STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

USAG STUTTGART

Effective Date: July 2005	**USAG Stuttgart**	**Revision Date:** September 2024
Storm Water Pollution Prevention Plan (SWPPP)		
Document Owner: Environmental Division	**Update Requirements:** Annual	

USAG Stuttgart

September 2024

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APPROVALS

This Storm Water Pollution Prevention Plan (SWPPP) is an engineering and management strategy prepared specifically for the U.S. Army Garrison (USAG) Stuttgart to improve the quality of the storm water runoff and thereby improve the quality of receiving waters.

This SWPPP satisfies the requirement to develop and implement a storm water pollution prevention plan contained in the German Final Governing Standards (GFGS), Chapter 4, Wastewater, and Section 4.3.4.1. This plan must be updated annually.

Approved By:

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Executive Summary

This Storm Water Pollution Prevention Plan (SWPPP) is an engineering and management strategy prepared specifically for the USAG Stuttgart to reduce the pollutant load in storm water runoff and thereby improve the quality of receiving waters. The SWPPP consists of a series of steps and activities to identify potential sources of storm water pollutants and to implement best management practices (BMPs). BMPs can range from low-cost measures, such as good housekeeping practices, to higher cost measures, such as the construction of secondary containment for a tank. Several higher cost BMPs are identified in this SWPPP and are summarized below.

Since the last update, significant progress has been made in keeping stormwater infrastructure inspections up to date and identifying deficiencies. Diligence is now required to correct deficiencies to ensure the functionality of existing BMPs.

The structural and potentially high-cost BMPs identified throughout USAG Stuttgart during the 2024 SWPPP update, with few exceptions, consist of the repair of existing infrastructure. Numerous major deficiencies were identified during General Inspections of the Oil Water Separators (OWS) around the garrison which must be repaired to ensure their functionality. Units requiring major repairs according to current maintenance reports include:

- Stuttgart Army Airfield (SAAF): OWS # 7722-3
- Panzer Kaserne: OWS # 7725-4
- Patch Barracks: OWS # 7727-4
- Kelley Barracks: 7737-2

Additionally, OWS # 7727-3 at the Patch Barracks Power Plant #2 is beyond repair and a replacement is programmed.

At Kelley Barracks, further structural BMPs which are recommended for Kelley Barracks are the addition of an OWS to the parking area behind Building 3320 which contains several shops performing vehicle maintenance. The addition of an OWS would be particularly needed if disabled vehicles are parked or repairs are conducted in the parking lot. An additional BMP would be the enlargement of the 405th AFSB BASOPS workspace to allow indoor maintenance of oversized equipment. The unit must currently send such equipment offsite if it does not fit in the current work center.

It is recommended to review and re-structure the drainage system at the Family Morale, Welfare, and Recreation (FMWR) car wash at Patch Barracks, to ensure all water associated with the wash system is routed through the OWS and to the combined sewer system. It is also recommended to curb and treat the bulk fuel transfer area at Power Plants #1, #2, and #3 with functional OWS. Finally, vegetation growth was observed in the secondary containment for Power Plant #2, which can indicate that the containment is no longer tight.

At the SAAF, it is recommended to treat runoff from the fire department wash rack with an OWS before it enters the combined sewer as well as renewing the surface of the wash rack which has numerous cracks and vegetation growth. It is additionally, at the mobile fuel point near Facility 3215 it is recommended to curb and cover the fuel transfer area and treat runoff from that location with an OWS. The fuel point at the Golf Course should also be covered with a sealed roof structure to protect the Fueling Pad area from storm water.

Finally, it is generally recommended to improve the accuracy of the stormwater infrastructure maps though surveying, particularly at Robinson Barracks.

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USAG STUTTGART STORM WATER POLLUTION PREVENTION PLAN

RECORD OF REVISIONS

This SWPPP was originally prepared in July 2005 and must be reviewed and updated annually in accordance with Section 4.3.4.1 of the Final Governing Standards for Germany (GFGS). To fulfill this requirement, the following table is provided for tracking revisions to this plan. Revisions may include:

- new activities;
- discontinued activities; and/or
- changes at an existing activity, such as the use of a new fuel or solvent.

It may also be necessary to amend this SWPPP to include more effective pollution prevention technologies and BMPs, if implementation will reduce the likelihood of storm water contamination.

