

Naval Facilities Engineering Command Southwest BRAC PMO West San Diego, CA

# AIR MONITORING SUMMARY REPORT

# **JANUARY 19 TO FEBRUARY 1, 2019**

Remedial Action/Non-Time-Critical Removal Action Installation Restoration Site 12

FORMER NAVAL STATION TREASURE ISLAND, SAN FRANCISCO, CA

February 2019

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DCN: GLBN-0005-F4239-022



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Prepared for:



Department of the Navy Naval Facilities Engineering Command Southwest BRAC PMO West 33000 Nixie Way, Bldg 50 San Diego, CA 92147

Prepared by:

Gilbane

Gilbane Federal 1655 Grant Street Suite 1200 Concord, California 94520

Contract Number: N62473-17-D-0005; Task Order No. F4239 DCN: GLBN-0005-F4239-022

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### LIST OF ABBREVIATIONS AND ACRONYMS

4,4'-DDD	4,4-dichlorodiphenyldichloroethane
AMP	Air Monitoring Plan
BAAQMD	Bay Area Air Quality Management District
BAP	benzo(a)pyrene
cfm	cubic feet per minute
CFR	Code of Federal Regulations
DAC	derived air concentration
DTSC	Department of Toxic Substances Control
HERO	Human and Ecological Risk Office
Gilbane	Gilbane Federal
DCP	Dust Control Plan
IR	Installation Restoration
mg/m <sup>3</sup>	milligram per cubic meter
Navy	U.S. Department of the Navy
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PDR	personal data-logging real-time aerosol monitor
PM10	particulate matter less than 10 microns in diameter
PUF	polyurethane foam
Ra-226	radium-226
TCDD	2,3,7,8-tetrachlorodibenzo p dioxin
TLV	threshold limit value
TSP	total suspended particulates
$\mu g/m^3$	microgram per cubic meter
USEPA	United States Environmental Protection Agency
Work Plan	Final Work Plan, Remedial Action/Non-Time Critical Removal Action, Installation
	Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California

#### 1.0 INTRODUCTION

This Air Monitoring Report was prepared by Gilbane Federal (Gilbane) as requested by the United States Department of the Navy (Navy) under the Radiological Multiple Award Contract (RADMAC II) N62473-12-D-D005, Contract Task Order F4239. Gilbane is performing dust and air monitoring at Former Naval Station Treasure Island in accordance with the Final Dust Control Plan (DCP) and Air Monitoring Plan (AMP), included as appendices to *Remedial Action/Non-Time Critical Removal Action Work Plan, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California* (Work Plan; Gilbane, 2018).

The DCP describes best management practices and procedures to be implemented to minimize dust generation during work activities. Dust monitoring is conducted to ensure that these procedures are effective. Dust monitoring is also conducted to verify that the working environment meets occupational health and safety standards and that workers are safe. The AMP outlines the requirements for prevention of exposure for construction workers to dust and potential airborne chemicals of concern from the work area. The AMP also establishes the conservative project action levels for dust at the work area boundary to protect residents.

This summary report describes the following:

Dust and air monitoring sampling locations – **Section 2.0**; Dust and air monitoring sample collection and analytical methods – **Section 3.0**; Dust and air monitoring data – **Section 4.0**; and Dust and air monitoring results – **Section 5.0**.

This summary report presents the dust and air monitoring test results at Installation Restoration (IR) Site 12 and/or IR Site 32 from January 19<sup>th</sup>, 2019 through February 1<sup>st</sup>, 2019, and compares the results with the established action levels included in the Work Plan (Gilbane, 2018).

IR Site 32, located 600 yards to the east of IR Site 12, is being used as a radiological screening yard and staging yard for the IR Site 12 project activities. The screening criteria established for IR Site 12 will be applied to the air monitoring at IR Site 32.

During the reporting period, personal data-logging real-time aerosol monitoring (PDR) dust data was collected. Air samples were collected and analyzed for lead, chromium, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxin [2,3,7,8-tetrachlorodibenzo p dioxin (TCDD)], total suspended particulates (TSP), and particulate matter less than 10 microns in diameter (PM10). In addition, air samples were analyzed for radiological gross alpha and beta levels.

#### 2.0 MONITORING SITE LOCATIONS

#### **2.1 Dust Monitoring**

During earthmoving activities, multiple PDR stations are set up to monitor real-time airborne dust concentrations. The purpose of the PDR stations is to act as a first line of defense in protecting workers' health, and ultimately the public's health, during field activities. Dust levels are monitored at, and immediately adjacent to, the work area at the locations that will most likely contain the greatest volume of airborne dust. The objective of this dust monitoring approach is to demonstrate that dust levels are below action levels.

The general locations for dust monitors in IR Site 32 are shown on Figure 1, and the general locations for dust monitors for IR Site 12 are shown on Figure 2. Specific locations of each PDR are described in the individual PDR daily data files. Field forms from each location are presented in Attachment 1 of this report. During earth moving activities (i.e. grading soil, loading trucks for transportation and disposal, managing radiological screening yard pads, etc.) at IR Site 32, one PDR serves as the upwind (background) location and two PDRs are placed in downwind perimeter locations. Correspondingly, during earth moving activities at IR Site 12 (i.e., transportation of backfill material, excavation, and backfilling), one PDR serves as the upwind (background) location and two PDRs are placed in downwind perimeter locations. Weather forecasts including wind direction are checked daily with a weather station located at Building 572.

#### 2.2 Air Monitoring

Air monitoring samples were collected at the upwind Perimeter Road location and at the downwind location at the gate to Site 32. Air monitoring samples collected using high volume samplers are collected to identify and quantify airborne contaminants and to confirm the results recorded during dust (PDR) monitoring. Air monitoring stations are mobilized to collect air monitoring samples upwind and downwind of work areas. General locations of air monitoring stations are shown on Figure 3. The locations of the air monitoring stations are determined based on the prevailing wind direction (typically

from the northwest) and are modified as needed. A weather station is erected to monitor the wind direction.

High volume air monitoring stations remain stationary while sampling is being conducted; however, locations may be adjusted when the wind direction changes and when overall excavation work areas change from one site to another. Each upwind and downwind high volume monitoring station includes separate monitoring systems for the following:

TSP- collected daily PM10- collected daily Lead and chromium- collected daily PAHs, PCBs, and Dioxins- collected on alternating days

#### 2.3 Radiological Air Monitoring

Radiological air samplers are positioned adjacent to excavation work activities for radiologically impacted soil at one upwind and one downwind location during earthmoving activities associated with radiologically impacted soil. The radiological air samplers may be co-located with PDRs or the high-volume samplers.

#### 3.0 SAMPLING AND ANALYTICAL METHODS

Dust and air samples are collected during earthmoving activities. However, during precipitation events, the dust and air monitoring units may not be operable. An attempt will be made to collect samples and readings regardless of the weather. If dust or air monitors are found to be malfunctioning or nonfunctional, earthmoving activities will stop until monitors can be repaired or replaced. The Site Health and Safety Officer is responsible for monitoring the air and dust monitoring sampling equipment. In rare cases, due to ancillary equipment malfunction such as generator failure during the night, a sample may be collected that represents a period of less than 24 hours. If this situation occurs, a note is added to the sample result data tables indicating why the full sampling period was not achieved.

