL (Adjusted for skewness)	0.001697
		Mod-t UCL (Adjusted for skewness)	0.001669
		Jackknife UCL	0.001658
		Standard Bootstrap UCL	0.001621
		Bootstrap-t UCL	0.00172
RECOMMENDATION		Hall's Bootstrap UCL	0.002096
Data are normal (0.05)		Percentile Bootstrap UCL	0.001642
		BCA Bootstrap UCL	0.001642
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.002122
		97.5% Chebyshev (Mean, Sd) UCL	0.002464
The second			

Data File P:\W2-mfg\TEXTRC	N\GORHAM\D	atabase\PVariable: Vinyl chloride N	
Raw Statistics		Normal Distribution Test	1
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0.944635
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0005	Data are normal at 5% significance level	
Maximum	0.0021		
Mean	0.001325	95% UCL (Assuming Normal Distribu	ition)
Median	0.0013	Student's-t UCL	0.001589
Standard Deviation	0.00051		undersen alle and an and a second
Variance	2.6E-007	Gamma Distribution Test	
Coefficient of Variation	0.385	A-D Test Statistic	0.521811
Skewness	-0.228354	A-D 5% Critical Value	0.731688
	muudu	K-S Test Statistic	0.203302
Gamma Statistics		K-S 5% Critical Value	0.245832
k hat	5.892077	Data follow gamma distribution	
k star (bias corrected)	4.474613	at 5% significance level	*
Theta hat	0.000225		
Theta star	0.000296	95% UCLs (Assuming Gamma Distribut	ion)
nu hat	141.4098	Approximate Gamma UCL	0.001685
nu star	107.3907	Adjusted Gamma UCL	0.001749
Approx.Chi Square Value (.05)	84.46959		
Adjusted Level of Significance	0.02896	Lognormal Distribution Test	
Adjusted Chi Square Value	81,37169	Shapiro-Wilk Test Statisitic	0.861871
		Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics	1	Data are lognormal at 5% significance lev	/el
Minimum of log data	-7.600902		
Maximum of log data	-6.165818	95% UCLs (Assuming Lognormal Distr	ibution)
Mean of log data	-6.713596	95% H-UCL	0.001827
Standard Deviation of log data	0.469946	95% Chebyshev (MVUE) UCL	0.002153
Variance of log data	0.220849	97.5% Chebyshev (MVUE) UCL	0.002504
		99% Chebyshev (MVUE) UCL	0.003193
		95% Non-parametric UCLs	
		CLT UCL	0.001567
		Adj-CLT UCL (Adjusted for skewness)	0.001557
		Mod-t UCL (Adjusted for skewness)	0.001588
		Jackknife UCL	0.001589
		Standard Bootstrap UCL	0.00156
		Bootstrap-t UCL	0.00157
RECOMMENDATION		Hall's Bootstrap UCL	0.001558
Data are normal (0.05)		Percentile Bootstrap UCL	0.00155
• • • • • •		BCA Bootstrap UCL	0.001533
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.001967
		97.5% Chebyshev (Mean, Sd) UCL	0.002245
		99% Chebyshev (Mean, Sd) UCL	0.00279

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Benzo(a)anthracene I	N
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0.327007
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0001	Data not normal at 5% significance level	
Maximum	0.0002		
Mean	0.000108	95% UCL (Assuming Normal Distribu	tion)
Median	0.0001	Student's-t UCI	0.000123
Standard Deviation	2.89E-005		
Variance	8.33E-010	Gamma Distribution Test	
Coefficient of Variation	0 266469	A-D Test Statistic	4 092277
Skewness	3 464102	A-D 5% Critical Value	0 731666
		K-S Test Statistic	0.536456
Gamma Statistics		K-S 5% Critical Value	0.245178
k hat	22 60662	Data do not follow gamma distribution	0.0.10110
k star (bias corrected)	17.01052	at 5% significance level	
Theta hat	4 79E-006		
Theta star	6.37E-006	95% UCLs (Assuming Gamma Distributi	on)
nu hat	542,5589	Approximate Gamma UCI	0.000122
nu star	408 2525	Adjusted Gamma UCI	0.000124
Approx Chi Square Value (05)	362 4063		
Adjusted Level of Significance	0.02896	Lognormal Distribution Test	
Adjusted Chi Square Value	355 8106	Shapiro-Wilk Test Statisitic 0.3	
	000.0100	Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics	1	Data not lognormal at 5% significance lev	ା ଜା
Minimum of log data	-9 21034	Bala not lognormal at 070 olgninounoo lov	01
Maximum of log data	-8 517193	95% LICLs (Assuming Lognormal Distr	ibution)
Mean of log data	-9 152578	95% H-UCI	0.000121
Standard Deviation of log data	0.200094	95% Chebyshev (MVUE) UCI	0.000135
Variance of log data	0.040038	97.5% Chebyshev (MVUE) UCI	0.000147
vananoo on log data	0.010000	99% Chebyshev (MVUE) UCI	0.00017
			0.00017
		95% Non-parametric UCLs	
		CLTUCI	0.000122
		Adi-CLT UCL (Adjusted for skewness)	0.000131
		Mod-t UCL (Adjusted for skewness)	0.000125
		Jackknife UCI	0.000123
		Standard Bootstran UCI	N/R
		Bootstrap-t UCI	N/R
RECOMMENDATION	1	Hall's Bootstran LICI	N/A
Data are Non-parametric (0.05)	Percentile Bootstran LICI	N/R
		BCA Bootstran UCI	N/R
Use Student's-t UCI		95% Chebyshey (Mean, Sd) UCI	0.000145
or Modified-t LICI		97 5% Chebyshev (Mean, Sd) UCI	0.00016
		99% Chebyshev (Mean, Sd) UCI	0.000191
			0.000101

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Benzo(a)pyrene N	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0.327007
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0001	Data not normal at 5% significance level	
Maximum	0.00024		
Mean	0.000112	95% UCL (Assuming Normal Distribu	tion)
Median	0.0001	Student's-t UCL	0.000133
Standard Deviation	4.04E-005		
Variance	1.63E-009	Gamma Distribution Test	
Coefficient of Variation	0.361921	A-D Test Statistic	4.097373
Skewness	3.464102	A-D 5% Critical Value	0.730852
		K-S Test Statistic	0.537281
Gamma Statistics		K-S 5% Critical Value	0.245316
k hat	13.53628	Data do not follow gamma distribution	
k star (bias corrected)	10.20776	at 5% significance level	
Theta hat	8.25E-006		
Theta star	1.09E-005	95% UCLs (Assuming Gamma Distributi	on)
nu hat	324.8707	Approximate Gamma UCL	0.00013
nu star	244.9863	Adjusted Gamma UCL	0.000134
Approx.Chi Square Value (.05)	209.7418		and provident and an an and an an and an an and an
Adjusted Level of Significance	0.02896	Lognormal Distribution Test	
Adjusted Chi Square Value	204.7648	Shapiro-Wilk Test Statisitic	0.327007
		Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics		Data not lognormal at 5% significance lev	el
Minimum of log data	-9.21034	9	
Maximum of log data	-8.334872	95% UCLs (Assuming Lognormal Distri	ibution)
Mean of log data	-9.137385	95% H-UCL	0.000128
Standard Deviation of log data	0.252726	95% Chebyshev (MVUE) UCL	0.000146
Variance of log data	0.06387	97.5% Chebyshev (MVUE) UCL	0.000162
		99% Chebyshev (MVUE) UCL	0.000192
		95% Non-parametric UCLs	
		CLT UCL	0.000131
		Adj-CLT UCL (Adjusted for skewness)	0.000143
		Mod-t UCL (Adjusted for skewness)	0.000135
		Jackknife UCL	0.000133
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/A
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	N/R
• • • • • •		BCA Bootstrap UCL	N/R
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.000163
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.000185
		99% Chebyshev (Mean, Sd) UCL	0.000228
			0.000220

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Dibenzo(a,h)anthrace	ne N
Raw Statistics		Normal Distribution Test	-
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0.327007
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0001	Data not normal at 5% significance level	
Maximum	0.00031		1
Mean	0.000118	95% UCL (Assuming Normal Distribu	ition)
Median	0.0001	Student's-t UCL	0.000149
Standard Deviation	6.06E-005		
Variance	3.68E-009	Gamma Distribution Test	
Coefficient of Variation	0.51593	A-D Test Statistic	4,10681
Skewness	3,464102	A-D 5% Critical Value	0.731102
		K-S Test Statistic	0.538814
Gamma Statistics		K-S 5% Critical Value	0.245641
k hat	7.627228	Data do not follow gamma distribution	
k star (bias corrected)	5.775977	at 5% significance level	
Theta hat	1.54E-005		
Theta star	2.03E-005	95% UCLs (Assuming Gamma Distributi	ion)
nu hat	183.0535	Approximate Gamma UCL	0.000145
nu star	138.6234	Adjusted Gamma UCL	0.00015
Approx.Chi Square Value (.05)	112,4135		
Adjusted Level of Significance	0.02896	Lognormal Distribution Test	
Adjusted Chi Square Value	108.8146	Shapiro-Wilk Test Statisitic	0.327007
		Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics		Data not lognormal at 5% significance lev	el
Minimum of log data	-9.21034		
Maximum of log data	-8.078938	95% UCLs (Assuming Lognormal Distr	ibution)
Mean of log data	-9.116057	95% H-UCL	0.00014
Standard Deviation of log data	0.326608	95% Chebyshey (MVUE) UCL	0.000163
Variance of log data	0.106673	97.5% Chebyshev (MVUE) UCL	0.000184
		99% Chebyshev (MVUE) UCL	0.000225
		95% Non-parametric UCLs	
		CLT UCL	0.000146
		Adj-CLT UCL (Adjusted for skewness)	0.000165
		Mod-t UCL (Adjusted for skewness)	0.000152
		Jackknife UCL	0.000149
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/A
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	N/R
•		BCA Bootstrap UCL	N/R
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.000194
or Modified-t UCL		97.5% Chebyshev (Mean. Sd) UCL	0.000227
		99% Chebyshev (Mean, Sd) UCL	0.000292

Raw Statistics		Normal Distribution Test	
Number of Valid Samples	12	Shapiro-Wilk Test Statisitic	0 698826
Number of Unique Samples	6	Shapiro-Wilk 5% Critical Value	0.859
Minimum	0.0025	Data not normal at 5% significance level	
Maximum	0.0318		1
Mean	0.010533	95% UCL (Assuming Normal Distribu	tion)
Median	0.0025	Student's-t UCL	0.016706
Standard Deviation	0.011906		
Variance	0.000142	Gamma Distribution Test	
Coefficient of Variation	1.130333	A-D Test Statistic	1.56314
Skewness	1.162688	A-D 5% Critical Value	0.757473
		K-S Test Statistic	0.367466
Gamma Statistics		K-S 5% Critical Value	0.252554
k hat	0.979304	Data do not follow gamma distribution	
k star (bias corrected)	0.790034	at 5% significance level	
Theta hat	0.010756		
Theta star	0.013333	95% UCLs (Assuming Gamma Distributi	on)
nu hat	23.50331	Approximate Gamma UCL	0.019799
nu star	18.96081	Adjusted Gamma UCL	0.021913
Approx.Chi Square Value (.05)	10.08734	anna a sha 🕈 sessa a sa calu na sisa sa s	
Adjusted Level of Significance 0.02896		Lognormal Distribution Test	
Adjusted Chi Square Value	9.114307	Shapiro-Wilk Test Statisitic	0.726355
		Shapiro-Wilk 5% Critical Value	0.859
Log-transformed Statistics		Data not lognormal at 5% significance lev	el
Minimum of log data	-5,991465	9	
Maximum of log data	-3.448289	95% UCLs (Assuming Lognormal Distri	ibution)
Mean of log data	-5.144081	95% H-UCL	0.030652
Standard Deviation of log data	1.109795	95% Chebyshev (MVUE) UCL	0.025134
Variance of log data	1.231645	97.5% Chebyshev (MVUE) UCL	0.031668
~		99% Chebyshev (MVUE) UCL	0.044503
		· · · · ·	
		95% Non-parametric UCLs	
		CLT UCL	0.016187
		Adj-CLT UCL (Adjusted for skewness)	0.017419
		Mod-t UCL (Adjusted for skewness)	0.016898
		Jackknife UCL	0.016706
		Standard Bootstrap UCL	0.015942
		Bootstrap-t UCL	0.019485
RECOMMENDATION	1	Hall's Bootstrap UCL	0.015111
Data are Non-parametric	(0.05)	Percentile Bootstrap UCL	0.016008
		BCA Bootstrap UCL	0.017283
Use 99% Chebyshev (Mear	, Sd) UCL	95% Chebyshev (Mean, Sd) UCL	0.025515
		97.5% Chebyshev (Mean, Sd) UCL	0.031997
		99% Chebyshey (Mean, Sd) UCI	0.044731

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\PVariable: Arsenic	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.908097
Number of Unique Samples	20	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.2	Data not normal at 5% significance level	
Maximum	45	Bala not normal at ere eigendet et er	
Mean	17.87955	95% UCL (Assuming Normal Distribu	tion)
Median	16.9	Student's-t UCL	23,23601
Standard Deviation	14.60069		
Variance	213,1802	Gamma Distribution Test	
Coefficient of Variation	0.816614	A-D Test Statistic	0.908176
Skewness	0.266505	A-D 5% Critical Value	0 780665
		K-S Test Statistic	0 166838
Gamma Statistics		K-S 5% Critical Value	
k hat	0.797359	Data follow approximate gamma distibutio	n
k star (bias corrected)	0.718931	at 5% significance level	
Theta hat	22.42346	ut o /o olgimicanoo le rol	
Theta star	24.86962	95% UCLs (Assuming Gamma Distributi	on)
inu hat	35.08379	Approximate Gamma UCL	28.59494
nu star	31.63297	Adjusted Gamma UCL	29 64345
Approx.Chi Square Value (.05)	19.77913		
Adjusted Level of Significance 0.0386		Lognormal Distribution Test	
Adjusted Chi Square Value	19.07953	Shapiro-Wilk Test Statisitic	0 846173
	1 19191 222	Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data not loonormal at 5% significance lev	el
Minimum of log data	-1 609438	Bala not lognormal at one of significance re-	01
Maximum of log data	3.806662	95% UCLs (Assuming Lognormal Distri	ibution)
Mean of log data	2 13901	95% H-UCI	117 1731
Standard Deviation of log data	1.647807	95% Chebyshev (MVUE) UCL	83 94976
Variance of log data	2 715268	97 5% Chebyshev (MVUE) UCL	107 6866
		99% Chebyshev (MVUE) UCL	154.313
		05% Non parametric LICLs	
			22 00077
		Adi CLT UCL (Adjusted for skowness)	22.55577
		Mod t LICL (Adjusted for skewness)	23.10070
		MOU-LOCE (Aujusted for skewness)	23.20043
	-	Standard Bootstrap LICI	23.23001
		Poststrap t UCI	22.00311
RECOMMENDATION	- d		23.4007
Accuming gamma distributic	nn (0.05)	Parcentile Rootstran LICI	23.07034
Assuming gamma distribute	on (0.03)		22.99040
Lico Approvimate Camma Li(~	BCA BOOISITAP UCL	22.91304
		95% Chebyshev (Mean, Su) UCL	31.44020
		97.5% Chebyshev (Mean, 50) UCL	37.31940
		99% Chebysnev (Mean, Su) UCL	48.89229

	1		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.893672
Number of Unique Samples	20	Shapiro-Wilk 5% Critical Value	0.911
Minimum	8.6	Data not normal at 5% significance level	1
Maximum	2670		
Mean	1184.959	95% UCL (Assuming Normal Distribu	ition)
Median	1290	Student's-t UCL	1517.171
Standard Deviation	905.5467		
Variance	820014.8	Gamma Distribution Test	-1
Coefficient of Variation	0.764201	A-D Test Statistic	1.860125
Skewness	-0.078469	A-D 5% Critical Value	0.790353
		K-S Test Statistic	0.255127
Gamma Statistics		K-S 5% Critical Value	0.193787
k hat	0.663267	Data do not follow gamma distribution	
k star (bias corrected)	0.603125	at 5% significance level	
Theta hat	1786.549		
Theta star	1964.7	95% UCLs (Assuming Gamma Distribut	ion)
nu hat	29.18375	Approximate Gamma UCL	1991.247
nu star	26.53748	Adjusted Gamma UCL	2072.404
Approx.Chi Square Value (.05) 15.79203		
Adjusted Level of Significance	0.0386	6 Lognormal Distribution Test	
Adjusted Chi Square Value	15.1736	Shapiro-Wilk Test Statisitic	0.765709
		Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data not lognormal at 5% significance lev	el
Minimum of log data	2.151762		
Maximum of log data	7.889834	95% UCLs (Assuming Lognormal Distr	ibution)
Mean of log data	6.159348	95% H-UCL	18908.86
Standard Deviation of log data	1.970951	95% Chebyshev (MVUE) UCL	8807.429
Variance of log data	3.884647	97.5% Chebyshev (MVUE) UCL	11465.79
		99% Chebyshev (MVUE) UCL	16687.63
		95% Non-parametric UCLs	
		CLT UCL	1502.52
		Adj-CLT UCL (Adjusted for skewness)	1499.069
		Mod-t UCL (Adjusted for skewness)	1516.633
		Jackknife UCL	1517.171
		Standard Bootstrap UCL	1494.9
		Bootstrap-t UCL	1518.389
RECOMMENDATIO	N	Hall's Bootstrap UCL	1487.666
Data are Non-parametric	(0.05)	Percentile Bootstrap UCL	1481.555
		BCA Bootstrap UCL	1477.405
Use 99% Chebyshev (Mea	n, Sd) UCL	95% Chebyshev (Mean, Sd) UCL	2026.502
		97.5% Chebyshev (Mean, Sd) UCL	2390.638
		99% Chebyshev (Mean, Sd) UCL	3105.914
Recommended UCL exceeds	the maximum of	oservation	
Consider using 95% or 97.5%	Chebyshev (Me	an Sd) UCI	

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\PVariable: Lead	
Raw Statistics	1	Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.927358
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value	0.911
Minimum	3.7	Data are normal at 5% significance level	
Maximum	1120	9	Ann a cara
Mean	423.3136	95% UCL (Assuming Normal Distribu	ution)
Median	383	Student's-t UCL	550.8712
Standard Deviation	347.6975		
Variance	120893.6	Gamma Distribution Test	
Coefficient of Variation	0.821371	A-D Test Statistic	0.710864
Skewness	0.412687	A-D 5% Critical Value	0.779249
		K-S Test Statistic	0.158418
Gamma Statistics		K-S 5% Critical Value	0.19209
k hat	0.826443	Data follow gamma distribution	
k star (bias corrected)	0.744049	at 5% significance level	
Theta hat	512.2117		
Theta star	568.9324	95% UCLs (Assuming Gamma Distribut	ion)
nu hat	36.36348	Approximate Gamma UCL	670.9142
nu star	32.73816	Adjusted Gamma UCL	695.0168
Approx.Chi Square Value (.05)	20.65616		
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	
Adjusted Chi Square Value	19.93982	Shapiro-Wilk Test Statisitic	0.854094
		Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data not lognormal at 5% significance lev	/el
Minimum of log data	1.308333		
Maximum of log data	7.021084	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.333031	95% H-UCL	2641.581
Standard Deviation of log data	1.621409	95% Chebyshev (MVUE) UCL	1948.254
Variance of log data	2.628968	97.5% Chebyshev (MVUE) UCL	2495.545
		99% Chebyshev (MVUE) UCL	3570.592
		95% Non-parametric UCLs	
		CLT UCL	545.2456
		Adi-CLT UCL (Adjusted for skewness)	552.2147
		Mod-t UCL (Adjusted for skewness)	551.9582
		Jackknife UCL	550.8712
		Standard Bootstrap UCL	541.8794
		Bootstrap-t UCL	556.2456
RECOMMENDATION		Hall's Bootstrap UCL	553.6826
Data are normal (0.05)		Percentile Bootstrap UCL	546.2591
		BCA Bootstrap UCL	549.9864
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	746.436
		97.5% Chebyshev (Mean, Sd) UCL	886.2513
		00% Chebyshey (Mean Sd) LICI	1160 001

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Benzo(a)pyrene	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0 393949
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.0161	Data not normal at 5% significance level	
Maximum	7.87		
Mean	0 678077	95% UCL (Assuming Normal Distribu	tion)
Median	0.195	Student's-t UCL	1 286237
Standard Deviation	1 657727		
Variance	2,74806	Gamma Distribution Test	
Coefficient of Variation	2 444747	A-D Test Statistic	1 230128
Skewness	4 26345	A-D 5% Critical Value	0.802858
		K-S Test Statistic	0.217867
Gamma Statistics		K-S 5% Critical Value	0 195661
k hat	0.51635	Data do not follow gamma distribution	1 0.10000.
k star (bias corrected)	0.476241	at 5% significance level	
Theta hat	1.313214		
Theta star	1,42381	95% UCLs (Assuming Gamma Distributi	on)
nu hat	22,71938	Approximate Gamma UCL	1.229531
nu star	20.95462	Adjusted Gamma UCL	1 287483
Approx.Chi Square Value (.05)	11.55631		
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	
Adjusted Chi Square Value	11.03615	Shapiro-Wilk Test Statisitic	0.963586
		Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data are lognormal at 5% significance lev	el
Minimum of log data	-4,128936		
Maximum of log data	2.063058	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.612531	95% H-UCL	1,926154
Standard Deviation of log data	1.524305	95% Chebyshev (MVUE) UCL	1.568053
Variance of log data	2.323506	97.5% Chebyshev (MVUE) UCL	1.997296
		99% Chebyshev (MVUE) UCL	2.840461
		95% Non-parametric UCLs	
		CLT UCL	1.259416
		Adj-CLT UCL (Adjusted for skewness)	1.602683
		Mod-t UCL (Adjusted for skewness)	1.33978
		Jackknife UCL	1.286237
		Standard Bootstrap UCL	1.254239
		Bootstrap-t UCL	3.698643
RECOMMENDATION		Hall's Bootstrap UCL	3.433729
Data are lognormal (0.05)		Percentile Bootstrap UCL	1.344955
		BCA Bootstrap UCL	1.770473
Use 95% Chebyshev (MVUE	UCL	95% Chebyshev (Mean, Sd) UCL	2.218637
		97.5% Chebyshev (Mean, Sd) UCL	2.885239
		99% Chebyshev (Mean, Sd) UCL	4.194648

In case Hall's Bootstrap method yields		99% Chebysnev (Mean, Sd) UCL	103.1604
		97.5% Chebyshev (Mean, Sd) UCL	69.84649
Use Hall's Bootstrap UCL		95% Chebyshev (Mean, Sd) UCL	52.88687
		BCA Bootstrap UCL	34.76294
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	30.49156
RECOMMENDATION		Hall's Bootstrap UCL	172.5078
	1	Bootstrap-t UCL	178.1538
		Standard Bootstrap UCL	27.88537
		Jackknife UCL	29.16483
		Mod-t UCL (Adjusted for skewness)	30.24991
		Adj-CLT UCL (Adjusted for skewness)	35.439
		CLT UCL	28.48244
		95% Non-parametric UCLs	
		99% Chebyshev (MVUE) UCL	70.90662
Variance of log data	12.54543	97.5% Chebyshev (MVUE) UCL	47.24041
Standard Deviation of log data	3.541953	95% Chebyshev (MVUE) UCL	35.19229
Mean of log data	-2.992096	95% H-UCL	5214.254
Maximum of log data	5.164786	95% UCLs (Assuming Lognormal Distri	bution)
Minimum of log data	-6.142287	· · · · · · · · · · · · · · · · · · ·	
Log-transformed Statistics		Data not lognormal at 5% significance level	
-		Shapiro-Wilk 5% Critical Value	0.911
Adjusted Chi Square Value	1.770563	Shapiro-Wilk Test Statisitic	0.776502
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	
Approx.Chi Square Value (.05)	1.953169		
nu star	6.599891	Adjusted Gamma UCL	51.03811
nu hat	6.098119	Approximate Gamma UCL	46.26647
Theta star	91,28203	95% UCLs (Assuming Gamma Distribution	on)
Theta hat	98 79299		nononinionin -
k star (bias corrected)	0 149998	at 5% significance level	
k hat	0 138594	Data do not follow gamma distribution	0.201040
Gamma Statistics		K-S 5% Critical Value	0.300241
01/24411/233	3.38003	K-S Test Statistic	0.317330
	3.000304	A-D Test Statistic	0.017226
	3 090204		3 660436
Standard Deviation	42.17576		
Median	0.011525	Student's-t UCL	29.16483
Iviean	13.69208	95% UCL (Assuming Normal Distribu	tion)
Maximum	175		
Minimum	0.00215	Data not normal at 5% significance level	
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.37405