Revision No.	Date	Name and Title	Signature	Pages Affected
1	Nov 2006	Joseph Waring DPW Environmental Engineer		As per Sec. 4.2 of this plan, an annual activity & site eval. was performed in Nov 06
2	Dec 2006	Joseph Waring DPW Environmental Engineer		Cover, ASG to USAG throughout, and various other changes Pgs. 3-5, 3-6, 4-17, Appendix 2
3	Dec 2006	Joseph Waring DPW Environmental Engineer		Wash Rack near Bldg 2992 has been permanently taken out of service
4	Feb 2010	DPW Environmental Division and AMEC Earth & Environmental GmbH		All
5	May 2013	Anja Emmenecker, DPW Environmental Division		Cover, Table of contents, Chapters 1, and 2
6	Dec 2015	DPW Environmental Division and URS International Inc.		All
7	Dec. 2017	DPW Environmental Division and AECOM International Inc.		Predominantly up-date of storm water situation at Panzer Kaserne and Kelley Barracks

Revision No.	Date	Name and Title	Signature	Pages Affected
8	June 2024	DPW Environmental Division and Tetra Tech Inc.		Comprehensive Update. Significant changes include Panzer Kaserne Vehicle Maintenance area

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LIST OF ABBREVIATIONS

AAFES	Army & Air Force Exchange Service
ACP	Access Control Point
AE	Army in Europe
AFSB	Army Field Support Brigade
AST	Aboveground Storage Tank
BMC	Base Maintenance Contract
BMP	Best Management Practice
DLA	Defense Logistics Agency
DPW	Directorate of Public Works
ED	Environmental Division
EO	Executive Order
FGDC	Federal Geographic Data Committee
FMWR	Family and Morale, Welfare and Recreation
FSG	Airport Stuttgart ("*Flughafen Stuttgart*")
GFGS	German Final Governing Standards
GSE	Ground Support Equipment
HM	Hazardous Material
HW	Hazardous Waste
HWAP	Hazardous Waste Accumulation Point
HWSA	Hazardous Waste Storage Area
LTA	Local Training Area
MEP	Maximum Extent Practicable
MOGAS	Motor Gasoline
MP	Military Police
NCO	Non-Commissioned Officer
NSWU/2	Naval Special Warfare Unit 2
O&M	Operation and Maintenance
OWS	Oil/Water Separator
POC	Point of Contact
POL	Petroleum, Oil, and Lubricant
POV	Privately Owned Vehicles
SAAF	Stuttgart Army Airfield
SDS	Spatial Data Standards
SFG	Special Forces Group
SWPPP	Storm Water Pollution Prevention
SWPPP	Storm Water Pollution Prevention Plan

ABBREVIATIONS
(*continued*)

TOC	Total Organic Content
TLSC-E / MAV	Theater Logistics Support Center Europe / Maintenance Activity Vilseck
USAG	United States Army Garrison
USAREUR	United States Army in Europe

STORM WATER POLLUTION PREVENTION PLAN

FACT SHEET

The Storm Water Pollution Prevention Plan (SWPPP) is an engineering and management strategy to reduce pollutants in storm water runoff at the USAG and thus improve the quality of receiving waters. The SWPPP identifies potential sources of storm water pollutants (such as the practices shown in these photographs) and Best Management Practices (BMPs) to prevent pollution of storm water.

The basic components of plan development and implementation are shown in the flow diagram on the following page.

SWPPP DEVELOPMENT PROCESS

Site Assessment
- Develop a site map
- Identify potential pollutant sources
- Identify potential pollutants

BMP Identification
- Baseline, activity-, site-specific BMPs
- Source reduction
- Source controls

SWPPP Implementation
- Implement appropriate controls and BMPs

Evaluation / Monitoring
- Complete BMP Checklists
- Maintain records, internal procedures
- Review / revise SWPPP annually

STORM WATER BMPs

BMPs reduce pollutant loads in storm water through source reduction (spill prevention, good housekeeping), source control (material segregation, water diversion), and treatment (structural BMPs) to lower pollutant loads prior to discharge.

TRAINING

The Environmental Division coordinates training on the SWPPP for personnel who handle hazardous substances or perform activities that could result in direct and/or indirect releases of hazardous substances to storm water.

EXAMPLE STRUCTURAL BMPs

Extended Detention Basin

Continuous Deflection Separator

Media Filters

Biofiltration Swales and Strips

Multi - Chambered Treatment Train

1 INTRODUCTION

This Storm Water Pollution Prevention Plan (SWPPP) is an engineering and management strategy prepared specifically for the United States Army Garrison (USAG) Stuttgart to reduce the pollutant load in storm water runoff and thereby improve the quality of receiving waters.

The SWPPP consists of a series of steps and activities to identify potential sources of storm water pollutants and to implement best management practices (BMP). BMPs are processes, procedures, and schedules of activities, prohibitions on practices, and other management practices that could prevent or reduce the concentration of pollutants in storm water runoff.

1.1 PURPOSE

This SWPPP satisfies the requirement to develop and implement a SWPPP contained in Section 4.3.4.1 of the Final Governing Standards for Germany (GFGS). Each of the components of this SWPPP correspond to GFGS requirements, as documented in Table 1-1.

This SWPPP has been prepared in accordance with standard engineering practices. The pollution prevention approach in this SWPPP focuses on three major objectives.