#### 3.1 Dust Samples

The PDR is a high sensitivity photometric monitor with a light-scattering sensing configuration that has been optimized for the measurement of the respirable fraction of airborne dust, smoke, fumes, and mists.

PDRs are used to evaluate real-time monitoring of airborne dust concentrations, to determine if there is a need for additional dust control or personal protection.

#### 3.2 Air Samples

Air samples were sampled in accordance with the United States Environmental Protection Agency (USEPA) reference sampling method for PM10, described in 40 Code of Federal Regulations (CFR) 50, Subpart J. Each sample was collected on a filter over an approximately 24-hour period; the filter was then weighted to determine the amount of PM10 collected.

TSP samples were collected with a high-volume (39 to 60 cubic feet per minute [cfm]) air sampler in accordance with USEPA's reference sampling method for TSP, described in Title 40 CFR, Part 50, Subpart B. Each sample was collected on a filter over an approximately 24-hour period; the filter was then weighted to determine the amount of TSP collected. Once the filter weight was determined, the sample was analyzed for lead and chromium in in accordance with USEPA Method 6020 using inductively coupled mass spectrometry.

Air samples for PCBs, PAHs, and dioxins are collected and analyzed in accordance with USEPA Methods TO-4A, TO-13, TO-9A, respectively, using TISH polyurethane (PUF) samplers. The filter media collected from the air samplers is submitted to the analytical laboratory for appropriate analysis.

PCB, PAH, and dioxin samples are collected on alternating days at the downwind and upwind stations during earthmoving activities.

#### 3.3 Radiological Air Samples

Radiological air monitoring is also conducted upwind and downwind on days of earthmoving activities. Radiological samples are collected with a LV-1 low volume air sampler. Air filters are counted on site following a decay period and are compared with public air concentration limits published in 10 CFR Part 20. Radiological air sampling methods and procedures are detailed in Gilbane Radiological Procedure PR-RP-150 *Radiological Survey and Sampling*.

The radiological air sample is counted on a Low Background Protean WPC-9950 and analyzed for gross alpha and beta activity. The calculated airborne concentration in microcuries is then compared to the effluent concentration (often but incorrectly refer to as a derived air concentration [DAC] which applies only to occupational exposures) limit specified in Table 2 of Appendix B to 10 CFR 20. The effluent

4

concentration is the concentration of a given radionuclide in air which, if inhaled continuously over the course of a year, results in an exposure equal to the annual regulatory limit specified in 10 CFR 20.1302. The threshold for radiological effluent air monitoring samples is 10 percent of the effluent concentration, which ensures work practices are evaluated and modified as necessary to ensure the limit is not reached.

#### 4.0 DUST AND AIR MONITORING DATA

The Human and Ecological Risk Office (HERO) at the request of the California Department of Toxic Substances Control (DTSC) developed dust action levels for community air monitoring for IR Site 12. Subchronic and chronic dust action levels as PM10 were calculated for lead, chromium, dioxin, benzo(a)pyrene (BAP), 4,4-dichlorodiphenyldichloroethane (4,4'-DDD) and PCBs. As presented in the document *Dust Action Levels for Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California* (HERO, 2018), the action levels were calculated using the maximum chemicals of concern soil concentrations at IR Site 12. As noted in Section 1.0, IR Site 12 action levels will be implemented for project work at IR Site 32.

Based on HERO's recommendations, a PM10 dust action level of 50 microgram per cubic meter (ug/m<sup>3</sup>) will be implemented for all excavations areas at IR Site 12 except at the area surrounding sampling location KCH-1217-1 which will have a limit of 8 ug/m<sup>3</sup> due to the elevated level of contaminants historically measured at this location. TSP is expected to be further controlled based on the limit employed for PM10, in accordance with guidance provided by the San Francisco Bay Area Air Quality Management District (BAAQMD), which estimates that PM10 makes up approximately 55 percent of TSP. If it is apparent that project activities are the cause of exceedances, additional control measures will be considered and implemented.

Dust monitoring action levels that are implemented on a real-time basis are listed in Table 1. PDR data are collected and reviewed each day by the Site Health and Safety Manager. PDR data are included in Attachment 1.

Analytical results from air monitoring samples are compared with the project screening criteria (threshold limit values [TLV]) listed in Table 2. Air monitoring results are included in Attachment 2. Radiological monitoring results are included in Attachment 3.

Method	Monitoring Location	Monitoring Frequency <sup>a</sup>	Action Level <sup>b</sup>	Action
PDR	Near Workers' Breathing Zones (typically on equipment)	Periodically <sup>c</sup>	<2.5 mg/m <sup>3</sup> >2.5 mg/m <sup>3</sup>	Continue work. Use Level D and increase dust control (i.e., apply water or other suppression method). Optionally upgrade to Level C until concentrations are reduced.
	Job Site Perimeter	Continuously	<1.0 mg/m <sup>3</sup> >1.0 mg/m <sup>3</sup>	Continue work. Increase dust control and re- evaluate. Stop work if levels do not decrease.

# Table 1Dust Monitoring Project Action Levels

Notes:

Only the Health and Safety Manager is authorized to downgrade levels of personal protective equipment.

*a* Frequency of air monitoring may be adjusted by the project Certified Industrial Hygienist after sufficient characterization of site contaminants has been completed, tasks have been modified, or site controls have proven effective.

*b* Five readings exceeding the action level in any 15-minute period or a sustained reading exceeding the action level for five minutes will trigger a response. Action levels represent airborne particulate concentrations in excess of background particulate concentrations.

c *PDR will be monitored a minimum of three times a day.* 

< less than

> greater than

*mg/m<sup>3</sup> milligram per cubic meter* 

PDR personal data-logging real-time aerosol monitor

Chemicals of Concern	Chemicals of Concern (Threshold Limit Value) µg/m <sup>3</sup>	
Lead	242	TI Site 12 Dust Action Level
Chromium	929	TI Site 12 Dust Action Level
TSP	50	TI Site 12 Dust Action Level
PM10	50	BAAQMD ambient air quality
BAP	50 (8) <sup>b</sup>	TI Site 12 Dust Action Level
PCBs <sup>a</sup>	NA	TI Site 12 Dust Action Level
4,4'-DDD	200	TI Site 12 Dust Action Level
Dioxin <sup>a</sup>	1E+07	TI Site 12 Dust Action Level
Radiological (Ra-226)	10% of DAC <sup>c</sup>	Occupational and public air concentration limits for Ra-226 published in 10 Code of Federal Regulations Part 20.

# Table 2Air Monitoring Project Screening Criteria

Notes:

*a* The dust action level was increased by a factor of 10 to account for the short-term duration of the project relative to the lifetime assumptions incorporated into the toxicity criteria and exposure assumption.

*b* BAP action levels will be  $50 \mu g/m^3$  for all excavations except for the area surrounding sample locations KCH-1217-1 at which it will be  $8 \mu g/m^3$ 

*c* Public air concentration limits are commonly referred to as DAC, but are in actuality Effluent Concentrations from Table 2 for 10 CFR Part 20.