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\PVariable: Tetrachloroethene	
Raw Statistics		Normal Distribution Test	-
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.248866
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.00215	Data not normal at 5% significance level	
Maximum	18.1		
Mean	0.904939	95% UCL (Assuming Normal Distribu	tion)
Median	0.007775	Student's-t UCL	2.316712
Standard Deviation	3.848224		
Variance	14.80882	Gamma Distribution Test	
Coefficient of Variation	4.252469	A-D Test Statistic	4.841571
Skewness	4.66058	A-D 5% Critical Value	0.898236
		K-S Test Statistic	0.408206
Gamma Statistics		K-S 5% Critical Value	0.206073
k hat	0.184451	Data do not follow gamma distribution	
k star (bias corrected)	0.189601	at 5% significance level	
Theta hat	4.906132	en eytarlığı sertinatin yışının an ≪onan Asişının sina 22.5 (Suşanış sarazı	
Theta star	4.772852	95% UCLs (Assuming Gamma Distributi	on)
nu hat	8.115823	Approximate Gamma UCL	2.572912
nu star	8.342453	Adjusted Gamma UCL	2.79677
Approx.Chi Square Value (.05)	2.934188	and a second	
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	
Adjusted Chi Square Value	2.699331	Shapiro-Wilk Test Statisitic	0.74459
		Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data not lognormal at 5% significance lev	el -
Minimum of log data	-6.142287		
Maximum of log data	2.895912	95% UCLs (Assuming Lognormal Distr	ibution)
Mean of log data	-4.13995	95% H-UCL	1.717584
Standard Deviation of log data	2.231112	95% Chebyshev (MVUE) UCL	0.509604
Variance of log data	4.97786	97.5% Chebyshev (MVUE) UCL	0.669317
		99% Chebyshev (MVUE) UCL	0.983041
		95% Non-parametric UCLs	
		CLT UCL	2.254449
		Adj-CLT UCL (Adjusted for skewness)	3.125529
		Mod-t UCL (Adjusted for skewness)	2.452582
		Jackknife UCL	2.316712
		Standard Bootstrap UCL	2.230954
		Bootstrap-t UCL	29.90711
RECOMMENDATION		Hall's Bootstrap UCL	30.02223
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	2.508695
		BCA Bootstrap UCL	3.462584
Use 99% Chebyshev (Mean,	Sd) UCL	95% Chebyshev (Mean, Sd) UCL	4.481171
		97.5% Chebyshev (Mean, Sd) UCL	6.02861
		99% Chebyshev (Mean, Sd) UCL	9.068254

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	Patabase\P Variable: Trichloroethene	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.333113
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.00215	Data not normal at 5% significance level	
Maximum	58.4		1000 IL WILLIAM STATE
Mean	3.725218	95% UCL (Assuming Normal Distribu	tion)
Median	0.012125	Student's-t UCL	8.370487
Standard Deviation	12.66211		
Variance	160.3292	Gamma Distribution Test	
Coefficient of Variation	3.399026	A-D Test Statistic	2.685147
Skewness	4.232389	A-D 5% Critical Value	0.902046
		K-S Test Statistic	0.268917
Gamma Statistics		K-S 5% Critical Value	0.206387
k hat	0.175303	Data do not follow gamma distribution	-teorismini in the second
k star (bias corrected)	0.181701	at 5% significance level	
Theta hat	21.25014		
Theta star	20.50188	95% UCLs (Assuming Gamma Distributi	on)
nu hat	7.713342	Approximate Gamma UCL	10.90394
nu star	7.994856	Adjusted Gamma UCL	11.88199
Approx.Chi Square Value (.05)	2.731361		. In an
Adjusted Level of Significance	0.0386	Loanormal Distribution Test	
Adjusted Chi Square Value	2.506532	Shapiro-Wilk Test Statisitic	0.874964
	1	Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data not loanormal at 5% significance lev	el
Minimum of log data	-6.142287		····
Maximum of log data	4.067316	95% UCLs (Assuming Lognormal Distri	ibution)
Mean of log data	-2.968837	95% H-UCL	276.4331
Standard Deviation of log data	3.046968	95% Chebyshev (MVUE) UCL	10.53933
Variance of log data	9 284014	97.5% Chebyshev (MVUE) UCL	14.07468
		99% Chebyshev (MVUE) UCL	21.01919
		95% Non-parametric UCLs	
		CLT UCL	8 165619
		Adi-CLT UCL (Adjusted for skewness)	10.76847
		Mod-t UCL (Adjusted for skewness)	8 776479
		Jackknife UCL	8.370487
		Standard Bootstran UCL	8 039094
		Bootstrap-t UCL	39.68097
RECOMMENDATION	1	Hall's Bootstrap UCL	40.34469
Data are Non-parametric ((0.05)	Percentile Bootstrap UCL	8,797334
		BCA Bootstrap UCL	11.76118
Use Hall's Bootstrap UCL		95% Chebyshev (Mean, Sd) UCL	15 49238
		97 5% Chebyshev (Mean, Sd) UCL	20 58404
In case Hall's Bootstrap method	vields	99% Chebyshev (Mean, Sd) UCI	30 58562
an erratic unreasonably large U	CL value		00.00002
use 99% Chebyshev (Mean Sd)			
			-
			1. C

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Aroclor-1254	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.685835
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.008	Data not normal at 5% significance level	
Maximum	0.528	•	
Mean	0.098325	95% UCL (Assuming Normal Distribu	tion)
Median	0.06875	Student's-t UCL	0.139807
Standard Deviation	0.113072		
Variance	0.012785	Gamma Distribution Test	
Coefficient of Variation	1.149982	A-D Test Statistic	0.41619
Skewness	2.839661	A-D 5% Critical Value	0.766142
		K-S Test Statistic	0.150101
Gamma Statistics		K-S 5% Critical Value	0.189901
k hat	1.192162	Data follow gamma distribution	
k star (bias corrected)	1.059897	at 5% significance level	
Theta hat	0.082476		
Theta star	0.092768	95% UCLs (Assuming Gamma Distributi	on)
nu hat	52.45511	Approximate Gamma UCL	0.143462
nu star	46.63547	Adjusted Gamma UCL	0.147651
Approx.Chi Square Value (.05)	31.96273		
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	
Adjusted Chi Square Value	31.05581	Shapiro-Wilk Test Statisitic	0.98112
		Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data are lognormal at 5% significance lev	el
Minimum of log data	-4.828314	· · · · · · · · · · · · · · · · · · ·	
Maximum of log data	-0.638659	95% UCLs (Assuming Lognormal Distri	ibution)
Mean of log data	-2.794265	95% H-UCL	0.179636
Standard Deviation of log data	1.011312	95% Chebyshev (MVUE) UCL	0.203346
Variance of log data	1.022751	97.5% Chebyshev (MVUE) UCL	0.24864
ann chaol an		99% Chebyshev (MVUE) UCL	0.337611
		95% Non-parametric UCLs	
		CLT UCL	0.137978
		Adj-CLT UCL (Adjusted for skewness)	0.153572
		Mod-t UCL (Adjusted for skewness)	0.142239
		Jackknife UCL	0.139807
		Standard Bootstrap UCL	0.136415
		Bootstrap-t UCL	0.17379
RECOMMENDATION		Hall's Bootstrap UCL	0.306637
Data follow gamma distributi	on (0.05)	Percentile Bootstrap UCL	0.142798
		BCA Bootstrap UCL	0.156339
Use Approximate Gamma U	CL	95% Chebyshev (Mean, Sd) UCL	0.203405
		97.5% Chebyshev (Mean, Sd) UCL	0.248873
		99% Chebyshev (Mean, Sd) UCL	0.338187

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Benzo(a)anthracene	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0 327472
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.0161	Data not normal at 5% significance level	
Maximum	15.1	Data normanar are to organization to tere.	-
Mean	1.073482	95% UCL (Assuming Normal Distribu	tion)
Median	0 2295	Student's-t UCI	2 23597
Standard Deviation	3 168722	oldonio i oce	2.2000
Variance	10 0408	Gamma Distribution Test	
Coefficient of Variation	2 951817	A-D Test Statistic	1 684582
Skewness	4 524687	A-D 5% Critical Value	0.818085
	1.02.100.	K-S Test Statistic	0.266323
Gamma Statistics		K-S 5% Critical Value	0 197552
k hat	0 436173	Data do not follow gamma distribution	0.107002
k star (hias corrected)	0.406998	at 5% significance level	
Theta hat	2 461139	at 070 significance level	
Theta star	2 637563	95% LICLs (Assuming Gamma Distributi	ion)
nu hat	19 1916	Approximate Gamma LICI	2 061984
nu etar	17 9079	Adjusted Gamma LICI	2 169283
Approv Chi Square Value (05)	9 322965	Aujusted Gamma OOL	2.100200
Adjusted Level of Significance	0.022000	Lognormal Distribution Test	
Adjusted Chi Square Value	8 861823	Shanira-Wilk Test Statisitic	0 952451
	0.001020	Shapiro Wilk 5% Critical Value	0.002401
Log-transformed Statistics		Data are legnormal at 5% significance lev	0.311
Minimum of log data	4 128936	Data are logitorniar at 5 % significance lev	el
Maximum of log data	2 71/605	05% LICLs (Assuming Lagnormal Distri	ikution)
Mean of log data	1 /16073		2 004052
Standard Deviation of log data	1 601500		0.094002
Stanuard Deviation of log data	2 620256	95% Chebyshev (WVUE) UCL	2.201072
Variance of log data	2.029330		2.922043
		99% Chebysnev (MVOE) UCL	4.181706
		95% Non-parametric UCLs	
		CLT UCL	2.184702
		Adj-CLT UCL (Adjusted for skewness)	2.881056
		Mod-t UCL (Adjusted for skewness)	2.344588
		Jackknife UCL	2.23597
		Standard Bootstrap UCL	2.128696
		Bootstrap-t UCL	9.325929
RECOMMENDATION		Hall's Bootstrap UCL	6.311884
Data are lognormal (0.05))	Percentile Bootstrap UCL	2.367605
		BCA Bootstrap UCL	3.233032
Use 95% Chebyshev (MVUE)) UCL	95% Chebyshev (Mean, Sd) UCL	4.018239
		97.5% Chebyshev (Mean, Sd) UCL	5.292438
		99% Chebyshev (Mean, Sd) UCL	7.795356

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Raw Statistics		Normal Distribution Test	
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.370807
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911
Minimum	0.0161	Data not normal at 5% significance level	
Maximum	14.8		
Mean	1.186532	95% UCL (Assuming Normal Distribu	tion)
Median	0.3025	Student's-t UCL	2.328226
Standard Deviation	3.11204		
Variance	9.684795	Gamma Distribution Test	
Coefficient of Variation	2.622804	A-D Test Statistic	1.205357
Skewness	4.367165	A-D 5% Critical Value	0.811823
·		K-S Test Statistic	0.195053
Gamma Statistics		K-S 5% Critical Value	0.196791
k hat	0.465062	Data follow approximate gamma distibutio	n
k star (bias corrected)	0.431947	at 5% significance level	
Theta hat	2.551341		1
Theta star	2.746936	95% UCLs (Assuming Gamma Distributi	on)
nu hat	20.46273	Approximate Gamma UCL	2.228324
nu star	19.00569	Adjusted Gamma UCL	2.339988
Approx.Chi Square Value (.05)	10.1201		
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	
Adjusted Chi Square Value	9.637167	Shapiro-Wilk Test Statisitic	0.962143
		Shapiro-Wilk 5% Critical Value	0.911
Log-transformed Statistics		Data are lognormal at 5% significance lev	el
Minimum of log data	-4 128936	Bala al o lognomial at o to olgninoarioo iot	0.
Maximum of log data	2 694627	95% UCLs (Assuming Lognormal Distri	ibution)
Mean of log data	-1 210318	95% H-UCI	4 415696
Standard Deviation of log data	1 67126	95% Chebyshev (MVUE) UCI	3 08082
Variance of log data	2 793109	97.5% Chebyshev (MVUE) UCI	3 956831
vananoo on log data	2.100100	99% Chebyshev (MVUE) UCI	5 677587
			0.011001
		95% Non-parametric UCLs	
		CLTUCI	2 277874
uum		Adi-CLTUCL (Adjusted for skewness)	2 937964
		Mod-t UCL (Adjusted for skewness)	2 431187
		Jackknife UCI	2 328226
		Standard Bootstrap UCI	2 268795
		Bootstran-t UCI	7 518312
RECOMMENDATION		Hall's Bootstran UCI	6 448200
Assuming gamma distribution (0.05)		Percentile Bootstrap UCI	2 378959
		BCA Bootstrap UCI	3 187064
Lise Adjusted Gamma LICI		95% Chebyshev (Mean Sd) UCI	4 078614
		97.5% Chebyshev (Mean, Sd) UCL	5 330021
		99% Chebyshev (Mean, Sd) UCL	7 788166
			1.100100

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Cadmium						
Raw Statistics		Normal Distribution Test						
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0 907849					
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value	0.911					
Minimum	0.14	Data not normal at 5% significance level						
Maximum	7.11							
Mean	2 943864	95% UCL (Assuming Normal Distribu	ition)					
Median	2.835	Student's-t UCI	3 792843					
Standard Deviation	2.314155							
Variance	5.355314	Gamma Distribution Test						
Coefficient of Variation	0.786095	A-D Test Statistic	0.603282					
Skewness	0.409776	A-D 5% Critical Value	0.766026					
		K-S Test Statistic	0 162059					
Gamma Statistics		K-S 5% Critical Value	0 189879					
k hat	1 196964	Data follow gamma distribution	1 0.1000.0					
k star (bias corrected)	1 064044	at 5% significance level						
Theta hat	2 459443	ut eve significance for or						
Theta star	2 766674	95% UCLs (Assuming Gamma Distribut	tion)					
nu hat	52 6664	Approximate Gamma UCI	4 291762					
nu star	46 81795	Adjusted Gamma UCI	4 416812					
Approx Chi Square Value (05)	32 114	Augusted Carlina Col	1.110012					
Adjusted Level of Significance	0.0386	Lognormal Distribution Test						
Adjusted Chi Square Value	31 20478	Shaniro-Wilk Test Statisitic	0 907118					
	01.20170	Shapiro-Wilk 5% Critical Value	0.007110					
Log-transformed Statistics		Data not lognormal at 5% significance lev	<u>ر ان </u>					
Minimum of log data	-1 966113	Bata not lognormal at 570 significance lev						
Maximum of log data	1.961502	95% LICLs (Assuming Lognormal Dist	ribution)					
Mean of log data	0.60704	95% H-LICI	7 166629					
Standard Deviation of log data	1 154314	95% Chebyshey (MV/UE) LICI	7.100020					
Variance of log data	1 332442	97.5% Chebyshev (MVUE) UCI	9.463705					
vanance of log data	1.552442	99% Chebyshev (MVUE) UCL	13.05554					
			10.00001					
		95% Non-parametric UCLs						
		CLT UCL	3.755401					
		Adj-CLT UCL (Adjusted for skewness)	3.801458					
		Mod-t UCL (Adjusted for skewness)	3.800027					
		Jackknife UCL	3.792843					
		Standard Bootstrap UCL	3.728924					
		Bootstrap-t UCL	3.83811					
RECOMMENDATION		Hall's Bootstrap UCL	3.773254					
Data follow gamma distributi	on (0.05)	Percentile Bootstrap UCL	3.714091					
9		BCA Bootstrap UCL	3.85					
Use Approximate Gamma U0	CL	95% Chebyshev (Mean, Sd) UCL	5.094455					
		97.5% Chebyshev (Mean. Sd) UCL	6.025018					
		99% Chebyshev (Mean, Sd) UCL	7.852928					
			1.052920					
Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Chromium						
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Raw Statistics		Normal Distribution Test						
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.870166					
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911					
Minimum	4.8	Data not normal at 5% significance level						
Maximum	640							
Mean	231,1909	95% UCL (Assuming Normal Distribu	tion)					
Median	160	Student's-t UCL	312.8782					
Standard Deviation	222,664							
Variance	49579.26	Gamma Distribution Test						
Coefficient of Variation	0.963117	A-D Test Statistic	0.691304					
Skewness	0.581998	A-D 5% Critical Value	0.788333					
		K-S Test Statistic	0.143201					
Gamma Statistics		K-S 5% Critical Value	0.193484					
k hat	0.686992	Data follow gamma distribution						
k star (bias corrected)	0.623614	at 5% significance level						
Theta hat	336,5263	eesti aan ahaa ahaa ahaa ahaa ahaa ahaa ahaa						
Theta star	370,7274	95% UCLs (Assuming Gamma Distributi	on)					
nu hat	30.22765	Approximate Gamma UCL	384.6953					
nu star	27.43903	Adjusted Gamma UCL	400.0598					
Approx.Chi Square Value (.05)	16.49008							
Adjusted Level of Significance	0.0386	Lognormal Distribution Test						
Adjusted Chi Square Value	15.85677	Shapiro-Wilk Test Statisitic	0.883708					
	-	Shapiro-Wilk 5% Critical Value	0.911					
Log-transformed Statistics		Data not lognormal at 5% significance lev	el					
Minimum of log data	1.568616							
Maximum of log data	6.461468	95% UCLs (Assuming Lognormal Distr	tribution)					
Mean of log data	4.561234	95% H-UCL	1454.878					
Standard Deviation of log data	1.679772	95% Chebyshev (MVUE) UCL	1005.151					
Variance of log data	2.821632	97.5% Chebyshev (MVUE) UCL	1291.532					
		99% Chebyshev (MVUE) UCL	1854.072					
		95% Non-parametric UCLs						
		CLT UCL	309.2756					
		Adi-CLT UCL (Adjusted for skewness)	315.5696					
		Mod-t UCL (Adjusted for skewness)	313.86					
		Jackknife UCL	312.8782					
		Standard Bootstrap UCL	306.8495					
		Bootstrap-t UCL	317.6237					
RECOMMENDATION		Hall's Bootstrap UCL	309.1281					
Data follow gamma distributi	on (0.05)	Percentile Bootstrap UCL 30						
		BCA Bootstrap UCL	315.0409					
Use Approximate Gamma UC	CL	95% Chebyshev (Mean, Sd) UCL 43						
		97.5% Chebyshev (Mean, Sd) UCL	527.6542					
		99% Chebyshev (Mean, Sd) UCL	703.5326					

Data File P:\W2-mfg\TEXTRO	DN\GORHAM\D	Database\P Variable: Dibenzo(a,h)anthrace	ne					
Raw Statistics		Normal Distribution Test						
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.331619					
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value	0.911					
Minimum	0.00395	Data not normal at 5% significance level						
Maximum	1.45							
Mean	0.11405	95% UCL (Assuming Normal Distribu	ition)					
Median	0.040925	Student's-t UCL	0.224836					
Standard Deviation	0.301982							
Variance	0.091193	Gamma Distribution Test						
Coefficient of Variation	2.647799	A-D Test Statistic	2 117882					
Skewness	4.517431	A-D 5% Critical Value	0.795578					
ana da ing		K-S Test Statistic	0.30073					
Gamma Statistics		K-S 5% Critical Value	0.19457					
k hat	0.60188	Data do not follow gamma distribution						
k star (bias corrected)	0.550109	at 5% significance level						
Theta hat	0.18949							
Theta star	0.207323	95% UCLs (Assuming Gamma Distributi	on)					
nu hat	26.48273	Approximate Gamma UCL	0.197144					
nu star	24.20478	Adjusted Gamma UCL	0.205643					
Approx.Chi Square Value (.05)	14.00277							
Adjusted Level of Significance	0.0386	Lognormal Distribution Test						
Adjusted Chi Square Value	13,42404	Shapiro-Wilk Test Statisitic	0.932671					
		Shapiro-Wilk 5% Critical Value	0.911					
Log-transformed Statistics	1	Data are lognormal at 5% significance lev	rel					
Minimum of log data	-5 53404							
Maximum of log data	0.371564	95% UCLs (Assuming Lognormal Distr	stribution)					
Mean of log data	-3 197221	95% H-UCI	0 185353					
Standard Deviation of log data	1,222772	95% Chebyshev (MVUE) UCI	0 190211					
Variance of log data	1 495172	97 5% Chebyshev (MVUE) UCI	0.237146					
		99% Chebyshev (MVUE) UCL	0.329343					
		95% Non-parametric UCLs						
		CLT UCL	0.21995					
		Adi-CLT UCL (Adjusted for skewness)	0.286207					
		Mod-t UCL (Adjusted for skewness)	0.235171					
		Jackknife UCL	0.224836					
		Standard Bootstrap UCL	0.217007					
		Bootstrap-t UCL	0.931423					
RECOMMENDATION		Hall's Bootstrap UCL	0.931423					
Data are lognormal (0.05	5)	Percentile Bootstrap UCL	0.240734					
		BCA Bootstrap UCL 0						
Use 95% Chebyshev (MVUE	E) UCL	95% Chebyshev (Mean, Sd) UCL 0.394						
· · · · · · · · · · · · · · · · · · ·	· ·	97.5% Chebyshev (Mean, Sd) UCL	0.51612					
		99% Chebyshev (Mean, Sd) UCL	0.75465					

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: Indeno(1,2,3-cd)pyrer	1e							
Raw Statistics		Normal Distribution Test								
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0 427169							
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value	0.911							
Minimum	0.015	Data not normal at 5% significance level								
Maximum	2.47	Data normanar ar o to orginitioanoc to to								
Mean	0 242193	95% UCL (Assuming Normal Distribu	tion)							
Median	0 10075	Student's-t LICI	0 43379							
Standard Deviation	0.522256	oudence root	01001 0							
Variance	0.272751	Gamma Distribution Test								
Coefficient of Variation	2 15636	A-D Test Statistic	1 310429							
Skewness	4.075206	A-D 5% Critical Value	0 791823							
		K-S Test Statistic	0 229304							
Gamma Statistics		K-S 5% Critical Value	0.194007							
k hat	0.645993	Data do not follow gamma distribution	1							
k star (bias corrected)	0.588206	at 5% significance level								
Theta hat	0.374916									
Theta star	0.411749	95% UCLs (Assuming Gamma Distributi	on)							
nu hat	28.42368	Approximate Gamma UCL	0.410063							
nu star	25.88106	Adjusted Gamma UCL	0.427032							
Approx.Chi Square Value (.05)	15.28599									
Adjusted Level of Significance	0.0386	Loanormal Distribution Test								
Adiusted Chi Square Value	14.67856	Shapiro-Wilk Test Statisitic	0.949977							
		Shapiro-Wilk 5% Critical Value	0.911							
Log-transformed Statistics		Data are lognormal at 5% significance lev	el							
Minimum of log data	-4.199705									
Maximum of log data	0.904218	95% UCLs (Assuming Lognormal Distribution)								
Mean of log data	-2.364255	95% H-UCL	0.486062							
Standard Deviation of log data	1.279984	95% Chebyshev (MVUE) UCL	0.481419							
Variance of log data	1.638358	97.5% Chebyshev (MVUE) UCL	0.602969							
		99% Chebyshev (MVUE) UCL	0.84173							
		95% Non-parametric UCLs								
		CLT UCL	0.42534							
		Adj-CLT UCL (Adjusted for skewness)	0.528709							
		Mod-t UCL (Adjusted for skewness)	0.449913							
		Jackknife UCL	0.43379							
		Standard Bootstrap UCL	0.413182							
		Bootstrap-t UCL	1.130057							
RECOMMENDATION		Hall's Bootstrap UCL	1.154162							
Data are lognormal (0.05)	J	Percentile Bootstrap UCL	0.451325							
		BCA Bootstrap UCL 0.58								
Use 95% Chebyshev (MVUE)) UCL	95% Chebyshev (Mean, Sd) UCL	0.727536							
		97.5% Chebyshev (Mean, Sd) UCL	0.937544							
		99% Chebyshev (Mean, Sd) UCL	1.350065							

)N\GORHAM\D	atabase\PVariable: Mercury							
	Normal Distribution Test							
22	Shapiro-Wilk Test Statisitic	0.7544						
22	Shapiro-Wilk 5% Critical Value	0.911						
0.0215	Data not normal at 5% significance level							
2.52								
0.503341	95% UCL (Assuming Normal Distribu	ition)						
0.1625	Student's-t UCL	0.743957						
0.655874								
0.430171	Gamma Distribution Test							
1.303042	A-D Test Statistic	0.680755						
1.739941	A-D 5% Critical Value	0.792363						
	K-S Test Statistic	0.170078						
	K-S 5% Critical Value	0.194088						
0.639645	Data follow gamma distribution							
0.582723	at 5% significance level							
0.786907								
0.863773	95% UCLs (Assuming Gamma Distribut	ion)						
28.14436	Approximate Gamma UCL	0.854645						
25.63982	Adjusted Gamma UCL	0.890215						
15.10051								
0.0386	Lognormal Distribution Test							
14.49715	Shapiro-Wilk Test Statisitic	0.935811						
	Shapiro-Wilk 5% Critical Value	0.911						
	Data are lognormal at 5% significance lev	/el						
-3.839702								
0.924259	95% UCLs (Assuming Lognormal Distr	bution)						
-1.643475	95% H-UCL	1.944452						
1.538791	95% Chebyshev (MVUE) UCL	1.561013						
2.367878	97.5% Chebyshev (MVUE) UCL	1.990065						
	99% Chebyshev (MVUE) UCL	2.832856						
	95% Non-parametric UCLs							
	CLT UCL	0.733346						
	Adj-CLT UCL (Adjusted for skewness)	0.788771						
	Mod-t UCL (Adjusted for skewness)	0.752603						
	Jackknife UCL	0.743957						
	Standard Bootstrap UCL	0.734401						
	Bootstrap-t UCL	0.859906						
	Hall's Bootstrap UCL	0.813889						
ion (0.05)	Percentile Bootstrap UCL	0.748614						
	BCA Bootstrap UCL	0.791659						
CL	95% Chebyshev (Mean, Sd) UCL 1							
	97.5% Chebyshey (Mean Sd) UCI	1.376597						
	Chick of Chick with Carl, Carl COL							
	N\GORHAM\D 22 22 0.0215 2.52 0.503341 0.1625 0.655874 0.430171 1.303042 1.739941 0.639645 0.582723 0.786907 0.863773 28.14436 25.63982 15.10051 0.0386 14.49715 -3.839702 0.924259 -1.643475 1.538791 2.367878	NIGORHAM\Database\F Variable: Mercury Normal Distribution Test 22 Shapiro-Wilk Test Statisitic 22 Shapiro-Wilk 5% Critical Value 0.0215 Data not normal at 5% significance level 2.52 0.503341 95% UCL (Assuming Normal Distribution Test 0.1625 Student's-t UCL 0.655874 0.430171 Gamma Distribution Test 1.303042 A-D Test Statistic 1.739941 A-D 5% Critical Value K-S 5% Critical Value 0.639645 Data follow gamma distribution 0.582723 at 5% significance level 0.786907 0.863773 95% UCLs (Assuming Gamma Distribution 0.863773 95% UCLs (Assuming Gamma Distribution 18.10051 0.0386 Lognormal Distribution Test 14.49715 Shapiro-Wilk Test Statistic Shapiro-Wilk 5% Critical Value Data are lognormal at 5% significance level 0.0386 Lognormal at						

