March Point Landfill
Anacortes, WA

Summary of Existing Information and Identification of Data Gaps for Sediments

FINAL

Prepared for

Washington State Department of Ecology
Toxics Cleanup Program
300 Desmond Drive
Lacey, Washington 98504

Prepared by

Science Applications International Corporation
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

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List of Acronyms

CSL	Contaminant Screening Level
ECOLOGY	Washington State Department of Ecology
GC/AED	gas chromatography/atomic emission detection
HPAH	high molecular weight polynuclear aromatic hydrocarbon
LPAH	low molecular weight polynuclear aromatic hydrocarbon
OC	organic carbon
PAH	polynuclear aromatic hydrocarbon
PBT	persistent bioaccumulative toxic
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzo-p-furans
RI/FS	Remedial Investigation/Feasibility Study
SAIC	Science Applications International Corporation
SCHD	Skagit County Health Department
SEDQUAL	sediment quality (database)
SIR	Swinomish Indian Reservation
SITC	Swinomish Indian Tribal Community
SMS	Sediment Management Standards
SQS	Sediment Quality Standard
SVOC	semi-volatile organic compound
TCDF	2,3,7,8-tetrachlorodibenzofuran
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WDOH	Washington State Department of Health

1.0 Introduction

1.1 Background and Purpose

The March Point (aka Whitmarsh) Landfill, located in Anacortes, Washington, was a public dump in the 1950s, and was operated by Skagit County from 1961 until its closure in 1973. The former landfill is located adjacent to Padilla Bay, which is a National Marine Estuarine Sanctuary that supports sustenance fishing to the Swinomish Indian Tribal Community (SITC). Due to the landfill's proximity and potential impacts to Padilla Bay, it has been identified as a high priority cleanup area under the Puget Sound Initiative.

Science Applications International Corporation (SAIC) is working in collaboration with GeoEngineers on this project under the Washington State Department of Ecology's (Ecology) Hazardous Substances Site Investigation & Remediation for the Toxics Cleanup Program (Contract #: CO700034, Work Assignment # SAIC004). SAIC is the prime contractor and will focus on aquatic and sediment-related issues, whereas GeoEngineers will evaluate upland-related issues. The evaluation of the upland portion of the site is provided under separate cover: *Summary of Existing Information and Identification of Upland Data Gaps, March Point (aka Whitmarsh) Landfill, Anacortes, Washington* (GeoEngineers 2007).

The purpose of this report is to summarize existing information and identify data gaps related to the sediments at the site. This report, combined with the upland report, will provide the basis of a remedial investigation/feasibility study (RI/FS) work plan. The purpose of the RI/FS is to conduct a site investigation to define the nature and extent of contamination in all media at the site and to develop an appropriate remedy. The RI/FS will comprehensively address the sediment and upland issues, and their relative interactions with respect to contamination and habitat quality.

1.2 Report Organization

This report includes the following sections: Site Description, Summary of Existing Information, Summary of Data Gaps, and a reference list of Documents Reviewed.

2.0 Site Description

The abandoned March Point Landfill site is approximately 14 acres located at 9663 South March Point Road in Anacortes, Washington. The site is located on former tidelands at the base of a bluff at the west end head of Padilla Bay Lagoon. The landfill is bounded by March's Point to the north and west, Padilla Bay and Padilla Bay Lagoon to the northeast, the Swinomish Indian Reservation (SIR) and Swinomish Channel to the east, and March's Point Road and Highway 20 to the south (Figure 1). The landfill is buttressed with heavy rock riprap along its saltwater edge to the northeast, which includes a railroad right-of-way. A small stream also flows along its south and southwest border (Meadows 1990). The embankment under the railroad serves as a dike separating the Padilla Bay Lagoon from the greater Padilla Bay. A small trestle in the railroad embankment allows for water exchange between the lagoon and outer bay.

The landfill was an unregulated public dump from 1950 to 1973 and was operated by Skagit County from 1961 to 1973. Skagit County used this landfill as its primary disposal area from 1969 to 1973. It is unknown the types and quantities of waste that were buried at the landfill, which included household and commercial solid waste, and industrial waste from two refineries located nearby, as well as potentially large quantities of asbestos-containing material. Records indicate that industrial wastes were accepted from Shell and Texaco refineries. In addition, Allied Chemicals and Northwest Petrochemical may have also dumped their wastes at the landfill (Ecology 2006, SAIC 2007). A more detailed description of the landfill waste type and history, along with photo documentation of the site, is provided in the *Summary of Existing Information and Identification of Upland Data Gaps* (GeoEngineers 2007).

Figure 1. March Point Landfill Site Location

3.0 Summary of Existing Information

Table 1 provides a summary of the documents obtained and reviewed for this investigation. The majority of these studies provided sediment chemistry and bioassay toxicity results along with sampling locations (Map ID), which can be found in Figure 2.

Table 1. Summary of Previous Studies, Existing Data, and Findings

Map ID	Study	Station Name	Findings	SMS Exceedance Reported	Bioassay Toxicity Reported
1	Myklebust 1971		Observed debris, pooled water, uncovered waste.		
2	Ecology 1984		Whitmarsh landfill designated as a medium-priority site.		
3	Milham 1986	NCT094-096	Water and sediment samples: traces of arsenic, toluene, and fluoranthene found in sediment from base of landfill.		
4	Milham 1986	NCT092-093	Water and sediment samples.		
5	Johnson 1989		Composite sediment sample. No detections reported.		
6	Johnson 1989		Composite sediment sample. 4-methylphenol detected at 25 µg/kg.		
7	Ecology 1991		Information summary states suspected contamination by metals, petroleum, nonchlorinated solvents, PAHs, and inorganic conventional contaminants.		
8	Wiggins 1992	Site A	Sediment bioassay: observable leachate, 100% mortality (Whidby Island control site had 5.5% mean mortality).		Y
9	Wiggins 1992	Site B	Sediment bioassay: observable leachate, 63% mean mortality.		Y
10	Wiggins 1992	Site C	Sediment bioassay: no observable leachate, 43% mean mortality.		Y
11	Bulthuis and Shaw 1992	D	Sediment bioassay: 60% mortaility.		Y
12	Bulthuis and Shaw 1992	E	Sediment bioassay: 34% mortality.		
13	Bulthuis and Shaw 1992	C	Sediment bioassay: 70% mortaility.		Y
14	Bulthuis and Shaw 1992	A	Sediment bioassay: 93% mortlaity.		Y
15	USFWS 1994		Inner lagoon sediment sample with detected metals and PAH below SMS.		
16	USFWS 1994		Sediment sample: results not specified.		
17	Willis 1996	WM-1;WMW1	Surface sediment and water samples: organics and metals detected at low levels.		

Map ID	Study	Station Name	Findings	SMS Exceedance Reported	Bioassay Toxicity Reported
18	Willis 1996	WM-2;WMW-2	Surface sediment and water samples: organics and metals detected at low levels.		
19	Ecology 1999	1	Sediment chemistry screening sample: full chemistry: metals, organics, organotins, and dioxins detected. Phenols above SMS.	Y	
20	Ecology 1999	2	Sediment chemistry screening sample: full chemistry: metals, organics, organotins, and dioxins detected. Phenols above SMS.	Y	
21	Ecology 1999	3	Sediment chemistry (phenols): phenols exceeding SMS. Bioassay: 0% survival in all three tests.	Y	Y
22	Ecology 1999	4	Sediment chemistry (phenols): phenols non-detect. Bioassay: abnormal larval development.		Y
23	Ecology 1999	5	Sediment chemistry (phenols): phenols non-detect. Bioassay: abnormal larval development. Chronic low level toxicity for polychaetes.		Y
24	Ecology 1999	6	Sediment chemistry (phenols): phenols non-detect. Bioassay: abnormal larval development.		Y
25	SITC 2002, 2004	PAD.2	2002: 2 SQS and 2 CSL chemical exceedances. 2004: 2 CSL exceedances.	Y	
26	SITC 2002, 2004	PAD.3	2002: 3 SQS and 6 CSL exceedances. 2004: 2 CSL exceedances.	Y	

Notes: Map ID corresponds to station numbers in Figure 2.
CSL = cleanup screening level; SMS = Sediment Management Standards; SQS = Sediment Quality Standards