%	percent
4,4'-DDD	dichlorodiphenyldichloroethane
BAAQMD	Bay Area Air Quality Management District
BAP	benzo(a)pyrene
DAC	derived air concentration
PCBs	polychlorinated biphenyls
PM10	particulate matter smaller than 10 microns in diameter
Ra-226	radium-226
TSP	total suspended particulates
$\mu g/m^3$	microgram per cubic meter

#### 5.0 AIR MONITORING RESULTS

If dust (PDR) monitoring equipment alarm, the source of exceedance will be determined by evaluating both upwind and downwind dust (PDR) sample locations. If the difference between upwind and downwind concentrations is greater than the action level for a sustained period of 15 minutes, then earthmoving activities will be halted until dust control measures are implemented. These may include, but are not limited to adding water to the work area during earth moving tasks, evaluation of alternate work procedures or equipment, and/or cessation of the activity that is creating the dust until the PDR readings are below the screening criteria.

PDR summary results are presented in Attachment 1. Weather information (including ambient pressure and temperature data) and high volume air monitoring sample results are presented in Attachment 2. Weather information was collected from the weather station at Building 572, Avenue M, Treasure Island, San Francisco, California. Radiological air monitoring results are presented in Attachment 3.

PM10 analytical results from January 19, 2019 to February 1, 2019 did not exceed the project-specific screening criteria presented in Table 2.

TSP analytical results from January 19, 2019 to February 1, 2019 did not exceed the project-specific screening criteria presented in Table 2.

Metals (chromium and lead), PAHs, total PCBs, and dioxin analytical results from January 19, 2019 to February 1, 2019 did not exceed the project-specific screening criteria presented in Table 2.

Dust (PDR) delta action levels did not exceed during the reporting period. The data sheets are found in Attachment 1.

Radiological air monitoring action levels were not exceeded during the reporting period.

#### 6.0 **REFERENCES**

Gilbane, 2016. Radiological Procedure PR-RP-150 Radiological Survey and Sampling. January.

Gilbane, 2018. *Remedial Action/Non-Time Critical Removal Action Work Plan, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California.* September.

Gilbane, 2018. Remedial Action/Non-Time Critical Removal Action Work Plan, Air Monitoring Report, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California. September.

Gilbane, 2018. Remedial Action/Non-Time Critical Removal Action Work Plan, Dust Control Plan, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California. September.

HERO, 2018. Dust Action Levels for Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California. September.

FIGURES



G:\ArcGIS\Navy\Treasure\_Island\PROJECTS\Rad\_s12\_Confrm\_Excav\Site32\_Dust\_Samples.mxd 2/5/2019 [15:16 PM] EANDERSON, Gilbane



G:\ArcGIS\Navy\Treasure\_Island\PROJECTS\Rad\_s12\_Confrm\_Excav\Site12\_Dust\_Samples\_HotSpots\_L.mxd 2/5/2019 [16:20 PM] EANDERSON, Gilbane



G:\arcGIS\Navy\Treasure\_Island\PROJECTS\Site12\_SWDA\_RA\TI\_Site12\_Pads\_HiValue\_Air.mxd 2/12/2019 EANDERSON, Gilbane

ATTACHMENTS

## ATTACHMENT 1 PDR SUMMARY TABLE AND FIELD FORMS

#### Table 1-1 Personal Data-logging Real-time (PDR) Aerosol Monitoring Results Remedial Action/NTCRA IR Site 12 Former Naval Station Treasure Island, San Francisco, California



Delta Between **Below action level?** Maximum DustTrak Downwind and **IR Site** Date Average (mg/m<sup>3</sup>) (0.050 mg/m<sup>3</sup>) Upwind stations Unit  $(mg/m^3)$ (Yes/No)  $(mg/m^3)$ DM1 Site 32 0.006 0.004 NA NA DM2 Site 32 0.003 0.002 -0.001 Yes DM3 Site 32 0.002 0.001 -0.003 Yes 1/22/2019 DM11 0.008 0.006 NA Site 12 NA Site 12 DM12 0.004 0.004 -0.002 Yes DM13 Site 12 0.005 0.004 -0.002 Yes NA 0.027 DM1 Site 32 0.017 NA DM2 Site 32 0.028 0.017 0.000 Yes DM3 Site 32 0.025 0.016 -0.001 Yes 1/23/2019 DM14 Site 12 0.029 0.024 NA NA Site 12 Yes DM15 0.017 0.015 -0.009 DM16 Site 12 0.023 0.020 -0.004 Yes NA DM1 Site 32 0.031 0.022 NA DM2 Site 32 0.031 0.021 -0.001 Yes DM3 0.046 0.008 Yes Site 32 0.030 1/24/2019 DM17 Site 12 0.037 0.034 NA NA DM18 Site 12 0.026 0.025 -0.009 Yes DM19 Site 12 0.026 0.023 -0.011 Yes Site 32 0.028 DM1 0.035 NA NA DM2 Site 32 0.032 0.022 -0.006 Yes 0.019 DM3 Site 32 0.026 -0.009 Yes 1/28/2019 DM20 Site 12 0.025 0.025 NA NA DM21 Site 12 0.024 0.022 -0.003 Yes DM22 0.020 0.020 Yes Site 12 -0.005 DM1 NA Site 32 NA 0.016 0.013 DM2 Yes Site 32 0.017 0.014 0.001 DM3 Site 32 0.014 0.014 0.001 Yes 1/29/2019 DM23 Site 12 0.019 0.023 NA NA DM24 Site 12 0.015 0.015 -0.004 Yes DM25 Site 12 0.015 0.013 -0.006 Yes DM1 Site 32 0.030 0.025 NA NA DM2 Site 32 0.033 0.025 0.000 Yes DM3 Site 32 0.030 0.024 -0.001 Yes 1/30/2019 Site 12 DM26 0.045 0.037 NA NA DM27 Site 12 0.040 0.027 -0.010 Yes DM28 Site 12 0.040 0.030 -0.007 Yes DM1 0.030 NA NA Site 32 0.019 Site 32 0.024 DM2 1/31/2019 0.040 0.005 Yes DM3 Site 32 0.041 0.026 0.007 Yes

Notes:

**bold** = results above screening criteria  $mg/m^3$  = milligram per cubic meter

NA = not applicable

Client	Name <u>NAVFAC</u>	)			1.44		Date	1/22/19
Proje	ct No <u>J31000030(</u>	2					Page_	of
Logge	Logged by SCOVH AMERN							
Weat	her 50°, partly	y cloudy.	no wi	nd				
Instru	ment Type: _Dust	Trak II						
Calibi	ation Standards U	sed <u>: Facto</u>	ry calibra	ated				
		Inst	rument F	Readings	s, (Units)	Activit	res	Mit Activition
Time	Location	mg/m <sup>3</sup>	Location	2-11-19		PPE	Used	# Remarks
0753	DM01	0.006	Site 32			no carth morning f	astes	2368
0836	NM02	0.003	Downwind Site 32					3204
0835	PM03	0.002	Nownwind Size 32			V		1649
0917	DM H 13	0.004	Site 12			moving	tasks	2714
0918	DM05912	0.004	Site 12			Ĭ		2724
0418	DM DOII	0.004	Upwand Site 12					3703
1115	DMI	0.005						
1112	DM 13	0.002						
1113	pM12	0.003				1	/	
1123	DWOI	0,003				transport	ng	
1121	OM 03	0.001						
1123	DM02	0.001						
1258	11 MM	0.008				activitie	on is complete	
1259	DU13	0,005						
1300	DMIZ	0.004				V		
1448	NM01	0,002				autivity	o 32 Jone	
1456	DN02	0.003						
1503	DM03	0.001						
							Maria and Anna and An	