Data File P:\W2-mfg\TEXTRC	N\GORHAM\D	atabase\P Variable: Nickel						
Raw Statistics		Normal Distribution Test						
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.647752					
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911					
Minimum	1.85	Data not normal at 5% significance level						
Maximum	853							
Mean	160.6386	95% UCL (Assuming Normal Distribu	ution)					
Median	92.9	Student's-t UCL	248.5931					
Standard Deviation	239,7472		Tainin Antonia					
Variance	57478.71	Gamma Distribution Test						
Coefficient of Variation	1.492463	A-D Test Statistic	0.434589					
Skewness	2.269085	A-D 5% Critical Value	0.797556					
		K-S Test Statistic	0.153242					
Gamma Statistics		K-S 5% Critical Value	0.194867					
k hat	0.578636	Data follow gamma distribution						
k star (bias corrected)	0.530034	at 5% significance level						
Theta hat	277.6159							
Theta star	303.0722	95% UCLs (Assuming Gamma Distribut	ion)					
nu hat	25.45999	Approximate Gamma UCL	280.9994					
nu star	23.32151	Adjusted Gamma UCL	293.3937					
Approx.Chi Square Value (.05)	13.33218							
Adjusted Level of Significance	0.0386	Lognormal Distribution Test						
Adjusted Chi Square Value	12.76897	Shapiro-Wilk Test Statisitic	0.959606					
na an 1997 ann an		Shapiro-Wilk 5% Critical Value	0.911					
Log-transformed Statistics		Data are lognormal at 5% significance lev	/el					
Minimum of log data	0.615186							
Maximum of log data	6.74876	95% UCLs (Assuming Lognormal Distr	ribution)					
Mean of log data	4.005583	95% H-UCL	916.7624					
Standard Deviation of log data	1.710179	95% Chebyshev (MVUE) UCL	611.0652					
Variance of log data	2.924713	97.5% Chebyshev (MVUE) UCL	786.386					
		99% Chebyshev (MVUE) UCL	1130.77					
		95% Non-parametric UCLs						
		CLT UCL	244.7141					
		Adj-CLT UCL (Adjusted for skewness)	271.1359					
		Mod-t UCL (Adjusted for skewness)	252.7144					
		Jackknife UCL	248.5931					
		Standard Bootstrap UCL	245.6553					
		Bootstrap-t UCL	342.6473					
RECOMMENDATION		Hall's Bootstrap UCL 3						
Data follow gamma distribut	ion (0.05)	Percentile Bootstrap UCL	246.0523					
		BCA Bootstrap UCL	270.0523					
Use Approximate Gamma U	CL	95% Chebyshev (Mean, Sd) UCL	383.4406					
		97.5% Chebyshev (Mean, Sd) UCL	479.8472					
nan en		99% Chebyshev (Mean, Sd) UCL	669.2192					

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\PVariable: s-Butylbenzene							
Raw Statistics		Normal Distribution Test							
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.305209						
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911						
Minimum	0.00205	Data not normal at 5% significance level							
Maximum	0.55		-112						
Mean	0.036527	95% UCL (Assuming Normal Distribu	tion)						
Median	0.0064	Student's-t UCL	0.079009						
Standard Deviation	0.115798								
Variance	0.013409	Gamma Distribution Test							
Coefficient of Variation	3.170179	A-D Test Statistic	2.938323						
Skewness	4.551686	A-D 5% Critical Value	0.81514						
		K-S Test Statistic	0.280533						
Gamma Statistics		K-S 5% Critical Value	0.197194						
k hat	0.449758	Data do not follow gamma distribution							
k star (bias corrected)	0.41873	at 5% significance level							
Theta hat	0.081215								
Theta star	0.087233	95% UCLs (Assuming Gamma Distributi	on)						
nu hat	19.78934	Approximate Gamma UCL	0.069403						
nu star	18.42413	Adjusted Gamma UCL	0.07295						
Approx.Chi Square Value (.05)	9.696677								
Adjusted Level of Significance	0.0386	Lognormal Distribution Test	0.000.15-						
Adjusted Chi Square Value	9.225212	Shapiro-Wilk Test Statisitic	0.868427						
		Shapiro-Wilk 5% Critical Value	0.911						
Log-transformed Statistics		Data not lognormal at 5% significance lev	el						
Minimum of log data	-6.189915								
Maximum of log data	-0.597837	95% UCLs (Assuming Lognormal Distr	ibution)						
Mean of log data	-4.745622	95% H-UCL	0.05101						
Standard Deviation of log data	1.333213	95% Chebyshev (MVUE) UCL	0.048718						
Variance of log data	1.777457	97.5% Chebyshev (MVUE) UCL	0.061265						
		99% Chebyshev (MVUE) UCL 0.							
		95% Non-parametric UCLs							
		CLT UCL	0.077136						
		Adj-CLT UCL (Adjusted for skewness)	0.102735						
		Mod-t UCL (Adjusted for skewness)	0.083002						
		Jackknife UCL	0.079009						
		Standard Bootstrap UCL	0.075745						
		Bootstrap-t UCL	0.474775						
RECOMMENDATION		Hall's Bootstrap UCL	0.243644						
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	0.083411						
		BCA Bootstrap UCL	0.115993						
Use 99% Chebyshev (Mean,	Sd) UCL	95% Chebyshev (Mean, Sd) UCL	0.144141						
		97.5% Chebyshev (Mean, Sd) UCL 0.1907							
		99% Chebyshev (Mean, Sd) UCL	0.282172						

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	Database\P Variable: Vinyl chloride					
Raw Statistics		Normal Distribution Test					
Number of Valid Samples	22	Shapiro-Wilk Test Statisitic	0.450108				
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911				
Minimum	0.00405	Data not normal at 5% significance level					
Maximum	24.8						
Mean	2.203714	95% UCL (Assuming Normal Distribu	tion)				
Median	0.01835	Student's-t UCL	4.32304				
Standard Deviation	5.776878		- dumante				
Variance	33.37232	Gamma Distribution Test					
Coefficient of Variation	2.621429	A-D Test Statistic	3.064137				
Skewness	3.334252	A-D 5% Critical Value	0.892024				
		K-S Test Statistic	0.355642				
Gamma Statistics		K-S 5% Critical Value	0.205562				
k hat	0.199365	Data do not follow gamma distribution					
k star (bias corrected)	0.202482	at 5% significance level					
Theta hat	11.05366						
Theta star	10.88351	95% UCLs (Assuming Gamma Distributi	on)				
nu hat	8.772062	Approximate Gamma UCL	6.001418				
nu star	8.909205	Adjusted Gamma UCL	6.499773				
Approx.Chi Square Value (.05)	3.27145						
Adjusted Level of Significance	0.0386	Lognormal Distribution Test					
Adjusted Chi Square Value	3.020619	Shapiro-Wilk Test Statisitic	0.805178				
		Shapiro-Wilk 5% Critical Value	0.911				
Log-transformed Statistics		Data not lognormal at 5% significance lev	el				
Minimum of log data	-5.509038						
Maximum of log data	3.210844	95% UCLs (Assuming Lognormal Distr	stribution)				
Mean of log data	-2.903008	95% H-UCL	85.42709				
Standard Deviation of log data	2.813926	95% Chebyshev (MVUE) UCL	6,472896				
Variance of log data	7.918181	97.5% Chebyshev (MVUE) UCL	8 614237				
		99% Chebyshev (MVUE) UCL	12.82049				
		95% Non-parametric UCLs					
		CLT UCL	4.229572				
		Adj-CLT UCL (Adjusted for skewness)	5.165084				
		Mod-t UCL (Adjusted for skewness)	4.468961				
		Jackknife UCL	4.32304				
		Standard Bootstrap UCL	4.140826				
		Bootstrap-t UCL	8.689712				
RECOMMENDATION		Hall's Bootstrap UCL	11.32376				
Data are Non-parametric (0.05)	Percentile Bootstrap UCL	4.404795				
		BCA Bootstrap UCL	5.400502				
Use 99% Chebyshev (Mean.	Sd) UCL	95% Chebyshev (Mean, Sd) UCL	7.572284				
		97.5% Chebyshev (Mean, Sd) UCL	9.895269				
		99% Chebyshev (Mean, Sd) UCL	14.45832				

Raw Statistics							
		Normal Distribution Test	0.040000				
lumber of Valid Samples	22	Shapiro-Wilk Test Statistic	0.910023				
	22	Snapiro-Wilk 5% Critical Value	0.911				
linimum	0.37	Data not normal at 5% significance level					
laximum	227						
1ean	83.49386	95% UCL (Assuming Normal Distribu	tion)				
1edian	86.65	Student's-t UCL	109.4666				
tandard Deviation	70.79663						
ariance	5012.163	Gamma Distribution Test	0.007450				
coefficient of Variation	0.847926	A-D Test Statistic	0.937458				
kewness	0.336967	A-D 5% Critical Value	0.788894				
		K-S Test Statistic	0.196429				
Gamma Statistics		K-S 5% Critical Value	0.193568				
hat	0.680409	Data do not follow gamma distribution					
star (bias corrected)	0.617929	at 5% significance level					
heta hat	122.7113						
heta star	135.1188	95% UCLs (Assuming Gamma Distributi	on)				
u hat	29.938	Approximate Gamma UCL	139.304				
u star	27.18888	Adjusted Gamma UCL	144.8987				
pprox.Chi Square Value (.05)	16.29605						
djusted Level of Significance	0.0386	Lognormal Distribution Test					
djusted Chi Square Value	15.66684	Shapiro-Wilk Test Statisitic	0.832866				
		Shapiro-Wilk 5% Critical Value	0.911				
Log-transformed Statistics		Data not lognormal at 5% significance leve	el				
Ainimum of log data	-0.994252						
laximum of log data	5.42495	95% UCLs (Assuming Lognormal Distri	ibution)				
lean of log data	3.533021	95% H-UCL	1090.3				
standard Deviation of log data	1.906617	95% Chebyshev (MVUE) UCL	559.6618				
ariance of log data	3.635187	97.5% Chebyshev (MVUE) UCL	726.7163				
		99% Chebyshev (MVUE) UCL	1054.863				
		95% Non-parametric UCLs					
		CLT UCL	108.3211				
		Adj-CLT UCL (Adjusted for skewness)	109.4798				
		Mod-t UCL (Adjusted for skewness)	109.6473				
		Jackknife UCL	109.4666				
		Standard Bootstrap UCL	107.6752				
		Bootstrap-t UCL	111.2924				
RECOMMENDATION		Hall's Bootstrap UCL	107.7864				
Data are Non-parametric	(0.05)	Percentile Bootstrap UCL	109.0739				
		BCA Bootstrap UCL	109.4064				
Use 99% Chebyshev (Mean	Sd) UCL	95% Chebyshev (Mean, Sd) UCL	149.2866				
		97.5% Chebyshev (Mean, Sd) UCL	177.7552				
		99% Chebyshev (Mean, Sd) UCL	233.6762				

Data File P:\W2-mfg\TEXTRO	N\GORHAM\D	atabase\P Variable: TEQ-M							
Raw Statistics		Normal Distribution Test							
Number of Valid Samples	22	Shaniro-Wilk Test Statisitic	0 721804						
Number of Unique Samples	22	Shapiro-Wilk 5% Critical Value	0.911						
Minimum	8 53E-007	Data not normal at 5% significance level							
Maximum	0.003622	Bulu not normal at the eigenvector eigenvector							
Mean	0.000647	95% UCL (Assuming Normal Distribu	ition)						
Median	0.00018	Student's-t UCL	0 000992						
Standard Deviation	0.000941		0.00000						
Variance	8.85E-007	Gamma Distribution Test							
Coefficient of Variation	1.453309	A-D Test Statistic	0.476634						
Skewness	1.873207	A-D 5% Critical Value	0.815962						
		K-S Test Statistic	0.153936						
Gamma Statistics		K-S 5% Critical Value	0.197294						
k hat	0.445963	Data follow gamma distribution							
k star (bias corrected)	0.415453	at 5% significance level							
Theta hat	0.001451								
Theta star	0.001558	95% UCLs (Assuming Gamma Distributi	ion)						
nu hat	19.62238	Approximate Gamma UCL	0.001233						
nu star	18.27994	Adjusted Gamma UCL	0.001297						
Approx.Chi Square Value (.05)	9.592085		andro and the second						
Adjusted Level of Significance	0.0386	Loanormal Distribution Test							
Adjusted Chi Square Value	9.12349	Shapiro-Wilk Test Statisitic	0.949057						
		Shapiro-Wilk 5% Critical Value	0.911						
Log-transformed Statistics		Data are lognormal at 5% significance lev	/el						
Minimum of log data	-13.97495								
Maximum of log data	-5.620845	95% UCLs (Assuming Lognormal Distr	rmal Distribution)						
Mean of log data	-8.793	95% H-UCL	0.012562						
Standard Deviation of log data	2.164741	95% Chebyshev (MVUE) UCL	0.00422						
Variance of log data	4.686105	97.5% Chebyshev (MVUE) UCL	0.00422						
		99% Chebyshev (MVUE) UCL	0.008107						
		95% Non-parametric UCLs							
		CLT UCL	0.000977						
		Adj-CLT UCL (Adjusted for skewness)	0.001063						
		Mod-t UCL (Adjusted for skewness)	0.001006						
		Jackknife UCL	0.000992						
		Standard Bootstrap UCL	0.000976						
		Bootstrap-t UCL	0.001144						
RECOMMENDATION		Hall's Bootstrap UCL	0.001099						
Data follow gamma distributi	ion (0.05)	Percentile Bootstrap UCL	0.000975						
		BCA Bootstrap UCL 0.00*							
Use Adjusted Gamma UCL		95% Chebyshev (Mean, Sd) UCL 0.0015							
		97.5% Chebyshev (Mean, Sd) UCL	0.001899						
		99% Chebyshev (Mean, Sd) UCL	0.002642						

Textron, Inc. Former Gorham Manufacturing Facility – Human Health Risk Assessment MACTEC Engineering and Consulting, Inc. Project No. 3650-05-0041.01

APPENDIX D

Risk Calculation Spreadsheets

TABLE DI SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - REASONABLE MAXIMUM EXPOSURE- CURRENT/FUTURE. ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTAL STITE NUVESTIGATION REPORT FORMER COMIAM MANUFACTURING SITE 333 ADELAIDE AVENUE 333 ADELAIDE AVENUE

	PROVIDENCE, RHODE ISLAND	
SCENARIO TIMEFRAME: CURRENT/FUTURE		
RECEPTOR POPULATION: ADOLESCENT TRESPASSER		
RECEPTOR AGE: AGES 7-18		
		NUM PLANT

					CAR	CINOGENIC	RISK (1)		NON	-CARCINOGE	INIC HAZARD OI	UOTIENT (1)	
MEDIUM	EXPOSURE MEDIUM	ENPOSURE	CHEMICAL	INGESTION	INHALATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INITALATION	DERMAL	ENPOSURE ROUTES TOTAL
SEDIMENT	SEDIMENT	INNER COVE	1.2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	5.4E-03	NA		5.4E-03
			Butylbenzenc, sec-	NC	NA	NC	AN		Undetermined	9.4E-07	NA		9.4E-07
			Tetrachloroethene	2.6E-07	VN N	0.0E+00	NA	2.6E-07	Liver	2.8E-04	NA		2.8E-04
			Trichloroethene	8.6E-07	NA	0.0E+00	NA	8.6E-07	Liver/Kidney	4.2E-02	NA		4.2E-02
			Vinvl Chloride	1.1E-06	NA	0.0E+00	NA	1.1E-06	Liver	1.5E-03	VN		1.5E-03
111			Benzo(a)anthracene	8.9E-08	NA	2.9E-08	NA	1.2E-07	Kidney	2.4E-05	NN	7.7E-06	3.1E-05
			Benzo(a)pyrene	6.1E-07	NA	2.0E-07	AN	8.1E-07	Kidney	1.6E-05	NA	5.3E-06	2.2E-05
			Benzoth)Illioranthene	9.1E-08	NA	3.0E-08	NA	1.2E-07	Kidnev	2.4E-05	NA	7.9E-06	3.2E-05
			Disensed: Manthracene	7.45-08	NA.	2.4P.08	NA.	9 8F-08	Kidnev	2.0F.06	NN	6 4F-07	2.6F.06
			Indeno(1.2.3.ed)mutene	1 96-08	NA	61E-09	VN	2.5E.08	Kidnev	\$ 0F.06	NA	1.6F.06	6.6E-06
				1 51 00		6.16-00		00-01-0		00-10-C		10000	1 05 03
			Afoclor 1254	1.05-05	AN I	1 70 00	AN I	2.15-05	ct-in-	CO-17.7	44	10-00-1	0.000
			Arsenic	20-362	YN S	10-31-1	NN I	00-307	OMUL 21.1	20-20-0		0-37.7	20-22-6
			Cadmum (water)	ž	AN	z c	YN S		Nuncy	2.75-03	VN N	1.35-04	2,85-03
		,	Chromium VI (used as Total Chromium)	ž	NA	2 S	AN	,	NUAEL	4.0E-02	VZ :		4.06-02
			Copper	NC	NA	NC	NA			ł	YN N		
112			Lead	:	NA	ģ	NA			Ľ	YN Y		
			Mercury (as elemental mercury)	NC	NA	U Z	NA		Immune system	8.8E-04	AN		8.8E-04
			Nickel	NC	NA	NC	NA		Decreased BW/Organ wt.	4.4E-03	NA		4,4E-03
			Silver	NC	NA	NC	NA		Skin	1.4E-02	NA		1.4E-02
			2.3.7.8-TCDD	1.0E-05	NA	2.6E-08	V A	1.0E-05		Ę	VN	r	
			CHEMICAL TOTAL	1.6E-05	•	4.9E-07	1	2E-05		1.4E-01	0.0E+00	3.2E-03	10-31
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						2E-05					1E-01
	EXPOSURE MEDIUM TOTA	AL						2E-05					10-31
SUBBACE	SUBBACE WATER	INNER COVE	[1 2-Dichturoethene (cis)	NC	NA	NC	NA		Hematological system	1.1E-04	NA	:	1.1E-04
WATED			Terrochlomethene	1 3F-08	NA	1.4E-07	NA	1 56-07	Liver	1.4E-05	NA	1 56-04	1.68-04
NALEN			Trichlomethene	2 4E-08	NA NA	7 IF-08	NA	9 58-08	Liver. Kidney	1.15-03	NA	1 5E-01	4 6F-01
			Virul Chloride	7 9F-08	NA	8 5E-08	NA	1.6E-07	Liver	1.15-04	NA	1 2E-04	2 3E-04
			T and		NA N		NA			1	NA	1	
												E	
			CHEMICAL TOTAL	1.76-07		3.05-07		45.07		1.45.03	0.05+00	3 7F-01	\$F.03
			CUEWICAE LOTAE	1722-01	0	10-70'0		10-71		00-00-1	001000	00-11-0	20.00
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						46-07					5E-03
	EXPOSURE MEDIUM TOTA	AL						4E-07					5E-03
organa	a TOTAL							2F-05					2E-01
NECEL IC	W DIVE				MOIN IT MOR	100000	11 MILLI	1000	THE INDUCT	10010012	Mary 11 and		10.12
					101 AL KISK	ALKUSS	ALL MEDIA	2E-02	I I U I AL	ZARD AUK	DAM ALL MED	V	76-01
		NOTES											
		NC - Not carcinogenic by this exposi-	ure route.										1
		NA - Not applicable, exposure route	not applicable for this chemical/exposure me	dium.									1
			its and/or demial absorption values are not av-	attable.									1
													1
		Prepared by	A BJR										•
		. Checked by	- KJC							TOTAL HEN	IATOLOGICAL S	- III WELSAS	5.5E-03
										1	OTAL IMMUNES	- IH WELSA	3.9E-03
											TOTAL	- IH ABNOD	2.9E-03
											TOTAL	LIVER HI =	2.2E-03
													I
											and an and a second second		I
											TOTAL	NOAEL HI =	4.0E-02
													1
											TOTA	TH NINS TN	4.6E-02

TABLE D2 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS- REASONABLE MAXIMUM EXPOSURE- CURRENT/FUTURE- ADULT TRESPASSER- AGES 19-30 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORIAM MANUEATURING SITE PROVIDEALOR AND HAZARDE AVENUE PROVIDEACE, RHODE ISLAND

		ENPOSURE ROUTES TOTAL	3.4E-03	6.0E-07	1.8E-04	2.7E-02	9.6E-04	2.2E-05	1.5E-05	2.2E-05	1.SE-06	4.6E-06	2.1E-03	2.1E-02	1.8E-03	2.6E-02			5.7E-04	2.8E-03	9.1E-03		9E-02			9E-02	9E-02	6.9E-05	1.4E-04	3.8E-03	1.7E-04	
	QUOTIENT	N DERMA						6.7E-0	4.6E-0	6.9E-0	5.6E-0	1.46-0	6.8E-0	1.9E-0	1.2E-0	100000000							2.8E-0	10	_			•	1.3E-0	3.0E-0	1.0E-0	1
	NIC HAZARD	INHALATION	NA	NA	NA	NA	NA	NA	AN	NA	NA	ΝA	NA	NA	NA	NA	NA	NA	NA	NA	ΥN	٧N	0.0E+00					NA	AN	NA	AN	AN
	-CARCINOGE	INGESTION	3.4E-03	6.0E-07	1.8E-04	2.7E-02	9.6E-04	1.5E-05	1.0E-05	1.6E-05	1.3E-06	3.2E-06	1.4E-03	1.9E-02	1.7E-03	2.6E-02	ţ	1	5.7E-04	2.8E-03	9.1E-03	•	9.2E-02					6.9E-05	9.0E-06	7.4E-04	7.1E-05	ł
	NON	PRIMARY TARGET ORGAN	Hematological system	Undetermined	Liver	Liver/Kidney	Liver	Kidney	Kidney	Kidney	Kidney	Kidney	Immune system	Skin	Kidney	NOAEL			Immune system	Decreased BW/Organ wt	Skin							Hematological system	Liver	Liver, Kidney	Liver	
		EXPOSURE ROUTES TOTAL			1.7E-07	5.5E-07	6.9E-07	8.2E-08	5.6E-07	8.4E-08	6.9E-08	1.7E-08	1,4E-08	1.6E-06								6.7E-06	1E-05			1E-05	1E-05	- A CONTRACTOR	1.3E-07	7.8E-08	1.3E-07	
	RISK (1)	EXTERNAL (RADIATION)	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	V N	AN	NA	NA	NA	NA	NA	NA	AN	NA	1					NA	NA	NA	NN	AN
	CINOGENIC	DERMAL	NC	NC	0.0E+00	0.0E+00	0.0E+00	2.5E-0S	1.7E-07	2.6E-08	2.1E-08	5.3E-09	4.7E-09	1.5E-07	Ŋ	NC	NC	F	NC	NC	Ŋ	2.3E-08	4.3E-07					NC	1.2E-07	6.2E-08	7.4E-08	;
	CAF	INHALATION	NA	NA	NA	٧N	NA	VN	VN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ΝA	•					NA	NA	VN	ΥN Ν	VN
		INCESTION	NC	NC	1.7E-07	5.5E-07	6.9E-07	5.7E-08	3.9E-07	5.8E-08	4.8E-08	1.2E-08	9.8E-09	1.5E-06	NC	NC	NC	;	NC	NC	NC	6.7E-06	1.0E-05					NC	8.3E-09.	1.5E-08	5.1E-08	1
		CHEMICAL	1.2-Dichloroethene (cis)	Butylbenzene, sec-	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluorunthene	Dibenzo(a.h)anthracene	Indeno(1.2.3-cd)pyrene	Aroclor 1254	Arsenic	Cadmium (water)	Chromium VI (used as Total Chromium)	Copper	Lead	Mercury (as elemental mercury)	Nickel	Silver	2.3.7.8-TCDD	CHEMICAL TOTAL		RADIONUCLIDE TOTAL			1.2-Dichloroethene (cis)	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Lead
CURRENT/FUTURE ADULT TRESPASSER -30		EXPOSURE	INNER COVE																							EXPOSURE POINT TOTAL	1	INNER COVE				
SCENARIO TIMEFRAME RECEPTOR POPULATION RECEPTOR AGE: AGES 19-		EXPOSURE MEDIUM	SEDIMENT																								EXPOSURE MEDIUM TOTAL	SURFACE WATER				
		MEDIUM	SEDIMENT																									SURFACE	WATER			

FOTAL HAZARD ACROSS ALL MEDIA 1E-05 TOTAL RISK ACROSS ALL MEDIA NOTES. NC - Not carcinogenic by this exposure route. NC - Not applicable; exposure route not applicable for this chemical/exposure medium. ... Not culculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR Checked by: KJC

-3.5E-03 2.7E-03 1.9E-03 1.5E-03

TOTAL HEMATOLOGICAL SYSTEM II = TOTAL IMMUNE SYSTEM II = TOTAL KIDNEY II = TOTAL LIVER III =

16-01

1E-05

3E-07 3E-07

4E-03 4E-03

3.3E-03

0.0E+00

8.8E-04

3E-07

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2.6E-07

I.