1. Identifying sources of pollution potentially affecting the quality of storm water discharges from areas of the USAG Stuttgart associated with industrial and/or construction activities.
2. Describing practices to minimize and control the pollutant load in storm water discharges from areas of the USAG Stuttgart associated with industrial and/or construction activities.
3. Training personnel to ensure effective implementation of the SWPPP. Personnel who handle hazardous substances or perform activities that could contribute pollution to wet weather events should be trained in the components and objectives of the SWPPP.

The Directorate of Public Works (DPW), Environmental Division (ED) is responsible for maintaining an updated and accurate version of the SWPPP. They should maintain the updated document in a permanent location to facilitate ongoing interdepartmental reviews, public inquiries, or unannounced reviews conducted by a regulatory agency.

Table 1-1. Regulatory Cross Reference Matrix

Storm Water Pollution Prevention Plan (SWPPP)			
GFGS Section	**Description**	**SWPPP Section**	**Remarks**
C4.3.4.1	Develop and Implement SWPPP	2.0 / 3.0 / 4.0	
C4.3.4.2	Employee Training	5.0	
C4.3.4.3	Licensed Wastewater Treatment Facility	3.3	N/A

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2 KEY PERSONNEL

2.1 USAG Stuttgart Commander

The USAG Stuttgart Commander is responsible for all activities at the Garrison, including ensuring compliance with the SWPPP. The USAG Stuttgart Commander shall also be responsible for approval of any major revisions to the SWPPP. Minor revisions may be made by the Storm Water Pollution Prevention (SWPP) Manager without the approval of higher command.

2.2 SWPP Manager

The SWPP Manager, identified in Table 2-1, is responsible for implementing the SWPPP, preparing annual revisions to the SWPPP, and ensuring compliance with SWPPP requirements at all tenant/unit facilities throughout the USAG Stuttgart. The SWPP Manager shall review plans for new construction or remodeling for erosion control, maintenance, and recommended BMPs, to determine if a revision to the SWPPP is required.

The SWPP Manager shall also coordinate training in storm water pollution prevention, to include the elements identified in Section 3.

Table 2-1: SWPP Key Personnel

Position/Task	Unit/Activity	Name	Telephone Number	E-mail Address
USAG Stuttgart Commander	USAG Stuttgart Commander	COL G. Kirk Alexander	596-1300	N/A
Director of Public Works	DPW	MARISA K. BARRIE	596-6101	N/A
SWPP Manager	DPW-ED	PAT GRIFFIN	596-6136	patrick.m.griffin26.civ@army.mil

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3 SITE OVERVIEW

A review of the industrial activities occurring at the USAG Stuttgart is necessary to facilitate pollution prevention. During this evaluation, the Garrison identifies industrial or construction activities that could potentially affect the quality of storm water discharges from the USAG Stuttgart (both point sources and non-point sources). The Garrison then identifies the specific pollutants associated with these activities. The industrial activities and pollutant sources at the USAG Stuttgart are identified on base maps including the outline of the Garrison storm drainage system. The maps are attached as Appendix 1.

3.1 INDUSTRIAL ACTIVITY SUMMARY

The USAG Stuttgart commands six geographically separate installations that house activities considered industrial in nature and that will be addressed in this SWPPP. The installations are:

- Kelley Barracks [GE44F],
- Panzer Kaserne [GE643],
- Patch Barracks [GE656],
- Stuttgart Army Airfield (SAAF) [GE19B],
- Kornwestheim Golf Course [GE46J], and
- Robinson Barracks [GE72T].

The remaining installations under USAG Stuttgart command do not support activities that are industrial in nature and will not be considered in this plan.

The below activities are classified as industrial in nature. Changes to the type of activities being performed and/or their locations are included in the below activity summary and in the Activity and Site Evaluation results in Tables 4-1a. to Table 4-1f.

3.1.1 Aircraft Ground Support Equipment Maintenance

Storm water discharges covered in this category include runoff from areas where the following aircraft ground support equipment maintenance activities may occur: fluid changes, mechanical repairs, parts cleaning, sanding, refinishing, painting, washing, storage of vehicles and equipment waiting for repair or maintenance, and storage of the related materials and waste materials such as oil, fuel, batteries, tires, or oil filters.

Aircraft ground support equipment (GSE) storage and minimal maintenance occurs only at Building 3227 (Hangar 5) at the SAAF.

3.1.2 Aircraft / Runway Deicing Operations

Storm water discharges covered in this category include runoff from areas where aircraft deicing operation occur. These activities include deicing fluid storage, deicing fluid handling, and deicing of aircraft.

According to the SAAF Airfield Manager, aircraft deicing is not conducted at the SAAF. When aircraft require deicing, they are taxied to areas designated and controlled by Flughafen Stuttgart (FSG) and deicing is conducted in accordance with their requirements.

Runway deicing operations occur anywhere along the flight line and taxiways at SAAF. Deicing of taxiway in front of Hangars 1 through 4 is permitted only when the gate valve to the rainwater retention

basin South is closed according to the above cited memorandum. Deicing operations are the responsibility of the host airport, FSG. FSG is responsible for any leaks or spills and any mitigation efforts that could result from leaks and spills of the deicing fluid.