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Gilbane

Client Name \_ NAVFAC

Project No. J310000300

Logged by Scovi them Weather 50°, sunny

Instrument Type: \_Dust Trak II\_

Calibration Standards Used: Factory calibrated

		Instrument Readings, (Units)						
Time	Location	mg/m <sup>3</sup>		Unit #	Location	vsh a vilia	PPE Used	Remarks
0738	DM 51	0.008		2714	Jite 32			no earth moving tasks
0807	nmoz	0.007		1049	Downwind Site 32	5		
0810	NM 03	0.010		37.04	brunwind Site 32			
0907	OM 14	0.02L		3703	size 12			
	DM15	0.017		2724	site 12			
4	PM16	0.019		2368	Site 12			
1013	DMIG	0.018						excavatton activity
	DM 15 *	0.013						5
V	DM 14	0.022						
1040	DUOI	0.017						
1043	NMO2	0.015						
1045	12M03	0.014					1. 60. (Sec.)	
1140	pMILe	0.023				-		excavation activity complete
	DMIS	0.016						
	DM 14	0.029						
1535	DMOI	0.027						
1535	DNOS	5028						
1540	pm03	25020						+
	ġ.							
- di	iki	4						

Date 1/23/19 of I Page\_ 1

Date 1-24.19

of

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Client	Name		NAVFAC
		<b>Contractor</b>	

Project No. J310000300

, Gilbane

Logged by Kimberry TOM/SCOUTThern

Weather (00° SUNNY

Instrument Type: \_Dust Trak II\_

Calibration Standards Used: Factory calibrated

Time	Location	Instr mg/m <sup>3</sup>	Tument F	Reading	ls, (Units) Location	KSA 2-1-19	PPE Used	Activities, Remarks
7:25	DM1	0.031			Upwind			No earth novin toot
7:35	DM2	0.031			Downwind Site 32			10.5 Conte moving (us
7:39	DM3	0.046			Plunwind Size 32			
0915	DMIT	0.037	3264	N	vpwma site12			
0917	PM18	0,026	2368		Awnumd Site12			
0918	DM19	0.024	2714		Downumd Site 12			
1043	DMIT	0.034						
1644	DMIE *	0.022						
INTS	DMIG	0.020						
1105	mi	0.025						
1106	QM2	0.024						
1108	DM3	0.032						
1203	DMIT	0.030				*		
1205	DM18	0.026						
1206	DM19	0-026						
1605	PMI	0:010						no arth many tasks
1609	DMZ	0.008						
1612	DM3	0:012						
	8							
1		÷						

# Gilbane

## DUST MONITORING LOG

Client	Name <u>NAVFAC</u>				Date 1/28/19										
Projec	ct No <u>. J310000300</u>	No. J310000300 Page of Page of													
Logge	ed by <u>SCUUtAher</u>	N			4										
Weath	her $uv$ , $clove$	y visin	1 lity	OW c	sue to	SMOG									
Instru	ment Type: _Dust	Trak II				_		R.,							
Calibr	ration Standards Us	sed <u>: Facto</u>	ry calibra	ated											
		Inst	rument F	Reading	<u>s, (Units)</u>				Unit Activities.						
Time	Location	mg/m°	Louit	vs4	21119		Activi-	tres	* Remarks						
0740	DM1	0.035	site 32			l	No car	the Moving	3703						
0753	11M2	0.032	Brunwind Size 32						2724						
0757	DM3	0.026	Site 32						2714						
6920	PM20	0.025	Site 12						3204						
1	DM 21	0.022	Knunwind Stf-e 12						2368						
V	DM ZZ	0.020	Site12				1	/	1649						
1050	DM20	0.025					<u>Geca</u>	rating							
	DM21	0.024					1								
$\checkmark$	DM22	0.022						/							
1110	DMI	0.032				1	No ea	M mori	ə						
	DM2	0.023						1							
J	DM3	0.021					1	V							
1300	DM 20	0.075				1	Finish	et brick.	nll						
	DM 21	0.019													
$\checkmark$	DW22	0.018						V.							
1508	pul	0.021				E	artha	Jering R							
1510	NM Z	0.018													
1513	Dh 3	6.015					1	Ha in a du staff							
1603	nm1	0.072				N	RUTI	VITIES							
1608	NMZ	0.015													
100	DM3	0.013					9	/							



Client Projec Logge Weatl	t Name <u>NAVFAC</u> ct No <u>J31000030</u> ed by <u>StOUTAV</u> her <u>OVErCaST</u>	0 1ern k 55°		Date Page_	e_ /29/19 of			
Instru	ment Type: _Dust	Trak II						
Calibr	ation Standards U	sed <u>: Facto</u>						
Time	Location	Inst mg/m <sup>3</sup>	rument F	Reading	s, (Units)	/	Hutivi Ties PPE Used	Vní Activities:
740	DM1	0.013	Vpwmd Site 32			NA	eath	1649
750	DMI	0.01	Site 32	hun wind			merring	2368
759	DMB	0.014	Connum STJE32					2714
845	DM23	0.019	upwmd sttc12					3703
	PM 24	0.0FS	Downwind Site12					2724
	P.M 25	0.013	Downwind Site 12					3204
1025	M 23	0-023				(X	cavation	
}	DN 24	0.015					1	
	DM 25	0,015					V	
tioo	<u>Ô</u> MI	0.016				14.5° - 5	-	
	MM2	0.013						
	DM3	0.04						
1530	AN23	215.0				ba	athling	
	DM24	0.014					1	
	OMOS	0.010						
1600	<u> </u>	0.010						
	PM2	0.012						
	DM3	0.014					V	
	NAME OF TAXABLE AND							