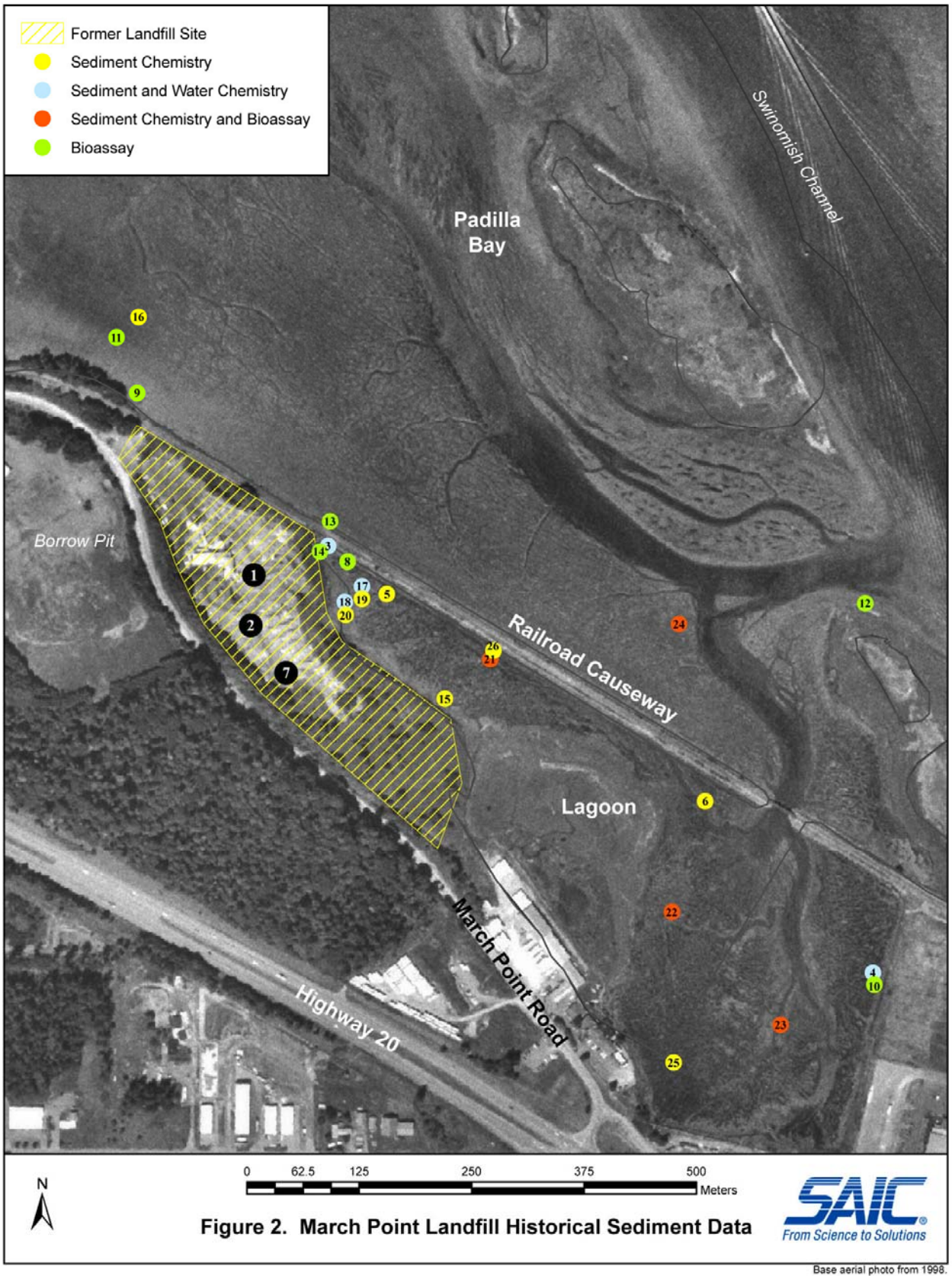

Figure 2. March Point Landfill Historical Sediment Data

Base aerial photo from 1998.

3.1 Letter to Skagit County Health Department (Myklebust 1971)

Concerns raised by Ecology regarding potential contamination from the March Point Landfill date back to a March 17, 1971, letter from Roy J. Myklebust (Ecology) to Dick Bernhardt (Skagit County Health Department [SCHD]), indicating that during a site visit on January 8, 1971, there was pooled water, with floating debris and considerable uncovered waste, present at the site. No samples, however, were collected, and no analyses were performed. Ecology did recommend that either the site be abandoned immediately or a site operating plan be immediately furnished to the state.

3.2 Letter to Skagit County Health Department (Ecology 1984)

In a letter dated January 8, 1985, Ecology notified SCHD that the Whitmarsh Landfill had been designated as a medium priority site based on a Potential Hazardous Waste Site Preliminary Assessment Summary Memorandum dated November 11, 1984. A medium priority designation indicates a potential health hazard or environmental threat is suspected based on evidence from sampling, from direct observation by a regulatory agency or site operator, or from a history of problems at the site. It is unknown what waste types or quantities other than municipal wastes were disposed of at the site. Four major chemical industries (including two refineries, a refinery waste recycler, and a sulfuric acid plant) are located on March Point, west and north of the site, and have been in business as long as the landfill was in operation. It is considered highly likely that these businesses took wastes to the site, as it was the largest and nearest county dump during its time of operation. It is known that one of the refineries (Texaco) dumped unknown substances at the landfill. The preliminary assessment indicated that groundwater and surface water are at greatest risk for contamination, with soil facing a lesser risk.

3.3 Washington State Department of Ecology Site Inspection Report (Milham 1986)

In December 1985, an inspection of Whitmarsh landfill was conducted for the Ecology Hazardous Waste Cleanup Program. Water and sediment samples were collected at the base of the landfill and at the opposite end of the lagoon. It was concluded there was a slight amount of contamination by arsenic, toluene, and fluoranthene in sediments near the landfill, but it could not be determined if the landfill was the source. Nothing of significance was found in the water samples. It was recommended that no further sampling or remedial action be required. The original report was not available for this review.

3.4 Washington State Department of Ecology Sediment Sampling (Johnson 1989)

During September 1988, ECOLOGY analyzed phenolic compounds and polychlorinated biphenyls (PCBs) in two sediment samples from the Padilla Bay lagoon. The analyte 2-methylphenol had been identified as the principal groundwater contaminant at the Northwest Petrochemical facility, which had disposed of waste material in Whitmarsh Landfill. One composite sample was analyzed near the landfill and another at the lagoon outlet. The only

compound detected was 4-methylphenol in the outlet sample at a relatively low concentration of 25 µg/kg. The original report was not available for this review.

3.5 Skagit County Health Department Management Recommendations (Meadows 1990)

SCHD designated Whitmarsh Landfill as a Risk Category 4, based upon the Risk Screen developed for a 1990 assessment of solid waste disposal in Skagit County entitled *A Century of Garbage: The Evolution of Skagit County's Solid Waste Disposal Sites (1910–2010) with Management Recommendations*. It was suggested that the site be upgraded to a Risk Category 5 based on the following:

- Proximity to a National Marine Estuarine Sanctuary,
- The influence of tidal intrusion by corrosive saltwater,
- Inclusion on the U.S. Environmental Protection Agency's (USEPA) list of Potentially Hazardous Waste Sites,
- The dumping of unknown types and quantities of chemicals by local industries, and
- Its uncertain regulatory control.

3.6 Owner/Operator Site Information Summary (Ecology 1991)

An Ecology owner/operator site information summary dated October 8, 1991, indicated suspected contamination of the site by priority pollutant metals, petroleum products, nonchlorinated solvents, polynuclear aromatic hydrocarbons (PAHs), and organic and inorganic conventional contaminants.

3.7 Padilla Bay Amphipod Bioassay Surveys (Bulthuis and Shaw 1992; Wiggins 1992)

Bioassays using the amphipod *Rhepoxynius abronius* were conducted on Padilla Bay lagoon sediments by Wiggins (1992) and Bulthuis and Shaw (1992). Wiggins tested surface sediments (0–2 cm) from two sites located near the landfill with observable leachate seeps, and one location without any observable leachate seeps. The amphipod mortality ranged from 43–100% in the samples indicating toxicity in all three samples (5.5% mortality in control sediment). Although significant mortality was found in all areas relative to controls, the most toxic sediments were adjacent to the landfill.

Bulthuis and Shaw conducted amphipod mortality bioassays using *R. abronius* at 19 locations in Padilla Bay, including four locations near the landfill. The bioassay results in the samples collected near the landfill ranged from 60–93% mortality. Chemical analyses were not performed on the sediment samples collected for either of the two amphipod mortality studies.

3.8 U.S. Fish and Wildlife Sediment Sampling (USFWS 1994)

As part of a larger study on trace elements, petroleum, and chlorinated pesticides in Padilla and Fidalgo Bays, the U.S. Fish and Wildlife Service (USFWS) analyzed a sediment sample

collected from the inner lagoon and one sample northwest of the landfill site, just outside the lagoon in July 1988. Concentrations of metals and PAHs in the inner lagoon sample were below the Sediment Management Standards (SMS) Sediment Quality Standards (SQS). No petroleum contamination was observed. The original report and data results were not available for this review.

3.9 Letter to Swinomish Indian Tribal Community (Willis 1996)

Representatives of Skagit County and SITC collected marine surface water and marine sediment samples from the site on October 24, 1996. The selected sampling locations were based largely on discolored surface water emanating from the concrete riprap wall at points where it discharged to the adjacent mudflats; two discharge points were identified. At each discharge point, a surface water sample and a sediment sample were collected (Figure 2). An analysis of priority pollutants was conducted on each of the two surface water samples (WMW-1 and WMW-2) and two sediment samples (WM-1 and WM-2). A few organic compounds and metals were detected at low concentrations in the surface water samples. Several organic compounds and metals were detected at low concentrations in the sediment samples, and many parameters were flagged as estimated values because they were detected below the laboratory reporting limits. The results of this sampling effort were reported to Lauren Rich of SITC by Ken Willis (SCHD) in a letter dated December 6, 1996. The results are summarized in Table 2.

The letter compares the results of this sampling effort to those of a sampling effort conducted by Ecology as part of a site investigation conducted in March 1986 (Milham 1986). Two Ecology samples (leachate sample NCT095 and sediment sample NCT096) appeared to be similar to the water and sediment samples collected as part of this investigation. ECOLOGY concluded from their sampling effort that it could not be determined whether the detected contamination resulted directly from the landfill contents or from other nonpoint sources in the area (such as fuel spills). Ecology also concluded that the presence of fluoranthene and toluene (detected in NCT096 and WM-1) are not unexpected in the offshore marine sediment samples for such a highly industrialized area. They further concluded that their sampling data did not show a significant problem with the landfill to warrant further sampling or remedial actions, and there was no conclusive indication that hazardous materials were leaching from the landfill into Padilla Bay or its surrounding estuarine area. Skagit County and SITC agreed with Ecology's findings and concluded that further investigation using county resources was not warranted at the time (SCHD).