3.1.3 Aircraft / Vehicle Fueling Operations

Storm water discharges covered in this category include runoff from areas where fueling operations occur for aircraft, motor vehicles, ground support equipment, various fixed generators, and fuel-oil-fired heaters. These activities include fuel delivery to the USAG Stuttgart site, aircraft fuel storage, refueler and pump cart operations, fueling and defueling of aircraft, diesel and motor gasoline (MOGAS) storage, and fuel dispensing.

Aircraft fueling operations are the responsibility of the host airport FSG, which is responsible for any fuel leaks or spills and any mitigation efforts that could result from a fuel leak or spill. According to the Airfield Manager, aircraft are fueled at their designated parking locations on the airfield. According to airfield policy, fueling is only permitted if the entire footprint of the aircraft is located on paved surface or hardstand. Aircraft fueling should also only be conducted on OWS-connected surfaces.

Vehicle fueling occurs at all installations. Army & Air Force Exchange Service (AAFES) operates a gas station at Patch Barracks (Building 2349). Combined Defense Logistics Agency (DLA) and AAFES fuel points are operated at Kelley Barracks (Building 3324). A DLA gas station is operated at Panzer Kaserne (Building 2953) and a Family Morale, Welfare & Recreation (FMWR) fuel point is operated at Kornwestheim Golf Course (north of Building 977A). An unoccupied mobile fuel point is present near Building 3215 at SAAF. Contractors also occasionally operate small mobile fuel points for their equipment, machines, and vehicles.

3.1.4 Aircraft / Vehicle Maintenance and Repair

Storm water discharges covered in this category include runoff from areas where aircraft and vehicle maintenance activities occur, including fluid changes, mechanical repairs, tire and wheel maintenance, parts cleaning, sanding, refinishing, painting, washing, storage of aircraft and vehicles waiting for repair or maintenance, and storage of the related materials and waste materials such as oil, fuel, batteries, tires, or oil filters.

Outdoor aircraft maintenance occurs on the maintenance pad just north of Hangar 2 (Building 3220) at SAAF; it is also possible that maintenance activities take place in front of the hangars. Hangar 3 (Building 3222) was used for storage and recreation during the 2024 up-date. However, it cannot be excluded that maintenance could occur in front of the hangars.

Vehicle maintenance occurs at all installations except for Patch Barracks and Robinson Barracks. Vehicle maintenance and repair primarily occurs indoors.

3.1.5 Aircraft / Vehicle Washing

The primary discharge from aircraft and vehicle washing activities is direct runoff from wash racks and other outdoor wash areas.

Aircraft washing only occurs on the aircraft wash rack northwest of Building 3226 at SAAF with the associated OWS system which discharges to the off-post Rainwater Retention Basin South and is strictly enforced. Vehicle wash racks are maintained at all installations except for Robinson Barracks.

3.1.6 Bulk Fuel Storage Areas

Storm water discharges covered in this category include runoff from areas of bulk fuel storage, such as aboveground storage tanks (AST). This activity includes aircraft and vehicle fuel storage, waste fuel storage, heating oil storage, boilers and generators, and mobile tankers.

Aircraft fuel storage at SAAF is managed by the FSG. Petroleum, oil, and lubricant (POL) storage exists throughout all installations, except for Robinson Barracks. A list of POL storage locations is maintained by the DPW-ED and should be referenced for the most up-to-date information on tank locations and status.

3.1.7 Construction / Land Disturbing Activities

Storm water runoff from construction/demolition activities can be detrimental to the water quality of a receiving stream. Sediment runoff caused by the erosion of exposed soil (and entrainment of contaminants) is the primary source of water quality impacts generated during construction activities such as clearing, grubbing, grading, and landscaping.

Construction / land disturbing activities occur on an irregular, as-needed basis at the USAG Stuttgart installations. Large construction projects must be reviewed by the DPW-ED prior to breaking ground. The DPW-ED will determine if the construction plans are in accordance with the environmental GFGS and Army regulations for new construction.

Major construction projects planned or underway during the 2024 up-date include the Patch sewer line replacement project where major renovation and restoration of the storm and sewer system will be conducted, upgrade of Power Plant 2 at Patch Barracks, renovation of the Child Care Center at Patch Barracks, upgrade of the sewer lines at Robinson Barracks, and construction of a new commissary at Panzer Kaserne. Smaller construction projects were also underway throughout the Garrison. Requiring and enforcing BMPs such as silt fences and stabilized construction entrances for construction sites will reduce soil entering and clogging the combined sanitary and storm sewer collection systems.

3.1.8 Corrosion Control Activities

Storm water discharges covered in this category include runoff from areas where corrosion control processes occur. The activities associated with corrosion control include aircraft washing operations, aircraft and aircraft parts painting and paint removal, and paint and related product storage.