N S

Client	Name <u>NAVFA</u>	<u>C</u>	Date_	Date 1/30/19							
Projec	$\frac{1}{2} \frac{1}{2} \frac{1}$	Ahern II milling Tom	Page	OT							
\//eatl	her rivercast,	55° DO MANING SUNJAN	(5° in the aff	ernoon							
Instru	ment Type: Dust	Trak II									
Calibr	ation Standards L	Jsed: Factory calibrated									
		Instrument Readings (Units)	1.1.1.21205								
Time	Location	mg/m <sup>3</sup> Locution	PPE Used	Activities, Vh							
		warz4		Remarks p							
0730	DNI	0.028 Site 32	ND PARTA Tasks	2368							
0745	DMZ	0.026 Site 32	. ]								
0750	DM3	0.027 Stre32		2714							
0852	PM26	0.038 upuma Site 32		3703							
1	DM 27	0.027 Downwind Site 12		1649							
	DA 28	0.029 Size 12		2724							
1235	nMI	0.030	Cillmo dumaino								
1	$OM_{2}$	0.033	excavation								
	DM 3	0.030	Sál								
1045	pm26	0.038	Grand Line								
	0427	0.128	Lots of strut								
	RCMU	0.00	Staffic								
1315	NM78	0.040	Backfilling								
1015	DM 27	0.040	constant street								
	DM 7.(2	0.045									
1355	DMI	0.077	NO AUTIVITY @								
j	$\eta/1/2$	0.024	5110 50								
	MAR3	0.074									
1460	01177	0.014	Noeurthmang	and the second second							
1.122	DATC	R 02(a	Jasks, low traffie	<del>3 4 - 100</del> -100							
	nu 28	0.071									
1/ · ·	DALA .	D X U		and the second second							
abi	U <sup>v</sup> V)	10.017		the second s							
	DM2	0.016									
V	DM3	0.016									

, Gilbane



 $\bigcirc$ 

## DUST MONITORING LOG

Client Projec Logge	Client Name <u>NAVFAC</u> Project No. J310000300 Logged by <u>SCOUT</u> AMERN Weather DVCrCUST. FOGGIA 55° IN MORMA SUMMING ALERNOON													
Weath	her OVCr(ll)	<u>r, togg</u>	y 50	Th morme	J, sunginall	ternoon								
Calibr	ment Type: _Dust	I rak II	ny calibrated											
				1° / 1 1 10 N		()								
Time	Location	mg/m <sup>3</sup>	Location	$\frac{11}{12}$ $11$	PPE Used	Activities, p Remarks								
0730	DMI	0.015	site32		novingtasks	1649								
1	PMZ	0.040	Downwmd Site 32		wet conditions	3204								
V	OM3	0.041	Downwind Size32			2368								
1100	pul	0.030												
	DNZ	0.028												
V	DM3	0.032												
1330	Mr. I	0.007			No activity @ Site 32									
	DMZ	0.009			1									
V	pm3	0.007												
1420	DM	0.022			Ĩ									
	DM2	0.019												
	DMS	0.023												
1														
	a and a second													

# ATTACHMENT 2 SUMMARY OF AIR MONITORING AND AIR SAMPLING RESULTS

DCN: GLBN-F4239-022



Sample Date	Ambient Pressure (inches of Hg)	Ambient Temperature (°F)	Ambient Temperature (°K)
1/23/2019	30.59	51.35	283.90
1/24/2019	30.53	50.75	283.57
1/25/2019	30.42	52.17	284.36
1/29/2019	30.21	54.72	285.77
1/30/2019	30.16	54.21	285.49
1/31/2019	30.08	54.64	285.73
2/1/2019	30.08	55.51	286.21

Notes:

Weather data collected from weather station at Building 572, Avenue M, Treasure Island, San Francisco, CA

°F = Degrees Fahrenheit

Hg = mercury

°K = Degrees Kelvin



Location ID	Sampling Period	Delta between	PM10				
	(Hours)		Less Than 10 Microns	Downwind and	Exceedance?		
			in Diameter (ug/m <sup>3</sup> )	<b>Upwind Stations</b>	(Yes/No)		
				(ug/m <sup>3</sup> )			
				Screening Criteria	50		
AMS01	23.44	1/23/2019	14	NA	NA		
	16.15*	1/24/2019	24	NA	NA		
	24.62	1/25/2019	25	NA	NA		
	24.6	1/29/2019	5.3	NA	NA		
	24.44	1/30/2019	16	NA	NA		
	18.45*	1/31/2019	0.48	NA	NA		
	23.83	2/1/2019	16	NA	NA		
AMS02	23.32	1/23/2019	19	5.0	No		
	23.42	1/24/2019	24	0.0	No		
	23.56	1/25/2019	28	3.0	No		
	23.65	1/29/2019	3.2	-2.1	No		
	23.48	1/30/2019	5.9	-10.1	No		
	23.64	1/31/2019	7.7	7.2	No		
	23.79	2/1/2019	16	0.0	No		
AMS03	21.40	1/23/2019	15	NA	NA		
	23.54	1/24/2019	19	NA	NA		
	23.98	1/25/2019	19	NA	NA		
	23.88	1/29/2019	4.1	NA	NA		
	23.76	1/30/2019	0.66	NA	NA		
	12.43*	1/31/2019	24	NA	NA		
AMS04	23.55	1/23/2019	13	-2.0	No		
	23.41	1/24/2019	16	-3.0	No		
AMS06	23.05	1/25/2019	18	-1.0	No		
	23.78	1/29/2019	3.9	-0.2	No		
	23.82	1/30/2019	3.2	2.5	No		
	24.22	1/31/2019	21	-3.0	No		

Notes:

NA = not applicable

PM10 = particulate matter less then 10 microns in diameter

ug/m<sup>3</sup> = microgram per cubic meter

\* = PM10 sampler malfunctioned

### Table 2-3 Total Suspended Particulates Monitoring Results Remedial Action/NTCRA IR Site 12 Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Total Suspended Particulate (ug/m <sup>3</sup> )	Delta Between Downwind and Upwind Stations (ug/m³)	TSP Exceedance? (Yes/No)
				Screening Criteria	50
AMS01	23.43	01/23/2019	19.66	NA	NA
	16.54*	1/24/2019	27.20	NA	NA
	24.61	01/25/2019	26.75	NA	NA
	24.62	1/29/2019	18.28	NA	NA
	24.38	1/30/2019	8.63	NA	NA
	17.85*	1/31/2019	24.17	NA	NA
	24.67	2/1/2019	14.29	NA	NA
AMS02	23.28	01/23/2019	32.40	12.73	No
	23.40	01/24/2019	36.41	9.21	No
	23.56	01/25/2019	33.04	6.29	No
	23.67	1/29/2019	31.44	13.15	No
	23.45	1/30/2019	22.46	13.83	No
	23.56	1/31/2019	37.32	13.15	No
	23.77	2/1/2019	16.40	2.10	No
AMS03	20.12*	1/23/2019	32.63	NA	NA
	23.58	01/24/2019	30.77	NA	NA
	23.97	01/25/2019	31.76	NA	NA
	23.87	1/29/2019	23.69	NA	NA
	23.79	1/30/2019	21.40	NA	NA
	23.81	1/31/2019	24.67	NA	NA
AMS04	23.55	01/23/2019	22.96	-9.67	No
	23.37	01/24/2019	28.52	-2.25	No
AMS06	23.07	01/25/2019	24.32	-7.44	No
	23.77	1/29/2019	38.12	14.43	No
	23.79	1/30/2019	17.58	-3.83	No
	24.22	1/31/2019	27.3	2.65	No

Notes:

J - estimated value

NA = not applicable

TSP = total suspended particulate

**bold** = results above screening criteria

\* = TSP sampler malfunctioned

### Table 2-4 Metals by EPA 6020 Monitoring Results Remedial Action/NTCRA IR Site 12 Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Lead (ug/m <sup>3</sup> )	Lead Exceedance? (Yes/No)	Chromium (ug/m³)	Chromium Exceedance? (Yes/No)
Screening Criteria	à			242		929
AMS01	23.44	1/23/2019	0.0017	No	0.002	No
	16.15*	1/24/2019	0.0026	No	0.0028	No
	24.62	1/25/2019	0.0023	No	0.0021	No
	24.60	1/29/2019	0.0017	No	0.0046	No
	24.44	1/30/2019	0.0011	No	0.0017	No
	18.45*	1/31/2019	0.0015	No	0.0058	No
	23.83	2/1/2019	0.00089	No	0.0043	No
AMS02	23.32	1/23/2019	0.0018	No	0.0021	No
	23.42	1/24/2019	0.0029	No	0.0024	No
	23.56	1/25/2019	0.0037	No	0.0049	No
	23.65	1/29/2019	0.0015	No	0.0049	No
	23.48	1/30/2019	0.0017	No	0.0046	No
	23.64	1/31/2019	0.0024	No	0.005	No
	23.79	2/1/2019	0.0015	No	0.0044	No
AMS03	21.40	1/23/2019	0.0018	No	0.0021	No
	23.54	1/24/2019	0.0021	No	0.002	No
	23.98	1/25/2019	0.002	No	0.0045	No
	23.88	1/29/2019	0.0016	No	0.0045	No
	23.76	1/30/2019	0.0011	No	0.0042	No
	12.43*	1/31/2019	0.002	No	0.0081	No
AMS04	23.55	1/23/2019	0.0015	No	0.0021	No
	23.41	1/24/2019	0.002	No	0.002	No
AMS06	23.05	1/25/2019	0.0024	No	0.0056	No
	23.78	1/29/2019	0.0016	No	0.0044	No
	23.82	1/30/2019	0.0013	No	0.0042	No
	24.22	1/31/2019	0.0016	No	0.0045	No

Notes:

NA = not applicable

ug/m<sup>3</sup> = microgram per cubic meter

\* = sampler malfunction

### Table 2-5 Polycyclic Aromatic Hydrocarbons by TO-13 Monitoring Results Remedial Action/NTCRA IR Site 12 Former Naval Station Treasure Island, San Francisco, California

Location ID	Sampling Period	Sample Date	BAP(Eq) Exceed-ance?	BAP (Eq)	2-Methyl-naph- thalene	Acenaph- thene	Acenaph- thylene	Anthra-cene (ug/m <sup>3</sup> )	Benzo(a) anthra-cene	Benzo(a) pyrene	Benzo(b) fluoran-thene	Benzo(g,h,i) perylene	Benzo(k) fluoran-thene	Chrysene (ug/m <sup>3</sup> )	Dibenz(a,h) anthra-cene	Fluoran-thene (ug/m3)	Fluorene (ug/m3)	Indeno (1,2,3- c,d) pyrene	Naph- thalene	Phenan- threne	Pyrene (ug/m3)
	(Hours)		(Yes/No)		(ug/m³)	(ug/m³)	(ug/m³)		(ug/m³)	(ug/m³)	(ug/m³)	(ug/m³)	(ug/m³)		(ug/m³)			(ug/m3)	(ug/m3)	(ug/m3)	
	Screeni	ng Criteria <sup>1</sup>		50	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
AMS01	23.48	1/23/2019	No	0	0.0049	0.00036 J	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	0.00043	< 0.00038	0.0074	0.00065	< 0.00038
	24.59	1/29/2019	No	0	0.0065	0.00041	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	0.00054	< 0.00039	0.0093	0.00078	< 0.00039
	24.66	2/1/2019	No	0	0.0046	0.00049	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	< 0.00038	0.00016 J	0.0007	< 0.00038	0.0057	0.0011	0.00015 J
AMS02	23.24	1/23/2019	No	0	0.0048	0.00045	0.00015 J	< 0.00037	< 0.00037	< 0.00037	< 0.00037	< 0.00037	< 0.00037	< 0.00037	< 0.00037	0.00027 J	0.0008	< 0.00037	0.0099	0.0016	0.00034 J
	23.65	1/29/2019	No	0	0.0044	0.00068	0.00017 J	0.00015 J	< 0.00036	< 0.00036	< 0.00036	< 0.00036	< 0.00036	< 0.00036	< 0.00036	0.00031 J	0.00091	< 0.00036	0.0086	0.0019	0.00044
	23.63	2/1/2019	No	0	0.004	0.00052	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	< 0.00039	0.00027 J	0.00066	< 0.00039	0.0082	0.0013	0.00034 J
AMS03	21.29	1/23/2019	No	0	0.0028	0.00051	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	0.00015 J	0.00071	< 0.00035	0.0069	0.0011	< 0.00035
	23.87	1/29/2019	No	0	0.0018	0.00042	< 0.00033	< 0.00033	< 0.00033	< 0.00033	< 0.00033	< 0.00033	< 0.00033	< 0.00033	< 0.00033	0.00015 J	0.00057	< 0.00033	0.0036	0.0011	< 0.00033
AMS04	21.29	1/23/2019	No	0	0.0029	0.00036 J	< 0.00042	< 0.00042	< 0.00042	< 0.00042	< 0.00042	< 0.00042	< 0.00042	< 0.00042	< 0.00042	< 0.00042	0.0004 J	< 0.00042	0.0063	0.00074	< 0.00042
AMS06	9.77*	1/29/2019	No	0	0.033	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	0.0049 J	< 0.012	0.084	0.0084 J	< 0.012

Notes:

 $^{1}$  The screening criteria for BAP(Eq) is 50  $\text{ug/m}^{3}$  except for the area

surrounding excavation KCH-1217-1 at which it will be 8 ug/m<sup>3</sup>.

NA = not applicable

ND = Not detected

NE = Not established

BAP(Eq) = Benzo(a) pyrene equivalency

J = estimated value

< = nondetected less than associated reporting limit

\* = PUF sampler malfunction



### Table 2-6 Polychlorinated Biphenyls by TO-4A Monitoring Results Remedial Action/NTCRA IR Site 12 Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Total PCB Exceedance? (Yes/No)	Total PCB	PCB-1016 (Aroclor 1016) (ug/m <sup>3</sup> )	PCB-1221 (Aroclor 1221) (ug/m <sup>3</sup> )	PCB-1232 (Aroclor 1232) (ug/m <sup>3</sup> )	PCB-1242 (Aroclor 1242) (ug/m <sup>3</sup> )	PCB-1248 (Aroclor 1248) (ug/m <sup>3</sup> )	PCB-1254 (Aroclor 1254) (ug/m <sup>3</sup> )	PCB-1260 (Aroclor 1260) (ug/m <sup>3</sup> )
Screening Cr	riteria			NE							
AMS01	24.67	1/25/2019	No	0	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	0.84*	1/31/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMS02	23.57	1/25/2019	No	0	< 0.00048	< 0.00048	< 0.00048	< 0.00048	< 0.00048	< 0.00048	< 0.00048
	23.59	1/31/2019	No	0	< 0.00051	< 0.00051	< 0.00051	< 0.00051	< 0.00051	< 0.00051	< 0.00051
AMS03	9.51*	1/25/2019	No	0	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011
	12.53*	1/31/2019	No	0	< 0.009	< 0.009	< 0.009	< 0.009	< 0.009	< 0.009	< 0.009
AMS06	23.06	1/25/2019	No	0	< 0.00065	< 0.00065	< 0.00065	< 0.00065	< 0.00065	< 0.00065	< 0.00065
	24.25	1/31/2019	No	0	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063