Table 2. Whitmarsh Landfill Samples Collected October 24, 1996

Sample ID	WMW-1	WMW-2	WM-1	WM-2
	Surface Water		*Sediment*	
USEPA Method 8260	**µg/L**	**µg/L**	**mg/kg**	**mg/kg**
Benzene	6			
Chlorobenzene	15	1 J		
m,p-xylenes	3	1 J	0.005 J	0.008 J
o-xylene	3			
Acetone			0.52	0.7
Carbon disulfide			0.03	0.05
Methylene chloride			0.14 J	0.016 J
2-butanone			0.17	0.19
4-methyl-2-pentanone			0.1	
Toluene			0.008 J	0.011 J
2-hexanone			0.038 J	0.036 J
USEPA Method 8270	**µg/L**	**µg/L**	**mg/kg**	**mg/kg**
2,4-dimethylphenol	3			
Naphthalene	2			
2-methylnaphthalene	1			
n-nitrosodiphenylamine		1		
Bis(2-ethylhexyl)phthalate		1	0.1	0.44
Fluoranthene			0.046 J	
Pyrene			0.084	
Benzo(a)anthracene			0.074	
Chrysene			0.064	
Benzo(b)fluoranthene			0.048 J	
Benzo(k)fluoranthene			0.03 J	
Metals	**µg/L**	**µg/L**	**mg/kg**	**mg/kg**
Antimony	6 U	3 U	1 U	2 U
Arsenic	5 U	5 U	12	11
Beryllium	10 U	10 U	0.46 U	0.64 U
Cadmium	10 U	10 U	1.3	1.8
Chromium	10 U	10 U	44	49
Copper	10 U	10 U	47	39
Cyanide	5 U	5 U	0.23 U	0.56 U
Lead	50 U	50 U	26	27
Mercury	0.2 U	0.2 U	0.1 U	0.3
Nickel	20 U	20 U	50	51
Selenium	5 U	5 U	0.8	0.2 U
Silver	10 U	10 U	0.91 U	1.3 U
Thallium	1 U	1 U	0.2 U	0.4
Total Phenol	10	5 U	2.2	1.7 U
Total Solids	NT	NT	55.7	33.1
Zinc	26	31	85	110

3.10 Ecology Environmental Assessment Program (Ecology 1999)

During the summer of 1998, in response to a request from SITC, the Ecology Environmental Assessment Program conducted an investigation to determine the extent to which Padilla Bay Lagoon had been degraded by discharges from Whitmarsh Landfill. The lagoon is partially located within the SIR. SITC had long been concerned about oily, discolored sediments near the fill and reported that petroleum sheens and odors commonly occurred in the lagoon. Although previous sampling had not detected significant chemical contamination, SITC considered the data to be inconclusive.

Ecology's 1998 investigation was done in two stages. An extensive chemical screening was first conducted on samples of seepage and intertidal sediments at the base of the landfill. Based on these results, a wider survey was conducted of sediment quality in the lagoon, focusing on chemicals detected in the screening analysis.

The screening sediment samples were collected at low tide on June 11, 1998, at sites #1 and #2 (Figure 3). The screening samples were colocated with Skagit County 1996 WM-1 and WM-2 samples and were composites of multiple grabs taken along a 20–30-foot transect downstream of the water samples and roughly parallel to the face of the fill. Composite sediment samples were collected on August 7, 1998, at three sites in the lagoon (#3 in the inner lagoon, #4 and #5 in the outer lagoon) and one site (#6) outside the lagoon in Padilla Bay (Figure 3). Sediments were also collected from an established reference area 9 miles to the north in Samish Bay. These samples were analyzed for a subset of the screening survey chemicals and were also submitted for bioassay testing (Table 3). Chemical analysis included total petroleum hydrocarbons (TPH), metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, and polychlorinated dibenzo-p-dioxins and -furans (PCDDs/PCDFs).

Table 3. Analysis of Whitmarsh Landfill/Padilla Bay Lagoon Samples Collected in 1998

Sample ID	1 & 2	3, 4, 5, 6, & Reference
Chemistry		
Priority pollutant metals	X	X
Metals scan	X	
Cyanide		
TPH	X	X
Hydrocarbon identification	X	
VOCs		X
SVOCs	X	X
PCBs	X	X
Pesticides	X	
Herbicides	X	
GC/AED screen	X	
PCDDs/PCDFs	X	X
Organotins	X	
Bioassay		
Amphipod mortality		X
Echinoderm larval development		X
Juvenile polychaete growth		X

GC/AED = gas chromatography/atomic emission detection

The concentrations of arsenic, chromium, copper, lead, mercury, and zinc in the screening sediments were elevated but were below SMS SQS screening criteria; beryllium, nickel, and selenium were also detected, but are not included on the list of SMS chemical criteria. No diesel or gasoline was detected in the screening sediment samples from sites 1 and 2; lube oil was detected in the sample from site 2, but was below the quantitation limit in a duplicate analysis of that sample. Site 3, located on the north side of the inner lagoon, approximately 200 yards east of the landfill, reported elevated concentrations of petroleum (5,300 mg/kg diesel; 4,000 mg/kg lube oil). PCBs were not detected in sediment samples but were detected in discharge or seepage from the landfill site at concentrations approaching the state marine chronic water quality criterion of 0 03 µg/L. Pesticides and herbicides were not detected in the screening samples. The measured concentrations of organotins (e.g., tributyltin) were similar to background concentrations reported for Puget Sound sediments. All of the screening sediment samples had detectable concentrations of 16 of the 17 2,3,7,8-substituted PCDDs/PCDFs (1,2,3,7,8,9-HxCDF). Fewer dioxin/furan compounds were detected in the remaining samples and generally at lower concentrations. Results for all detected chemistry in sediment are summarized in Table 4.

The major findings from Ecology's 1998 investigation on sediment quality in Padilla Bay Lagoon can be summarized as follows. The SVOCs phenol, 2-methylphenol, 4-methylphenol, and 2,4-dimethylphenol in the inner lagoon exceeded Sediment Management Standards as summarized in Table 4. According to the report, this cluster of stations (sites #1, #2, and #3) represent a priority for further evaluation as a cleanup site. All other SMS chemicals were within SQS. Chemicals meeting the SQS are not expected to cause adverse effects on biological resources.

Table 4. Detected Chemicals in Sediment Samples Collected in 1998

Parameter (Units)	SMS		Inner Lagoon						Outer Lagoon				Outside Lagoon	
Metals (mg/kg)	**SQS**	**CSL**	**Site 1**		**Site 2**		**Site 3**		**Site 4**		**Site 5**		**Site 6**	
Arsenic	57	93	11		12		9.8		11		6.7		8.9	
Cadmium	5.1	6.7	0.5	U	0.5	U	0.48		0.4		0.4		0.4	
Chromium	260	270	65		59		44		54		35		46	
Copper	390	390	44		39		35		38		21		33	
Lead	450	530	13		13		34		12		6.6		50	
Mercury	0.41	0.59	0.082		0.076		0.095	J	0.081	J	0.047	J	0.078	J
Silver	6.1	6.1	0.4	U	0.4	U	0.7	J	0.54	J	0.47	J	0.56	J
Zinc	410	960	98		93		111		80		48		68	
HPAH (mg/kg OC)														
Benzo(a)anthracene	110	270	3.2		1.8		2.6	U	1.6	U	6.0	U	1.2	
Benzo(a)pyrene	99	210	2.7		1.0		2.6	U	0.5		1.0		0.7	
Benzo(g,h,i)perylene	31	78	5.1		3.2		13.0	U	0.3		30.2	U	0.3	
Chrysene	110	460	6.3		3.1		1.5		3.3	U	1.7		1.8	
Fluoranthene	160	1200	8.7		4.5		2.6	U	1.4		2.9		4.4	
Indeno(1,2,3-cd)pyrene	34	88	6.0		16.0		13.0	U	0.5		0.7		0.4	
Pyrene	1000	1400	8.2		4.1		2.6	U	1.4		2.5		3.5	
Total HPAH	960	5300	53.0		25.0		1.5		6.1		14.0		16.0	
LPAH (mg/kg OC)														
2-Methylnaphthalene	38	64	2.3		1.7		13.6		0.3		0.7		0.2	
Acenaphthene	16	57	0.9		3.2	U	1.5		0.1		0.3		0.1	
Acenaphthylene	66	66	4.7	U	3.2	U	2.6	U	0.2		0.2		0.1	
Anthracene	220	1200	1.7		0.8		2.6	U	0.2		0.5		0.4	
Fluorene	23	79	1.4		0.8		1.4		0.2		0.4		0.3	
Naphthalene	99	170	1.7		1.2		3.9		0.2		0.8		0.3	
Phenanthrene	100	480	5.2		3.1		4.0		0.8		1.4		1.5	
Total LPAH	370	780	11.0		5.9		11.0		1.8		3.7		2.7	
Dibenzofuran	15	58	1.4		0.8		0.8		0.2		0.5		0.2	
Phthalates (mg/kg OC)														
Bis(2-ethylhexyl)phthalate	47	78	42.9		11.7									
Di-n-butylphthalate	220	1700	36.3		19.4									

Parameter (Units)	SMS		Inner Lagoon						Outer Lagoon				Outside Lagoon	
Volatiles (µg/kg)														
2,4-dimethylphenol	29	29	**288**		**118**		**5580**		161	U	78	U	52	U
2-methylphenol	63	63	**180**		**121**		**1740**		31	U	78	U	52	U
4-methylphenol	670	670	545		238		**7950**		16		44		17	
Phenol	420	1200	178		271		**820**		61	U	78	U	52	U

Notes: **Bold highlighted** values indicate SMS exceedances.
HPAH = high molecular polynuclear aromatic hydrocarbon; LPAH = low molecular polynuclear aromatic hydrocarbon; OC = organic carbon
Source: Ecology 1999

Laboratory controls and the Samish Bay reference sediment met SMS guidelines for the amphipod test, echinoderm larvae test, and juvenile polychaete test. No toxicity was observed in the reference sediments. Due to high concentrations of petroleum and phenols, the sediments at site #3 were extremely toxic in all three tests, with zero survival observed in each bioassay. Outer lagoon sites #4 and #5, and site #6 north of the lagoon, demonstrated no toxic effects in the amphipod mortality or juvenile polychaete growth bioassays. There was slight but significantly less growth of polychaetes for sites #5 and #6, suggesting a low level of chronic toxicity to this species. The larval development bioassay showed statistically significant abnormal development for all three of the above areas. These results are summarized in Table 5.