Large-scale painting operations are contracted out rather than performed by USAG Stuttgart personnel. Paint and related product storage is in accordance with Hazardous Substance Storage regulations and is managed by the DPW-ED.

3.1.9 Hazardous Substance Storage

Storm water discharges covered in this category include runoff from hazardous substance storage, handling, and disposition areas directly exposed to rainfall, such as outdoor storage of product drums or containers. Hazardous substances include both hazardous materials and hazardous wastes.

The USAG Stuttgart maintains one Hazardous Waste Storage Area (HWSA) at Kelley Barracks (Building 3371) and Hazardous Waste Accumulation Points (HWAP) throughout each of the other installations. Hazardous Waste (HW) is managed by the DPW-ED with all HW disposal is contracted out. Hazardous Materials (HM) are stored throughout the installations and managed by their respective

units. The 405th Army Field Support Brigade (AFSB_ Reuse Center at Panzer Kaserne manages the collection of and redistribution of unused HM.

3.1.10 Outdoor Material Storage Areas

Storage areas for new and used materials such as oil, paints, batteries, tires, and filters are included in this plan when either directly exposed to rainfall or when discharges (via building drains or spills to the ground surface) can enter the drainage system.

There are few outdoor material storage areas in the USAG Stuttgart. Roofed structures for material storage do exist at Kelley Barracks (e.g. open storage Building 3370 at DPW Yard); however, due to surface drainage patterns in these areas, there is potential for the materials stored there to be exposed to storm water. Hazardous substances such as antifreeze, oil, and/or cleaner are stored in a partly roofed storage area associated with the AAFES Gas Station (Building 2349) at Patch Barracks. Released materials may be exposed to storm water and/or enter the drainage system. Storage of propane cylinders in outdoor cages exposed to precipitation is prevalent throughout the garrison but of minimal risk to storm water.

An additional outdoor material storage area was established near Buildings 2338 and 2366 at Patch Barracks. Facility management and ground keepers store various building materials including soil and/or sand at this location. During rain events, this soil/sand material is drained with the surface water run-off into the drainage system; the drainage system is predominantly clogged in this area.

3.1.11 Pesticide and Herbicide Operations

Storm water discharges covered in this category include runoff from areas where chemical pesticide and herbicide applications occur. The associated activities include the preparation and storage of pesticides and herbicides for application.

Kornwestheim Golf Course is the only installation that directly manages pesticide and herbicide operations; storage, handling, and transfer is exclusively conducted in roofed and lockable areas of the Building Complex 979. Pesticide and herbicide application at Robinson Barracks is contracted out and is executed on a just-in-time basis.

3.1.12 Power Production

Storm water discharges covered in this category include runoff from areas where power production processes occur. These activities include generation and distribution of electrical power in support of the Garrison mission, stability and support operations, and emergency operations.

Power production occurs at Patch Barracks at three separate power plants. Diesel ASTs provide the fuel. The AST at Power Plant #3 (adjacent to Building 2374) is covered with a metal roof structure. Power Plant #2 (Building 2316) and the associated infrastructure is currently being upgraded into a larger and a more energy efficient plant. Mobile power generators are facilitated at Kelley Barracks, SAAF, Patch Barracks, and Panzer Kaserne.

3.1.13 Vehicle Storage Yards

Storage areas for vehicles and related support equipment, such as batteries, tires, and filters, are addressed in this plan when either directly exposed to rainfall or when discharge (via building drains or spills to the ground surface) can enter the drainage system.

Vehicle storage yards exist at Kelley Barracks, SAAF, Kornwestheim Golf Course, and Panzer Kaserne. Most long-term vehicle storage at the USAG Stuttgart occurs at Panzer Kaserne. At Kelley Barracks, vehicles are parked at the DPW Yard at Building 3370 and a large parking lot for privately

owned vehicles (POV) is in the center of the installation. The Transportation Motor Pool of the 405th AFSB is situated at the SAAF as well as a lot for unserviceable vehicles. A closed Golf Caddy Garage (Building 980) was built at Kornwestheim Golf Course.

The typical pollutants associated with the industrial activities listed above are presented in a matrix format in Table 3-1.

3.1.14 Typical Pollutants

Table 3-1. Typical Pollutants Associated with Industrial/Construction Activities

ACTIVITY	POL and Waste POL	Solvents, Antifreeze, Deicing Chem.	Battery Acid	Pesticides and Herbicides	Detergents and Cleaners	Oil and Latex Paints, byproducts	Sediment and Particulates
Aircraft GSE (1) Maintenance	X	X	X				
Aircraft / Runway Deicing		X					
Aircraft / Vehicle Fueling Operations	X						
Aircraft / Vehicle Maintenance and Repair	X	X	X				
Aircraft / Vehicle Washing	X	X			X		X
Bulk Fuel Storage Areas	X						
Construction Activities	X						X
Corrosion Control Activities		X			X	X	
Hazardous Substance Storage	X	X	X	X	X	X	
Outdoor Material Storage Areas	X	X	X	X	X	X	X
Pesticide Operations				X			
Power Production	X						
Vehicle Storage Yards	X	X	X				X