Notes:

NA = not available

ND = not detected

NE = none established

PCB = polychlorinated biphenyl

 $ug/m^3 = microgram per cubic meter$ 

< = nondetected less than associated reporting limit

\* = PUF sampler malfunction

### Table 2-7 Dioxin as 2,3,4,7,8-TCDD by TO-9A Monitoring Results Remedial Action/NTCRA IR Site 12 Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	2,3,7,8-Tetrachlorodibenzo-p- dioxin (ug/m <sup>3</sup> )	Dioxin Exceedance?
				(Yes/No)
			Screening Criteria	10,000,000
AMS01	16.46*	1/24/2019	< 0.0000002	No
	24.44	1/30/2019	< 0.000014	No
AMS02	23.38	1/24/2019	< 0.00000014	No
	23.44	1/30/2019	< 0.000015	No
AMS03	23.50	1/24/2019	< 0.00000012	No
	23.77	1/30/2019	< 0.000012	No
AMS04	23.40	1/24/2019	< 0.00000014	No
AMS06	23.72	1/30/2019	< 0.000018	No

Notes:

\* = PUF sampler malfunction

NA = Not applicable

ug/m<sup>3</sup> = microgram per cubic meter

< = nondetected less than associated reporting limit

# ATTACHMENT 3 RADIOLOGICAL AIR MONITORING RESULTS

Gilbane

## AIR SAMPLE RESULTS - PUBLIC EXPOSURE MONITORING

	Project Information										Effluent	t Air Cor	centration		Sampling Period			Color Codes					
#ontract	+as@ Arder .	umber: 3ro	olect +itle	e >ocati	on:		?ilbane 3rolect	. umber:					Alpha	Beta	Air s	amples coll	ected	*	alue;C-#	¥	*alue	0&! < "fflu	ent #onc
. 6	6254 ' - ! 400	002	IR Site	!2 R - R	A8 +reasure I	sland8 S)8 #A	7'	!0000'00			Rad	lionuclide	Ra-226	Sr-90	between	7anuar/ 22	28 20 ! 9	; 42	2 hr deca/ t	ime	*alue =	= 0&! < "fflu	ent #onc
			Inforn	mation ef	fective as of:	2 !0 20 !9				"f	fluent #onc	;\$µ#iml⊮	9&"-!'	6&"-!2	and	7anuar/ '	!8 20 ! 9	- ;	ata reviewe	d	*alu	e = "ffluent	#onc
				S	ample Colle	ection							Count	Informatio	n				Sample	Results		Ini	tials
Sample	Sample	Sample	Э	" (uip	Ave ) low	Start	"nd	"lapsed	*olume	Inst	#ount	+ime	#ountin,	?ross	Activit/	. et	dpm	Activit/	\$∶#i ml%	"ffluent	#onc \$9%	#ount	- ata
. umber	+/pe	>ocatior	n	. 0	Rate \$lpm%	-a/ +ime	- ate +ime	+ime \$min%	\$ <b>ml</b> %	. 0	- ate	\$min%	Onits	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	+ech	Reviewer
AS-012	3erimeter	ACS-0!	!	3"0!	20	! 22 !9 4:!2	! 22 !9 !2:52	2!0	212"604	А	! 21 !9	20	cpm	0&520	28420	!&'	2&0	21' "-!5	109"-!5	2.5%	1.5%	BS	
AS-016	3erimeter	ACS-02	2	3"02	60	! 22 !9 4:22	! 22 !9 !2:22	2!0	'&! "604	А	! 21 !9	20	cpm	! &000	'&'20	249	686	5&2"-!5	9%1"-!5	4.7%	1.6%	BS	
AS-014	3erimeter	ACS-0'	1	3"0'	20	! 22 !9 1:00	! 22 !9 !6:'0	2!0	212"604	А	! 21 !9	20	cpm	0&220	' 8000	!&6	284	21"-!5	! &0 " - ! '	3.1%	1.7%	BS	
AS-011	3erimeter	ACS-05	5	3"05	60	! 22 !9 4:50	! 22 !9 !6:!0	2!0	'&! "604	А	! 21 !9	20	cpm	0&220	'&!20	!&6	68!	21' "-!5	940"-!5	2.6%	1.5%	BS	
AS-019	3erimeter	"DE!2'9B		3"02	20	! 22 !9 1:52	! 22 !9 !':02	260	!&' "604	А	! 21 !9	20	cpm	0&200	2620	!&5	5&4	240"-!5	!&6"-!'	5.5%	2.7%	BS	
AS-090	3erimeter	ACS-0!		3"0!	20	! 2' !9 6:00	! 2' !9 !6:00	600	'&0"604	А	! 21 !9	20	cpm	!&020	24600	'&0	586	5&2"-!5	649"-!5	5.0%	1.2%	BS	
AS-09!	3erimeter	ACS-02 3"		3"02	60	! 2' !96:!0	! 2' !9 !6:!0	600	'&6"604	А	! 21 !9	20	cpm	0&400	' 1220	2&0	645	212"-!5	10"-!5	2.8%	1.3%	BS	
AS-092	3erimeter	ACS-0'	'	3"0'	20	! 2' !9 6:20	! 2' !9 !2:'0	220	21"604	А	! 21 !9	20	cpm	0&400	21020	2&0	'&!	'&' "-!5	2&!"-!5	3.7%	0.9%	BS	
AS-09'	3erimeter	ACS-05		3"05	60	! 2' !9 6:02	! 2' !9 !2:52	210	'&2"604	А	! 21 !9	20	cpm	0&200	' 1620	!&5	482	!&9"-!5	9%6"-!5	2.1%	1.6%	BS	
AS-095	3erimeter	"DE!2'6	6 A	3"02	60	! 2' !9 4:52	! 2' !9 !2:00	222	!&2"604	А	! 21 !9	20	cpm	0&'20	28620	! åO	5&4	'&0"-!5	!&5"-!'	3.3%	2.3%	BS	
AS-092	3erimeter	ACS-0!	!	3"0!	20	! 25 !9 2:22	! 25 !9 !2:'0	242	219"604	А	! 21 !9	20	cpm	0&220	'&220	!&6	645	2&2"-!5	!&0"-!'	2.8%	1.7%	BS	
AS-096	3erimeter	ACS-02	2	3"02	60	! 25 !9 2:52	! 25 !9 !2:20	602	'&6"604	А	! 21 !9	20	cpm	0&420	'&220	282	482	2&4"-!5	109"-!5	3.0%	1.5%	BS	
AS-094	3erimeter	ACS-0'	'	3"0'	20	! 25 !9 6:02	! 25 !9 !2:00	2'2	284"604	А	! 21 !9	20	cpm	0&400	'&500	2&0	6&1	'&5"-!5	!&! "-! '	3.8%	1.9%	BS	
AS-091	3erimeter	ACS-06	6	3"06	60	! 25 !9 1:00	! 25 !9 !6:00	510	219"604	А	! 21 !9	20	cpm	0&500	'&520	!&2	689	!&1"-!5	!&! "-! '	2.0%	1.8%	BS	
AS-099	3erimeter	"D E !222	2 A	3"02	60	! 25 !9 1:'0	! 25 !9 !2:'0	250	!&5"604	А	! 21 !9	20	cpm	0&520	28400	!&'	589	5&!"-!5	!&2"-!'	4.5%	2.5%	BS	
AS-!00	3erimeter	ACS-0!	!	3"0!	20	! 21 !9 6:00	! 21 !9 !2:52	212	219"604	А	25!9	20	cpm	0&200	' 1900	0%6	1&!	1&9"-!2	!&' "-! '	1.0%	2.1%	BS	
AS-!0!	3erimeter	ACS-02	2	3"02	60	! 21 !9 6:!0	! 21 !9 !6:00	290	'&2"604	A	25!9	20	cpm	00'00	54520	049	946	!&! "-!5	!&2"-!'	1.2%	2.0%	BS	
AS-!02	3erimeter	ACS-0'	1	3"0'	20	! 21 !9 6:20	! 21 !9 !6:!0	290	219"604	А	25!9	20	cpm	0&!20	5&!00	045	1&4	6&6"-!2	!&' "-! '	0.7%	2.2%	BS	
AS-!0'	3erimeter	ACS-06	6	3"06	60	! 21 !9 4:!0	! 21 !9 !2:20	220	'å! "604	А	25!9	20	cpm	0&!00	54000	0% '	185	5&2"-!2	!&2"-!'	0.5%	2.0%	BS	
AS-!05	3erimeter	"DE!224	4)	3"02	60	! 21 !9 1:52	! 21 !9 !':00	222	!&2"604	А	25!9	20	cpm	0&220	' 1920	0&4	1&'	2&!"-!5	2&5"-!'	2.4%	4.1%	BS	
AS-!02	3erimeter	ACS-0!	!	3"0!	20	! 29 !9 2:20	! 29 !9 !6:22	6'2	'&2"604	А	25!9	20	cpm	0&!00	58220	0% '	989	5&!"-!2	!&5"-!'	0.5%	2.3%	BS	
AS-!06	3erimeter	ACS-02	2	3"02	60	! 29 !9 2:22	! 29 !9 !6:'0	6'2	'&1"604	А	25!9	20	cpm	0&!00	'&120	0% '	1&0	'&5"-!2	9&2"-!5	0.4%	1.6%	BS	
AS-!04	3erimeter	ACS-0'	'	3"0'	20	! 29 !9 6:02	! 29 !9 !6:!0	602	'&0"604	А	25!9	20	cpm	0&520	51500	!&'	982	!&9"-!5	!&5"-!'	2.1%	2.4%	BS	
AS-!01	3erimeter	ACS-06	6	3"06	60	! 29 !9 6:!2	! 29 !9 !6:!2	600	'&6"604	А	25!9	20	cpm	! 1020	' 1620	'&O	482	'&1"-!5	9&'"-!5	4.2%	1.6%	BS	
AS-!09	3erimeter	"D E F3 !	!!6	3"02	60	! 29 !9 4:22	! 29 !9 !6:02	590	249"604	А	25!9	20	cpm	0&620	'&!00	! 89	6&0	249"-!5	94!"-!5	3.2%	1.5%	BS	
AS-!!0	3erimeter	ACS-0!	!	3"0!	20	! '0 !9 6:02	! '0 !9 !2:'0	262	21"604	А	25!9	20	cpm	04'00	21'20	089	!2&!	!&5"-!5	!&9"-!'	1.5%	3.2%	BS	
AS-!!!	3erimeter	ACS-02	2	3"02	60	! '0 !9 6:00	! '0 !9 !2:52	212	'&2"604	А	25!9	20	cpm	0&!20	'&100	045	489	2&2"-!2	! &0 " - ! '	0.6%	1.7%	BS	