7.4E-08

RADIONUCLIDE TOTAL CHEMICAL TOTAL

EXPOSURE POINT TOTA

EXPOSURE MEDIUM TOTA

RECEPTOR TOTAL

1 1E-01

1

2.6E-02 3.0E-02

TOTAL NOAEL HI = TOTAL SKIN III = TABLE D3

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC3 - REASONABLE MAXIMUM EXPOSURE- CURRENTFUTURE- COMMERCIAL/INDUSTRIAL WORKER- ADULT SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORMER CONTRACTURING SITE PROVIDENCE, RHODE ISLAND PROVIDENCE, RHODE ISLAND

EXPOSURE ROUTES TOTAL 1.0E.07 3.0E.05 4.5E.03 1.6E.04 3.22E.06 3.32E.06 3.32E.06 3.32E.06 3.32E.06 3.326.04 3.36.04 4.36.03 4.36.03 9.5E-05 4.7E-04 1.5E-03 1.7E-05 2.1E-05 6.2E-04 3.2E-05 2E-02 2E-02 2E-02 7E-04 . 2E-02 E-04 7E-04 NON-CARCINOGENIC HAZARD QUOTIENT (I) DERMAL 4.7E-04 2.6E-04 6.4E-07 4.4E-07 6.6E-07 5.3E-08 1.3E-07 6.5E-05 1.8E-04 1.8E-04 1.1E-05 1.9E-05 4.4E-04 1.4E-05 TOTAL HAZARD ACROSS ALL MEDIA INHALATION 0.0E+00 INGESTION 1.5E-02 2.2E-04 5.7E-04 1.0E-07 3.0E-05 4.5E-03 2.5E-06 1.7E-06 2.6E-06 2.1E-07 5.3E-07 2.4E-04 3.2E-03 2.9E-04 4.3E-03 9.5E-05 4.7E-04 1.5E-03 1.7E-05 2.2E-06 1.8E-04 1.8E-04 1.6E-04 Hematological system Liver Liver, Kidney Liver Immune system Decreased BW/Organ wt. PRIMARY TARGET ORGAN Liver LiverKidney Liver Kidney Kidney Kidney Kidney Kidney Kidney Kidney Sinnune system Skin Undetermined tological sys Kidney NOAEL Skin EXPOSURE ROUTES TOTAL 5.885-08 1.955-07 2.455-07 2.555-08 1.775-07 1.775-07 2.555-08 5.255-09 5.215-09 5.215-09 5.425-07 5.425-07 4.1E-08 2.7E-08 4.8E-08 4E-06 4E-06 2.3E-06 4E-06 4E-06 90-31 1E-07 1E-07 1E-07 EXTERNAL (RADIATION) FOTAL RISK ACROSS ALL MEDIA NA NA NA NA NA NA NA CARCINOGENIC RISK (1) DERMAL NC 3.7E-08 1.9E-08 2.1E-08 8.5E-08 7E-08 NNN INHALATION V V V V V V INGESTION 3.9E-08 3.5E-06 NC 4.3E-09 7.9E-09 2.6E-08 5.8E.05 1.9E.07 2.4E.07 2.4E.07 2.0E.08 1.4E.07 1.4E.07 3.4E.09 3.4E.09 3.4E.09 NC NC NC NC NC 23E-06 N N Chromium VI (used as Total Chromiu fercury (as elemental mercury) CHEMICAL RADIONUCLIDE TOTAL RADIONUCLIDE TOTAL Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2.3-cd)pyrene .2-Dichloroethene (cis) 2-Dichloroethene (cis) Vinyl Chloride Benzo(a)anthracene HEMICAL TOTAL HEMICAL TOTAL Butylbenzene, sec-Fetrachloroethene **Fetrachloroethene** admium (water) Trichloroethene Vinyl Chloride Lead **Frichloroethene** .3.7.8-TCDD Aroclar 1254 SCENARIO TIMEFRAME: CURRENT/FUTURE RECEITOR POPULATION: COMMERCIAL/INDUSTRIAL WORKER RECEPTOR AGE: ADULT Copper lickel ilver ead EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL EXFOSURE POINT INNER COVI NOTES: EXPOSURE MEDIUM TOTAL EXPOSURE MEDIUM TOT/ SURFACE WATER EXPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMEN

---- Not calculated, dose-response data and/or dermal absorption values are not available. NA - Not applicable; exposure route not applicable for this chemical/exposure medium.

NC - Not carcinogenic by this exposure route.

Prepared by: BJR Checked by: KJC

P: W.2-mig-TEXTRON-GORLDAM Supplements? 2000 HIJ_KiA, July_2006 Tables/Ridd'alev RAII-funet/savet/ommlnd, STMMARY

5.9E-04 4.0E-04 3.1E-04 2.4E-04

TOTAL LIVER HI =

TOTAL HEMATOLOGICAL SYSTEM III -TOTAL IMMUNE SYSTEM III -TOTAL KIDNEY HI =

4.3E-03

TOTAL NOAEL HI = TOTAL SKIN HI =

4.9E-03

TABLE D4 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - REASONABLE MAXIMUM EXPOSURE- CURRENT/FUTURE- ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTAL STITE INVESTIGATION REPORT FORMER GORHAM MANUFACTURING SITE PRANDE ATORING SITE PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE

RECEPTOR AGE: AGES 7-18 RECEPTOR AGE: AGES 7-18	N ADULESLENT I KESTASSEK			CARC	CINOGENIC	RISK (I)		NON	-CARCINOGE	NIC HAZARD O	UOTIENT (I)	
EXPOSURE EXPOSURE MEDIUM POINT	EXPOSURE POINT	CHEMICAL	INGESTION	INHALATION	DERNAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT OUTER COVE	CULTER COVE	[1.3.Dichlomethene (cis)	NC	NA	NC	NA		Hematological system	7 55-08	NA		2 5E-08
		Rulylhenzene. sec.	NC	AN	UN	NA		Undetermined	7 5E-08	NA		7.5E-08
		Tetrachloroethene	6.9E-11	AN NA	0.0E+00	NA	6.9E-11	Liver	7.5E-08	NA	5	7.5E-08
		Trichlotnethene	5.1E-11	VN	0.0E+00	NA	5.1E-11	Liver/Kidney	2.5E-06	NA		2.5E-06
		Vinyl Chloride	3.6E-10	NA	0.0E+00	AN	3.6E-10	Liver	5.0E-07	NA		5.0E-07
		Benzo(a)anthracene	2.7E-08	VN	8.7E-09	NA	3.5E-0S	Kidney	7.1E-06	NA	2.3E-06	9.4E-06
		Benzo(a)pyrene	3.3E-07	NA	1.1E-07	NA	4.4E-07	Kidney	8.9E-06	NA	2.9E-06	1.2E-05
		Benzo(b)fluoranthene	5.5E-08	NA	1.8E-08	NA	7.3E-08	Kidney	1.5E-05	NA	4.7E-06	1.9E-05
		Dibenzo(a,h)anthracene	3.1E-08	NA	1.0E-08	NA	4.2E-08	Kidney	8.4E-07	NA	2.7E-07	1.1E-06
		Indeno(1,2,3-cd)pyrene	1.0E-08	NA	3.3E-09	NA	1.3E-08	Kidney	2.7E-06	NA	8.7E-07	3.6E-06
		Aroclor 1254	4.1E-09	NA	1.4E-09	NA	5.5E-09	Immune system	6.0E-04	NA	2.1E-04	8.1E-04
		Arsenic	9.2E-07	NA	6.9E-08	NA	9.9E-07	Skin	1.2E-02	NA	8.9E-04	1.3E-02
		Cadmium (water)	NC	NA	NC	NA		Kidney	2.6E-04	NA	1.3E-05	2.7E-04
		Chromium VI (used as Total Chromium)	NC	NA	NC	NA		NOAEL	7.2E-04	NA	The of Harden	7.2E-04
		Conner	NC	NA	NC	NA				NA		1000000
		Lead	1	AN	;	NA			1	NA		
		Mercury (as elemental mercury)	UN	NA	NC	NA		Immune system	2.5E-05	NA		2.5E-05
		Nickel	UN N	NA	UN	NA		Decreased BW/Organ wt.	3.56-04	VN		3.58-04
		Sheer	N N	NA		NA		Skin	2 6E-05	NA		2 6F.05
		17 S.TCDD	9.0F.08	NA	2.3E-10	NA	9.1E-08			NA	;	20.0
									a.		1942	
		CHEMICAL TOTAL	1.5E-06		2.2E-07	:	2E-06		1.4E-02	0.0E+00	1.1E-03	2E-02
							+					
		RADIONUCLIDE TOTAL										
EXPOSURE POINT TOTAL	EXPOSURE POINT TOTAL						2E-06					2E-02
EXPOSURE MEDIUM TOTAL	AL						2E-06		22			2E-02
SURFACE WATER OUTER COVE	OUTER COVE	[1.2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	2.2E-04	NA	1	2.2E-04
		Tetrachloroethene	9.6E-09	NA	1.0E-07	NA	1.1E-07	Liver	1.0E-05	NA	1.1E-04	1.2E-04
		Trichloroethene	3.3E-08	NA	9.9E-08	NA	1.3E-07	Liver, Kidney	1.6E-03	NA	4.8E-03	6.4E-03
		Vinyl Chloride	2.5E-08	NA	2.7E-08	NA	5.1E-08	Liver	3.5E-05	NA	3.7E-05	7.2E-05
		Lead	:	NA	1	NA			4	NA	1	
		CUENICAL TOTAL	6 70 00		2 20 07		3E 07		1 95 01	0.05400	1 05 03	16.03
			0.12-00		10-0014	-	10-ML		00-12-1	001000	on-ast	20-07
		Control Internet										
TT WOW WITHOUT ONLY OF THE OWNER	TT MOM ANTION ANTI-SOUNA	RADIONUCLIDE IUTAL		10			20.07				5	EN 26
JEAPOSUKE POINT TOTAL	EALUSUKE FUINT TUTAL						20-01					10-07
EXPOSURE MEDIUM TOTAL	AL						3E-07					7E-03
LOTAL							2E-06					2E-02
				TOTAL RISK.	ACROSS /	VLL MEDIA	2E-06	TOTAL HA	ZARD ACRO	DSS ALL MED	IA	2E-02

NOTES:

NC - Nut carcinogenie by this exposure route. NA - Not applicable: exposure route not applicable for this eltemical/exposure medium.

---- Not calculated; dose-response data and/or demual absorption values are not available.

Prepared by: BJR Checked by: KJC

7/31/2006

2.2E-04 8.3E-04 3.2E-04 1.9E-04

TOTAL HEMATOLOGICAL SYSTEM II = TOTAL IMMUNE SYSTEM II = TOTAL KIDNEY II = TOTAL LIVER II =

7.1E-04

TOTAL NOAEL HI = TOTAL SKIN HI =

1.3E-02

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TABLE DS SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - REASONABLE MAXIMUM EXPOSURE- CURRENT/FUTURE- ADULT TRESPASSER- AGES 19-30 SUPILEMENTAL SITE INVESTIGATION REPORT FORMER GORHAM MANUPACTURING SITE 733. ADBLADEATOR ANTENUE PROVIDENCE, RHODE ISLAND

	SCENARIO TIMEFRAME RECEPTOR POPULATIO RECEPTOR AGE: AGES 1	: CURRENT/FUTURE N: ADULT TRESPASSER 9-30											
					CARC	CINOGENIC	RISK (1)		NON	-CARCINOGE	NIC HAZARD Q	(I) LOTIENT (I)	
MEDIUM	EXPOSURE MEDIUM	EXPOSURE	CHEMICAL	INGESTION	INHALATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INIALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT	SEDIMENT	OUTER COVE	1.2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	4.8E-08	NA		4.8E-08
			Butylbenzene, see-	DN S	AN AN	NC	AN S		Undetermined	4.8E-08	AN AN		4.8E-08
			I ctrachloroethene	11-90-4	AN AN	0.06+00	AN AN	4.2E-11 3.3E-11	Liver/Kidnev	4.5E-05 1.6E.06			4.55-05
			Vinyl Chloride	2.36-10	AN AN	0.0E+00	AN	2.3E-10	Liver	3.2E-07	AN NA		3.26-07
			Benzo(a)anthracene	1.7E-08	ΥN	7.6E-09	NA	2.5E-08	Kidney	4.6E-06	N A	2.0E-06	6.6E-06
			Benzo(a)pyrene	2.2E-07	AN	9.5E-08	NA 1	3.1E-07	Kidney	5.7E-06	AN N	2.5E-06	8.3E-06
		4	Benzo(b)fluoranthene Dihenzo(a h)anthenene	3.5E-08 2.0E-08	A A A	1.6E-08 8 9E-09	AN	5.1E-08 2.9E-08	Kidnev	9.4E-00 5.4E-07	AN NA	4.1E-06 2.4E-07	7 75-07
			Indeno(1,2,3-ed)pyrene	6.5E-09	A N	2.9E-09	NA	9.3E-09	Kidney	1.7E-06	NA N	7.66-07	2.5E-06
			Aroclor 1254	2.6E-09	AN	1.3E-09	NA	3.9E-09	Immune system	3.8E-04	NA	1.8E-04	5.7E-04
			Arscnic	5.9E-07	AN NA	6.0E-08	NA	6.5E-07	Skin	7.7E-03	¥Z.	7.8E-04	8.4E-03
			Cadmium (water)	U C	₹ ×Z	N N	AN AN		Kidney	1.7E-04	۲×۲	1.1E-05	1.8E-04
			CATORIARI VI (USCU 25 1014) CATORIURI	ZZZ	K N	2 U	AN AN		NUMEL	+1-1-1+	t t		1.12-04
			Lead	1	A N	1	NA			1	A N		
			Mercury (as elemental mercury)	NC	AN	NC	AN		Immune system	1.6E-05	A N		1.6E-05
			Nickel	UN N	AN	N N	AN NA		Decreased BW/Organ wt.	2.2E-04	NA NA		2.2E-04
			2.3.7.8-TCDD	5.8E-08	K K K K	2.0E-10	AN AN	5.SE-0S	ШУС		K N N	•	1.12-05
			CURRENT POTAL	0.00 01		1 05 03	2	10.00		0.05 03	0.05100	0.00 04	10.00
			CHEMICAL IUIAL	9.2E-U/	•	1.95-07		15-00		3.72-05	0.05+00	40-36%	1E-02
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						1E-06					1E-02
	EXPOSURE MEDIUM TOTA	AL						1E-06					1E-02
SURFACE	SURFACE WATER	OUTER COVE	1.2-Dichloroethene (cis)	NC	VN	NC	NA		Hematological system	1.4E-04	NA	1	1.4E-04
WATER			Teinhoroethene	6.2E-09 7 I E-08	e a	9.1E-08 8.7E-08	AN AN	9.7E-08	Liver Kidnev	6./E-06 1.0E.03	A N N	9.86-05	1.15-04
			Vinyl Chloride	1.6E-08	AN	2.3E-08	NA	3.9E-08	Liver	2.2E-05	NA	3.2E-05	5.5E-05
			Lead	1	AA	1	NA			j.	NA	,t	
			CHEMICAL TOTAL	4 1F.08		2.0F-07		76.07		1.75.01	0.05+00	1 15-01	4E-01
				00-00t					9		101-101-10	10-20-1	
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						2E-07					6E-03
	EXPOSURE MEDIUM TOTA	VI.						2E-07					6E-03
								2				-	
RECEPTO	IR TOTAL							1E-06					2E-02
					TOTAL RISK.	ACROSS A	LL MEDIA	1E-06	TOTAL HA2	ZARD ACRC	DSS ALL MED	IA	2E-02
		NOTES											,
		NC - Not carcinorenic by this exnos	ture mute.										1
		NA - Not applicable, exposure route	e not applicable for this chemical/exposure med	dium									1
		Not calculated; dose-response da	ata and/or dermal absorption values are not ava	ailable.									1
													-
		Prepared by Checked by	y: KJC y: KJC							TOTAL HEM	IATOLOGICAL	SYSTEM III =	1.4E-04
										TO	DTAL IMMUNE	SYSTEM HI =	5.8E-04
	8										TOTAL	LLIVER HI -	1.6E-04

P. W.2-mig. TIXTRUNK 62831AAU Supplemented 2006 HIL Risk, July. 2006 Tables RiskU-also RML-6 meet toxe-shall(Tes.) SUMMAY.

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Page 1 of 1

4.7E-04 8.4E-03

TOTAL NOAEL HI -TOTAL SKIN HI = TABLE D6

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCA- REASONABLE MAXIMUM EXPOSURE- CURRENT/FUTURE- COMMERCIAL/INDUSTRIAL WORKER- ADULT SUPLEMENTAL SITE INVESTIGATION REPORT FORMER CONTRACTURING SITE 33 AURAL MANUFACTURING SITE PROVIDENCE, RHODE ISLAND PROVIDENCE, RHODE ISLAND

EXPOSURE ROUTES TOTAL 8.06-09 8.06-09 2.76-07 5.46-08 9.56-07 1.26-06 2.06-06 1.16-07 1.16-07 3.56-05 8.26-05 8.26-05 7.86-05 7.86-05 2.6E-06 3.7E-05 2.8E-06 2E-03 3.6E-05 1.6E-05 8.6E-04 1.0E-05 2E-03 3E-03 0E-09 3E-03 • 2E-03 9E-04 9E-04 9E-04 NON-CARCINOGENIC HAZARD QUOTIENT (I) DERMAL 9.4E-05 1.9E-07 2.4E-07 4.0E-07 4.0E-07 2.3E-08 1.7E-05 7.3E-08 1.7E-05 7.4E-05 1.1E-06 1.4E-05 6.1E-04 4.4E-06 6.3E-04 1 ŝ, FOTAL HAZARD ACROSS ALL MEDIA INHALATION 0.0E+00 0.0E+00 V V V V V V INGESTION 3.0E-04 8.0E-09 8.0E-09 8.0E-09 2.7E-07 5.4E-08 7.6E-07 9.6E-07 1.6E-06 8.9E-08 2.9E-07 6.4E-05 1.3E-03 2.8E-05 7.8E-05 2.6E-06 3.7E-05 2.8E-06 1.5E-03 3.6E-05 1.7E-06 2.6E-04 5.5E-06 Ē. 1 PRIMARY TARGET ORGAN Decreased BW/Organ wt. ematological system Liver Liver, Kidney Liver lmmune system Skin Kidney NOAEL Liver Liver/Kidney Liver Kidney Kidney Kidney Kidney Hematological syst Undetermined Immune system Skin EXPOSURE ROUTES TOTAL 1.66-11 1.16-11 8.16-11 7.46-09 9.46-08 1.56-09 8.86-09 2.86-09 1.26-09 1.26-09 2.28-07 2.26-07 3.1E-08 3.7E-08 1.5E-08 4E-07 2.0E-08 4E-07 4E-07 8E-08 8E-08 8E-08 4E-07 (RADIATION) FOTAL RISK ACROSS ALL MEDIA CARCINOGENIC RISK (I) DERMAL 6.0E-08 - NC NC NC 3.9E-11 3.8E-08 NC 2.7E-08 2.6E-08 6.6E-09 : INHALATION INGESTION NC NC 1.16E-11 1.11E-11 5.9E-08 7.5E-08 7.5E-0 - NC NC NC 2.0E-0S NC 3.2E-09 1.1E-08 8.3E-09 2.2E-08 3.3E-07 ium VI (used as Total Chronium) Aercury (as elemental mercury) CHEMICAL VADIONUCLIDE TOTAL RADIONUCLIDE TOTAL 1.2-Dichloroethene (cis) Tetrachloroethene Nibenzo(a,h)anthracene ndeno(1,2.3-cd)pyrene Dichloroethene (cis) 3enzo(b)fluorunthene HEMICAL TOTAL HEMICAL TOTAL Vinyl Chloride Benzo(a)anthracene Butylbenzene, sec-fetrachloroethene admium (water) Trichloroethene Vinyl Chloride Lead 3cnzo(a)pyrene *<u><u></u></u> <u><u></u></u> <u><u></u></u>* 3.7.8-TCDD vroclor 1254 SCENARIO TIMEFRAME: CURRENT/FUTURE Receptor population: commercial/industrial, worker receptor age: adult Copper **FSFIII** Vickel Silver cad EXPOSURE EXPOSURE POINT TOTA FXPOSURE POINT TOTA OUTER COVE OUTER COVE EXPOSURE MEDIUM TOTAL EXPOSURE MEDIUM TOTA SURFACE WATER ENPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMENT

NOTES

NC - Not carcinogenic by this exposure route

NA - Not applicable; exposure route not applicable for this chemical/exposure medium.

... Not calculated; dosc-response data and/or dermal absorption values are not available.

Prepared by: BJR Checked by: KJC

3.6E-05 8.4E-05 3.3E-05 2.6E-05

TOTAL HEMATOLOGICAL SYSTEM HI -TOTAL IMMUNE SYSTEM HI -TOTAL KIDNEY HI = TOTAL LIVER HI =

7.8E-05 1.4E-03

TOTAL SKIN HI = TOTAL NOAEL HI =

TABLE D7

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC3 - CENTRAL TENDENCY - CURRENT/FUTURE- ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORHAM MANUFACTURING SITE 333 ADBLANDE AVENUE PROVIDENCE, RIIODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADOLESCENT TRESPASSER RECEPTOR AGE: AGES 7-18

_	RECEI TOWARD MAN	2		71									
					CARC	CINOGENIC	RISK (1)		NON	-CARCINOGE	INIC HAZARD OF	OTIENT (I)	
MEDIUM	EXPOSURE	EXPOSURE	CHEMICAL	INGESTION	INIIALATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAI
SEDIMENT	SEDIMENT	INNER COVE	1.2-Dichloroethene (cis)	NC N	NA	NC	NA		Hematological system	2.8E-04	NA		2.8E-04
			Butylbenzene, sec-	A 3E M	AN AN	UNC NC	NA VV	00 DE V	Undetermined	0.56-07	A N		0.36-07
			Trichlomethine	1 35.08	AN AN	0.05+00	e N	1 15-08	Liver/Kidney	7 6F-01	e N		2.6E-03
			Vinyl Chloride	2.7E-08	AN	0.0E+00	YN N	2.7E-08	Liver	1.5E-04	AN N		1.5E-04
			Benzo(a)anthracene	7.0E-09	NA	2.36-09	NA	9.2E-09	Kidney	7.4E-06	NA	2.4E-06	9.8E-06
			Benzo(a)pyrene	4,4E-08	NA	1.4E-08	NA	5.8E-08	Kidney	4.7E-06	NA NA	1.5E-06	6.2E-06
			Benzo(b)/fuoranthene	7.7E-09	NA	2.5E-09	NA	1.0E-08	Kidney	8.2E-06	NA	2.7E-06	1.1E-05
			Dibenzo(a,h)anthracene	7.4E-09	NA	2.4E-09	NA NA	9.8E-09	Kidney	7.9E-07	NA	2.6E-07	1.0E-06
			Indeno(1,2,3-cd)pyrene	1.6E-09	NA	5.1E-10	NA	2.1E-09	Kidney	1.7E-06	NA	5.4E-07	2.2E-06
			Aroctor 1254	1.7E-09	NA	6.1E-10	NA	2.4E-09	Immune system	1.0E-03	NA	3.6E-04	1.4E-03
			Arsenic	2.4E-07	NA	1.8E-08	NA	2.6E-07	Skin	1.2E-02	NA	9.3E-04	1.3E-02
			Cadmium (water)	NC	NA	NC	NA		Kidney	1.2E-03	NA	6.1E-05	1.3E-03
			Chromium VI (used as Total Chromium)	NC	NA	NC	NA		NOAEL	1.6E-02	NA	the state of the state of the	1.6E-02
			Copper	NC	NA	NC	VN			:	NA		
			Lead	r	NA	ĩ	NA			1	NA		
			Mercury (as elemental mercury)	UZ Z	NA	S	NA		Immune system	3.5E-04	NA		3.5E-04
			Nickel	Ŋ	NA	NC	NA		Decreased BW/Organ wt.	1.7E-03	NA		1.7E-03
			Silver	NC	NA	NC	NA	10000000000000000000000000000000000000	Skin	3.5E-03	NA		3.5E-03
			2,3,7,8-TCDD	8.6E-07	NA	2.2E-09	NA	8.6E-07		•	NA	4	
								10 11			001100		200 AU
			CHEMICAL TOTAL	1.2E-06	5 m	4.3E-08		1E-06		3.9E-02	0.0E+00	1.45-03	4E-02
			11 TOT DE LOUINE										
		I TOUGHT THE POST IN BOOM IN	KADIONOCEIDE TOTAL					10.07					10.00
		EXPOSURE POINT TOTAL						1E-00					46-02
	EXPOSURE MEDIUM 101A	LL		-		1012		12-00					46-02
SURFACE	SURFACE WATER	INNER COVE	Terrochloroothene (cis)	3 0F-00	AN AN	2 6F-DR	AN AN	7 8E_DS	rtematological system	6.1E-05 8.7E-06	K M	-	1.75-04
MALEN			Trichtomathana	1 55 00	NA	1 3E-06	NA	1 6E-08	l item Kidnere	6 9E-04	NA	2 SE-01	1 75-01
			Visvi Chloride	1.2E-08	AN	1.6E-08	NA	2.8E-08	Liver	6.9E-05	VN	8.95-05	1.6E-04
			Lead	:	NA	-	AN				NA	1	
													and a second
			CHEMICAL TOTAL	1.8E-0S	:	5.4E-08	1	7E-08		8.4E-04	0.0E+00	2.7E-03	4E-03
					1								
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						7E-08					4E-03
	EXPOSURE MEDIUM TOTA	r.						7E-08					4E-03
DECEPTO	D TOTAL							1E-06					4E-02
KELET 10	KIUIAL				AND ALMON	100000	11000	10.00	111 11404	1001 0012	Mary 111 000		10-21
					TOTAL RISK	ACROSS /	ALL MEDIA	1E-06	TOTAL HA	ZARD ACRO	USS ALL MED		4E-02
		NULES:											t
		NU - Not carcinogenic by mis expo	sure rouce.										1
		NA - Not applicable, exposure roun	e not applicature for this chemical exposure men	datte.									1
		INON CARCULATION, GUSC-165/D0136 H	tata anavor uctitiai ausorphiuti vanues ate not ava										1
		Prepared b	by: BJR									<u> </u>	1
		Checked b	by: KJC							TOTAL HEA	MATOLOGICAL S	VSTEM HI =	3.SE-04
										F	OTAL IMMUNE S	VSTEN HI =	1.7E-03
											TOTAL	H ANDIO	1.3E-03
											TOTAL	LIVER HI =	4.5E-04
											TOTAL	NOAEL III =	1.6E-02