Notes:
(1) GSE - Ground Support Equipment

3.1.15 Other Industrial Activities and Pollution Sources

During the 2023 site walk, the following additional operations or non-point sources where observed:

- Road salt storage facilities (e.g., bunkers or silos) were observed in Robinson Barracks (northeast of Building 146), at Kelley Barracks (contractors' area north of DPW Yard), Patch Barracks (near Bldg. 2339), and Panzer Kaserne (east of Building 2952). These facilities are managed by contractors.
- Road salt application occurs throughout USAG Stuttgart during the winter season on road surfaces, parking lots, and walkways. Although this application is not industrial in nature, it has a measurable impact on the storm water quality. The salt will be potentially discharged with the storm water into open water bodies and the environment via the outfalls such as the new Stuttgart Elementary and High Schools and the Panzer Hotel (both are located on Panzer Kaserne). In accordance with agreements with the local environmental authority, road salt application is tracked and stormwater outflows are monitored at the Stuttgart School and Panzer Hotel outfalls. Chemical analyses continue to show that ion concentrations and electric conductivity readings appear to be elevated in the discharged storm waters during the winter season when compared to non-winter periods. Application of salt represents an alteration of the physical and chemical conditions of the storm water. This is a violation of applicable storm water discharge regulations and the storm water discharge permits; only unaltered rain water can be discharged into open water bodies and the environment. Elevated electrical conductivities and ion concentrations may pose a threat to the flora and fauna of the affected creeks, ponds, and the environment. According to the regulations, split and/or sand should be used as an alternative for deicing purposes. This topic is not considered individually for the installations rather in Section 4 because salt application for deicing purposes is conducted throughout the USAG by the responsible contractor.
- Although routine maintenance and inspections of OWS are performed as required, several separators require major repairs and lack functionality.
- Some gullies, storm water inlets, linear storm water drainage inlets, etc. are not well maintained and are filled with soil, sediments, leaves, and dirt – particularly in areas with land disturbing activities / construction. BMPs which would prevent such issues were not observed during the site walks. Regular inspections and cleaning is required to maintain the functionality of the drainage system.
- Fertilization is conducted frequently at the Kornwestheim Golf Course. Granular fertilizer is stored and mixed in a locked shed at the Building Complex 979 and spread out at the golf greens (this observation dates to the 2015 up-date). Application of fertilizer should be minimized to protect storm water.

3.2 STORM WATER DRAINAGE SUMMARY

In addition to identifying industrial activities throughout the USAG Stuttgart, it is important to locate these activities in relation to any areas where storm drainage may flow off-post rather than to the sanitary sewer during heavy rain. The relative locations of the potential sources and drainage will assist in selecting BMPs that are appropriate to the surrounding environment.

For purposes of this plan, drainage areas and associated outfalls regarding flow that may not drain to the sanitary sewer system were identified for each industrial area. These drainage areas and outfalls were developed using available mapping of the Garrison, including the existing storm sewer systems and topographic contours. All industrial activities are located within these defined

drainage areas. The combined storm and sanitary sewer systems, overland flow paths, drainage areas, outfalls, and receiving stream(s) are noted on the USAG Stuttgart maps included in Appendix 1.

Most of the storm water from Patch Barracks and Robinson Barracks flows to the respective local wastewater treatment plants; most of the storm water flow from SAAF is directed to subsurface drainage beds or to the receiving "*Katzenbach*" Creek. Storm water at Panzer Kaserne is discharged either to open water bodies or to the local wastewater plant. At Kelley Barracks, storm water is predominantly discharged to the receiving "*Koersch"* and "*Weidach"* Creeks. Specific outfall information for flow that may not drain to the sanitary sewer is provided in Appendix 2, including the assigned outfall number, associated industrial activities, building and structure numbers, and the receiving stream.

Changes to the stormwater and sewer infrastructure since the previous (2017) SWPPP were identified from interviews with DPW personnel in the Environmental Division, Operations and Maintenance (O&M) Division, and Utilities Branch, review of provided maps and plans, and interviews and observations during site visits. These changes to the stormwater infrastructure and relevant industrial activities at USAG Stuttgart since the previous SWPPP Update include the following:

- Sewer lines at Kelley Barracks along Maple Street, Spruce Street, and Building 3310 were replaced. According to DPW O&M points of contact (POC), this project upgraded and restored functionality of existing infrastructure. This existing infrastructure repair has minimal impact to stormwater pollution prevention.
- Building 2926 on Panzer Kaserne, the former FMWR Auto Skills Center, was demolished. This project displaced several industrial activities associated with vehicle maintenance and took one wash rack and OWS out of service.
- A new OWS was installed in 2022 on Panzer Kaserne near Building 2958. It was not yet on the 6-month maintenance item list at the time of the O&M interviews and should be added.
- The discharge permit for the Panzer Hotel rain retention basin is under review. The terms of the permit will need to be incorporated into future plans once responsibilities have been clarified, specifically regarding the base maintenance contract (BMC) tasks.
- OWS #7737-5 is no longer on the BMC routine inspection list and is presumed no longer in place. The associated rain retention basin remains.
- OWS #7725-1 at the Holding Yard with Wash Rack at Building 2928 is inactive. The General Inspection was not performed in 2022 and it scheduled for permanent shut down.
- OWS #7725-2 was removed. It has been removed from the list in this plan.
- OWS #7725-4 at the Hard Stand at Building 2966 was repaired and functionality was restored in 2018/2019.
- Substantial defects were identified for OWS #7725-6 during the April 2022 inspection and immediate decommission is required. The OWS was previously identified as abandoned but remains connected to an in-use industrial area.
- OWS #7725-11 inside Building 2968 was associated with bilge water treatment but was shut down and removed 5 Feb 2020.
- OWS #7725-12, which is connected to the FMWR Vehicle Maintenance bays at Building 2930 was added to the plan.

- OWS #7727-3 at the Power Plant #2 at Bldg. 2316 is inactive as it is damaged beyond repair and programmed for replacement.
- (Underway) Sewer lines are being upgraded at Patch Barracks. According to DPW O&M Division POCs, this project repairs and restores functionality to existing infrastructure with minimal impact to storm water. At the time of writing, sediment control measures are recommended to reduce particulate pollution from the construction activities.
- (Underway) Power Plant 2 (Bldg. 2316) at Patch Barracks is undergoing a significant upgrade. This project replaces generators and addresses deficiencies associated with the facility. Upon completion the associated BMPs for power production and bulk fuel storage should be re-assessed.
- (Underway) The Child Care Center is under renovation. This facility update is not significant to the SWPPP after completion. At the time of writing, sediment control measures are recommended to reduce particulate pollution from the construction activities.
- (Planned) Construction of new commissary at Panzer Kaserne. BMPs associated with this project are expected to impact future SWPPPs but the project remains in planning at the time of writing.

The storm drainage systems of each installation are discussed below.

3.2.1 Kelley Barracks

Storm water is predominantly drained by a separate storm sewer system. A storm water drainage divide splits the Barracks in two, with the northwest corner draining through the North Storm Water Retention and Sedimentation Basin and the remainder of the Barracks draining to the South Storm Water Retention Basin (see **Appendix 1 - Figure A-1.1**). The two (2) storm water retention basins serve as outflow control devices. Storm water from the Access Control Point (ACP)(opened in January 2017) is collected in an underground cistern, and reportedly is pumped (outflow controlled) to the discharge line from the South Storm Water Retention Basin to the *Koersch* Creek (see **Appendix 1 - Figure A-1.1**).

Outflow from the northern portion of the installation enters the *Weidach* Creek and eventually the *Koersch* Creek. The majority of the storm water in the north is collected and discharged to the North Storm Water Retention and Sedimentation Basin. This facility itself acts as an oil-water-separator and as an outflow control device. The basin connects to the *Weidach* Creek via outfall No. 001A and an underground drainage pipe, which predominantly runs outside of the installation boundary. The northern Spruce Street discharges directly to an open ditch via Outfall No. 001B (see **Appendix 1 - Figure A-1.1**). This open ditch connects to the drainage pipe of Outfall No. 001A off-post (see Outfall No. 001C on **Appendix 1 - Figure A-1.1**).

Outflow from the southern portion of the base eventually enters the *Koersch* Creek via the South Storm Water Retention Basin and Outfall No. 002 (**Appendix 1 - Figure A-1.1**). An OWS is not associated with Outfall No. 002 of the South Storm Water Retention Basin to the *Koersch* Creek and the ACP cistern. The drainage to the *Koersch* Creek consists partly of an underground pipe but is also in parts an open ditch.

Although the drainage lines to the *Weidach* (northern part) and the *Koersch* (southern part) are running predominantly outside of the site, surveillance, maintenance, and repairs are the responsibility of the USAG Stuttgart. The garrison initiated a major renovation and restoration program for the sewer / storm water systems at Kelley Barracks in 2017 to restore drainage lines to the *Koersch* and *Weidach* Creeks and replace and/or restore storm water lines.

There are two active OWS integrated into the storm drainage system at strategic locations across the Barracks.

- OWS #7737-2 is associated with the Wash Rack north of Building 3390 and discharges to the municipal sewer system and ultimately to the wastewater treatment plant *Moehringen* (Outfall No. 003 on **Figure A-1.1**). The OWS #7737-2 was replaced during the 2016 sewer project at Kelley Barracks but has outstanding deficiencies identified during the 2022 General Inspection.
- OWS #7737-6 is associated with the AAFES / DLA Gas Station (Building 3324).

