RELATIVE RISK SITE EVALUATION

Gulfport Combat Readiness Training Center, Mississippi

Introduction

The Department of Defense (DoD) identified certain per- and polyfluoroalkyl substances (PFAS) as emerging contaminants of concern which affected installations across the Air Force. When the term "Air Force" is used in this fact sheet, it includes Air National Guard (ANG). Specifically, perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS) are components of legacy Aqueous Film Forming Foam (AFFF) that the Air Force began using in the 1970s as a firefighting agent to extinguish petroleum fires. The U.S. Environmental Protection Agency (EPA) issued lifetime drinking water Health Advisories (HA) for PFOS and PFOA, and health-based regional screening levels for PFBS.

The Air Force has systematically evaluated potential AFFF releases on all Installations and former Installations. It began with the Preliminary Assessments, or PAs, that identified potential release areas. First responders, fire chiefs, and hangar staff were interviewed to determine where a release or a spill may have occurred on an Installation (for example, aircraft crash site or an accidental hangar AFFF release). Once the information in the PA was collected, we began Site Inspections, or SIs, to take soil and water samples and analyzed the media for PFAS compounds at the potential release areas. The intention of the SI was to determine if a release had occurred and to determine the impacts to soil and/or groundwater. The next step in the process is called the Relative Risk Site Evaluation, or RRSE, which is a tool used to sequence Sites/Installations to begin a Remedial Investigation, or RI. Air Force Installations are at the beginning of the more detailed investigative stage, the RI, to determine where action is needed and to identify remedial technologies.

The Gulfport Combat Readiness Training Center (CRTC) PFAS PA and SI can be found at the AFCEC Administrative Record (AR): https://ar.afcec-cloud.af.mil/ Scroll to the bottom of the page and click on “Continue to site”, then select Air National Guard, scroll down the Installation List and click on Gulfport Rgnl APT (Biloxi), MS, then enter the AR Number 474839 in the “AR #” field for the PA. For the SI, enter the AR Number 581924. Then click “Search” at the bottom of the page. Click on the spy glass to view the document.

More information on the Air Force response to PFOS and PFOA can be found at: https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/

Acronyms

AFFF - Aqueous Film Forming Foam

ANG - Air National Guard

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CHF – Contaminant Hazard Factor

CRTC - Combat Readiness Training Center

DOD - Department of Defense

EPA – US Environmental Protection Agency

FTA – Fire Training Area

HA – Health Advisory

MPF – Migration Pathway Factor

PA – Preliminary Assessment

PFAS - Per-and polyfluoroalkyl substances

PFBS – Perfluorobutanesulfonic acid

PFOA - Perfluorooctanoic acid

PFOS - Perfluorooctane sulfonate

PRL - Potential Release Location

RF – Receptor Factor

RI – Remedial Investigation

RRSE – Relative Risk Site Evaluation

SI – Site Inspection

RELATIVE RISK SITE EVALUATION, cont.

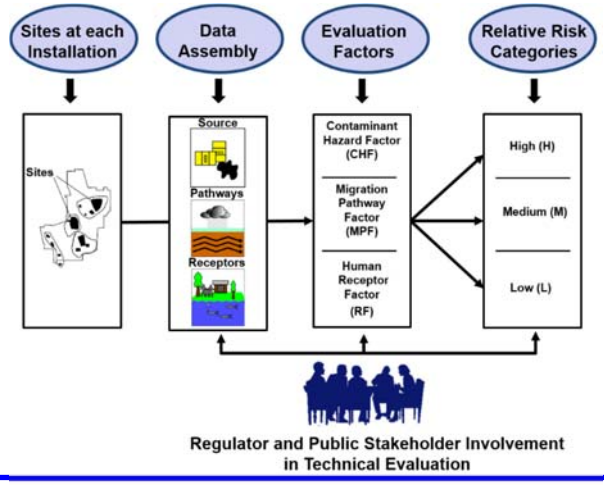
Q. What is the Relative Risk Site Evaluation (RRSE)?