P: W2-mig-TEXTROS/GORIAM/Supplements] 2000/HH_Rak_July_2000/Tables/RiskCales/ CFdmerCove-AdolescentTes, SUMMARY

Page I of I

7/31/2006

1.7E-02

TOTAL SKIN HI =

TABLE D8 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS- CENTRAL TENDENCY- CURRENT/FUTURE- ADULT TRESPASSER- AGES 19-30 SUPPLEMENTAL SITE INVESTICATION REPORT FORMER GORHAM MACUFACTURING SITE PROVIDENCE, RHODE ISLAND PROVIDENCE, RHODE ISLAND

	SCENARIO TIMEFRAME RECEPTOR POPULATIO RECEPTOR AGE: AGES 1	S: CURRENT/FUTURE N: ADULT TRESPASSER 19-30		š									
					CAD	LINDERNI	DISK/11		NON	CABCINOCE	NIC HAZABD OI	UNTIRN'T AL	
MEDIUM	EXPOSURE MEDIUM	EXPOSURE	CHEMICAL	INGESTION	INHALATION	DERMAL	ENTERNAL (RADIATION)	ENPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT	SEDIMENT	INNER COVE	1.2-Dichlorocthene (cis)	NC	NA	NC	NA		Hematological system	1.8E-04	NA		1.8E-04
			Butytbenzene, see- Terrachloroethene	3.7E-09	AN AN	0.0E+00	K K Z Z	3.7E-09	Undetermined Liver	4 05-07 1 25-05	A N N		4.05-07
			Trichloroethene	1.1E-08	AN	0.0E+00	٧N	1.1E-08	Liver/Kidney	1.7E-03	A N		1.7E-03
			Vinyl Chloride	2.3E-08	VN	0.0E+00	۲Z	2.3E-08	Liver	9.8E-05	VZ.		9.8E-05
			Benzo(a)anthracene Benzo(a)aurene	6.0E-09 3 8E-08	V N N	2.6E-09	< < Z	8.6E-09 5.4E-05	Kidney Kidnev	4.8E-06 3.0E-06	V V	2.1E-06 1.3E-06	6.9E-06 4 3E-06
			Benzo(a)pyrene Renzo(b)fluoranthene	5.6E-09 6.6E-09	K N N	2.96-09	K K K K	9.5E-00	Kidnev	5.3E-06	K N	2.3E-06	4.3E-06
			Dibenzo(a,h)anthracene	6.3E-09	AN NA	2.8E-09	VN	9.16-09	Kidney	5.1E-07	VN.	2.2E-07	7.36-07
			Indeno(1.2.3-cd)pyrene	1.3E-09	VN	5.9E-10	٧N	1.9E-09	Kidney	1.1E-06	٧N	4.8E-07	1.5E-06
			Aroclor 1254	1.5E-09	VN N	7.1E-10	YZ :	2.2E-09	Immune system	6.5E-04	YZ :	3.1E-04	9.7E-04
			Arsenic Colminus (conter)	2.0E-07 NC	VN VN	2.1E-08	< < Z Z	7.26-07	Kithro	7.8E-04	K N N	8.1E-04	8./E-03 8.4E-04
			Chromium VI (used as Total Chromium)	2 N	VN	Z	VN.		NOAEL	1.06-02	VN	201-21-21-22	1.0E-02
			Copper	NC	NA	NC	NA			1	NA		
			Lead	c	NA	1	NA			1	NA		
			Mercury (as clemental mercury)	NC	AN N	N S	٧X		Immune system	2.2E-04	YN :		2.2E-04
			Nickel	U C	AN AN	S Z	V N		Decreased BW/Organ wi- Skin	7.2E-03	4 4 7 7 7		1.1E-03 7.7E.03
			2.3.7.8-TCDD	7.4E-07	NA	2.5E-09	AN NA	7.4E-07			NA	1	
			CHEMICAL TOTAL	1.0E-06	a.	5.0E-08	1	1E-06		2.5E-02	0.0E+00	1.2E-03	3E-02
								10.07					10.00
	TOT 1 II I	EXPOSURE POINT TOTAL						15-06					35-02
	JEXPOSUKE MEDIUM TOT	AL INNEP COME	1.2 Michlamathana (ala)	NC	NA	NIC	NA	15-00	Hematological castem	4 65 05	NA.	3	3E-02
WATER	SURFACE WATEK	INNEKCOVE	Tetrachlomothene (cis)	1 7F-09	AN AN	3.0F-08	4 Z Z	3.2E-08	Liver	4.0E-03 5.6E-06	A Z	- 9.7E-05	1 05-04
101100			Trichloroethene	3.0E-09	N	1.5E-08	AN NA	1.8E-08	Liver, Kidney	4.46-04	NA	2.2E-03	2.7E-03
			Vinyl Chloride	1.1E-08	NA	1.9E-08	٧N	2.9E-08	Liver	4.4E-05	NA	7.8E-05	1.2E-04
			Lead	1	٧N	1	NA			;	VN	1	
			CHEMICAL TOTAL	1 5E.08		6.45.08		8E-08		5 4F-04	0.064-00	10.44.0	1F.03
			CREMICAL IOIAL	1.25-00		0.10-00		at-10		toote	0.001000	CU-01-7	co-ste
			RADIONICI IDE TOTAL										
		EXPOSURE POINT TOTAL						8E-08					3E-03
	EXPOSURE MEDIUM TOT.	AL						8E-08					3E-03
RECEPTC	DR TOTAL							1E-06					3E-02
					TOTAL RISK	ACROSS.	ALL MEDIA	1E-06	TOTAL HA	ZARD ACRO	SS ALL MED	[A	3E-02
		NOTES:											1
		NC - Not carcinogenic by this expo	Sture route										•
		NA - Not applicable; exposure rout Not calculated: dose-response d	te not applicable for this chemical/exposure med data and/or dermal absorption values are not avai	num. Mable									
		Prepared b	by BJR							a second s			-
		Checked b	by: KJC							TOTAL HEM TO	ATOLOGICAL S ITAL IMMUNE S	SYSTEM III =	1.25-04
											TOTAL	- IH ASURIA	8.6E-04
											TOTAL	LIVER HI -	3.3E-04
													•
											TOTAL	NOAEL HI =	1.0E-02
											TOTA	- IH NINS T	- 1.1E-02

Page I of I

TABLE D9 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CENTRAL TENDENCY- CURRENTFUTURE- COMMERCIALINDUSTRIAL WORKER- ADULT SUPPLEMENTIAL STITE INVESTIGATION REPORT FORMER CORIEMM MANUFECTURING SITE 733. ADBLATECTURING SITE PROVIDENCE, RHODE ISLAND

	EN	7	-
	CARCINOG	INGESTION	2.3E-05
	NON	PRIMARY TARGET ORGAN	Hematological system
		EXPOSURE ROUTES TOTAL	
	CRISK (1)	ENTERNAL (RADIATION)	NA
	INOGENIC	DERMAL	NC
	CARC	INHALATION	VN
		INCESTION	NC
WORKER		CHEMICAL	1.2-Dichloroethene (cis)
CURRENT/FUTURE COMMERCIAL/INDUSTRIAL		ENPOSURE	INNER COVE
SCENARIO TIMEFRAME: C RECEPTOR POPULATION: RECEPTOR AGE: ADULT		EXPOSURE MEDIUM	SEDIMENT

-					CAR	CINOGENIC	RISK (I)		NON	-CARCINOGE	CNIC HAZARD Q	UOTIENT (I)	
MEDIUM	EXPOSURE MEDIUM	ENPOSURE	CHEMICAL	INCESTION	INHALATION	DERMAL	EXTERNAL (RADIATION)	EXFOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	NOITAALION	DERMAL	EXPOSURE ROUTES TOTAI
SEDIMENT	SEDIMENT	INNER COVE	[1.2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	2.3E-05	NA		2.3E-05
			Butythenzene, sec-	NC	NA	NC	NA	0.00000000000000	Undetermined	5.0E-08	NA		5.0E-08
			Tetrachloroethene	1.5E-09	NA	0.0E+00	NA	1.5E-09	Liver	1.5E-06	NA		1.5E-06
			Trichloroethene	4.4E-09	NA	0.0E+00	NA	4.4E-09	Liver/Kidney	2.1E-04	VN		2.1E-04
			Vinvi Chloride	9.2E-09	NA	0.0E+00	NA	9.2E-09	Liver	1.2E-05	NA		1.2E-05
			Benzo(a)anthracene	2 1F-09	NA	5.9E-10	NA	2.9E-09	Kidnev	6.0E-07	NA	L.5E-07	7.5E-07
			Benzo(a)byrene	1 SE-08	NA	3 7E-09	NA	1.8F.08	Kidnev	3 8E-07	NA	9.5E-0S	4.7E-07
			Benrochtdunranthene	2.6E.09	NA	6 SE-10	NA	60°.44 F	Kidnev	6.6P-07	NA	1 76-07	70-3C X
1			Detroit of the detroit	1 55 00	NN N	6 26 10	N N	116.00	Kidney	5 3E.00	N N	1 65.08	7.08.08
				2.3E-07	VN.	1.35 10		2010-02	Vidnay	1 36 07		1.015-00	1 76 07
				01-36.6	VN.	125-10		0.0E-10		0-3C1		30 20 0	10-011
			ATOCIOT 1254	01-326	NA NA	1.05-10	12	01-3410	china system	0.05.01	VN VN	201-377	1.05.01
			Alsonic	5.UE-U6	NN NN	40-30 +		en-3+'e	IIINC IIINC	10-26-6		0.00.0	1.05-03
			Cadmum (water)	N N	AN 1	S Z	VN.		Kidney	9.86-05	Z	J.8E-00	1.05-04
			Chromium VI (used as Total Chromium)	NC	AN	UN N	VN		NOAEL	1.3E-03	VZ.		1.3E-03
			Copper	NC	NA	NC	٧N			ŧ	YZ X		
			Lead	E	AN	f)	V N			1	VN		
			Mercury (as elemental mercury)	NC	NA	Ŋ	VN		Immune system	2.8E-05	٧N		2.8E-05
			Nickel	NC	NA	NC	VN		Decreased BW/Organ wt.	1.3E-04	NN		1.36-04
			Silver	NC	VN	NC	VN		Skin	2.8E-04	NA		2.8E-04
			2.3.7.S-TCDD	2.9E-07	NA	5.6E-10	۲Z	2.9E-07		,	NA		* 700 a 2 4 6 6 6 6 7 7 7
			CHEMICAL TOTAL	4.1E-07		1.1E-08		4E-07		3.1E-03	0.0E+00	8.4E-05	3E-03
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						4E-07					3E-03
	VPOSURE MEDIUM TOT	I.V.						46-07					3E-03
	VLOSONE MEDION 101	AL HARFA COUR	10.5 St. 11	00	N N	NO.	NN	10.71	Uamicalaniani matam	100 00	N N		20100
SURFACE	SURFACE WATER	INNER COVE	1.2-Dichlorocthene (cis)		AN N	NL NC	den in	115 40	nematiogical system	00-30-0	TZ I	- 20	3.85-00
WATER			I ctrachlorocthchc	1 40 40	AN AN	3.15-05		3.2E-05	LINCT	10-20-4		1.02-04	1.00-001
			I neulorochiene	1.0E-09	VN NN	1.05-06		1./E-05	Liver, Nuncy	5./E-05	ZZ Z	1.25-04	5.95-04
			Vinyi Chioride	60-90-0	AN	1.8E-05	YN N	20-26-72	LIVEL	3. /E-00	ZZ :	00-37-1	1.36-05
			Lead	F	NA	ı	NA			ŧ	NA N	1	
			Contract of the second s	0.01 00		100 100		70.00			001.100	100 00	10.11
			CHEMICAL TOTAL	8.0E-09	1	6.3E-US		/E-08		4.56-05	0.06+00	3.8E-04	4E-04
						10 - N						A STATE OF	
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						7E-08					46-04
	VENCINE MEMBINE MEMBINE							7E-08					4F.04
	AFUSUNE MEDIUM TUL	AL						00-71					
an constant	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							50 04					40.00
RECEPTOR	TUTAL					1 202 202		5E-0/	and any second second				45-03
					FOTAL RISK	ACROSS A	NLL MEDIA	SE-07	TOTAL HA	ZARD ACRO	OSS ALL MED	IA	4E-03
		NOTES											1
		NC - Not carcinogenic by this exp	osure route.										
		NA - Not applicable; exposure rou	te not applicable for this chemical/exposure med	Jium.									1
		Not calculated; dose-response	data and/or dermal absorption values are not ava	nilable.									1
													1
		Prepared	by: BJR							AND ALTON		- III IVALAN	
		Checked	by: KJC							TUIALIEN	DTAL IMMUNE	- IN WELSON HI =	FU-AL I
											TOTAL	H NINEY HI	F0-30 1
											TOTAL	. LIVER HI =	4.5E-05
													-
													1
											TOTAL	NOAEL HI =	1.3E-03
											TOT	III NLXS III =	1 15-01

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CENTRAL TENDENCY- CURRENTFUTURE- ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORIAM MANUFACTIRING SITE 333 ADDELADE AFFUUE PROVIDENCE, RHODE ISLAND TABLE D10

SCENARIO TIMEFRAME: RECEPTOR POPULATION RECEPTOR AGE: AGES 7-	: CURRENT/FUTURE N: ADOLESCENT TRESPASSE) -18	-										
				CAR	CINOGENIC	RISK (1)		NON	I-CARCINOGEN	HC HAZARD QL	(I) LIENT (I)	
MEDIUM	FOINT	CHEMICAL	INCESTION	INIIALATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT	OUTER COVE	1.2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	5.0E-08	AN		5.0E-08
		Butylbenzene, sec-	2 N N	NA	Ŋ	NA		Undetermined	5.0E-08	NA		5.0E-08
		Tetrachloroethene	1.2E-11	NA	0.0E+00	NA	1.2E-11	Liver	5.0E-08	NA		5.0E-08
		Trichloroethene	S.6E-12	NA	0.0E+00	NA	8.6E-12	Liver/Kidney	1.7E-06	NA		1.7E-06
		Vinyl Chloride	6.0E-11	NA	0.0E+00	NA	6.0E-11	Liver	3.3E-07	NA		3.3E-07
		Benzo(a)anthracene	1.5E-09	NA	5.0E-10	NA	2.0E-09	Kidney	1.6E-06	NA	5.4E-07	2.2E-06
		Benzo(a)pyrene	1.9E-08	NA	6.3E-09	NA	2.6E-08	Kidney	2.IE-06	NA	6.7E-07	2.7E-06
		Benzo(b) fluoranthene	3.2E-09	NA	1.0E-09	NA	4.2E-09	Kidney	3.4E-06	VN	1.1E-06	4.5E-06
		Dibenzo(a,h)anthracene	2.4E-09	NA	7.9E-10	NA	3.2E-09	Kidney	2.6E-07	AN	8.4E-0S	3.4E-07
		Indeno(1.2.3-cd)pyrene	6 3E-10	NA	2.0E-10	NA	8.3E-10	Kidney	6.7E-07	NA NA	2.2E-07	8.8E-07
		Aroclor 1254	6.8E-10	NA	2.4E-10	NA	9.2E-10	Immune system	4.0E-04	A N	1.4E-04	5.4E-04
		Arsenic	5.8E-08	NA	4.4E-09	NA	6.3E-08	Skin	3.0E-03	NA NA	2.3E-04	3.3E-03
		Cadmium (water)	NC	NA	NC	NA		Kidney	1.7E-04	AN	8.7E-06	1.8E-04
		Chromium VI (used as Total Chromium)	NC	NA	NC	NA	C. 1	NOAEL	3.4E-04	NA NA		3.4E-04
		Copper	NC	٧Z	NC	NA			1	۲Z		
		Lead	:	NA	;	NA			L	AN		
		Mercury (as elemental mercury)	NC	NA	NC	NA		Immune system	1.6E-05	NA		1.6E-05
		Nickel	NC	NA	NC	NA		Decreased BW/Organ wt.	1.0E-04	NA		1.0E-04
		Silver	NC	NA	NON	NA		Skin	1.7E-05	VN		1.7E-05
		2.3.7,8-TCDD	6.0E-09	AN	1.5E-11	NA	6.0E-09		ı	۲Z		
		CHEMICAL TOTAL	9.2E-08	•	1.3E-08		1E-07		4.IE-03	0.0E+00	3.8E-04	4E-03
		RADIONUCLIDE TOTAL										
	EXPOSURE POINT TOTAL						1E-07					4E-03
EXPOSURE MEDIUM TOTA	\L						1E-07					4E-03
SURFACE WATER	OUTER COVE	1.2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	7.5E-05	NA	4	7.5E-05
		Tetrachloroethene	1.8E-09	NA	2.3E-08	NA	2.5E-08	Liver	7.8E-06	٧N	9.9E-05	1.1E-04
		Trichloroethene	2.9E-09	NA	1.1E-08	NA	1.4E-08	Liver, Kidney	5.7E-04	VN	2.1E-03	2.6E-03
		Vinyl Chloride	4.7E-09	NA	6.0E-09	NA	1.1E-08	Liver	2.6E-05	NA	3.4E-05	5.9E-05
		Lead	;	NA	•	NA		1	1	NA	ł	
		CHEMICAL TOTAL	9.4E-09	:	4.0E-08		5E-08		6.8E-04	0.0E+00	2.2E-03	3E-03
		1 A DESCRIPTION OF A DESCRIPTION OF A										
		RADIONUCLIDE TOTAL			1							
	EXPOSURE POINT TOTAL						5E-08					3E-03
EXPOSURE MEDIUM TOTA	T						5E-08					3E-03
IR TOTAL							2E-07					7E-03
				TOTAL RISK	ACROSS /	VLL MEDIA	2E-07	TOTAL HA	ZARD ACRO	SS ALL MEDI	A	7E-03
	NOTES:											1
	NC - Not carcinogenic by this exp	osure route.										1
	RECENTOR POPULATION RECEPTOR AGE: AGES A REDIUM SEDIMENT SEDIMENT SEDIMENT SEDIMENT SEDIMENT SEDIMENT SEDIMENT T SEDIMENT SE	RECENTION OF DULATION: CURRENTITIRE RECENTION POPULATION: ADDLESCENT TRESPASED RECEPTOR AGE: AGES 7-18 REDUM REDUM SEDIMENT OUTER COVE SEDIMENT OUTER COVE REVOSURE MEDIUM TOTAL SURFACE WATER OUTER COVE SURFACE WATER OUTER COVE	RECENSING TIME FAANSE. CURRENTETTIRE RECEPTION FORUNT ROLLSCENT TREEPASSER RECEPTION AGE. AGES 7:18 RECEPTION AGE. AGES 7:18 NEPDUUNI POINT OUTER COVE BURNENDER ECON MEDIUNI OUTER COVE BURNENDER ECON POINT OUTER COVE BURNENDER ECON POINT OUTER COVE BURNENDER ECON BURNENT OUTER COVE BURNENDER ECON DIRECTOR AGE. AGES 7 EAST CHORDING COMMINING CON CONPORT SILVER COVE BURNENUM TOTAL ECON SILVER OUTER COVE BURNENDIM TOTAL ECON SILVER COVE BURNENDIM TOTAL ELEMENTER OUTER COVE BURNENDIM TOTAL EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL BURNENDER ECON TOTAL	RECENARIO TINETAME. CURRENTIFUTURE RECEPTOR AGE AGES 71.30 RECEPTOR AGE AGES 71.30 RECEPTOR AGE AGES 71.30 RECEPTOR AGE AGES 71.30 REDUKIN RED	RECEMPTION TIMERENTERVITIES RECEMPTION: CURRENTITIES RECEMPTION: COLLECCINT TRESPASER RECEPTION FOULTER COLLECCINT TRESPASER RECEPTION FOULTER COLLECCINT TRESPASER RECEPTION AGE: ACR5 748 NEET Trichburgeneties RECEMPTION: COLLERCTION OUTER COLLECTION INITIALITION RECEPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION: COLLERCTION RECEPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION: COLLECTION INITIALITION RECEPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION: COLLERCTION RECEPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION: COLLERCTION RECEMPTION INITIALITION RECEMPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION: COLLERCTION RECEMPTION INITIALITION RECEMPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION RECEMPTION AGE: ACR5 748 NEET TRESPASER RECEMPTION RECEMP	RECENTOR INTERACTIVITIE RECENTOR TREPARATION RECENT TREPARATION CONTRUCTION RECENTOR INTERACTIVITIE RECENTOR FORTANTIC EXPOSURE CONTRUCTION RECENTOR FORTANTIC EXPOSURE CONTRUCTION NULLINI EXPOSURE CONTRUCTION NULLINI EXPOSURE CONTRUCTION NULLINI NULLINI NULLINION NULLINI NULLINION NULLINION NULLINI NULLINION NULLINION NULLINI OUTER COVE NULLINION NULLINION NULLINION NULINION NULLINION NULLINION	RECENTION TREFERANCE CURRENT PLANE RECENTION TO REFERANCE RECENTION	RCAMON DIMENSION (CONTREAMS) RECENTION PROVING CONTREAMS) RECENTION PROVING CONTREAMS CONTREAMS (CONTREAMS) RECENTION PROVING CONTREAMS (CONTREAMS) RECENTIN	Recent of the part	Rection OFREPANG, COMBACTIVIDES Rection OFREPANG, COMBACTIVIDES Rection Concentration Frances Rection OFREPANG, COMBACTIVIDES Rection OFREFANG, COMBACTIVIDES RECTION OFFE RECTION OFFE R	Reconstruction Construction Constructio	Recent on the Average (according to the Average) According to the Average

NC - storteringente oy tin se reposite route on applicable.
NA - storpglicable, route noute nou applicable for this chemicad/exposure medium.
Not calculated, dose-response data and/or dermal absorption values are not available.

Prepared by: BJR Checked by: KJC

TOTAL IIEMATOLOGICAL SYSTEM III -TOTAL IMMUNE SYSTEM III -TOTAL KIDNEY III -TOTAL LIVER III -

5.5E-04 1.9E-04 1.7E-04

3.4E-04 3.3E-03

TOTAL NOAEL HI -TOTAL SKIN HI = 7/31/2006

Page 1 of 1

P. W.2-mig JEXTRUN GORRIAM Supplements1 2006 IIII, Risk, July, 2006 Tables Risk? des-CT-60007 Over-AudicecentTres, SUMMARY.