Table 5. Sediment Bioassay Results

		Amphipod Mortality Bioassay		**Juvenile Polychaete Growth Bioassay**		**Larval Development Bioassay**
Location	**Site No.**	**% Survival**	**% Emergence**	**% Survival**	**Biomass (mg)**	**% Normal**
Laboratory Control	---	90 +/- 4	10 +/- 5	100 +/- 0	11.3 +/- 1.3	82 +/- 7
Samish Bay	Ref. Area	95 +/- 6	12 +/- 9	100 +/- 0	10.9 +/- 1.0	**77 +/- 13**
Outside Lagoon Entrance	6	91 +/- 10	12 +/- 5	100 +/- 0	**9.3 +/- 1.3**	**32 +/- 15**
Outer Lagoon, E. End	5	95 +/- 6	12 +/- 5	88 +/- 27	**9.6 +/- 0.7**	**35 +/- 18**
Outer Lagoon, W. End	4	83 +/- 20	5 +/- 4	96 +/- 9	11.5 +/- 1.1	**36 +/- 19**
Inner Lagoon, N. Side	3	**0 +/- 0**	**73 +/- 5**	**0 +/- 0**	N/A	**0 +/- 0**

Notes: **Bold Typeface** indicates results were significantly less than reference area (t test, $p<0.05$).
Source: Ecology 1999


WDOE 1999
June - August 1998 Sediment Sampling
Sediment Screening Composite Samples - Full Chemistry
Sediment Composites - Sediment Chemistry and Bioassay
Former Landfill Site
Padilla Bay
Swinomish Channel
Borrow Pit
Railroad Causeway
Lagoon
March Point Road
Highway 20
1
2
3
4
5
6
N
0 62.5 125 250 375 500
Meters
Figure 3. March Point Landfill Sediment and Bioassay 1998 Sampling Locations
SAIC
From Science to Solutions
Base aerial photo from 1998.

3.11 Ecology Shellfish Investigation (Ecology 2000)

Ecology analyzed shellfish from Padilla Bay, Fidalgo Bay, the Swinomish Channel, and Samish Island (a reference area) for over 130 potentially toxic and bioaccumulative chemicals that could pose a risk to human health (Figure 4). These included both tribal and recreational shellfish harvesting sites. The species tested included Dungeness crab (*Cancer magister*), native littleneck clams (*Prototheca staminea*), Japanese oysters (*Crassostrea gigas*), butter clams (*Saxidomus giganteus*), and mussels (*Mytilus sp)*. This was a screening survey to determine if there was a need for more intensive follow-up sampling. Fourteen composite edible tissue samples were analyzed for arsenic, lead, cadmium, selenium, mercury, tributyltins, PAHs, PCBs, bioaccumulative pesticides, PCDDs/PCDFs, percent lipids, and percent solids. However, the tissue sampling locations were not in very close proximity to the Padilla Bay Lagoon, with the nearest samples collected from approximately 5 kilometers away at the northern end of march point. None of the samples were collected from within the lagoon and it is unlikely that site-related contaminants are the source of chemicals found in tissue residues from the Ecology shellfish investigation.

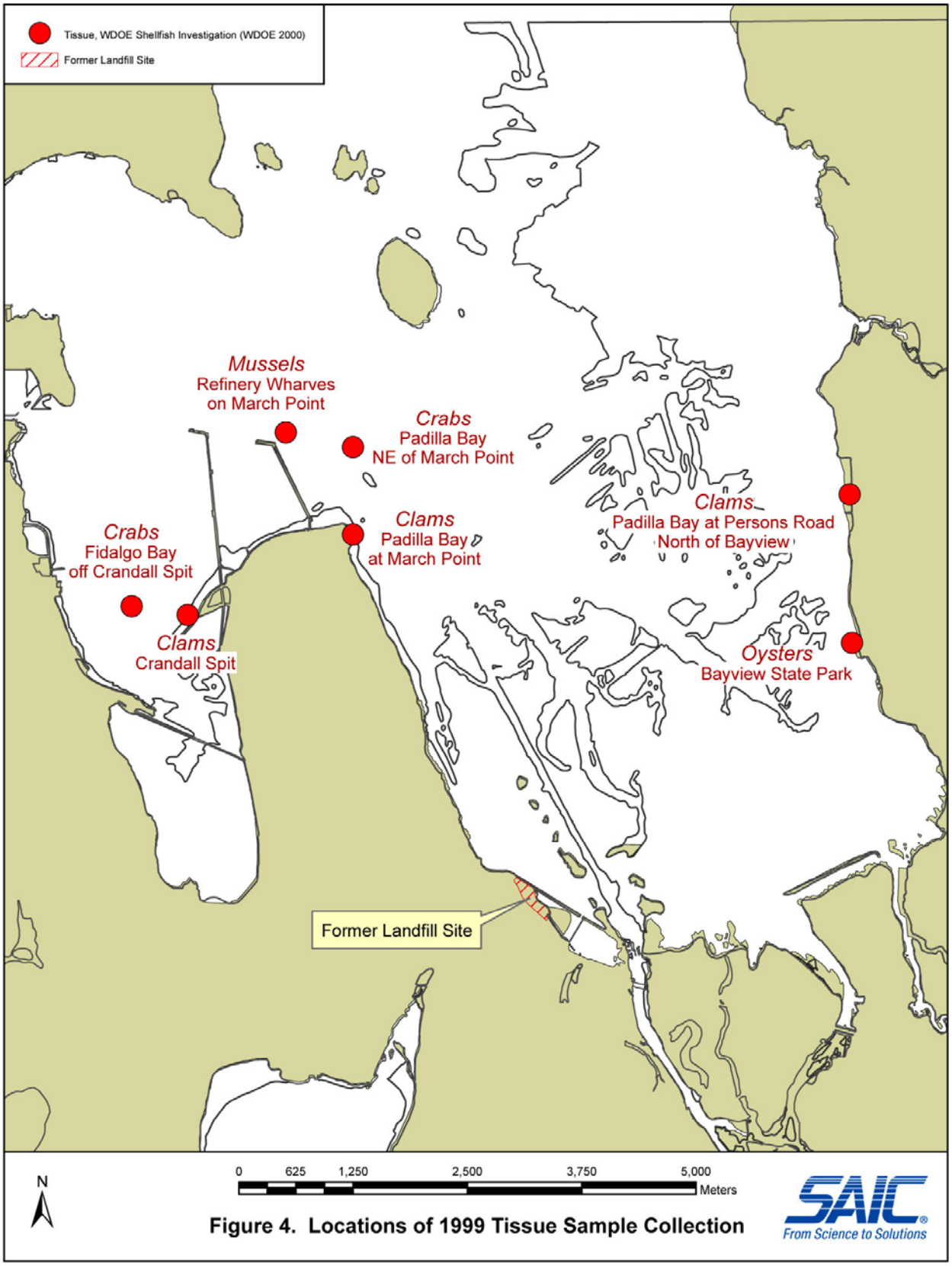

Figure 4. Locations of 1999 Tissue Sample Collection

3.12 Swinomish Indian Tribal Community Water Resources Program (SITC 2002)

In August 2002, the Swinomish Water Resources Program evaluated sediment quality at two locations in the Padilla Bay Lagoon as part of their Toxics Trends in Sediment Monitoring project. Data from the sediment screening were compared to SQS guidelines.

The Swinomish Toxics Monitoring Program was initiated as a yearly sampling project to quantify concentrations of persistent bioaccumulative toxic (PBT) chemicals in SIR waters. Previous investigations had found several potentially toxic contaminants in water, sediments, and tissue samples in and adjacent to SIR tidelands, including, but not limited to: tributyltin, pesticides, 2,3,7,8-TCDF, arsenic, lead, mercury, PAHs, and PCBs in Padilla Bay. Additional sediment contaminants including organotins, mercury, and PAHs were measured in samples from marina and boat yards along the Swinomish Channel; and cadmium, lead, and selenium in a sample near McGlinn Island. Stations PAD.2 and PAD.3 are in the vicinity of the former March Point landfill site.

Samples from monitoring location PAD.2 exceeded SQS criteria for benzyl alcohol (59 µg/kg), and both CSL criteria for 1,2-dichlorbenzene (10 µg/kg), 2,4-dimethylphenol (77 µg/kg), and phenol (480 µg/kg). Samples from monitoring location PAD.3 exceeded SQS criteria for fluoranthene (1020 µg/kg), fluorene (24 µg/kg), and phenanthrene (320 µg/kg), and the CSL criteria for benzo(a)anthracene (430 µg/kg), benzo(a)pyrene (580 µg/kg), benzoic acid (4740 µg/kg), chrysene (730 µg/kg), dibenzo(a,h)anthracene (89 µg/kg), and hexachlorobenzene (153 µg/kg). The results are summarized in Table 6.

3.13 Swinomish Indian Tribal Community Water Resources Program (SITC 2004)

In early October 2004, the Swinomish Water Resources Program collected composite sediment samples at 10 sampling locations for the Toxics Trends in Sediment Monitoring project. Sediment chemistry results were compared to SMS criteria. The 2004 sampling found a total of 34 chemicals of concern, an increase from the 29 chemicals detected in 2002, as determined by SITC.

Samples from monitoring location PAD.2 exceeded CSL criteria for benzoic acid (1,790 µg/kg) and hexachlorobenzene (10 µg/kg). Samples from monitoring location PAD.3 exceeded the CSL criteria for 2-methylphenol (125 µg/kg) and benzyl alcohol (148 µg/kg). The results are summarized in Table 6.