A. RRSE is a methodology to sequence environmental restoration work used by the Department of Defense (DoD). The RRSE process is used to evaluate the relative risk posed by an environmental restoration site in relation to other sites. The DoD fundamental premise in site prioritization is "worst first," meaning the DoD Component shall address sites that pose a relatively greater potential risk to public safety, human health, or the environment before sites posing a lesser risk. Relative risk is not the sole factor in determining the sequence of environmental restoration work, but it is an important consideration in the priority setting process. The methodology is described in the DoD, Relative Risk Site Evaluation Primer, Summer 1997 Revised Edition: https://denix.osd.mil/references/dod/policy-guidance/relative-risk-site-evaluation-primer/

Q. What is the RRSE framework?

A. The RRSE framework provides a DoD-wide approach for evaluating the relative risk to human health and the environment posed by contamination present at sites. The **Relative Risk Site Evaluation Concept Summary** (shown in the figure) illustrates the selection of sites, evaluation of the site data using three evaluation factors, and placement into high, medium, and low categories. The relative risk site evaluation framework is based on information fundamental to risk assessment: sources, pathways, and receptors to sequence restoration work. The RRSE is not a baseline risk assessment or health assessment in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. Regulators and public stakeholders in the environmental restoration process are provided the opportunity to participate in the process in accordance with the DoD Defense Environmental Restoration Program.

Relative Risk Site Evaluation Concept Summary

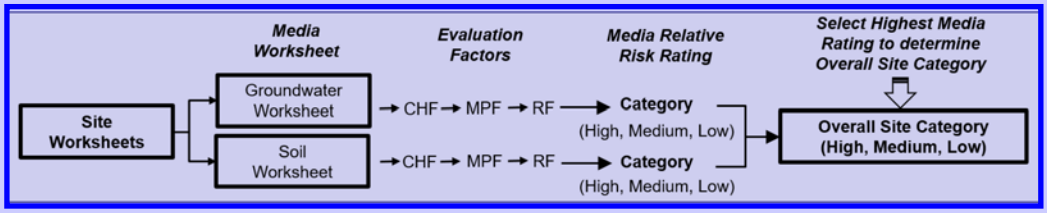


Sites at Each Installation

Q. What restoration sites are required to be evaluated in the RRSE process?

A. Restoration sites in CERCLA phases prior to remedy-in-place are evaluated in the process. Worksheets are developed for environmental media at each site. For consistency across all the Installations, only surface soil (0-1 foot deep) and groundwater media were evaluated in the RRSE.

The figure shows the process for a media to be evaluated using the contaminant hazard factor (CHF), the migration pathway factor (MPF), and the receptor factor (RF). Each media is scored to obtain a relative risk rating of High, Medium, or Low. The highest media rating determines the Overall Site Category.



Q. How is the Contaminant Hazard Factor (CHF) determined?

A. The **CHF** is determined by dividing the maximum level for a contaminant at each site by the approved screening values (i.e., risk-based comparison values). Contaminant concentration ratios are totaled to arrive at a **CHF.** A CHF sum of greater than 100 earns a **Significant (High)** ranking. **Moderate (Medium)** is when the total is 2 to 100. **Minimal (Low)** is when a CHF is less than two.

FOR MORE INFORMATION

Air Force Civil Engineer Center
Environmental Restoration Program
www.afcec.af.mil

AFCEC CERCLA
Administrative Record (AR)
https://ar.afcec-cloud.af.mil/

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Q. How is the Migration Pathway Factor (MPF) determined?

A. The movement of contamination at a site is evaluated and assigned a **MPF** rating.

Ratings for MPFs are designated as: **evident**, **potential**, or **confined** (for **High, Medium, and Low**). **Evident** exposure means the contamination is at a point where exposure to humans or the environment can occur, such as at a drinking water well. **Potential** ratings are given to sites where exposure may happen. A **confined** rating is given to sites where a low possibility for exposure may occur.