7.56-05

TABLE DI SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDENCY- CURRENT/FUTURE- ADULT TRESPASSER- AGES 19-30 SUPPLEMENTAL SITE FORMER FOR REPORT FORMAR ANUTACTURING SITE 333 ADELANDE AVENUE 333 ADELANDE AVENUE

PROVIDENCE, RHODE ISLAND

EXPOSURE ROUTES TOTAL 3.26-08 3.26-08 3.26-08 11.16-06 1.56-06 1.96-06 3.16-06 3.16-06 3.36-04 3.38-04 2.216-03 3.38-04 2.216-03 2.216-04 4.8E-05 9.2E-05 2.2E-03 4.6E-05 4.8E-05 3.9E-04 1.3E-04 1.4E-04 1.1E-05 6.4E-05 1.1E-05 2.2E-04 2.2E-03 5E-03 5E-03 3.2E-08 2E-03 2E-03 2E-03 3E-03 TOTAL HEMATOLOGICAL SYSTEM III = TOTAL IMMUNE SYSTEM III = TOTAL KIDNEY II = TOTAL LIVER III = DERMAL TOTAL NOAEL HI = - IH NINS TOTOT NON-CARCINOGENIC HAZARD QUOTIENT (1) 1.9E-03 4.7E-07 5.8E-07 9.6E-07 7.3E-08 1.9E-07 1.2E-04 2.0E-04 7.6E-06 8.7E-05 1.8E-03 3.0E-05 3.3E-04 t 4 TOTAL HAZARD ACROSS ALL MEDIA INGESTION INHALATION 0E+00 0.0E+00 3226-08 3226-08 3.226-08 1.1.16-06 1.1.16-06 1.136-06 1.136-06 1.136-06 1.136-04 1.16-04 1.196-03 1.116-04 1.116-04 4.8E-05 5.0E-06 3.7E-04 1.7E-05 4.4E-04 2.6E-03 £ 1 Immune system Deereased BW/Organ wt. Skin PRIMARY TARGET ORGAN tological system Liver Liver/Kidney Liver Kidney Kidne Liver Liver. Kidney Liver Hematological system Undetermined ENPOSURE ROUTES TOTAL 9,9E-12 7,4E-12 5,2E-11 1,9E-09 1,9E-09 3,9E-09 3,3E-09 3,3E-09 3,3E-09 3,3E-09 5,5E-08 5,5E-08 5.1E-09 2.8E-08 1.5E-08 1.1E-08 5E-08 5E-08 1E-07 1E-07 5E-08 ENTERNAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA Y Z Z Z Z Z CARCINOGENIC RISK (1) DERMAL 4.6E-08 NC 2.7E-08 1.3E-08 7.1E-09 1.6E-08 N N NOITAJAHNI A A A A A INGESTION 9.98-12 7.46-12 1.315-09 1.315-08 1.746-12 5.36-10 5.36-10 8.96-10 8.96-10 NC NC NC NC NC NC S.06-08 S.06-08 NC NC S.06-08 S.06-10 S.06-100 S.06-100 S.06-100 S.06-100 S.06-100 S.06-100 S.06-NC 1.5E-09 2.5E-09 4.0E-09 8.0E-09 95-08 NNN --- Not calculated; dose-response data and/or dermal absorption values are not available. NC - Not carcinogenie by this exposure route NA - Not applicable; exposure route not applicable for this chemical/exposure medium. Chromium VI (used as Total Chromium) Mercury (as elemental mercury) Nickel CHEMICAL RADIONUCLIDE TOTAL RADIONUCLIDE TOTAL Dibenzo(a.h)anthracene Indeno(1.2.3-cd)pyrene Aroclor 1254 1,2-Dichloroethene (cis) Tetrachloroethene Cis Benzo(a)pyrene Benzo(b)fluoranthene HEMICAL TOTAL CHEMICAL TOTAL Vinyl Chloride Benzo(a)anthracene .2-Dichloroethene Butylbenzene, sec-Tetrachloroethene Cadmium (water) Trichloroethene Vinyl Chloride Lead **Trichloroethene** 2.3.7.8-TCDD Copper vrsemic ilver ead. Prepared by: BJR Checked by: KJC EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADULT TRESPASSER RECEPTOR AGE: AGES 19-30 EXPOSURE POINT OUTER COVE OUTER COVE NOTES: EXPOSURE MEDIUM TOTAL SURFACE WATER EXPOSURE MEDIUM EXPOSURE SEDIMEN RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMEN

P: W2-mfg/TEXTRON (A/RHAM) Sopplements1 2006 HH, Rid. July_2006 Tables RiskCales CT-06664 for e-MailTes, SI A/MARY

Page 1 of 1

TABLE D12 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDENCY- CURRENTFUTURE- COMMERCIAL/INDUSTRIAL WORKER- ADULT FORMER GORIAM ANDUBCTURIOR REPORT FORMER GORIAM ANDUBCTURING SITE 333 ADELAIDE AVENUE

PROVIDENCE, RHODE ISLAND

EXPOSURE ROUTES TOTAL 4,06-09 4,06-09 1,38-07 1,38-07 1,38-07 1,38-07 3,46-07 3,46-07 3,46-07 2,66-08 6,776-08 6,776-08 2,566-04 4,116-05 2,566-04 4,116-05 2,566-04 4,116-05 2,566-04 4,116-05 2,566-04 4,116-05 2,566-06 2,566-06 2,566-06 2,566-06 2,566-06 2,566-06 2,566-06 2,566-07 2,56 1.3E-06 8.1E-06 1.4E-06 0E-09 4E-04 4E-04 4E-04 DERMAL NON-CARCINGGENIC HAZARD QUOTIENT (1) 3.3E-08 4.2E-08 6.8E-08 5.2E-09 1.4E-08 8.7E-06 1.4E-05 5.4E-07 5.4E-07 2.4E-05 : INHALATION 0F+00 INGESTION 4.0E-09 4.0E-09 4.0E-09 1.3E-07 1.3E-07 1.3E-07 1.77E-07 1.77E-07 2.27E-03 3.2E-05 3.32E-05 2.4E-04 1.4E-05 2.77E-05 1.3E-04 PRIMARY TARGET ORGAN Hernatological system Undetermined Liver Kidney LiverKidney Kidney Kidney Kidney Kidney Kidney Kidney Kidney Sidney Sitans Sitans Sitans W. Immune system Decreased BW/Organ Kidney Skin EXPOSURE ROUTES TOTAL 3.9E-12 2.9E-12 2.0E-11 6.5E-10 8.1E-09 1.13E-09 1.10E-09 2.0E-10 2.9E-10 2.9E-10 2.9E-10 2.9E-10 2.0E-09 E-08 ENTERNAL (RADIATION) VOCENIC RISK (1 DERMAL 3.5E-09 INHALATION INGESTION NC NC 339E-12 2.29E-12 5.29E-12 5.29E-10 5.29E-10 8.81E-10 8.81E-10 8.81E-10 2.218E-10 NC NC NC NC NC NC NC S0E-03 2.20E-03 2.20E 3.1E-08 Cadmium (water) Chromium VI (used as Total Chromium) Aercury (as elemental mercury) CHEMICAL RADIONUCLIDE TOTAL (cis) cis Dibenzo(a,h)anthracene Indeno(1,2.3-ed)pyrene Aroclor 1254 Benzo(b)fluoranthene CHEMICAL TOTAL 3enzo(a)anthracene .2-Dichloroethene 1.2-Dichloroethene **Butylbenzene**, sec-**Tetrachlorocthene** Tichloroethene Benzo(a)pyrene Vinyl Chloride 2.3.7.8-TCDD SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR PO/ULATION: COMMERCIAL/INDUSTRIAL WORKER RECEPTOR AGE: ADULT Copper rsenic lickel Silver XPOSURE POINT TOTAL EXPOSURE POINT OUTER COVE OUTER COVE JRE MEDIUM TOTAL SURFACE WATER ENPOSURE SEDIMENT SEDIMENT MEDIUM

8.0E-06 7.9E-06 2.1E-04 5.0E-06 2E-04 2E-04 6E-04 6E-04 2E-04 1.5E-04 7.1E-06 1.5E-04 2.2E-06 TOTAL HAZARD ACROSS ALL MEDIA 0.0E+00 8.0E-06 8.3E-07 6.1E-05 2.8E-06 7.3E-05 utobogical system Liver Liver, Kidney Liver 5E-08 5E-08 7.7E-09 4.4E-09 3.7E-09 2E-08 FOTAL RISK ACROSS ALL MEDIA V V V V V NC 6.9E-09 3.1E-09 1.7E-09 1.2E-08 NC 8.0E-10 1.3E-09 2.1E-09 4.2E-09 RADIONUCLIDE TOTA THEMICAL TOTAL Tetrachloroethene Trichloroethene Vinyl Chloride Lead XPOSURE POINT TOTAL EXPOSURE MEDIUM TO: RECEPTOR TOTAL SURFACE WATER

NOTES

NC - Not carcinogenic by this exposure route. NA - Not applicable; exposure route not applicable for this chemical/exposure medium.

--- Not calcutated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR Checked by: KJC

8.0E-06 4.2E-05 1.5E-05 1.3E-05

TOTAL IMMUNE SYSTEM III = TOTAL KIDNEY III = TOTAL LIVER III =

TOTAL HEMATOLOGICAL SYSTEM III =

2.7E-05 2.6E-04

TOTAL NOAEL HI = TOTAL SKIN HI =

APPENDIX E

Surface Water Uncertainty Analysis

TABLE E1 - UNCERTANINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC4 - REASONABLE MAXIMUM EXPOSIRE. CURRENT/FUTURE- ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTA. STE ENVERTGATION REPORT FOMMER CORIAM MANUEGTURING 3.3.3 ADBLAIDE AVENUE PROVIDENCE, RHODE ISLAND

	SCENARIO TIMFERANE	CURRENT/FUTURE		-									
	RECEPTOR POPULATIO: RECEPTOR AGE: AGES 7	N: ADOLESCENT TRESPASSER -18	~										
					CAR	CINOGENIC	RISK (1)		NON	CARCINOGEN	VIC HAZARD QU	OTIENT (I)	
MEDIUM	EXPOSURE	EXPOSURE	CHENICAL	INGESTION	INHALATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INCESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT	SEDIMENT	INNER COVE	1.2-Dichlorocthene (cis)	NC	NA	NC	NA		Hematological system Huderemined	5.4E-03 9.4E-07	NA		5.4E-03 9.4E-07
			Tetrachloroethene	2.5E-08	VN VN	0.0E+00	NA N	2.5E-08	Liver	2.8E-04	NA NA		2.86-04
			Trichloroethene	8.6E-07	VN	0.0E+00	NA NA	8.6E-07	Liver/Kidney	4.2E-02	NA 		4.2E-02
			Vinyl Chloride	1.1E-06 s at: ns	V V V	0.0E+00	K K	1.1E-06	Liver Kidnev	1.5E-03 7.4E-05	K N	7 7F.06	1.5E-03
			Benzo(a)pyrene	6.1E-07	AN	2.0E-07	N N	8.1E-07	Kidney	1.6E-05	< Z	5.3E-06	2.28-05
			Benzo(b)fluoranthene	9.1E-08	NA	3.0E-08	NA	1.26-07	Kidney	2.4E-05	٧Z	7.9E-06	3.2E-05
			Dibenzo(a,h)anthracene	7.4E-08	AN AN	2.4E-08 6.1E-09	NA	9.8E-08 7.4F.08	Kidney Kidnev	2.0E-06 \$ 0E-06	V Z	6.4E-07	2.6E-06 6.6E-06
			Indeno(1.c.a-cd.pyrenc Aroclor 1254	1.5E-06	K N	6.1E-U3	V V	2.1E-08	Inmune system	2.2E-03	¢ v	7.8E-04	3.0E-03
			Arsenic	2.3E-06	AN	1.76-07	V N	2.5E-06	Skin	3,0E-02	۲Z	2.2E-03	3.2E-02
	_		Cadmiums (water)	NC	AN	NC	٧N	1	Kidney	2.7E-03	۲Z	1.3E-04	2.8E-03
			Curomium VI (used as Total Chromium)	N N	4 4 Z Z	U N	4 A N		NOAEL	4.0E-02	۲ م Z		4,0E-02
			Lead	{ 1	A N	1	AN			1	AN		
			Mercury (as elemental mercury)	NC	YN	NC	ΝA		lumune system	8.8E-04	ΥN		8.8E-04
			Nickel	N N	¥ X	N N	V X		Decreased BW/Organ wt.	4.4E-03	Y X		4.4E-03
			2,3,7,8-TCDD	1.0E-05	V V	2.6E-08	A A	1.0E-05	NUMC .		A N	9	70-34-1
			CHEMICAL TOTAL	1.5E-05	,	4.9E-07	1	2E-05		1.4E-01	0.0E+00	3.2E-03	16-01
			RADIONUCLIDE TOTAL							Section 200			
		EXPOSURE POINT TOTAL						2E-05					16-01
	EXPOSURE MEDIUM TOTA	T						2E-05					16-01
SURFACE	SURFACE WATER	INNER COVE	1.2-Dichlorocthene (cis)	NC	NA	NC	NA		Hematological system	1.1E-04	NA	1	1.1E-04
WATER			Tetrachloroethene	1.2E-09	Y N	1.3E-08	Y X	1.4E-08 o se <i>n</i> o	Liver Liver Vidnau	1.4E-05	Y N	1.5E-04	1.6E-04
			Vind Charide	7.9E-08	AN	8.5E-08	AN AN	1.6E-07	Liver Liver	L.IE-04	< ZZ	1.26-04	2.36-04
			Benzo(a)anthracene	3.2E-09	NA	7.4E-07	AN	7.5E-07	Kidney	8.6E-07	VN	2.0E-04	2.0E-04
			Benzo(a)pyrene	3.5E-08	AN N	1.4E-05	AN AN	1.4E-05	Kidney	9.3E-07	YN N	3.6E-04	3.6E-04
			Dibenzo(a,b)anthracene	3.96-08	K K Z Z	2.46-05	K N	2.46-05	Nidney	1.0E-00	¢ ₹	6.4E-04	0.4E-04
			2.3.7.8-TCDD	3.3E-07	N	1.26-04	NA	1.2E-04		4	YN N	1	
					4.02.92.1		2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				1.1 (b)		
			CHEMICAL TOTAL	5.1E-07		1.6E-04	1	2E-04		1.4E-03	0.0E+00	4.9E-03	6E-03
			IN TOT BALLOUND A										
		EVENSIBE BOINT TOTAL						FU-AC					80-49
	EXPOSURE MEDIUM TOTA	L.						2E-04					6E-03
RECEPTC	R TOTAL							2E-04					2E-01
					TOTAL RISK	ACROSS A	VIDEM TT	2E-04	TOTAL HAZ	ARD ACRO	SS ALL MEDI	 	2E-01
		WATEC.											
		NOTES: NC - Not carcinogenic by this expe	vosure route.										1
		NA - Not applicable; exposure rou	ute not applicable for this chemical/exposure men	dinn.									
			data and/or dermal absorption values are not av-	ailable.									
		Prepared b	by: BJR										
		Checked I	by KJC							TOTAL HEM	ATOLOGICAL S	VSTEM III -	5.5E-03
										2	TOTALK	IDNEV III -	4.1E-03
											10101	LIVER III -	50-37-7
													1
											TOTAL	NOAEL HI =	4.0E-02

P. W.2.mfd TEXTRON NODBRAD Supplements 3 one III, José "July, "Densi Table Reak Odes Chrostiana) Davana BAB-187-bunder Ose-Antéoscent Press (B.2.BAARY)

4.6E-02

TOTAL SKIN HI =

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs. REASONABLE MAXIMUM EXPOSURE- CURRENT/FUTURE- ADULT TRESPASSER- AGES 19-30 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER GORHAM MANUFACTURING TABLE E2 - UNCERTAINTY

PROVIDENCE, RHODE ISLAND 333 ADELAIDE AVENUE

ENPOSURE ROUTES TOTAL 3.4E-03 6.0E-07 1.8E-04 9.9E-04 9.9E-04 1.5E-05 1.5E-05 1.8E-05 2.2E-05 1.8E-05 2.1E-03 2.1E-03 2.1E-03 2.1E-03 2.2E-03 2.2E-0 5.7E-04 2.8E-03 9.1E-03 6.9E-05 1.4E-04 3.8E-03 1.7E-04 1.7E-04 3.2E-04 3.2E-04 5.6E-04 0E-02 9E-02 E-02 2.8E-03 NON-CARCINOGENIC HAZARD QUOTIENT (1) DERMAL 6.75-06 4.65-06 6.95-06 5.65-07 1.45-06 6.85-04 1.95-03 1.95-03 1.3E-04 3.0E-03 1.0E-04 1.7E-04 3.2E-04 5.6E-04 ; INGESTION INHALATION 0E+00 6.9E-05 9.0E-06 7.4E-04 7.1E-05 5.5E-07 6.0E-07 6.0E-07 3,4E-03 6,0E-07 1,8E-04 1,8E-04 9,6E-04 1,5E-05 1,0E-05 1,0E-05 1,3E-06 1,3E-06 1,3E-06 1,4E-03 1,7E-03 2,26E-02 2,26E-02 2,26E-02 2,26E-02 2,26E-02 5.7E-04 2.8E-03 9.1E-03 9.2E-02 PRIMARY TARGET ORGAN Undetermined Undetermined Liver Liver Kidney Kidney Kidney Kidney Kidney Kidney Kidney Skin Shin Shin NOAE Immune system Decreased BW/Organ wt. logical system Liver Liver, Kidney Liver Kidney Kidney Kidney Skin EXPOSURE ROUTES TOTAL 1.612-05 5.52E-07 0.91E-07 0.91E-07 8.21E-08 5.61E-07 5.61E-08 6.91E-08 1.71E-08 1.41E-08 1.61E-06 6.7E-06 1.2E-08 7.8E-08 1.3E-07 6.5E-07 1.2E-05 2.1E-05 1E-05 1E-05 DERMAL EXTERNAL (RADIATION) CARCINOGENIC RISK (1) NC 1.2E-08 6.2E-08 7.4E-08 6.5E-07 1.2E-05 2.1E-05 -1.0E-04 4.3E-07 INHALATION INGESTION NC 7.8E-10 1.5E-08 5.1E-08 2.1E-09 2.2E-08 2.2E-08 NC NC NC 6.7E-06 -2.1E-07 1.0E-05 Chronium VI (used as Total Chronium) fercury (as elemental mercury) CHEMICAL Benzoka)pyrene Benzokb)fhuoranthene Dibenzo(a.h)anthracene Indeno(1.2.3-cd)pyrene Aroclor 1254 RADIONUCLIDE TOTAL 1.2-Dichloroethene (cis) Butylbenzene, see-Tetrachloroethene icuzo(a)pyrene libenzo(a,h)anthracene .2-Dichlorocthene (cis) CHEMICAL TOTAL Trichloroethene Vinyl Chloride Benzo(a)anthracene /inyl Culoride Benzo(a)anthracene ctrachloroethene admium (water) **Trichlorocthene** 3,7,8-TCDD opper Vickel lvcr cad EXPOSURE POINT TOTAL SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADULT TRESPASSER RECEPTOR AGE: AGES 19-30 ENPOSURE INNER COVE INNER COVE EXPOSURE MEDIUM TOTAL SURFACE WATER EXPOSURE MEDIUM SEDIMENT SEDIMENT SURFACE WATER MEDIUM

NOTES:

NC - Not carcinogenic by this exposure route. NA - Not applicable; exposure route not applicable for this chemical exposure medium.

Prepared by: BJR Clacked by: KJC

P. W.2 ang TEXTRONG KORDAN Supplements. 2006 BIL, Josh, Job, 2006 Tables Badt MorthuryDowne RME-DC-InnerCove Adultizes, 81 MMARCY.

Page 1 of 1

3.0E-02

TOTAL NOAEL HI TOTAL SKIN HI

1.5E-03 2.6E-02

3.5E-03 2.9E-03

> TOTAL HEMATOLOGICAL SYSTEM HI TOTAL IMMUNE SYSTEM HI-TOTAL KIDNEY HI : TOTAL LIVER HI :

5E-03

4.3E-03

00+30°

8.9E-04

: :

1.1

1.0E-04

1E-04

1.4E-04

3.3E-07

RADIONUCLIDE TOTAL

EXPOSURE POINT TOTAL

EXPOSURE MEDIUM TOTAL

RECEPTOR TOTAL

HEMICAL TOTAL

3.7.8-TCDD

cad

5E-03

5E-03

1E-01

1E-01 ŧ

TOTAL HAZARD ACROSS ALL MEDIA

1E-04 1E-04

TOTAL RISK ACROSS ALL MEDIA

1E-04

1E-04

TABLE E3 - UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC3- REASONABLE MAXIMUM EXPOSURE. CURRENTFUTURE. COMMERCIAL/INDUSTRIAL WORKER- ADULT SUPPLEMENTAL SITE INVESTIGATION REPORT FOMMER COMIAM MANUFACTURING BI 3 ADULADE AVENUE PROVIDENCE, RHODE ISLAND

	SCENARIO TIMEFRAME: RECEPTOR POPULATION RECEPTOR AGE: ADULT	CURRENT/FUTURE 4: COMMERCIAL/INDUSTRIAL	WORKER										
					CAR	CINOGENIC	RISK (1)		NON.	CARCINOGEN	IC HAZARD QU	OTIENT (1)	
MEDIUM	EXPOSURE MEDIUN	ENPOSURE POINT	CHEMICAL	INGESTION	NOLTATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INCESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT	SEDIMENT	INNER COVE	1,2-Dichloroethene (cis)	NC	NA	NC	NA		Hematological system	5.7E-04 1.0E-07	NA		5.7E-04
			Tetrachloroethene	5.8E-08	ξź	0.0E+00	AN N	5.8E-08	Liver	3.0E-05	NA		3.0E-05
			Trichloroethene Minyl Chloride	1.9E-07 2.4E-07	A N N	0.0E+00 0.0E+00	AN NA	1.9E-07 2.4E-07	Liver/Kidney Liver	4.5E-03 1.6E-04	NA NA		4.5E-03 1.6E-04
			Benzo(a)anthracene	2.0E-08	¥.	5.0E-09	NA	2.5E-08	Kidney	2.5E-06	NA	6.4E-07	3.2E-06
			Benzo(a)pyreue Benzoch/fluoranthene	1.4E-07 7.0F-08	V N N	3.4E-08 \$ 1E-09	NA NA	1.7E-07 2 SF-08	Kidney Kidnev	1.7E-06 2.6E-06	NA	4.4E-07 6.6E-07	2.2E-06 3.3E-06
			Dibenzo(a,h)anthracene	1.6E-08	AN	4.2E-09	NA N	2.1E-08	Kidney	2.1E-07	NA	5.3E-08	2.6E-07
			Indeno(1.2.3-cd)pyrene	4.2E-09	VN VN	1.1E-09	AN NA	5.2E-09 4.7E-00	Kidney Immus contant	5.3E-07	NA NA	1.3E-07	6.7E-07 1.0E-01
			Arsenic	5.1E-07	VN	3.0E-08	NA N	5.4E-07	Skin	3.2E-03	NA.	1.8E-04	3.4E-03
			Cadmium (water)	N C	NA NA	NC	۲×		Kidney	2.96-04	AN S	1.1E-05	3.0E-04
			Corper Copper	N N	źź	NC	NA		NUMBL		AN NA		
			Leid	ı.	NA	1	V N				NA		and a second second
			Mercury (as elemental nicreury) Nicket	y y	e e	N N	AN NA		Innuue system Decreased BW/Organ wt.	9.5E-05 4.7E-04	AN NA		9.5E-05 4.7E-04
			Silver	NC	NA	NC	YN		Skin	1.5E-03	VN	10	1.5E-03
			2.3.7.8-TCDD	2.3E-06	NA	4.5E-09	NA	2.3E-06		ĵ	NA	1	
			CHEMICAL TOTAL	3.5E-06	ı	8.5E-08	1	4E-06		1.5E-02	0.0E+00	2.6E-04	2E-02
						()							
			RADIONUCLIDE TOTAL										AF 44
		EXPOSURE POINT TOTAL						4E-06					2E-02
	EXPOSURE MEDIUM TOTA	LL				- ON		4E-06	And the second se	1.00			2E-02
SURFACE	SURFACE WATER	INNER COVE	1.2-Dichloroethene (cis) Toterethoroethene	A TE-10	< < Z Z	A 7F-08	K K	3.75.08	Hematological system	7.7E-06	K X X		1.7E-06 1.9E-05
			Trichloroethene	7.9E-10	YN	1.9E-08	¥N.	2.0E-08	Liver, Kidney	1.8E-05	NA	4.4E-04	4,6E-04
			Vinyl Culoride	2.6E-09	VN VN	2.1E-08	V N	2.4E-08 3.0E-07	Liver	1.8E-06	AN AN	1.46-05	1.6E-05
			Benzolajouracene Benzolajourene	1.1E-10	K K	3.6E-06	< < Z Z	3.6E-06	Kidney	1.5E-08	< < Z Z	4.6E-05	4.6E-05
			Dibenzo(a.h.)anthracene	1.3E-09	Ň	6.3E-06	NA	6.3E-06	Kidney	1.7E-08	V N	8.1E-05	8.1E-05
			Lead 2.3.7.8-TCDD	 1.1E-08	A X X	- 3.1E-05	AN NA	3.1E-05	5	i./i	AN NA	60	
				1000000000	1200								
			CHEMICAL TOTAL	1.8E-08		4.2E-05	ı	4E-05		2.2E-05	0.0E+00	6.2E-04	6E-04
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						4E-05					6E-04
	EXPOSURE MEDIUM TOTA	T						4E-05					6E-04
OTOTOTOTOTO	D TOTAL							50-05					20-02
WELET 10	TALVIN				TOTAL RISK	ACROSS /	VLL MEDIA	5E-05	TOTAL HAZ	ARD ACRO	SS ALL MEDI		2E-02
		NOTES: NC - Not carcinogenie by this expos NA - Not applicable, exposure route	sure route. s not applicable for this chenical/exposure mo	dium.									
			ala and/or dermal absorption values are not ava	ailable.									1 1
		Prepared by	y: BJR							TOTAL UFA	ATOLOCICAL S	verten ul-	- CEL DI
		Checked by	22								TAL IMMUNE S TOTAL K	NATEM HI	3.0E-04 4.0E-04 4.6E-04
											TOTAL	LIVER III -	2.3E-04
											TOTAL	NOAEL HI =	4.3E-03
											TOTA	T SKIN III -	4.96-03

P. W.2 mig-IEXTROSS (CKREME Supplements). 2006/IEH Josk, 2606. Takka Suski Marchinethinethioux RME-4X7-HomeCove Crossified, SI2603-06Y

Page 1 of 1

TABLE E4-UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - REASOMABLE MAXIMUM EXPOSURE- CURRENT/FUTURE- ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTAL STEL INVESTIGATION REPORT FORMER CORHAM MANUFACTURING PROVIDERC CORHAM NANUFACTURING PROVIDERCE RIDOR BLAND PROVIDERCE RIDOR BLAND