Gilbane

## AIR SAMPLE RESULTS - PUBLIC EXPOSURE MONITORING

Project Information											Effluent Air Concentration					Sampling Period			Color Codes					
#ontract	+as@ Arder .	umber: 3rolect	3rolect +itle >ocation:			?ilbane 3rolect . umber:					Alpha	Beta	Air samples collected		*alue; C - #			*alue; 0&! < "ffluent #onc						
. 6	6254 ' - ! 400	002 IR S	IR Site !2 R - RA8 +reasure Island8 S)8 #A				7'!0000'00			Radionuclide			Sr-90	between 7anuar/ 228 20!9		; 42 hr deca/ time			*alue = 0&! < "ffluent #onc					
Information effective as of: 2 !0 20!9									"ffluent #onc \$µ#i ml% 9&"-! '			6&"-!2	and 7anuar/ '!820!9			- ata reviewed			*alue = "ffluent #onc					
Sample Collection												Count	Informatio	n			Sample Results			Initials				
Sample	Sample	Sample	" (uip	Ave ) low	Start	"nd	"lapsed	*olume	Inst	#ount	+ime	#ountin,	?ross Activit/		ivit/ . et dpm		Activit/ \$: #i ml%		"ffluent #onc \$9%		#ount	- ata		
. umber	+/pe	>ocation	. 0	Rate \$lpm%	-a/ +ime	- ate +ime	+ime \$min%	\$ml%	. 0	- ate	\$min%	0nits	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	+ech	Reviewer		
AS-!!2	3erimeter	ACS-0'	3"0'	20	! '0 !9 6:!2	! '0 !9 !2:!0	2'2	2&4"604	А	25!9	20	cpm	0&!20	54500	045	982	4&'"-!2	!&6"-!'	0.8%	2.7%	BS			
AS-!!'	3erimeter	ACS-06	3"06	60	! '0 !9 6:20	! '0 !9 !2:20	250	'&2"604	А	25!9	20	cpm	0&020	'&120	08!	1&0	20"-!2	!&! "-! '	0.2%	1.9%	BS			
AS-!!5	3erimeter	"DEF3!00	3"02	60	! '0 !9 1:00	! '0 !9 !2:00	520	282"604	А	25!9	20	cpm	0&200	'&200	086	4&0	!&0"-!5	!&' "-! '	1.1%	2.1%	BS			
AS-!!2	3erimeter	ACS-0!	3"0!	20	! '! !9 6:02	! '! !9 !2:22	290	'&0"604	А	25!9	20	cpm	0&220	' 1900	0&4	1&!	!&! "-!5	!&2"-!'	1.2%	2.1%	BS			
AS-!!6	3erimeter	ACS-02	3"02	60	! '! !9 6:00	! '!!9!6:00	600	'&6"604	A	25!9	20	cpm	0&!20	54900	045	!0%1	245"-!2	!&5"-!'	0.6%	2.3%	BS			