Q. How is the Receptor Factor (RF) determined?

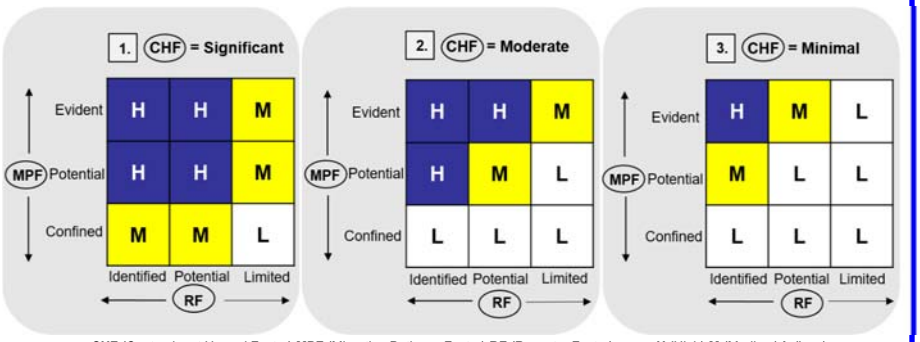
A. The **RF** is determined by a receptor's, such as humans, potential to come into contact with contaminated media. **RFs** are designated as: identified, potential, or limited **(High, Medium, and Low). Identified** rating is given when receptors are in contact or threat of contact with contaminated media. **Potential** is given when receptor may contact contaminated media. **Limited** is given when there is little or no contact with contaminated media.

RELATIVE RISK SITE EVALUTION, cont.

Media Relative Risk Rating

Q. How is the media relative risk rating determined?
A. Use the chart to determine the relative risk rating for each media evaluated. Start by choosing the **CHF** result of the evaluation. If the **CHF** is **Significant**, use **box 1.**; if **Moderate**, use **box 2.**; if **Minimal**, use **box 3.** Then find the **MPF** and **RF** results and move to the square where the results meet. That square indicates the media relative risk rating. For example, if the **CHF** is **Significant (go to box 1.)**, the **MPF** is **Potential** and the **RF** is **Identified**, then the rating is High (**H**).

Relative Risk Site Evaluation Matrix



CHF (Contaminant Hazard Factor) **MPF** (Migration Pathway Factor) **RF** (Receptor Factor) **H** (High) **M** (Medium) **L** (Low)

Overall Site Category

Q. How do I determine the Overall Site Category?
A. The highest relative risk media rating becomes the **Overall Site Category** for the site. For example, if a site has a groundwater relative risk rating of **High**, and soil relative risk rating of **Low**, then the Overall Site Category rating for the site is **High**.