3.14 Other Information Identified

The original documents for several of the studies cited above or on Figure 2 were not available for review including: Milham 1986, Johnson 1989, Fitzpatrick 1989, and USFWS 1994. Ecology's sediment quality (SEDQUAL) database was also queried for sediment sampling locations in the proximity of the Padilla Bay Lagoon. SEDQUAL locations were identified in Padilla Bay along the Swinomish Channel, but no corresponding sediment chemistry or bioassay data records could be located.

Table 6. Padilla Bay Lagoon Sediment Chemistry Comparisons to SMS

	SMS Guidelines		2002		2004	
Analyte	**SQS**	**CSL**	**PAD.2**	**PAD.3**	**PAD.2**	**PAD.3**
1,2-dichlorobenzene	2.3	2.3	**10**	16 U	---	---
2,4-dimethylphenol	29	29	**77**	16	---	---
2-methylnaphthalene	38	64	18	29	24	---
2-methylphenol	63	63	10 U	16 U	---	**125**
Acenaphthene	16	57	5.6	12	---	---
Acenaphthylene	66	66	2.3	8	---	---
Anthracene	220	1200	8.2	67	---	---
Arsenic	57	93	---	---	11.5	11.1
Benzo(a)anthracene	110	270	15	**430**	---	---
Benzo(a)pyrene	99	210	19	**580**	---	---
Benzoic acid	650	650	203 UJ	**4740 J**	**1790 J**	
Benzyl alcohol	57	73	**59**	32	---	**148**
Chrysene	110	460	37	**730**	---	---
Copper	390	390	27.5	32.9	31.3	28.7
Dibenzo(a,h)anthracene	12	33	3.4	**89**	6.5	---
Diethylphthalate	61	110	22 UJ	28 U	---	---
Dimethylphthalate	53	53	10 U	16 U	---	---
Di-n-butylphthalate	220	1700	10	123 UJ	---	---
Fluoranthene	160	1200	50	**1020**	---	---
Fluorene	23	79	12	**24**	---	---
Hexachlorobenzene	0.38	2.3	10 U	**153**	**10**	---
Hexachlorobutadiene	3.9	6.2	10 U	16 U	---	---
Naphthalene	99	170	12	39	---	---
Pentachlorophenol	360	390	203 UJ	324 U	---	---
Phenanthrene	100	480	50	**320**	---	---
Phenol	420	1200	**480**	383	---	---
Pyrene	1000	1400	47	920	---	---
Total Aroclors	12	65	55.4 U	34.3 U	---	---

Concentration exceeds SQS only

Concentration exceeds both SQS and CSL

Source: SITC 2002, 2004

4.0 Summary of Data Gaps

4.1 Sediment Chemistry

Several studies have indicated that sediment quality has been impacted by contamination. SMS criteria have been exceeded for assorted phenolics and other organics (SITC 2002, 2004; and Ecology 1999). A few documents reviewed indicated potential problems without providing any quantitative data (Myklebust 1971, Ecology 1984, Meadows 1990, and Ecology 1991), whereas other studies indicated that there were no significant contaminated sediment concerns (Milham 1986, USFWS 1994, Johnson 1989, and Ecology 1999). Figure 5 presents sediment chemistry sampling locations from these studies and their respective comparisons to SMS. Many of the investigations had limited sampling locations and only very near the site. None of the documents reviewed indicated that a thorough SMS sediment characterization has been completed for the sediments in the vicinity of the March Point Landfill, and toxicity data (Section 4.3) indicates potential biological impacts likely exist. Therefore, adequate sediment chemistry, including conventionals, to characterize the site is identified as a data gap.

4.2 Subsurface Sediment Chemistry

No information from previous investigations was available that characterized the subsurface sediments in the Padilla Bay lagoon adjacent to the site. Since the landfill activities are historical in nature, it is possible that contamination could exist at depth. Therefore, subsurface sediment chemistry is identified as a potential data gap for the Padilla Bay lagoon.

4.3 Sediment Toxicity

Three documents (Wiggins 1992, Bulthuis and Shaw 1992, and Ecology 1999) indicated that significant toxicity exists in the Padilla Bay Lagoon (Figure 5). The source of the toxicity has not been identified, but the most toxic samples have been collected in close proximity to the landfill. Synoptic chemistry data were not available for bioassays conducted in 1992. The extent of the toxicity observed in these previous studies deems further investigation is warranted. Since the Padilla Bay lagoon is a shallow waterbody, subsequent toxicological investigation should include bioasssays conducted utilizing full-spectrum lighting due to the presence of PAHs (Ecology 2003). Sediment toxicity is identified as a data gap because the full extent of impacted sediments is not known at this time.

4.4 Benthic Community

No information from previous investigations was available that characterized the benthic community in the Padilla Bay lagoon. The diversity and abundance of the benthic community can provide an indication as to whether the lagoon has been impacted by site-related activities. Therefore, characterization of the benthic community is identified as a potential data gap for the Padilla Bay Lagoon.

Figure 5. March Point Landfill Sediment Management Standard Exceedances and Bioassay Toxicity

4.5 Sediment Bioaccumulation

One document reviewed (Ecology 2000) examined contaminants in shellfish tissue collected from Padilla Bay, but not in very close proximity to the Padilla Bay Lagoon. None of the samples were collected from within the lagoon and it is unlikely that site-related contaminants are the source of chemicals found in tissue residues. The potential for impacts to biota from bioaccumulation of contaminants from sediments is a data gap.

4.6 Aquatic Habitat

No documents reviewed discussed the general type and condition of the aquatic habitat of the Padilla Bay lagoon. The type and condition of the aquatic habitat in the Padilla Bay lagoon and in the vicinity of the former landfill is identified as a data gap.

5.0 Conclusions

Based on the evaluation of existing information for the March Point landfill, a comprehensive characterization of sediments in the Padilla Bay Lagoon and nearshore areas around the site is needed. The nature and extent of contamination should be better defined based on full SMS chemistry and synoptic biological testing in areas where previous investigation indicated adverse impacts, as well as areas with no existing data. These identified data gaps and recommendations will be addressed in detail in the RI/FS work plan.

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Appendix A

Existing Sediment Chemistry Data Identified Around March Point Landfill Site

Existing Sediment Chemistry Data Identified around March Point Landfill Site

Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
Willis 1996	Sediment		10/24/1996	WM-1	HPAH	Benzo(a)anthracene	mg/kg	Inner Lagoon	0.074		Y	110	270	PPM_TOC	N	N
Willis 1996	Sediment		10/24/1996	WM-1	HPAH	Chrysene	mg/kg	Inner Lagoon	0.064		Y	110	460	PPM_TOC	N	N
Willis 1996	Sediment		10/24/1996	WM-1	HPAH	Fluoranthene	mg/kg	Inner Lagoon	0.046	J	Y	160	1200	PPM_TOC	N	N
Willis 1996	Sediment		10/24/1996	WM-1	HPAH	Pyrene	mg/kg	Inner Lagoon	0.084		Y	1000	1400	PPM_TOC	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	LPAH	2-Methylnaphthalene	µg/L	Inner Lagoon	1		Y				N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	LPAH	Naphthalene	µg/L	Inner Lagoon	2		Y				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Antimony	mg/kg	Inner Lagoon	1	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Antimony	mg/kg	Inner Lagoon	2	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Antimony	µg/L	Inner Lagoon	3	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Antimony	µg/L	Inner Lagoon	6	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Arsenic	mg/kg	Inner Lagoon	11		Y	57	93	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Arsenic	mg/kg	Inner Lagoon	12		Y	57	93	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Arsenic	µg/L	Inner Lagoon	5	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Arsenic	µg/L	Inner Lagoon	5	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Cadmium	mg/kg	Inner Lagoon	1.3		Y	5.1	6.7	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Cadmium	mg/kg	Inner Lagoon	1.8		Y	5.1	6.7	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Cadmium	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Cadmium	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Chromium	mg/kg	Inner Lagoon	44		Y	260	270	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Chromium	mg/kg	Inner Lagoon	49		Y	260	270	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Chromium	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Chromium	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Copper	mg/kg	Inner Lagoon	39		Y	390	390	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Copper	mg/kg	Inner Lagoon	47		Y	390	390	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Copper	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Copper	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Lead	mg/kg	Inner Lagoon	26		Y	450	530	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Lead	mg/kg	Inner Lagoon	27		Y	450	530	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Lead	µg/L	Inner Lagoon	50	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Lead	µg/L	Inner Lagoon	50	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Mercury	mg/kg	Inner Lagoon	0.1	U	N	0.41	0.59	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Mercury	mg/kg	Inner Lagoon	0.3		Y	0.41	0.59	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Mercury	µg/L	Inner Lagoon	0.2	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Mercury	µg/L	Inner Lagoon	0.2	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Nickel	µg/L	Inner Lagoon	20	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Nickel	µg/L	Inner Lagoon	20	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Nickel	mg/kg	Inner Lagoon	50		Y				N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Nickel	mg/kg	Inner Lagoon	51		Y				N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Selenium	mg/kg	Inner Lagoon	0.2	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Selenium	mg/kg	Inner Lagoon	0.8		Y				N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Selenium	µg/L	Inner Lagoon	5	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Selenium	µg/L	Inner Lagoon	5	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Silver	mg/kg	Inner Lagoon	0.91	U	N	6.1	6.1	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Silver	mg/kg	Inner Lagoon	1.3	U	N	6.1	6.1	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Silver	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Silver	µg/L	Inner Lagoon	10	U	N				N	N
Willis 1996	Sediment		10/24/1996	WM-1	Metals	Zinc	mg/kg	Inner Lagoon	85		Y	410	960	PPM	N	N
Willis 1996	Sediment		10/24/1996	WM-2	Metals	Zinc	mg/kg	Inner Lagoon	110		Y	410	960	PPM	N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	Metals	Zinc	µg/L	Inner Lagoon	26		Y				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	Metals	Zinc	µg/L	Inner Lagoon	31		Y				N	N
Willis 1996	Surface Water		10/24/1996	WMW-1	USEPA Method 8	2,4-dimethylphenol	µg/L	Inner Lagoon	3		Y				N	N
Willis 1996	Sediment		10/24/1996	WM-1	USEPA Method 8	Bis(2-ethylhexyl)phthalate	mg/kg	Inner Lagoon	0.1		Y	47	78	PPM_TOC	N	N
Willis 1996	Sediment		10/24/1996	WM-2	USEPA Method 8	Bis(2-ethylhexyl)phthalate	mg/kg	Inner Lagoon	0.44		Y	47	78	PPM_TOC	N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	USEPA Method 8	Bis(2-ethylhexyl)phthalate	µg/L	Inner Lagoon	1		Y				N	N
Willis 1996	Surface Water		10/24/1996	WMW-2	USEPA Method 8	n-nitrosodiphenylamine	µg/L	Inner Lagoon	1		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	CONV	TOC	percent	Inner Lagoon	3.8		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	CONV	TOC	percent	Inner Lagoon	3.6		Y				N	N