ENPOSURE ROUTES TOTAL 7.55-08 7.55-08 5.06-07 5.06-07 5.06-07 5.06-07 1.126-05 3.66-06 3.66-06 3.66-06 3.66-06 3.66-06 7.26-04 1.36-02 7.26-04 2.5E-05 3.5E-04 2.6E-05 222E-04 1.2E-04 6.4E-03 7.2E-05 1.6E-04 2.7E-04 2E-02 2E-02 8E-03 2E-02 8E-03 8E-03 DERMAL 5.8E-03 1.1E-03 NON-CARCINGGENIC HAZARD QUOTIENT (I) 2.3E-06 2.9E-06 4.7E-06 2.7E-07 8.7E-07 2.1E-04 8.9E-04 1.3E-05 1.1E-04 4.8E-03 3.7E-05 1.6E-04 2.7E-04 1 r. TOTAL HAZARD ACROSS ALL MEDIA INHALATION 00+30° 0E+00 INGESTION 1.9E-03 1,4E-02 7.5E.08 7.5E.06 5.0E.07 7.1E-06 8.9E.06 8.9E.05 8.4E.07 1.5E.05 8.4E.07 1.2E.04 1.2E.02 7.2E.04 -2.5E-05 3.5E-04 2.6E-05 1.0E-05 1.6E-03 3.5E-05 6.9E-07 6.9E-07 2.2E-04 : : Immune system Decreased BW/Organ wt. Skin PRIMARY TARGET ORGAN enatological system Undetermined cmatological system Liver Liver Kidney Liver Kidney Kidney Kidney Kidney Kidney Kidney Kidney Kidney Liver Liver, Kidney Liver Kidney Kidney Kidney Kidney NOAEL EXPOSURE ROUTES TOTAL 5E-05 5E-05 1.1E-07 1.3E-07 5.1E-08 6.0E-07 1.0E-05 1.6E-05 6.96-11 5.16-11 3.66-10 3.56-10 3.56-08 4.46-07 7.36-08 4.46-07 7.36-08 4.26-08 1.36-08 5.56-09 9.96-07 9.1E-08 2.4E-05 SE-05 2E-06 2E-06 E-05 5E-05 ENTERNAL (RADIATION) FOTAL RISK ACROSS ALL MEDIA CARCINOGENIC RISK (I) DERMAL NC NC 0.0E+00 0.0E+00 0.0E+00 8.7E-09 1.1E-07 1.1E-07 1.0E-08 3.3E-09 1.4E-09 6.9E-08 NC NC NC NC S3E-10 NC 1.0E-07 9.9E-08 2.7E-08 6.0E-07 1.0E-05 1.6E-05 5.1E-05 2.2E-07 INHALATION INGESTION NC 9.6E-09 3.3E-08 2.5E-08 2.6E-09 2.6E-08 2.6E-08 6.8E-08 1.9E-07 1.5E-06 admium (water) hromium VI (used as Total Chromium) ferenty (as elemental mercury) CHEMICAL T.2. Dichloreethene (cis) Tetrachlorrecthene Trickhlorrecthene Vinyl Chloride Benzo(a)anthracene Benzo(a)apyrene Dibenzo(a,h)anthracene Trichlorochtene Vinyl Chloride Benzol a)mthracene Benzol a)pyrene Berzolb/fluoranthene Dbetavod a)panthracene Indenol (1,2,3-cd)pyrene Anofor (1,2,3-cd)pyrene ADIONUCLIDE TOTAL ADIONUCLIDE TOTAL 2-Dichloroethene (cis) HEMICAL TOTAL HEMICAL TOTAL Jutylbenzene, sec-etrachloroethene ilver 2.3.7.8-TCDD cad 3.7,8-TCDD rscnic opper lickel cad SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADOLESCENT TRESPASSER RECEPTOR AGE: AGES 7-18 EXPOSURE POINT TOTAL OSURE POINT TOTA EXPOSURE POINT OUTER COVE OUTER COVE EXPOSUBE MEDIUM TOTAL EXPOSURE MEDIUM TOTA SURFACE WATER EXPOSURE MEDIUM SEDIMENT RECEPTOR TOTAL SURFACE WATER SEDIMENT MEDIUM

NOTES:

NC - Not carcinogenic by this exposure route. NA - Not applicable, exposure route not applicable for this chemical exposure medium

---- Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR Checked by: KJC

8.3E-04 1.2E-03

TOTAL HEMATOLOGICAL SYSTEM HI TOTAL IMMUNE SYSTEM HI TOTAL LINEY HI = TOTAL LIVER HI =

2.2E-04

1.9E-04

7.2E-04 1.3E-02

TOTAL NOAEL III -

TOTAL SKIN HI

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCA- REASONALLE MAXIMUM EXPOSURE- CURRENTFUTURE- ADULT TRESPASSER- AGES 19-30 SUPPLEMENTAL SITE INVESTIGATION REPORT PORMER CORHAM MANUFACTURING 313 ADULAUDE KYFRUE PROVIDENCE, RHODE ISLAND TABLE E5 - UNCERTAINTY

EXPOSURE ROUTES TOTAL 4.8E-08 4.8E-08 4.8E-08 3.2E-07 5.0E-06 6.0E-06 8.32E-07 7.72E-07 7.77E-07 5.7E-04 4.7E-04 4.7E-04 1.6E-05 2.2E-04 1.7E-05 L.4E-04 L.1E-04 S.2E-03 S.5E-05 L.4E-04 2.4E-04 3.7E-04 1.4E-04 4.7E-04 2E-02 2E-02 9.6E-04 1.6E-04 6E-03 6E-03 1E-02 E-02 6E-03 TOTAL HEMATOLOGICAL SYSTEM HI TOTAL IMMUNE SYSTEM HI TOTAL KIDNEY HI DERMAL 5.1E-03 NON-CARCINOGENIC HAZARD QUOTIENT (I) 2.0E-06 2.5E-06 4.1E-06 2.4E-07 7.6E-07 1.8E-04 7.8E-04 7.8E-04 1.1E-05 9.9E-04 TOTAL LIVER HI -9.885-05 4.285-03 3.285-05 1.485-04 2.445-04 3.785-04 : 1 1 TOTAL HAZARD ACROSS ALL MEDIA INHALATION 0.0E+00 00+30° INGESTION 8.96-03 1.2E-03 4.8E-08 4.8E-08 4.8E-08 4.8E-06 3.7E-06 5.7E-06 5.7E-06 3.7E-05 3.8E-04 7.7E-04 4.7E-04 4.7E-04 4.7E-04 1.4E-04 6.7E-06 1.0E-03 2.2E-05 4.4E-07 4.4E-07 1.6E-05 2.2E-04 1.7E-05 : : Hematological system Undetermined Liver Liver/Kidney Ň, PRIMARY TARGET ORGAN Liver Kidney Kidney Kidney Kidney Kidney Iannure system Skin Kidney NOAEL Immune system Decreased BW/Organ logical syster Liver Liver Kidney Liver Kidney Kidney Kidney Skin EXPOSURE ROUTES TOTAL 4.5E-11 3.3E-11 2.3E-10 2.5E-08 3.1E-07 5.1E-08 9.3E-09 3.9E-09 3.9E-09 3.9E-09 5E-05 5E-05 9.7E-08 1.1E-07 3.9E-08 8.9E-06 1.4E-05 2.1E-05 5.8E-08 4E-05 1E-06 4E-05 1E-06 EXTERNAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA CARCINGGENIC RISK (1) DERMAL 4.5E-05 NC 9.1E-08 8.7E-08 2.3E-08 5.2E-07 8.9E-06 1.4E-05 --2.1E-05 .9E-07 NOITALATION INGESTION NC + SE-11 3.34E-11 3.34E-11 3.34E-11 3.34E-11 3.34E-11 3.34E-10 5.34E-08 5 NC 6.2E-09 2.1E-08 1.6E-08 1.7E-09 1.7E-09 1.7E-08 --4.4E-08 1.2E-07 9.5E-07 --- - Not culculated; dose-response data and/or dermal absorption values are not available. NC - Not carcinogenie by this exposure route. NA - Not applicable, exposure route not applicable for this chemical/exposure medium. hromium VI (used as Total Chromium) vlercury (as elemental mercury) CHEMICAL RADIONUCLIDE TOTAL I.2-Dichloroethenie (cás) Burytbenzene, see-Terardonoethene Vinyl Chloride Berrodaparathracene Berrodaparathracene Berrodaparathracene Berrodaparathe Diberoxa hauthracene Muclon 1.2-3-edipyrene Araclor 1.2-3-edipyrene .2-Dictionethene (cis) Icnzo(a)pyrene Dibenzo(a,h)anthracene CHEMICAL TOTAL Tetrachloroethene Trichloroethene Vinyl Chloride Benzo(a)anthracene HEMICAL TOTAL ADIONUCLIDE admium (water) .cad .3.7,8-TCDD 3.7.8-TCDD opper Vickel lver Prepared by: BJR Checked by: KJC EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADULT TRESPASSER RECEPTOR AGE: AGES 19-30 OUTER COVE EXPOSURE POINT OUTER COVE NOTES: EXPOSURE MEDIUM TOTAL EXPOSURE MEDIUM TOTA SURFACE WATER EXPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER SEDIMENT MEDIUM

7/31/2006

8.4E-03

TOTAL SKIN III -

TOTAL NOAEL HI

Page 1 of 1

TABLE E6-UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC5- REASOMABLE MAXIMUM EXPOSURE. CURRENTFUTURE. COMMERCIAL/INDUSTRIAL WORKER. ADULT SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER CORLIAN MANUFACTURING PABADELADE AVENUE PROVIDENCE, RHODE ISLAND

33 ADELAIDE A SCENARIO TIMEFRAME: CURRENTPUTURE IRECEPTOR POLLATION: COMMERCIALJINDUSTRIAL WORKER

-	NEVEL I UN AUE AUTO			5									
					CARC	INOGENIC	RISK (1)		NON	CARCINOGEN	VIC HAZARD QI	OTIENT (I)	
MEDIUM	EXPOSURE	EXPOSURE	CHEMICAL	INGESTION	INHALATION	DERMAL	ENTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INHALATION	DERMAL	EXPOSURE ROUTES TOTAL
SEDIMENT	SEDIMENT	OUTER COVE	1.2-Dichlorocthene (cis)	NC	NA	NC NC	NA		Hematological system	8.0E-09 8.0E-09	NA		8.0E-09 * 0E-00
			Tetrachloroethene	1.6E-11	e v	0.0E+00	e v	1.6E-11	Liver	8.0E-09	Z		8.0E-09
			Trichloroethene	1.1E-11	AN	0.0E+00	NA	I.IE-II	Liver/Kidney	2.7E-07	VN		2.7E-07
			Vinyl Chloride	8.1E-11	٧N	0.0E+00	NA	8.IE-11	Liver	5.4E-08	NA		5.4E-08
			Benzo(a)anthracene	5.9E-09	VN NN	1.5E-09	YN S	7.4E-09	Kidney	7.6E-07	AN N	1.9E-07	9.5E-07
			Benzo(k) forces	1.75-08	AN NA	3.16-00	VN VN	9.4E-08 1.4E-08	Kidnev	9.6E-07	K K	2.4E-U/ 4.0F-07	1.2E-00 2.0P-06
			Dibenzo(a.h)anthracene	7.0E-09	e e e	1.8E-09	A N	8.8E-09	Kidney	8.9E-08	AN N	2.3E-08	1.1E-07
			Indeno(1,2,3-ed)pyrene	2.2E-09	AN	5.7E-10	٩N	2.8E-09	Kidney	2.96-07	VN	7.3E-08	3.6E-07
			Aroclor 1254	9.2E-10	NA	2.5E-10	NA	1.2E-09	Immune system	6.4E-05	۲Z	1.7E-05	8.2E-05
			Arsenic	2.0E-07	NA	1.2E-08	AN	2.2E-07	Skin	1.3E-03	NA	7.4E-05	1.3E-03
			Cadmium (water)	NC	AN	NC	NA	and a second	Kidney	2.8E-05	NA	1.1E-06	2.9E-05
		8	Curomium VI (used as Total Chromium)	N N	ž	N S	AN S		NOAEL	7.8E-05	AN I		7.8E-05
			Copper	NC	AN S	Ş	¥2			•	A V		
			Lead	15	AN N	1 5	AN AN		Turning everyon	1 45 06			2 60 04
			Nercury (as elemental mercury)			NC N	AN AN		Decreased RW/Organ wf	1 76-05	AN AN		200-002
			Silver	N N	AN	N N	AN		Skin	2.8E-06	NA		2.8E-06
			2.3.7.8-TCDD	2.0E-08	NA	3.9E-11	AN	2.0E-08		ì	NA	1	
			CHEMICAL TOTAL	3.3E-07		3.8E-08	1	4E-07		1.5E-03	0.0E+00	9.4E-05	2E-03
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						4E-07					2E-03
	EXPOSURE MEDIUM TOT	AL TA						4E-07					2E-03
SURFACE	SURFACE WATER	OUTER COVE	1.2-Dichloroethene (cis)	NC	AN N	NC	¥N.	- 20 A	Hematological system	3.6E-06	NA NA	: :	3.6E-06
WATER			T ctrachlorocthene	3.2E-10	AN N	2.7E-08	V N	2.052-08	LINCT 1 firms Pedana	1./0-0/	< < >	1.46-05	1.45-05
			Vinvl Chloride	8 1F-10	e e n	6.6F-09	AN AN	2.4E-09	Liver	5.5E-07	AN N	4.4E-06	5 0F-06
			Benzo(a)andtracene	8.7E-11	AN	1.6E-07	NA	1.6E-07	Kidney	1.1E-08	NN	2.0E-05	2.0E-05
			Benzo(a)pyrene	8.7E-10	NA	2.7E-06	NA	2.7E-06	Kidney	1.1E-08	NA	3.4E-05	3.4E-05
			Dibenzo(a,h)anthracene	8.7E-10	A N	4.2E-06	AN	4.2E-06	Kidney	L.IE-08	NA NA	5.3E-05	5.3E-05
			Lead	1	۲Ż	1 1 1	AN N	10 LL 01		ı	AN S	1	
			2.3.7.8-TCDD	2.3E-09	AN	6.4E-06	¥2	6.4E-U6		ı	AN N	r	
			CHEMICAL TOTAL	6 3E-09	3	1.3E-05	,	1E-05		3.0E-05	0.0E+00	7.3E-04	8E-04
										Notice of the second			
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						1E-05					8E-04
	EXPOSURE MEDIUM TOT.	.VL						1E-05					8E-04
RECEPTOI	R TOTAL							1E-05					2E-03
					TOTAL RISK.	ACROSS /	ALL MEDIA	1E-05	TOTAL HAZ	ZARD ACRO	SS ALL MEDI	V	2E-03
		NOTES: NC - Not carcinogenic by this expo	osure route.										1
		NA - Not applicable; exposure rout	te not applicable for this chemical/exposure me	dium.								No.	ľ
		Not calculated; dose-response o	data and/or dermal absorption values are not av	ailable.									
		Prepared b	by: BJR										
		Checked t	by: KJC							TOTAL IIEM TO	IATOLOGICAL	SVSTEM HI	3.6E-06 8.4E-05
											TOTALI	KIDNEV HI -	1.4E.04
											TOTAL	LIVER HI -	1.9E-05
													,

P. W.2-ang/IEXTEGNAR/ShiphemarkS 2006/III, Jack_May_2006/Iides/Roke/theortang/flocume/ IAIE-02-05archive-05amilial, SIDIMARY

Page 1 of 1

7.8E-05

TOTAL NOAEL HI = TOTAL SKIN HI = TABLE E7 - UNCERTIANTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDEXCY. CURRENT/FUTURE. ADOLESCENT TRESPASSER. AGES 7-18 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMAR ADDULATORING 333 ADBLAIDE AVENUE 333 ADBLAIDE AVENUE

PROVIDENCE, RHODE ISLAND

ENPOSURE ROUTES TOTAL 2.8E-04 6.3E-07 1.9E-05 2.6E-03 1.5E-04 1.5E-04 9.8E-06 6.2E-06 1.1.1E-05 1.1.1E-05 1.1.1E-05 1.1.1E-03 1.3E-03 1.1.3E-03 1.1.3E-03 3.5E-04 1.7E-03 3.5E-03 7.18-05 1.28-04 3.28-03 1.68-04 1.58-04 2.78-04 4.38-04 1.6E-02 1.7E-02 3.5E-04 1.7E-03 2.2E-03 4.5E-04 4E-03 4E-03 4E-02 4E-02 4E-02 CO. at 4E-03 TOTAL HEMATOLOGICAL SYSTEM HI TOTAL IMMUNE SYSTEM HI TOTAL KIDNEY HI 1.4E-03 3.6E-03 DERMAL 2.4E-06 1.5E-06 2.7E-06 2.4E-07 3.4E-07 3.6E-04 9.3E-04 9.3E-04 6.1E-05 TOTAL LIVER III -NON-CARCINGGENIC HAZARD QUOTIENT (1) TOTAL NOAEL HI TOTAL SKIN HI 1.1E-04 2.5E-03 8.9E-05 1.5E-04 2.7E-04 4.3E-04 ; 10 TOTAL HAZARD ACROSS ALL MEDIA **NUHALATION** 0E+00 0E+00 INGESTION 8.4E-04 3.9E-02 3.5E-04 1.7E-03 3.5E-03 8.7E-06 6.9E-04 6.9E-05 5.6E-07 5.8E-07 6.1E-07 .8E-04 1 1 1 Hernatobogical system Undermined Liver Liver Kidney Kidney Kidney Kidney Kidney Kidney Kidney Signen Sign Intrutic system Decreased BW/Organ w1. PRIMARY TARGET ORGAN ematological system Liver Liver, Kidney Liver Kidney Kidney Kidney Kidney NOAEL Skin ENPOSURE ROUTES TOTAL 4.3E-09 1.3E-08 2.7E-08 9.2E-09 9.2E-09 9.8E-09 9.8E-09 2.1E-09 2.2E-09 2.2E-09 2.2E-09 2.2E-09 2.2E-09 8.6E-07 2.6E-09 1.6E-08 2.8E-08 1.4E-07 2.5E-06 4.1E-06 1.6E-05 2E-05 2E-05 2E-05 2E-05 E-06 E-06 DERMAL EXTERNAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA CARCINOGENIC RISK (1) NC NC 0.0E+00 0.0E+00 0.0E+00 2.3E-09 1.4E-08 5.1E-10 5.1E-10 6.1E-10 1.8E-08 NC NC NC NC NC 22E-09 NC 2.4E-09 1.3E-08 1.6E-08 1.4E-07 2.5E-06 4.1E-06 2.3E-05 4.3E-08 INHALATION INGESTION 6.5E-08 NC NC 1,3E-09 1,3E-08 1,3E-08 1,3E-09 1,4E-09 1,6E-09 1,17E-09 2,4E-07 1,17E-09 2,4E-07 NC NC NC NC NC NC S6E-07 NC 1.9E-10 3.5E-09 1.2E-08 5.3E-10 5.4E-09 5.7E-09 3.7E-09 3.7E-08 1.2E-06 --- Not calculated; dose-response data and/or dermal absorption values are not available. NC - Not carcinogenie by this exposure route. NA - Not applicable; exposure route not applicable for this chemical/exposure medium. admium (water) hromium VI (used as Total Chromium) fercury (as elemental mercury) CHEMICAL RADIONUCLIDE TOTAL 2. Dichloroethene (cis) Tetrachloroethene Tricthloroethene Vinyl Chloride Benzo(a)anttracene Benzo(a)pyrene Dibenzo(a,h)anttracene ADIONUCLIDE TOTAL 1.2-Dichloroethene (cis) Butylbenzene, sec-Fetrachloroethene Benzoka jpyrene Benzokb jfhuoranthene Dibenzo(a,h)anthracene Indens(1,2,3-ed)pyrene Aroelor 1254 Trichloroethene Vinyl Chloride Benzo(a)anthracene THEMICAL TOTAL HEMICAL TOTAL liver 3.7.8-TCDD cad 3.7.8-TCDD rscale opper lickel Prepared by: BJR Cluccked by: KJC cad SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: MOLESCENT TRESPASSER RECEPTOR AGE: AGES 7-18 EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL EXPOSURE POINT INNER COVE INNER COVE NOTES: POSURE MEDIUM TOTAL EXPOSURE MEDIUM TOTA SURFACE WATER EXPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER SEDIMENT MEDIUM

Page I of 1

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDERCY. CURRENT/FUTURE- ADULT TRESPASSER- AGES 19-30 SUPPLEMENTAL SILE INVESTIGATION REPORT FORMER CORHIAN MANUFACTURING PROVIDENCE, RHOUR ESLAND PROVIDENCE, RHOUR ESLAND

EXPOSURE ROUTES TOTAL 4.0E-07 1.2E-05 1.7E-03 9.8E-05 6.9E-06 7.6E-06 7.3E-07 7.3E-07 7.3E-07 8.7E-04 8.7E-04 8.7E-04 1.0E-02 1.0E-04 2.7E-03 1.2E-04 1.3E-04 2.3E-04 3.8E-04 2.3E-04 1.2E-03 1.6E-03 3.3E-04 2.2E-04 1.1E-03 2.2E-03 1.8E-04 1.0E-02 4E-03 3E-02 3E-02 6E-05 4E-03 4E-03 E-02 3E-02 TOTAL HEMATOLOGICAL SYSTEM HI TOTAL IMMUNE SYSTEM HI TOTAL KIDNEY HI 3.1E-03 DERMAL TOTAL NOAEL HI = 1.2E-03 NON-CARCINGGENIC HAZARD QUOTIENT (1) 2.1E-06 1.3E-06 2.3E-06 2.2E-07 3.1E-04 8.1E-04 5.3E-05 9.7E-05 2.2E-03 7.8E-05 1.3E-04 2.3E-04 3.8E-04 TOTAL LIVER HI 1 1 TOTAL HAZARD ACROSS ALL MEDIA INHALATION 0.0E+00 0.0E+00 INGESTION 5.4E-04 18E-04 12E-05 1.2E-05 1.7E-03 9.8E-05 9.8E-05 5.3E-06 5.3E-06 5.3E-06 5.3E-06 5.3E-06 1.1E-07 7.9E-03 7.9E-04 1.10E-02 7.8E-04 4.6E-05 5.6E-06 4.4E-04 4.4E-05 3.6E-07 3.7E-07 3.9E-07 2.2E-04 1.1E-03 2.2E-03 2.5E-02 Hernatological system Undetermined Liver Liver Kidney Kidney Kidney Kidney Kidney Kidney Kidney Kidney Kidney Skin System Skin Immune system Decreased BW/Organ wt. Skin FRIMARY TARGET ORGAN ological system Liver Liver Kidney Liver Kidney Kidney Kidney Kidney NOAEL EXPOSURE ROUTES TOTAL 3.75-09 1.15-08 2.35-08 5.45-09 9.55-09 9.15-09 1.95-09 1.95-09 2.255-09 3.0E-09 1.8E-08 2.9E-08 1.7E-07 2.9E-06 4.8E-06 3E-05 3E-05 7.4E-07 1.9E-05 3E-05 3E-05 1E-06 EXTERNAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA NA CARCINOGENIC RISK (I) DERMAL NC 2.8E-09 1.5E-08 1.9E-08 1.7E-07 2.9E-06 4.8E-06 -.0E-08 2.6E-05 INHALATION INGESTION NC 3.7E-09 1.1.1E-69 6.0E-09 6.0E-09 6.3E-09 6.3E-09 6.3E-09 1.3E-09 1.3E-09 1.3E-09 NC NC NC NC NC NC NC NC 1.4E-07 7.4E-07 7.7E-08 7 NC 1.6E-10 3.0E-09 1.1E-08 4.5E-10 4.6E-09 4.9E-09 4.9E-09 3.2E-08 5.6E-08 1.0E-06 - - Not calculated; dose-response data and/or dermal absorption values are not available. NOTES: NC - Not carcinogenic by this exposure route. NA - Not applicable:, exposure route not applicable for this chemical/exposure medium. 'admium (water) Inconium VI (used as Total Chromium) Mercury (as elemental mercury) Vickel CHEMICAL RADIONUCLIDE TOTAL RADIONUCLIDE TOTAL I. 2-Dichloroethene (cis)
Tetrachloroethene
Vinyl Chloride
Benzo(a)anthracene Benzo(a) antifracene Benzo(a) pyrene Benzo(b) fluoranthene Dibenzo(a, h) antifracene Indeno(1,2,3-ed) pyrene Aroclor 1254 1.2-Dichlorocthene (cis) Butylbenzene, seccnzo(a)pyrene ibenzo(a,h)anthracene HEMICAL TOTAL CHEMICAL TOTAL etrachloroethene richloroethene Silver 2.3.7.8-TCDD Vinyl Chloride 3.7.8-TCDD rsenic opper Prepared by: BJR Checked by: KJC cad. cad EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADULT TRESPASSER RECEPTOR AGE: AGES 19-30 EXPOSURE POINT INNER COVE INNER COVE EXPOSURE MEDIUM TOTAL EXPOSURE MEDIUM TOTAL SURFACE WATER EXPOSURE MEDIUM SEDIMENT RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMENT

1.1E-02

TOTAL SKIN HI

Page 1 of 1

TABLE E9 - UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDENCY - CURRENTFUTURE- COMMERCIAL/INDUSTRIAL WORKER- ADULT SUPPLEMENTAL TETE INVESTIGATION REFORT 513 ADELANDE AND MANUFACTURING 313 ADELANDE AVENUE PROVIDERCE AND DIE ESLANDE