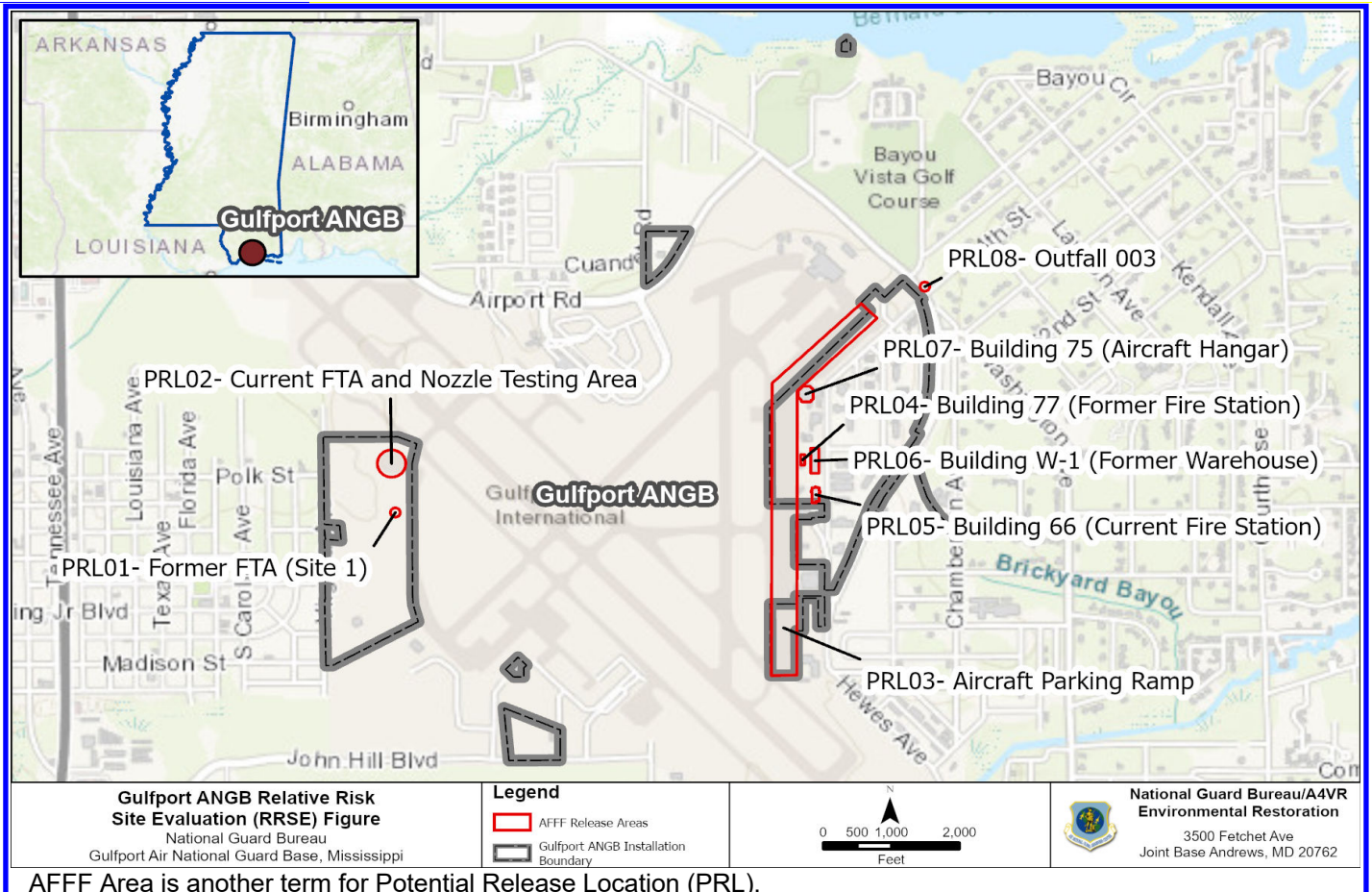
Regulatory and Stakeholder Involvement

Q. **How do I participate as Stakeholder?**

A. To offer opportunity to participate in RRSE, the Air Force announces a public comment period in your local newspaper. There is also opportunity to participate during installation Restoration Advisory Committees where active. Installation Restoration Advisory Committee meetings are also announced in your local newspaper.

Relative Risk Site Evaluation Summary Gulfport CRTC, MS

Overall Site Category	Site Name (Sites are shown on the map below and RRSE Worksheets are attached)
HIGH	PRL 1, PRL 4, PRL 6
MEDIUM	PRL 3, PRL 5, PRL 7, PRL 8
LOW	PRL 2



AFFF Area is another term for Potential Release Location (PRL).

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Former Fire Training Area - Site 1 - PRL 1	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	Site 1, the Former FTA, is located due west of the Gulfport-Biloxi Regional Airport. The site was active from 1972 (possibly as early as 1954) to June 1988 and consisted of a slightly bermed unlined pit, approximately 12 in. deep. The pit was used for flammable materials (e.g., jet fuel) and water, foam, or other extinguishing agents for fire training exercises. The pit often had standing water that would eventually drain to an intermittent waterway and north into Turkey Creek. A remedial action to address petroleum contamination entailed excavation and treatment of approximately 2,000 cubic yards of soil in 2001. Confirmation sampling within the excavation pit demonstrated that petroleum-impacted soils were removed to concentrations below the applicable cleanup standards.
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the Combat Readiness Training Center (CRTC) and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the site investigation (SI) ranged from 1.95 ft. below ground surface (BGS) to 6.25 ft. BGS. Soils at PRL-1 are exposed in a vegetated area.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the Environmental Data Resources (EDR) Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL 1 is within the base boundary and is adjacent to the airstrips therefore access to site soils would be limited. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 1 **AFFF Release Area #:** AFFF 1

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	3.5	0.04	87.5
PFOA	1	0.04	25.0
PFBS	0.17	0.602	0.3

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	112.8
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	H

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**HIGH**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 1 **AFFF Release Area #:** AFFF 1