Existing Sediment Chemistry Data Identified around March Point Landfill Site

Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
Willis 1996	Sediment	Y	6/11/1998	WM-2	CONV	TOC	percent	Inner Lagoon	3.7		Y				N	N
Willis 1996	Sediment	Y	6/11/1998	WM-1	CONV	TOC	percent	Inner Lagoon	3.7		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Benzo(a)anthracene	ug/Kg	Inner Lagoon	66	J	Y	110	270	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Benzo(a)anthracene	ug/Kg	Inner Lagoon	123	J	Y	110	270	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Benzo(a)pyrene	ug/Kg	Inner Lagoon	35	J	Y	99	210	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Benzo(a)pyrene	ug/Kg	Inner Lagoon	103	J	Y	99	210	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Benzo(g,h,i)perylene	ug/Kg	Inner Lagoon	116		Y	31	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Benzo(g,h,i)perylene	ug/Kg	Inner Lagoon	192		Y	31	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Chrysene	ug/Kg	Inner Lagoon	112	J	Y	110	460	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Chrysene	ug/Kg	Inner Lagoon	240		Y	110	460	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Fluoranthene	ug/Kg	Inner Lagoon	161		Y	160	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Fluoranthene	ug/Kg	Inner Lagoon	332		Y	160	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Indeno(1,2,3-cd)pyrene	ug/Kg	Inner Lagoon	229	J	Y	34	88	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Indeno(1,2,3-cd)pyrene	ug/Kg	Inner Lagoon	576	U	N	34	88	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Pyrene	ug/Kg	Inner Lagoon	146		Y	1000	1400	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Pyrene	ug/Kg	Inner Lagoon	311		Y	1000	1400	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	HPAH	Total HPAH	ug/Kg	Inner Lagoon	1009		Y	960	5300	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	HPAH	Total HPAH	ug/Kg	Inner Lagoon	2282		Y	960	5300	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	2-Methylnaphthalene	ug/kg	Inner Lagoon	60	J	Y	38	64	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	2-Methylnaphthalene	ug/kg	Inner Lagoon	87	J	Y	38	64	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Acenaphthene	ug/kg	Inner Lagoon	35	J	Y	16	57	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Acenaphthene	ug/kg	Inner Lagoon	115	U	N	16	57	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Acenaphthylene	ug/kg	Inner Lagoon	115	U	N	66	66	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Acenaphthylene	ug/kg	Inner Lagoon	179	U	N	66	66	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Anthracene	ug/kg	Inner Lagoon	27	J	Y	220	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Anthracene	ug/kg	Inner Lagoon	64	J	Y	220	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Fluorene	ug/kg	Inner Lagoon	29	J	Y	23	79	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Fluorene	ug/kg	Inner Lagoon	52	J	Y	23	79	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Naphthalene	ug/kg	Inner Lagoon	44	J	Y	99	170	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Naphthalene	ug/kg	Inner Lagoon	66	J	Y	99	170	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Phenanthrene	ug/kg	Inner Lagoon	112	J	Y	100	480	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Phenanthrene	ug/kg	Inner Lagoon	198		Y	100	480	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	LPAH	Total LPAH	ug/kg	Inner Lagoon	820		Y	370	780	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	LPAH	Total LPAH	ug/kg	Inner Lagoon	1252		Y	370	780	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Antimony	mg/kg	Inner Lagoon	3	UJ						
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Antimony	mg/kg	Inner Lagoon	3	UJ						
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Arsenic	mg/kg	Inner Lagoon	11		Y	57	93	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Arsenic	mg/kg	Inner Lagoon	12		Y	57	93	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Beryllium	mg/kg	Inner Lagoon	0.39							
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Beryllium	mg/kg	Inner Lagoon	0.4							
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Cadmium	mg/kg	Inner Lagoon	0.5	U						
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Cadmium	mg/kg	Inner Lagoon	0.5	U						
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Chromium	mg/kg	Inner Lagoon	59		Y	260	270	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Chromium	mg/kg	Inner Lagoon	65		Y	260	270	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Copper	mg/kg	Inner Lagoon	39		Y	390	390	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Copper	mg/kg	Inner Lagoon	44		Y	390	390	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Lead	mg/kg	Inner Lagoon	13		Y	450	530	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Lead	mg/kg	Inner Lagoon	13		Y	450	530	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Mercury	mg/kg	Inner Lagoon	0.076		Y	0.41	0.59	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Mercury	mg/kg	Inner Lagoon	0.082		Y	0.41	0.59	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Nickel	mg/kg	Inner Lagoon	42		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Nickel	mg/kg	Inner Lagoon	51		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Nickel	mg/kg	Inner Lagoon	51							
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Nickel	mg/kg	Inner Lagoon	42							
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Selenium	mg/kg	Inner Lagoon	0.42		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Selenium	mg/kg	Inner Lagoon	0.5		Y				N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Selenium	mg/kg	Inner Lagoon	0.5							

Existing Sediment Chemistry Data Identified around March Point Landfill Site

Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Selenium	mg/kg	Inner Lagoon	0.42							
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Silver	mg/kg	Inner Lagoon	0.4	U						
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Silver	mg/kg	Inner Lagoon	0.4	U						
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Thallium	mg/kg	Inner Lagoon	0.3	J						
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Thallium	mg/kg	Inner Lagoon	0.3	J						
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Metals	Zinc	mg/kg	Inner Lagoon	93		Y	410	960	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Metals	Zinc	mg/kg	Inner Lagoon	98		Y	410	960	PPM	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Misc SVOC	Dibenzofuran	ug/kg	Inner Lagoon	30	J	Y	15	58	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Misc SVOC	Dibenzofuran	ug/kg	Inner Lagoon	53	J	Y	15	58	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Phenol	2,4-dimethylphenol	ug/kg	Inner Lagoon	118		Y	29	29	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Phenol	2,4-dimethylphenol	ug/kg	Inner Lagoon	288		Y	29	29	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Phenol	2-methylphenol	ug/kg	Inner Lagoon	121		Y	63	63	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Phenol	2-methylphenol	ug/kg	Inner Lagoon	180		Y	63	63	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Phenol	4-methylphenol	ug/kg	Inner Lagoon	238		Y	670	670	UG/KG DW	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Phenol	4-methylphenol	ug/kg	Inner Lagoon	545		Y	670	670	UG/KG DW	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Phenol	Phenol	ug/kg	Inner Lagoon	178		Y	420	1200	UG/KG DW	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Phenol	Phenol	ug/kg	Inner Lagoon	271		Y	420	1200	UG/KG DW	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Phthalate	Bis(2-ethylhexyl)phthalate	ug/kg	Inner Lagoon	421	J	Y	47	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Phthalate	Bis(2-ethylhexyl)phthalate	ug/kg	Inner Lagoon	1630		Y	47	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 2	Phthalate	Di-n-butylphthalate	ug/kg	Inner Lagoon	698		Y	220	1700	PPM_TOC	N	N
WDOE 1999	Sediment	Y	6/11/1998	Site 1	Phthalate	Di-n-butylphthalate	ug/kg	Inner Lagoon	1380		Y	220	1700	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/7/1998	PAD.3	CONV	TOC	percent	Inner Lagoon	9.8		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	CONV	TOC	percent	Inner Lagoon	9.8		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	CONV	TOC	percent	Outer Lagoon	3.7		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	CONV	TOC	percent	Outer Lagoon	1.3		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	CONV	TOC	percent	Outside Lagoon	2.7		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Benzo(a)anthracene	ug/Kg	Outside Lagoon	32	J	Y	110	270	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Benzo(a)anthracene	ug/Kg	Outer Lagoon	61	U	N	110	270	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Benzo(a)anthracene	ug/Kg	Outer Lagoon	78	U	N	110	270	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Benzo(a)anthracene	ug/Kg	Inner Lagoon	254	U	N	110	270	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Benzo(a)pyrene	ug/Kg	Outer Lagoon	13	J	Y	99	210	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Benzo(a)pyrene	ug/Kg	Outer Lagoon	17	J	Y	99	210	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Benzo(a)pyrene	ug/Kg	Outside Lagoon	18	J	Y	99	210	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Benzo(a)pyrene	ug/Kg	Inner Lagoon	254	U	N	99	210	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Benzo(g,h,i)perylene	ug/Kg	Outside Lagoon	6.9	J	Y	31	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Benzo(g,h,i)perylene	ug/Kg	Outer Lagoon	12	J	Y	31	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Benzo(g,h,i)perylene	ug/Kg	Outer Lagoon	392	U	N	31	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Benzo(g,h,i)perylene	ug/Kg	Inner Lagoon	1270	U	N	31	78	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Chrysene	ug/Kg	Outer Lagoon	22	J	Y	110	460	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Chrysene	ug/Kg	Outside Lagoon	49	J	Y	110	460	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Chrysene	ug/Kg	Outer Lagoon	121	U	N	110	460	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Chrysene	ug/Kg	Inner Lagoon	151	J	Y	110	460	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Fluoranthene	ug/Kg	Outer Lagoon	38	J	Y	160	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Fluoranthene	ug/Kg	Outer Lagoon	53	J	Y	160	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Fluoranthene	ug/Kg	Outside Lagoon	119		Y	160	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Fluoranthene	ug/Kg	Inner Lagoon	254	U	N	160	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Indeno(1,2,3-cd)pyrene	ug/Kg	Outer Lagoon	9.7	J	Y	34	88	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Indeno(1,2,3-cd)pyrene	ug/Kg	Outside Lagoon	11	J	Y	34	88	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Indeno(1,2,3-cd)pyrene	ug/Kg	Outer Lagoon	17	J	Y	34	88	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Indeno(1,2,3-cd)pyrene	ug/Kg	Inner Lagoon	1270	U	N	34	88	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Pyrene	ug/Kg	Outer Lagoon	33		Y	1000	1400	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Pyrene	ug/Kg	Outer Lagoon	51	J	Y	1000	1400	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Pyrene	ug/Kg	Outside Lagoon	94		Y	1000	1400	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Pyrene	ug/Kg	Inner Lagoon	254	U	N	1000	1400	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	HPAH	Total HPAH	ug/Kg	Inner Lagoon	151		Y	960	5300	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	HPAH	Total HPAH	ug/Kg	Outer Lagoon	215		Y	960	5300	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	HPAH	Total HPAH	ug/Kg	Outer Lagoon	271		Y	960	5300	PPM_TOC	N	N