EXPOSURE ROUTES TOTAL 7.6E-06 8.9E-06 2.5E-04 1.3E-05 1.1E-05 1.9E-05 3.1E-05 5.0E-08 1.5E-06 2.1E-04 1.2E-05 7.5E-07 7.5E-07 7.9E-08 8.2E-07 7.9E-08 1.76E-04 1.0E-04 1.0E-04 1.3E-03 2.8E-05 1.3E-04 2.8E-04 3.0E-05 1.3E-04 1.7E-04 3.6E-05 2.3E-05 36-04 4E-03 4E-03 3E-03 3E-03 3E-04 2.5E-04 TOTAL HEMATOLOGICAL SYSTEM HI = TOTAL IMMUNE SYSTEM HI = TOTAL KIDNEV HI = DERMAL NON-CARCINGGENIC HAZARD QUOTIENT (1) 1.5E-07 9.5E-08 9.5E-08 1.7E-07 1.7E-08 3.4E-08 3.4E-08 5.8E-05 3.8E-05 3.8E-05 8.4E-05 7.9E-06 1.8E-04 5.9E-06 1.1E-05 1.9E-05 3.1E-05 TOTAL LIVER HI : : ï TOTAL HAZARD ACROSS ALL MEDIA INHALATION 00+30° 00+30° INGESTION 3.1E-03 9.0E-05 5.0E-08 1.5E-06 2.1E-04 1.2E-05 6.0E-07 3.8E-07 6.6E-07 6.6E-07 6.6E-07 6.6E-07 8.2E-05 8.2E-05 9.9E-04 9.8E-05 1.3E-05 2.8E-05 1.3E-04 2.8E-04 7.6E-06 9.3E-07 7.4E-05 7.3E-06 6.0E-08 6.2E-08 6.5E-08 2.3E-05 1 1 Hernatological system Undetermined Liver Kidney NoAEL PRIMARY TARGET ORGAN M Immune system Decreased BW/Organ alogical systen Liver Liver Kidney Liver Kidney Kidney Kidney Skin EXPOSURE ROUTES TOTAL 1.5E-09 9.2E-09 9.2E-09 2.9E-09 1.8E-08 3.2E-09 3.3E-09 6.6E-10 7.4E-10 8.4E-08 8.1E-10 5.4E-09 9.9E-09 4.3E-05 7.5E-07 1.2E-06 7E-06 7E-06 2.96-07 4.8E-06 7E-06 E-06 7E-06 E-07 ENTERNAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA CARCINOGENIC RISK (1) DERMAL NC NC 0.0E+00 0.0E+00 5.9E-10 5.9E-10 6.5E-10 6.5E-10 1.3E-10 1.3E-10 1.3E-10 1.5E-10 NC NC NC S6E-10 NC 7.2E-10 3.8E-09 4.4E-09 7.5E-07 1.2E-06 4.7E-06 6.8E-06 1.1E-08 2 2 2 Z INIIALATION INGESTION 2.9E-08 NC 8.5E-11 1.6E-09 5.5E-09 5.5E-09 2.3E-10 2.24E-09 2.5E-09 2.5E-09 1.7E-08 4.1E-07 ---- Not calculated; dose-response data and/or dermal absorption values are not available. NC - Not carcinogenic by this exposure route. NA - Not applicable; exposure route not applicable for this chemical/exposure medium. Cadmium (water) Chromium VI (used as Total Chromium) Mercury (as elemental mercury) CHEMICAL ADIONUCLIDE TOTAL RADIONUCLIDE TOTAL Trichlorocellecue Vinyl Culoride Benzo(a)undhracene Benzo(a)nyrene Benzo(b)fluorandhene Dibenzo(a, b)andhracene Indeno(1,2,3-ed)pyrene Anodor 1234 2-Dichlomethene (cis) Dichloroethene (cis) enzo(a)pyrene ibenzo(a,h)anthracene THEMICAL TOTAL Tetrachloroethene TrichAoroethene Vinyl Chloride Benzo(u)anthracene HEMICAL TOTAL Butylbenzene, sec-Fetrachloroethene Silver 2.3.7.8-TCDD Lead 2,3,7,8-TCDD SCENARIO TIMEFRAME: CURRENT/FUTURE RECETTOR POULATION: COMMERCIAL/INDUSTRIAL WORKER RECEPTOR AGE: ADULT opper rsenic Nickel Prepared by: BJR Checked by: KJC cad EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL INNER COVE FOINT INNER COVE NOTES: EXPOSURE MEDIUM TOTAL KPOSURE MEDIUM TOTAL SURFACE WATER EXPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMENT

Page 1 of 1

1.3E-03

1.3E-03

TOTAL NOAEL HI -TOTAL SKIN III - TABLE E10 - UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDEXCY- CURRENT/FUTURE- ADOLESCENT TRESPASSER- AGES 7-18 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER FORHIAM MANUFACTURING 333 ADELAIDE AVENUE

PROVIDENCE, RHODE ISLAND

EXPOSURE ROUTES TOTAL 5.06-08 5.06-08 1.76-06 3.36-07 3.36-07 2.276-06 2.276-06 4.56-06 3.46-07 3.46-04 3.46-04 3.46-04 3.46-04 1.0E-05 1.0E-04 1.7E-05 1.1E-04 2.6E-03 5.9E-05 1.4E-04 2.4E-04 3.7E-04 8E-03 7.5E-05 5.5E-04 9.4E-04 1.7E-04 8E-03 SE-05 4E-03 4E-03 4E-03 4E-03 E-03 46-03 TOTAL HEMATOLOGICAL SYSTEM III -TOTAL IMMUNE SYSTEM III -TOTAL KIDNEY III -TOTAL LIVER III -DERMAL 3.8E-04 3.0E-03 NON-CARCINGGENIC HAZARD QUOTIENT (I 5.4E-07 6.7E-07 1.1E-06 8.4E-08 2.2E-07 1.4E-04 2.3E-04 8.7E-06 8.7E-06 9.9E-05 2.1E-03 3.4E-05 1.4E-04 2.4E-04 3.7E-04 1 2 TOTAL HAZARD ACROSS ALL MEDIA INHALATION 0.0E+00 0.0E+00 INGESTION 6.8E-04 4.1E-03 7.8E-06 5.7E-04 2.6E-05 5.2E-07 5.2E-07 5.2E-07 5.06-08 5.06-08 1.76-06 3.36-07 1.66-06 2.16-06 2.346-07 2.66-07 2.66-07 2.66-07 2.66-07 2.66-07 2.66-07 2.66-07 3.46-04 3.46-04 3.46-04 5.0E-08 : : : Immune system Decreased BW/Organ wt. Skin PRIMARY TARGET ORGAN Hematological system Undetermined Liver Liver/Kidney Hematological system Liver Liver, Kidney Liver Kidney Kidney Kidney Liver Kidney Kidney Kidney Kidney Kidney Kidney Kidnes Kidney Kidney EXPOSURE ROUTES TOTAL 1.26-11 8.66-12 6.06-11 2.06-09 2.66-08 3.26-09 3.26-09 3.26-09 8.36-10 8.36-10 8.36-08 6.36-08 2.3E-09 1.4E-08 1.1E-08 1.3E-07 2.2E-06 3.5E-06 1E-05 1E-05 60-30.9 5.4E-06 1E-07 1E-05 1E-05 1E-07 DERMAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA Z Z Z Z Z Z Z Z Z Z Z CARCINOGENIC RISK (1 0.0E+00 0.0E+00 0.0E+00 5.0E-10 6.3E-09 1.0E-09 7.9E-10 7.9E-10 2.0E-10 4.4E-09 1.1E-05 NC NC NC NC 36-08 NC 2.2E-09 1.1E-08 6.0E-09 1.3E-07 2.2E-06 3.5E-06 --5.4E-06 U Z Z INHALATION INGESTION 3.1E-08 NC 1.76-10 2.96-09 4.76-09 4.96-10 4.96-09 4.96-09 -9.2E-08 ···· Not calculated; dose-response data and/or derntal absorption values are not available. NC - Not carcinogenie by this exposure route. NA - Not applicable, exposure route not applicable for this chemical/exposure medium. 'admium (water) Inomium VI (used as Total Chromium) dereury (as elemental mercury) vickel CHEMICAL ADIONUCLIDE TOTAL 1.2-Dichloroethene (cis) Tetaraklonoethene Trichloroethene Vinyl Chloride Beizo(a)suntracene Beizo(a)syrene Dibenzo(a,h)strutracene Dibenzo(a,h)strutracene 1.2-Dichloroethene (cis) Butylbenzene, see-Tetrachloroethene Dibenzo(a,lt)anthracene Indeno(1,2,3-ed)pyrene Aroelor 1254 ADIONUCLIDE TOTAL Vinyl Chloride Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene HEMICAL TOTAL HEMICAL TOTAL richlonocthene cad 3.7.8-TCDD Silver 2.3.7.8-TCDD opper rscuic Prepared by: BJR Checked by: KJC cad SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADOLESCENT TRESPASSER RECEPTOR AGE: AGES 7-18 POSURE POINT TOTAL EXPOSURE POINT TOTAL EXPOSURE POINT OUTER COVE OUTER COVE NOTES. KPOSURE MEDIUM TOTAL EXPOSURE MEDIUM TOTAL SURFACE WATER EXPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMENT

 W2mtg (EXTRON-0.001LAN Supplements) 2004.011 [Ask_Jaby_28-0.12 date BokUdes DirectantyDocker CT-UC-OnerGees Molecentres. SIMMARY

Page 1 of 1

3.3E-03

3.4E-04

TOTAL NOAEL HI

TABLE E11 - UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CENTRAL TENDENCY- CURRENTFUTURE- ADULT TRESPASSER- AGES 19-J0 SUPPLEMENTAL SITE INVESTIGATION REPORT FORMER COMPRE COMPACTORIAN MANUFACTURING 33, ADRLADE ANTENUE PROVIDENCE, RHODE ISLAND

EXPOSURE ROUTES TOTAL 3.26-08 3.226-08 3.226-08 3.226-06 1.26-06 1.96-06 1.96-06 5.26-07 5.26-04 1.26-04 2.266-04 1.226-04 4.8E-05 9.2E-05 2.2E-03 4.6E-05 1.2E-04 2.1E-04 1.1E-05 6.4E-05 1.1E-05 4.8E-05 3.9E-04 7.8E-04 1.4E-04 2.2E-04 2.2E-03 6E-03 6E-03 3E-03 3E-03 3E-03 TOTAL HEMATOLOGICAL SYSTEM HI = TOTAL IMMUNE SYSTEM HI = TOTAL LIVER HI = TOTAL LIVER HI = NON-CARCINOGENIC HAZARD QUOTIENT (I) DERMAL TOTAL SKIN HI = TOTAL NOAEL HI = 3.3E-04 8.7E-05 1.8E-03 3.0E-05 1.2E-04 2.1E-04 4.76-07 5.86-07 5.86-07 9.66-07 7.36-08 1.96-07 1.26-04 1.26-04 7.66-06 2.6E-03 ; TOTAL HAZARD ACROSS ALL MEDIA INHALATION 0.05+00 V V V V V V V V V V V V V INGESTION 4.4E-04 32E-08 32E-08 32E-08 1.1E-06 1.1E-06 1.1E-06 1.3E-06 2.2E-06 1.7E-07 4.3E-07 2.6E-04 1.1E-04 2.2E-04 5.0E-06 3.7E-04 1.7E-05 3.3E-07 3.3E-07 1.9E-03 2.6E-03 4.8E-05 Immune system Decreased BW/Organ wt. Skin PRIMARY TARGET ORGAN atological system Liver Liver/Kidney Liver/Kidney Kidney NoAEL matological syste Undetermined Liver Liver, Kidney Liver Kidney Kidney EXPOSURE ROUTES TOTAL 9.9E-12 7.4E-12 5.2E-11 1.9E-09 1.9E-09 3.9E-09 3.9E-09 3.0E-09 8.6E-10 8.6E-10 5.5E-08 2.7E-09 1.5E-08 1.1E-08 1.1E-08 1.5E-07 2.6E-06 5.1E-09 1E-05 1E-05 9E-08 1E-05 1E-05 E-08 ENTERNAL (RADIATION) TOTAL RISK ACROSS ALL MEDIA CARCINOGENIC RISK (1) DERMAL 0.0E+00 0.0E+00 0.0E+00 5.9E-10 7.3E-09 9.2E-10 9.2E-10 2.4E-10 2.4E-10 5.1E-09 5.1E-09 NC 2.5E-09 1.3E-08 7.1E-09 1.5E-09 2.6E-06 NC NC NC NC NC NC 1.3E-05 6E-08 N N NOILVIANI INGESTION 9.96-12 7.46-12 5.25-11 1.76-03 1.77-6-12 5.25-11 1.76-03 2.113-03 5.216-03 NC NC NC NC NC NC NC S.06-10 5.06-10 NC NC S.06-10 S.06-100S.000S.000S.000S.000S.0 NC 1.5E-10 2.5E-09 4.0E-09 4.2E-10 4.2E-09 2.6E-08 9E-08 NON ---- Not calculated; dosc-response data and/or dermal absorption values are not available. NA - Not applicable; exposure route not applicable for this chemical/exposure medium. Chromium VI (used as Total Chromium) tercury (as elemental mercury) CHEMICAL ADIONUCLIDE TOTAL ADIONUCLIDE TOTAL Dibenzo(a.h)anthracene Indeno(1.2.3-cd)pyrene Aroclor 1254 ..2-Dichloroethene (cis) fetrachloroethene 2-Dichloraethene (cis) Benzo(a)pyrene Benzo(b)fluoranthene Trichloroethene Vinyl Chloride Benzo(a)anthracene Trichloroethene Vinyl Chloride Benzo(a)anthracene HEMICAL TOTAL Butylbenzene, secadmium (water) enzo(a)pyrene .3.7,8-TCDD HEMICAL Copper NC - Not carcinogenic by this exposure route. rsent lickel lvcr Prepared by: BJR Checked by: KJC ead EXPOSURE POINT TOTAL EXPOSURE POINT TOTAL SCENARIO TIMEFRAME: CURRENT/FUTURE RECEPTOR POPULATION: ADULT TRESPASSER RECEPTOR AGE: AGES 19-10 EXPOSURE POINT OUTER COVE OUTER COVE NOTES: EXPOSURE MEDIUM TOTAL JRE MEDIUM TOT SURFACE WATER EXPOSURE SEDIMENT RECEPTOR TOTAL SURFACE WATER MEDIUM SEDIMEN

Page I of I

TABLE E12-UNCERTAINTY SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - CENTRAL TENDENCY-CURRENT/FUTURE- COMMERCIAL/INDUSTRIAL WORKER- ADULT SUPPLEMERTAL SITE INVESTIGATION REPORT PORMER CORHAM MANUFACTURING 313 ADULADE FARINE PROVIDENCE BILANDE FARINE

PROVIDENCE, KHUDE ISLAND		CARCINOGENIC RISK (1)
	ORKER	
	CURRENT/FUTURE : COMMERCIAL/INDUSTRIAL W	adiiseana
	SCENARIO TIMEFRAME: RECEPTOR POPULATION RECEPTOR AGE: ADULT	anii onii o

					CARC	CINOGENIC	RISK (I)		NON	CARCINOGE	NIC HAZARD O	OTIENT (I)	
MEDIUM	EXPOSURE	ENPOSURE	CHEMICAL	INGESTION	INIIALATION	DERMAL	EXTERNAL (RADIATION)	EXPOSURE ROUTES TOTAL	PRIMARY TARGET ORGAN	INGESTION	INIIALATION	DERMAL	EXPOSURE ROUTES TOTAL
CELVINGNIT	CEDIMENT	OILTER COVE	1.3.Dicklornethene (cic)	NC	NA	NC	NA		Hematulovical system	4.0E-09	NA		4 0E-09
SEDUMENT	DELONIEN	COLLA COVE	Burd Bon voire and	2N	NN	UN NC	NA		Indetermined	4 0F-00	NA		4.0F.00
			Township continues	3 95.17	NN	0.0F400	NN	3 95.13	liver	4 nF-00	VN		4 0F.00
			Triatferentiere	1 96 1 2	NA	ULTER D	NN	2 QE.12	1 iver/Kidney	1 35.07	NN.		1 35.07
			Wind Charles	2 06-11	N.N.	0.05400	NN.	2 0F-11	Liver	2 7E.08	N'N		2 7E.08
				2.00-10 2.10 10	V.V	1 26 10		A 517 10	Videout	1 15 07	N N	2 3E MG	1 76 42
			Denizo(a)anua denizo	4 SE-00	ANA ANA	1 65-00	NA NA	S IE-DO	Kidner	1 76.07	NA.	1 15-08	2 16.07
			Benzola/pyrene	1 15 00		0 11 11 C	~~~	1 35 00	Villion	3 76 07		00-17-1	2 45 07
			Benzo(b)IIttoranthene	60-21-1	NA	2.75-10	EN	1 00 00	NUMEY	2.12-01		0.95-00	
			Dibenzo(a,h)antitracene	8.1E-10	YZ Y	2.05-10	NA.	1.05-09	Namey	2.15-08	AN	5.2E-09	2.05-105
			Indepo(1.2.3-cd)pyrene	2.1E-10	NA	5.35-11	AN .	2.05-10	Kadney .	5.4E-08	۲. Z	1.4E-08	0./E-08
			Aroctor 1254	2.3E-10	NA 	6.2E-11	AN	2.9E-10	Immune system	3.2E-05	AN .	8.7E-06	4.1E-05
			Arsenic	2.0E-0S	AN	1.1E-09	NA	2.1E-08	Skin	24E-04	YN.	1.4E-05	2.6E-04
			Cadmium (water)	U Z	NA	NC	NA		Kidney	1.4E-05	NA	5.4E-07	1.4E-05
			Chromium VI (used as Total Chromium)	S	NA	Ŋ	NA		NOAEL	2.7E-05	AN		2.7E-05
			Copper	SC	NA	NC	NA			•	NA		
			llead	1	NA	1	NA			•	VN		
			Mercury (as elemental mercury)	S	NA	NC	NA		Immune system	1.3E-06	VN		1.3E-06
			Nickel	NC	NA	NC	NA		Decreased BW/Organ wt.	8.1E-06	NA		8.1E-06
			Silver	NC	NA	NC	NA		Skin	1.4E-06	NA		1.4E-06
			2.3.7.8-TCDD	2.0E-09	NA	3.9E-12	NA	2.0E-09		1	NA	1	
			CHEMICAL TOTAL	3.1E-08		3.5E-09	t	3E-08		3.3E-04	0.0E+00	2.4E-05	4E-04
				No.									
			RADIONUCLIDE TOTAL										200
		JEXPOSURE POINT TOTAL					es.	3E-08					4E-04
	EXPOSURE MEDIUM TOTA							3E-08					4E-04
STIDEACE	CUBEACE WATER	T DITTED COVE	II 3. Diddorodhene (eis)	NC	NA	NC	NA		Hematological system	S OF DA	NA		S DF DK
WATER	SUNTALE WATER	A D D D D D D D D D D D D D D D D D D D	Tetrachloroethene	7.6E-11	NA	6.5E-10	NA	7.2E-10	Liver	8.3E-07	NA	7.1E-06	7.9E-06
			Trichlomethene	1 3E-09	NA	3.1E-09	NA	4E-09	Liver, Kidney	6.1E-05	NA	1 5E-04	2 1E-04
			Vinul Culoride	2.1F-09	NA	1.7E-09	N	3 7E-09	Liver	2.8F-06	NA	2.2E.06	5 0E-06
			Remote tarrelities	2.2F.10	AN N	3 9F-08	AN N	4 0F-08	Kidnev	5.5F-08	NA NA	1 0E-05	1.05.05
			Benzo(a)systeme	2.7F.09	NA	6.7P.07	NA	6.7E.07	Kidnev	5.5E.08	NA	1 7E.05	1 7F-05
			Dihenzo(a It)antheacene	2.2F.09	NA	1.0F.06	NN	1 0P.06	Kidney	5 5F.08	NN.	2.76.05	2.7E.05
			f cid	1	NA		NN			1	NA	1	1
			2.3.7,8-TCDD	5.7E-09	NA	1.6E-06	NA	1.6E-06		1	AN NA	ţ	
				Conception of the second se	1000		00000						
			CHEMICAL TOTAL	1.4E-08		3.4E-06	i.	3E-06		7.3E-05	0.0E+00	2.1E-04	3E-04
			RADIONUCLIDE TOTAL										
		EXPOSURE POINT TOTAL						3E-06				N.	3E-04
	EXPOSURE MEDIUM TOTA	AL						3E-06					3E-04
RECEPTO	2 TOTAL							3E-06					6E-04
					TOTAL RISK	ACROSS /	NLL MEDIA	3E-06	TOTAL HAZ	ARD ACRC	OSS ALL MED	V	6E-04
		NOTES:											-
		NC - Not carcinogenic by this expos	sure route.										1
		NA - Not applicable; exposure route	e not applicable for this chemical/exposure me	dium.									1
		Not calculated; dose-response d.	ata and/or dermal absorption values are not av	ailable.									1
		Deserved he	de										i
		Checked by	v: KIC							TOTAL HEN	IATOLOGICAL	SYSTEM HI -	8.0E-06
										Ħ	DTAL IMMUNE:	- IH WELLSAS	4.2E-05
											TOTAL	KIDNEY HI	6.9E-05
												LIVER III -	C0-35-1
											TOTAL	NOAEL HI =	2.7E-05
												Contraction of the local division of the loc	The second s

2.6E-04

TOTAL SKIN HI =

Table E13 - UNCERTAINTY Risk Assessment Summary - CT Supplemental Site Investigation Report Former Gorham Manufacturing 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Inner Cove					
Trespasser	Older Child (ages 7 through 18)	Sediment	Incidental ingestion Dermal contact	1E-06 4E-08	0.04 0.001
		Surface water	Incidental ingestion Dermal contact	7E-08 2E-05	0.0008 0.004
			Total Risk:	2E-05	0.04
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion Dermal contact	1E-06 5E-08	0.03 0.001
		Surface water	Incidental ingestion Dermal contact	6E-08 3E-05	0.0005 0.003
			Total Risk:	3E-05	0.03
			Total Receptor Risk:	5E-05	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion Dermal contact	4E-07 1E-08	0.003 0.00008
		Surface water	Incidental ingestion Dermal contact	3E-08 7E-06	0.00009 0.0003
			Total Risk:	7E-06	0.004
		8	Total Receptor Risk:	7E-06	NC
Table E13 - UNCERTAINTY Risk Assessment Summary - CT Supplemental Site Investigation Report Former Gorham Manufacturing 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Outer	r Cove				
Trespasser	Older Child (ages 7 through 18)	Sediment	Incidental ingestion Dermal contact	9E-08 1E-08	0.004 0.0004
	8	Surface water	Incidental ingestion Dermal contact	3E-08 1E-05	0.0007 0.003
			Total Risk:	1E-05	0.008
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion Dermal contact	8E-08 2E-08	0.003 0.0003
		Surface water	Incidental ingestion Dermal contact	3E-08 1E-05	0.0004 0.003
			Total Risk:	1E-05	0.006
			Total Receptor Risk:	2E-05	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion Dermal contact	3E-08 3E-09	0.0003 0.00002
		Surface water	Incidental ingestion Dermal contact	1E-08 3E-06	0.0001 0.0002
			Total Risk:	3E-06	0.0006
			Total Receptor Risk:	3E-06	NC

Risk calculations are presented in Tables E1-E12.

NC = Not calculated because Hazard Index is not summed across age groups.

Table E14 - UNCERTAINTY Risk Assessment Summary - RME Supplemental Site Investigation Report Former Gorham Manufacturing 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Inner	Cove				
Trespasser	Older Child (ages 7 through 18) Sediment	Incidental ingestion Dermal contact	2E-05 5E-07	0.1 0.003
		Surface water	Incidental ingestion Dermal contact	5E-07 2E-04	0.001 0.005
			Total Risk:	2E-04	0.2
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion Dermal contact	1E-05 4E-07	0.09 0.003
		Surface water	Incidental ingestion Dermal contact	3E-07 1E-04	0.0009 0.004
			Total Risk:	1E-04	0.1
			Total Receptor Risk:	3E-04	NC
Commercial/Industrial	Adult (ages 19 and above)				
Worker		Sediment	Incidental ingestion Dermal contact	4E-06 8E-08	0.02 0.0003
		Surface water	Incidental ingestion Dermal contact	2E-08 4E-05	0.00002 0.0006
			Total Risk:	5E-05	0.02
			Total Receptor Risk:	5E-05	NC

Table E14 - UNCERTAINTY Risk Assessment Summary - RME Supplemental Site Investigation Report Former Gorham Manufacturing 333 Adelaide Avenue Providence, Rhode Island

Exposure Scenario	Receptor	Exposure Point	Exposure Route	Excess Lifetime Cancer Risk	Hazard Index
Current/Future - Pond	(Outer Cove)	-			
Trespasser	Older Child (ages 7 through 18)	Sediment	Incidental ingestion Dermal contact	1E-06 2E-07	0.01 0.001
		Surface water	Incidental ingestion Dermal contact	2E-07 5E-05	0.002 0.006
			Total Risk:	5E-05	0.02
Trespasser	Adult (ages 19 and above)	Sediment	Incidental ingestion Dermal contact	9E-07 2E-07	0.009 0.001
		Surface water	Incidental ingestion Dermal contact	1E-07 4E-05	0.001 0.005
			Total Risk:	5E-05	0.02
			Total Receptor Risk:	1E-04	NC
Commercial/Industrial Worker	Adult (ages 19 and above)				
		Sediment	Incidental ingestion Dermal contact	3E-07 4E-08	0.001 0.00009
		Surface water	Incidental ingestion Dermal contact	6E-09 1E-05	0.0000 0.001
			Total Risk:	1E-05	0.002
			Total Receptor Risk:	1E-05	NC

Risk calculations are presented in Tables E1-E12.

NC = Not calculated because Hazard Index is not summed across age groups.