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.003	0.126	0.0
PFOA	0.0011	0.126	0.0
PFBS	0.00016	1.9	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.0**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	M
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	M
Limited	No potential for receptors to have access to contaminated soil	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Current FTA and Nozzle Testing Area - PRL 2	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary	
Brief Site Description:	The Current fire training area (FTA) was built near the Former FTA in 1999. The Current FTA includes a large-frame aircraft mock-up, an aircraft rescue firefighting (ARFF) simulator containing liquid and vapor propane, and a lined retention pond to the south of the aircraft. An underground pipe connected to the circular area that encompasses the aircraft mock-up directs wastewater generated during fire training exercises and stormwater to the retention pond. The retention pond is designed to evaporate any trapped propane that may be in the water from firefighting. The pond includes an overflow pipe that discharges water to the swampy area/unnamed tributary to the west via Outfall 008 and is covered by a National Pollutant Discharge Elimination System permit. The CRTC conducts training at the Current FTA approximately 10 times per year since 1999. Aqueous film forming foam (AFFF) has never been utilized during training activities; however, according to ANG personnel, one nozzle test (unknown quantity) was conducted at the Current FTA in April 2013 on the gravel by the aircraft mock-up.
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS. Soil samples collected adjacent to the FTA are from areas with exposed soils, while samples collected within the FTA are from the lined area.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL 2 is within base perimeter but is not in an additionally restricted access area within the base. Area is accessible to all base personnel. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 2 **AFFF Release Area #:** AFFF 2

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.026	0.04	0.7
PFOA	0.002	0.04	0.1
PFBS	0.0052	0.602	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.7
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	L

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**LOW**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 2 **AFFF Release Area #:** AFFF 2

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.035	0.126	0.3
PFOA	0.00051	0.126	0.0
PFBS	0.0002	1.9	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.3**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	M
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	M
Limited	No potential for receptors to have access to contaminated soil	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Aircraft Parking Ramp - PRL 3	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	The Aircraft Parking Ramp at the CRTC is located on the west, north, and south sides of the Base on the flight line. The ramps are used for parking and occasional fueling and minor maintenance of aircraft. According to CRTC personnel, routine nozzle testing using AFFF was conducted to verify foam production in the 1990s. These tests would have been done on the concrete Aircraft Parking Ramp to allow for visual verification. No particular place on the ramp was designated; however, CRTC personnel indicated that nozzle testing was known to have occurred on the northwest side of Apron 3 on Army National Guard property. Additionally, line purging of AFFF vehicles was done as necessary on the Aircraft Parking Ramp in the area of the Former Fire Station (Building 77) and Former Warehouse (Building W-1). Any AFFF released from nozzle testing or line purging would have been allowed to dissipate. The storm drain system for the northeast-trending portion of the Aircraft Parking Ramp (referred to as Apron 3 above) discharges to Outfall 003. Groundwater for this PRL was evaluated using the co-located well from PRL 8.
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS. PRL-3 is an asphalted aircraft parking area.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL 3 is an aircraft parking area with restricted access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation: Gulfport Biloxi Regional Airport

Site ID: PRL 3 **AFFF Release Area #:** AFFF 3

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFBS	0.0063	0.602	0.0
PFOA	0.075	0.04	1.9
PFOS	0.11	0.04	2.7

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	4.6
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	M

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 3 **AFFF Release Area #:** AFFF 3

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0016	0.126	0.0
PFOA	0.0003	0.126	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.0**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Former Fire Station (Bldg 77) - PRL 4	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	Building 77 was built in 1957 and served as the CRTC Fire Station until 2008 when it was demolished, and the Current Fire Station, Building 66, was built. The drains at Building 77 discharged to the storm sewer. AFFF was stored in ARFF vehicles. Surplus AFFF would have been stored here or at the Former Warehouse (Building W-1) during the time this building was actively used by the Fire Department. Two 55-gallon (gal) drums of AFFF, brought over from Keesler Air Force Base (AFB), were stored outside Building 77. One drum ruptured and its contents entered the storm drain. It is unknown what happened to the other drum, but CRTC personnel speculate that the other drum may have been moved to the Former Warehouse (Building W-1) for storage. Other than the release mentioned above, there are no other known releases of AFFF in or around the Former Fire Station. If any releases did occur within or around Building 77, the AFFF would have been washed down the storm sewer or left to dissipate.
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS. PRL-4 is an asphalted area adjacent to the aircraft parking ramp.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL-4 is an aircraft parking area with restricted access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 4 **AFFF Release Area #:** AFFF 4