Existing Sediment Chemistry Data Identified around March Point Landfill Site

Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
WDOE 1999	Sediment	Y	8/7/1998	Site 6	HPAH	Total HPAH	ug/Kg	Outside Lagoon	486		Y	960	5300	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	2-Methylnaphthalene	ug/kg	Outside Lagoon	6.7	J	Y	38	64	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	2-Methylnaphthalene	ug/kg	Outer Lagoon	9.5	J	Y	38	64	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	2-Methylnaphthalene	ug/kg	Outer Lagoon	11	J	Y	38	64	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	2-Methylnaphthalene	ug/kg	Inner Lagoon	1330		Y	38	64	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Acenaphthene	ug/kg	Outside Lagoon	3.1	J	Y	16	57	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Acenaphthene	ug/kg	Outer Lagoon	4	J	Y	16	57	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Acenaphthene	ug/kg	Outer Lagoon	4.2	J	Y	16	57	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Acenaphthene	ug/kg	Inner Lagoon	144	J	Y	16	57	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Acenaphthylene	ug/kg	Outer Lagoon	2.8	J	Y	66	66	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Acenaphthylene	ug/kg	Outside Lagoon	3.9	J	Y	66	66	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Acenaphthylene	ug/kg	Outer Lagoon	6.4	J	Y	66	66	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Acenaphthylene	ug/kg	Inner Lagoon	254	U	N	66	66	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Anthracene	ug/kg	Outer Lagoon	6.1	J	Y	220	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Anthracene	ug/kg	Outer Lagoon	9.1	J	Y	220	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Anthracene	ug/kg	Outside Lagoon	11	J	Y	220	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Anthracene	ug/kg	Inner Lagoon	254	U	N	220	1200	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Fluorene	ug/kg	Outer Lagoon	5.8	J	Y	23	79	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Fluorene	ug/kg	Outside Lagoon	7.1	J	Y	23	79	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Fluorene	ug/kg	Outer Lagoon	7.7	J	Y	23	79	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Fluorene	ug/kg	Inner Lagoon	140	J	Y	23	79	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Naphthalene	ug/kg	Outside Lagoon	7.4	J	Y	99	170	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Naphthalene	ug/kg	Outer Lagoon	8.7	J	Y	99	170	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Naphthalene	ug/kg	Outer Lagoon	11	J	Y	99	170	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Naphthalene	ug/kg	Inner Lagoon	386		Y	99	170	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Phenanthrene	ug/kg	Outer Lagoon	18	J	Y	100	480	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Phenanthrene	ug/kg	Outer Lagoon	30	J	Y	100	480	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Phenanthrene	ug/kg	Outside Lagoon	40	J	Y	100	480	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Phenanthrene	ug/kg	Inner Lagoon	390		Y	100	480	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	LPAH	Total LPAH	ug/kg	Outer Lagoon	62		Y	370	780	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	LPAH	Total LPAH	ug/kg	Outer Lagoon	98		Y	370	780	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	LPAH	Total LPAH	ug/kg	Outside Lagoon	113		Y	370	780	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	LPAH	Total LPAH	ug/kg	Inner Lagoon	5011		Y	370	780	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Antimony	mg/kg	Inner Lagoon	3	UJ	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Antimony	mg/kg	Outer Lagoon	3	UJ	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Antimony	mg/kg	Outer Lagoon	3	UJ	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Antimony	mg/kg	Outside Lagoon	3	UJ	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Antimony	mg/kg	Inner Lagoon	3	UJ						
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Antimony	mg/kg	Outer Lagoon	3	UJ						
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Antimony	mg/kg	Outer Lagoon	3	UJ						
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Antimony	mg/kg	Outside Lagoon	3	UJ						
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Arsenic	mg/kg	Outer Lagoon	6.7		Y	57	93	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Arsenic	mg/kg	Outside Lagoon	8.9		Y	57	93	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Arsenic	mg/kg	Inner Lagoon	9.8		Y	57	93	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Arsenic	mg/kg	Outer Lagoon	11		Y	57	93	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Beryllium	mg/kg	Inner Lagoon	0.3							
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Beryllium	mg/kg	Outer Lagoon	0.38							
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Beryllium	mg/kg	Outer Lagoon	0.23							
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Beryllium	mg/kg	Outside Lagoon	3							
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Cadmium	mg/kg	Outer Lagoon	0.4		Y	5.1	6.7	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Cadmium	mg/kg	Outer Lagoon	0.4		Y	5.1	6.7	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Cadmium	mg/kg	Outside Lagoon	0.4	UJ	N	5.1	6.7	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Cadmium	mg/kg	Inner Lagoon	0.48		Y	5.1	6.7	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Chromium	mg/kg	Outer Lagoon	35		Y	260	270	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Chromium	mg/kg	Inner Lagoon	44		Y	260	270	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Chromium	mg/kg	Outside Lagoon	46		Y	260	270	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Chromium	mg/kg	Outer Lagoon	54		Y	260	270	PPM	N	N

Existing Sediment Chemistry Data Identified around March Point Landfill Site

Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Copper	mg/kg	Outer Lagoon	21		Y	390	390	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Copper	mg/kg	Outside Lagoon	33		Y	390	390	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Copper	mg/kg	Inner Lagoon	35		Y	390	390	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Copper	mg/kg	Outer Lagoon	38		Y	390	390	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Lead	mg/kg	Outer Lagoon	6.6		Y	450	530	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Lead	mg/kg	Outer Lagoon	12		Y	450	530	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Lead	mg/kg	Inner Lagoon	34		Y	450	530	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Lead	mg/kg	Outside Lagoon	50		Y	450	530	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Mercury	mg/kg	Outer Lagoon	0.047	J	Y	0.41	0.59	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Mercury	mg/kg	Outside Lagoon	0.078	J	Y	0.41	0.59	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Mercury	mg/kg	Outer Lagoon	0.081	J	Y	0.41	0.59	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Mercury	mg/kg	Inner Lagoon	0.095	J	Y	0.41	0.59	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Nickel	mg/kg	Outer Lagoon	31		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Nickel	mg/kg	Inner Lagoon	40		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Nickel	mg/kg	Outside Lagoon	41		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Nickel	mg/kg	Outer Lagoon	46		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Nickel	mg/kg	Inner Lagoon	40							
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Nickel	mg/kg	Outer Lagoon	46							
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Nickel	mg/kg	Outer Lagoon	31							
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Nickel	mg/kg	Outside Lagoon	41							
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Selenium	mg/kg	Outside Lagoon	0.3	UJ	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Selenium	mg/kg	Outer Lagoon	0.33		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Selenium	mg/kg	Outer Lagoon	0.35		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Selenium	mg/kg	Inner Lagoon	0.4		Y				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Selenium	mg/kg	Inner Lagoon	0.4							
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Selenium	mg/kg	Outer Lagoon	0.35							
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Selenium	mg/kg	Outer Lagoon	0.33							
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Selenium	mg/kg	Outside Lagoon	0.3	U						
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Silver	mg/kg	Outer Lagoon	0.47	J	Y	6.1	6.1	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Silver	mg/kg	Outer Lagoon	0.54	J	Y	6.1	6.1	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Silver	mg/kg	Outside Lagoon	0.56	J	Y	6.1	6.1	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Silver	mg/kg	Inner Lagoon	0.7	J	Y	6.1	6.1	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Thallium	mg/kg	Inner Lagoon	0.3	J						
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Thallium	mg/kg	Outer Lagoon	0.3	J						
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Thallium	mg/kg	Outer Lagoon	0.3	J						
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Thallium	mg/kg	Outside Lagoon	0.3	J						
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Metals	Zinc	mg/kg	Outer Lagoon	48		Y	410	960	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Metals	Zinc	mg/kg	Outside Lagoon	68		Y	410	960	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Metals	Zinc	mg/kg	Outer Lagoon	80		Y	410	960	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Metals	Zinc	mg/kg	Inner Lagoon	111		Y	410	960	PPM	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Misc SVOC	Dibenzofuran	ug/kg	Outer Lagoon	5.9	J	Y	15	58	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Misc SVOC	Dibenzofuran	ug/kg	Outside Lagoon	6.2	J	Y	15	58	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Misc SVOC	Dibenzofuran	ug/kg	Outer Lagoon	8.1	J	Y	15	58	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Misc SVOC	Dibenzofuran	ug/kg	Inner Lagoon	81	J	Y	15	58	PPM_TOC	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Phenol	2,4-dimethylphenol	ug/kg	Outer Lagoon	0	U	N	29	29	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Phenol	2,4-dimethylphenol	ug/kg	Outer Lagoon	0	U	N	29	29	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Phenol	2,4-dimethylphenol	ug/kg	Outside Lagoon	0	U	N	29	29	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Phenol	2,4-dimethylphenol	ug/kg	Inner Lagoon	5580		Y	29	29	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Phenol	2-methylphenol	ug/kg	Outer Lagoon	0	U	N	63	63	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Phenol	2-methylphenol	ug/kg	Outer Lagoon	0	U	N	63	63	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Phenol	2-methylphenol	ug/kg	Outside Lagoon	0	U	N	63	63	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Phenol	2-methylphenol	ug/kg	Inner Lagoon	1740		Y	63	63	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Phenol	4-methylphenol	ug/kg	Outer Lagoon	0	U	N	670	670	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Phenol	4-methylphenol	ug/kg	Outer Lagoon	0	U	N	670	670	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Phenol	4-methylphenol	ug/kg	Outside Lagoon	0	U	N	670	670	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Phenol	4-methylphenol	ug/kg	Inner Lagoon	7950		Y	670	670	UG/KG DW	Y	Y
WDOE 1999	Sediment	Y	8/7/1998	Site 4	Phenol	Phenol	ug/kg	Outer Lagoon	0	U	N	420	1200	UG/KG DW	N	N