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	71	0.04	1775.0
PFOA	6.6	0.04	165.0
PFBS	0.67	0.602	1.1

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	1941.1
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	H

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**HIGH**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 4 **AFFF Release Area #:** AFFF 4

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.18	0.126	1.4
PFOA	0.0006	0.126	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**1.4**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Current Fire Station (Bldg 66) - PRL 5	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	Building 66 was built in 2008 and is the current CRTC Fire Station. The Fire Station and its response vehicles are located in the western portion of the CRTC along the flight line, on the east side of Apron 1. The CRTC Fire Department uses AFFF in ARFF vehicles, which are stored within Building 66. Historically, the CRTC had two P-23 vehicles that carried 500 gal each of AFFF. At the time of the PA, the following vehicles were located at the CRTC Fire Department, along with their AFFF storage tank capacity: one engine, 25 gal; two P-19R vehicles, each 210 gal; one P-34 vehicle, 40 gal; one P-23 Stryker, 420 gal; and Foam Trailer 1,800 gal. The CRTC also has two P-18 vehicles that did not carry AFFF. The Fire Station has a gravity fed tank and piping system for AFFF with a 1,500 gal capacity with tanks that drip into a secondary containment. The tank and piping system are designed to service ARFF vehicles via gravity feed; however, according to CRTC personnel, the ARFF vehicles are also filled via a non-aspirating pump from Trailer 1. There are no records of AFFF nozzle tests; however, CRTC personnel noted routine testing on ARFF vehicles on the Aircraft Parking Ramp (PRL 3)
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS. PRL-5 includes both asphalted and grassy landscaped areas.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL 5 is within base perimeter but are not in an additionally restricted access area within the base. Area is accessible to all base personnel and fire station staff and escorted visitors. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 5 **AFFF Release Area #:** AFFF 5

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.63	0.04	15.7
PFOA	0.031	0.04	0.8
PFBS	0.02	0.602	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	16.6
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

CHF Value	CHF VALUE	M

Migratory Pathway Factor

Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor

Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 5 **AFFF Release Area #:** AFFF 5

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0073	0.126	0.1
PFOA	0.00088	0.126	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.1
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	L

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	M
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	M
Limited	No potential for receptors to have access to contaminated soil	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Former Warehouse (Bldg W-1) - PRL 6	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	The Former Warehouse (Building W-1) was built in 1957 and served as a warehouse until 2007 when it was demolished. Surplus AFFF would have been stored here or at the Former Fire Station (Building 77) during the time this building was used. One of the two 55-gal drums of AFFF brought over from Keesler AFB may have been moved into the Former Warehouse for storage after the other drum rupture. PRL 6 was evaluated using the co-located data from PRL 4 as they are geographically adjacent and PRL 4 is downgradient.
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS. PRL-6 is an asphalted area adjacent to the runway.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL-6 is located within the base boundary and is not otherwise restricted. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation: Gulfport Biloxi Regional Airport

Site ID: PRL 6 **AFFF Release Area #:** AFFF 6

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFBS	0.67	0.602	1.1
PFOA	6.6	0.04	165.0
PFOS	71	0.04	1775.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	1941.1
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	H

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**HIGH**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 6 **AFFF Release Area #:** AFFF 6

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0015	0.126	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.0
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	L

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L

Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Building 75 (Aircraft Hangar) - PRL 7	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	Building 75 (Aircraft Hangar), located east of the Aircraft Parking Ramp, was built in 2002. CRTC records indicate that an AFFF fire suppression system (FSS) was installed in the hangar when the building was built in 2002. At the time of the PA, the FSS consisted of five underwing turrets within the hangar and was supplied with AFFF by a 1,200-gal AFFF tank located in the AFFF Foam Room within the hangar. One 55-gal container and five 5-gal containers of 3% AFFF were stored in the AFFF Foam Room. Drains within the hangar and AFFF Foam Room go to a 3,000-gal oil-water separator (OWS) that is connected to the sanitary sewer system. The catch basins adjacent to the facility are connected to an underground drainage system which generally conveys runoff to the north. Annual testing of the FSS is conducted; however, only water is used. An F-16 aircraft crashed into the hangar in August 2009 causing the underwing system to activate (unknown quantity). Some of the AFFF was captured in the OWS and later recovered via a hazardous waste vacuum contractor. The AFFF that was not captured at the underground containment was left to dissipate on the Aircraft Parking Ramp, with some entering the storm sewer (Outfall 003). Additionally, a small release of AFFF occurred during pipeline maintenance in 2013.
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS. PRL-7 is an asphalted area. Soil samples were taken from a grassy strip adjacent to the Aircraft Parking Ramp north-northeast of Building 75.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL-7 is an aircraft hangar with restricted access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 7 **AFFF Release Area #:** AFFF 7

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.92	0.04	23.0
PFOA	0.05	0.04	1.3
PFBS	0.0067	0.602	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	24.3
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	M

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 7 **AFFF Release Area #:** AFFF 7

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0057	0.126	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.0
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CHF Value		CHF VALUE	L

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L

Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Gulfport Biloxi Regional Airport	**Date:**	10/14/2021
Location (State):	Mississippi	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	Outfall 003 - PRL 8	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Keith Freihofer	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	Outfall 003 (DA-003) is located in the northeast portion of the CRTC and includes the northern portion of the Aircraft Parking Ramp (Apron 3). Runoff from DA-003 flows beneath the public road to the east (Washington Avenue) where the road becomes Hewes Avenue. Outfall 003 is located across the road, outside the CRTC property, in a small culvert headwall approximately 20 yards downstream of the larger culvert in the Washington Avenue/Hewes Avenue drainage ditch, at the intersection of 54th Street. At the time of the preliminary assessment (PA) site visit in February 2016, standing water was observed in the wooded area. Soil data for the evaluation at PRL 8 used co-located data from PRL 3
Brief Description of Pathways:	The primary regional aquifers for the Gulfport area include the Catahoula, Hattiesburg, Pascagoula, Graham Ferry, and Citronelle. These aquifers consist of thick, lenticular beds of sand or gravel which are not continuous over large areas. The majority of groundwater is obtained from the Graham Ferry and Pascagoula aquifers. Both of these regional aquifers underlie the CRTC and are used for domestic, industrial, and public water supply, and both are surrounded by confining layers of clay. Both aquifers contain well fields operated by the City of Gulfport for water supply to the Airport and the CRTC. Although the Citronelle aquifer is the predominant water table aquifer in the region, it has not been encountered at the CRTC during historical investigations. The general groundwater flow direction at the CRTC is north-northwest. Depth to water in the six monitoring wells sampled during the SI ranged from 1.95 ft. BGS to 6.25 ft. BGS.
Brief Description of Receptors:	The localized water table aquifer underlying the CRTC is known as the Pamlico aquifer. The Pamlico aquifer is the uppermost aquifer and ranges in thickness from 0 to 75 ft. It is used locally for irrigation and limited water supply. The Pamlico aquifer has become contaminated with sewage or other potentially harmful constituents, has a rotten egg odor and brown tint, and is of insufficient quality for drinking water. Multiple domestic water wells were identified within one mile of the base, with additional potable wells likely located within four miles of the base. According to the EDR Report, there are some downgradient domestic use wells that are screened in the Citronelle aquifer (at approx. 30 ft. bgs). The majority of downgradient wells appear to be screened in deeper aquifers. A City of Gulfport Public Water Supply Well is listed as less than 0.5-mile north-northeast of the base and hydraulically downgradient. PRL 8 is located outside the base boundary fence on the opposite side of a public road. This PRL could be accessible to the public. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation Gulfport Biloxi Regional Airport

Site ID: PRL 8 **AFFF Release Area #:** AFFF 8

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.11	0.04	2.7
PFOA	0.075	0.04	1.9
PFBS	0.0063	0.602	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	4.6
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

CHF Value	CHF VALUE	M

Migratory Pathway Factor

Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor

Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	M
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation: Gulfport Biloxi Regional Airport

Site ID: PRL 8 **AFFF Release Area #:** AFFF 8

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOA	0.0003	0.126	0.0
PFOS	0.0016	0.126	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.0**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	M
Limited	No potential for receptors to have access to contaminated soil	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
	Soil Category	**LOW**