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Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
WDOE 1999	Sediment	Y	8/7/1998	Site 5	Phenol	Phenol	ug/kg	Outer Lagoon	0	U	N	420	1200	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	Phenol	Phenol	ug/kg	Outside Lagoon	0	U	N	420	1200	UG/KG DW	N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	Phenol	Phenol	ug/kg	Inner Lagoon	820		Y	420	1200	UG/KG DW	Y	N
WDOE 1999	Sediment	Y	8/7/1998	Site 5	VOC	Ethylbenzene	ug/kg	Outer Lagoon	3	U	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 6	VOC	Ethylbenzene	ug/kg	Outside Lagoon	3.3	U	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 4	VOC	Ethylbenzene	ug/kg	Outer Lagoon	3.8	U	N				N	N
WDOE 1999	Sediment	Y	8/7/1998	Site 3	VOC	Ethylbenzene	ug/kg	Inner Lagoon	260	J	Y				N	N
Johnson 1989	Sediment	Y	9/1/1998	6	Phenol	4-methylphenol	ug/kg		25		Y	670	670	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	HPAH	Benzo(a)anthracene	ug/kg_OC	Inner Lagoon	15		Y	110	270	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	HPAH	Benzo(a)anthracene	ug/kg_OC	Inner Lagoon	430		Y	110	270	PPM_TOC	Y	Y
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	HPAH	Benzo(a)pyrene	ug/kg_OC	Inner Lagoon	19		Y	99	210	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	HPAH	Benzo(a)pyrene	ug/kg_OC	Inner Lagoon	580		Y	99	210	PPM_TOC	Y	Y
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	HPAH	Chrysene	ug/kg_OC	Inner Lagoon	37		Y	110	460	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	HPAH	Chrysene	ug/kg_OC	Inner Lagoon	730		Y	110	460	PPM_TOC	Y	Y
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	HPAH	Fluoranthene	ug/kg_OC	Inner Lagoon	50		Y	160	1200	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	HPAH	Fluoranthene	ug/kg_OC	Inner Lagoon	1020		Y	160	1200	PPM_TOC	Y	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	HPAH	Pyrene	ug/kg_OC	Inner Lagoon	47		Y	1000	1400	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	HPAH	Pyrene	ug/kg_OC	Inner Lagoon	920		Y	1000	1400	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	2-Methylnaphthalene	ug/kg_OC	Inner Lagoon	18		Y	38	64	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	2-Methylnaphthalene	ug/kg_OC	Inner Lagoon	29		Y	38	64	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	Acenaphthene	ug/kg_OC	Inner Lagoon	5.6		Y	16	57	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	Acenaphthene	ug/kg_OC	Inner Lagoon	12		Y	16	57	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	Acenaphthylene	ug/kg_OC	Inner Lagoon	2.3		Y	66	66	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	Acenaphthylene	ug/kg_OC	Inner Lagoon	8		Y	66	66	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	Anthracene	ug/kg_OC	Inner Lagoon	8.2		Y	220	1200	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	Anthracene	ug/kg_OC	Inner Lagoon	67		Y	220	1200	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	Fluorene	ug/kg_OC	Inner Lagoon	12		Y	23	79	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	Fluorene	ug/kg_OC	Inner Lagoon	24		Y	23	79	PPM_TOC	Y	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	Naphthalene	ug/kg_OC	Inner Lagoon	12		Y	99	170	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	Naphthalene	ug/kg_OC	Inner Lagoon	39		Y	99	170	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	LPAH	Phenanthrene	ug/kg_OC	Inner Lagoon	50		Y	100	480	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	LPAH	Phenanthrene	ug/kg_OC	Inner Lagoon	320		Y	100	480	PPM_TOC	Y	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Metals	Copper	ug/kg	Inner Lagoon	27.5		Y	390	390	PPM	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Metals	Copper	ug/kg	Inner Lagoon	32.9		Y	390	390	PPM	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	MISC EXTR	Benzoic acid	ug/kg	Inner Lagoon	203	UJ		650	650	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	MISC EXTR	Benzoic acid	ug/kg	Inner Lagoon	4740	J	Y	650	650	UG/KG DW	Y	Y
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	MISC EXTR	Benzyl alcohol	ug/kg	Inner Lagoon	32		Y	57	73	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	MISC EXTR	Benzyl alcohol	ug/kg	Inner Lagoon	59		Y	57	73	UG/KG DW	Y	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phenol	2,4-dimethylphenol	ug/kg	Inner Lagoon	16		Y	29	29	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phenol	2,4-dimethylphenol	ug/kg	Inner Lagoon	77		Y	29	29	UG/KG DW	Y	Y
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phenol	2-methylphenol	ug/kg	Inner Lagoon	10	U	N	63	63	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phenol	2-methylphenol	ug/kg	Inner Lagoon	16	U	N	63	63	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phenol	Pentachlorophenol	ug/kg	Inner Lagoon	203	UJ	N	360	690	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phenol	Pentachlorophenol	ug/kg	Inner Lagoon	324	U	N	360	690	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phenol	Phenol	ug/kg	Inner Lagoon	383		Y	420	1200	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phenol	Phenol	ug/kg	Inner Lagoon	480		Y	420	1200	UG/KG DW	Y	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phthalate	Diethylphthalate	ug/kg_OC	Inner Lagoon	22	UJ	N	61	110	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phthalate	Diethylphthalate	ug/kg_OC	Inner Lagoon	28	U	N	61	110	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phthalate	Dimethylphthalate	ug/kg_OC	Inner Lagoon	10	U	N	53	53	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phthalate	Dimethylphthalate	ug/kg_OC	Inner Lagoon	16	U	N	53	53	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	Phthalate	Di-n-butylphthalate	ug/kg_OC	Inner Lagoon	10		Y	220	1700	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	Phthalate	Di-n-butylphthalate	ug/kg_OC	Inner Lagoon	123	UJ	N	220	1700	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	VOC	1,2-dichlorobenzene	ug/kg_OC	Inner Lagoon	10		Y	2.3	2.3	PPM_TOC	Y	Y
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	VOC	1,2-dichlorobenzene	ug/kg_OC	Inner Lagoon	16	U	N	2.3	2.3	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	VOC	Hexachlorobenzene	ug/kg_OC	Inner Lagoon	10	U	N	0.38	2.3	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	VOC	Hexachlorobenzene	ug/kg_OC	Inner Lagoon	153		Y	0.38	2.3	PPM_TOC	Y	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.2	VOC	Hexachlorobutadiene	ug/kg	Inner Lagoon	10	U	N	3.9	6.2	UG/KG DW	N	N

Existing Sediment Chemistry Data Identified around March Point Landfill Site

Source	Matrix	Composite	SampleDate	StnID	ChemGroup	Parameter	Units	Location	Value	QualC	Detect	SMSSQS	SMSCSL	SMSunit	SQSexc	CSLexc
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	VOC	Hexachlorobutadiene	ug/kg	Inner Lagoon	16	U	N	3.9	6.2	UG/KG DW	N	N
SITC 2002, 2004	Sediment	Y	8/1/2002	PAD.3	VOC	Dibenzo(a,h)anthracene	ug/kg	Inner Lagoon	89		Y				Y	Y
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.2	LPAH	2-Methylnaphthalene	ug/kg_OC	Inner Lagoon	24		Y	38	64	PPM_TOC	N	N
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.3	Metals	Arsenic	ug/kg	Inner Lagoon	11.1		Y	57	93	PPM	N	N
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.2	Metals	Arsenic	ug/kg	Inner Lagoon	11.5		Y	57	93	PPM	N	N
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.3	Metals	Copper	ug/kg	Inner Lagoon	28.7		Y	390	390	PPM	N	N
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.2	Metals	Copper	ug/kg	Inner Lagoon	31.3		Y	390	390	PPM	N	N
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.2	MISC EXTR	Benzoic acid	ug/kg	Inner Lagoon	1790	J	Y	650	650	UG/KG DW	Y	Y
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.3	MISC EXTR	Benzyl alcohol	ug/kg	Inner Lagoon	148		Y	57	73	UG/KG DW	Y	Y
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.3	Phenol	2-methylphenol	ug/kg	Inner Lagoon	125		Y	63	63	UG/KG DW	Y	Y
SITC 2002, 2004	Sediment	Y	10/1/2004	PAD.2	VOC	Hexachlorobenzene	ug/kg_OC	Inner Lagoon	10		Y	0.38	2.3	PPM_TOC	Y	Y