3.2.2 Panzer Kaserne

Storm water is either drained by a combined sanitary and storm sewer collection system at Panzer Kaserne, infiltrated to the ground (e.g., Panzer Exchange), or discharged to open water bodies (Panzer Hotel and new Stuttgart Elementary and High Schools). All storm water associated with industrial activity areas flows to the Wastewater Retention Basin located to the west and outside the fenceline of the horseshoe-shaped Kaserne (see **Appendix 1 - Figures A-2.1** or **A-2.2**). Combined sanitary and storm water from the northern part of the Panzer Kaserne discharges via Outfall No. 001 into the Wastewater Retention Basin (**Appendix 1 - Figure A-2.1**). Combined sanitary and storm water from the southern part of the Panzer Kaserne discharges via Outfall No. 002 into the same Wastewater Retention Basin (**Appendix 1 - Figure A-2.2**). The Wastewater Retention Basin discharges to the local wastewater treatment plant Böblingen.

Storm water from the roof of the Panzer Exchange (Bldg. 2903) is discharged to a rainwater retention and infiltration basin north of the building; during major rain events, the storm water is also discharged to the combined sewer system via an overflow (**Appendix 1 - Figure A-2.1**).

Drains located at the western (Outfalls No. 003, 004, and 005) and eastern (Outfalls No. 006 and 007) end of the road that borders the southern edge of the Kaserne drain directly to a drainage ditch just outside the Kaserne's southern fence line (**Appendix 1 - Figure A-2.2**).

Storm water from the driveway, parking lot, walkways, and roof of the new Stuttgart Elementary and High Schools (Bldgs. 3080 and 3081) drain through an underground storm water storage basin or a fire water / rain water reservoir and via Outfalls No. 008A and 008B (emergency overflow) directly to the protected, open ditch "*Waldklinge*" just outside of the Kaserne's southern fence line and on the Böblingen Local Training Area (LTA) (**Appendix 1 – Figure A-2.3**). Down-gradient, there are several protected ponds and biotopes that receive the storm water from the schools.

Storm water collected from the roof, walkways, driveway, and the parking lot of the Panzer Hotel (Bldg. 2905) is collected and discharged via a storm overflow shaft, a successive pre-treatment shaft with constant water table into an open rainwater retention basin located to the south of the hotel complex (**Appendix 1 – Figure A-2.1**). Rain water infiltrates into the soil and is drained through three underground drainage pipes into a collection shaft at the eastern end of the basin. The storm water discharges via outfall No. 009 to the open ditch "*Wolfsburger Hau*" outside of the installation (**Appendix 1 – Figure A-2.1**) and eventually discharges into the down-gradient Ganssee Lake.

Panzer Kaserne is elevated in respect to the land immediately surrounding it. There may be some minor off-post storm water flow from areas close to the installation boundary and other areas during very heavy rains.

The following six (6) active OWSs are integrated into the combined sewer system at strategic locations throughout the Panzer Kaserne:

- #7725-3 at the Wash Rack at Building 2935B;
- #7725-4 at the Hard Stand at Building 2966; deficiencies were repaired and functionality was restored in 2018/2019.
- #7725-7 at the DLA / 405th AFSB Gas Station (Building 2953);
- #7725-10 at the Wash Pad at Building 2969; and
- #7725-12 for the Vehicle Maintenance bays at Building 2930.
- New OWS for the Vehicle storage and maintenance area at Building 2958

The OWS #7725-1 at the Holding Yard with Wash Rack at Building 2928 is inactive. The General Inspection was not performed in 2022 and it is scheduled for permanent shut down.

OWS #7725-6 at the south side of Building 2935; is inactive due to serious deficiencies identified in the 2022 DIN 1999 inspection. Decommissioning was recommended in the inspection report.

OWS #7725-11 inside Building 2968 was associated with bilge water treatment but was shut down and removed 5 Feb 2020.

3.2.3 Patch Barracks

Storm water is drained by a combined sanitary and storm sewer collection system at Patch Barracks. Drainage from the majority of the Barracks (including all areas associated with industrial activities) flows to the northeast (Outfall No. 001 on **Appendix 1 - Figure A-3**). Drainage from *Kurmäker Straße*, east of the eastern side of Kefurt Loop, and along "*Katzenbach Straße*" from the Main Gate south drains to the southeast (Outfall No. 002 on **Appendix 1 - Figure A-3**). Almost all storm water from Patch Barracks flows to the main wastewater treatment plant at Stuttgart-Muehlhausen (Outfalls No. 001 and 002 on **Appendix 1 – Figure A-3**).

There may be some minor off-post storm water flow from areas close to the installation boundary and other areas during very heavy rains, e.g., at the western or northeastern site boundary where an open drainage system exists. Outfalls No. 003 and 004 (**Appendix 1 – Figure A-3**) at the northern boundary drain directly into the "*Katzenbach"* Creek. Storm water from the open material storage area which is located near Bldgs. 2338 and 2366 is drained via Outfall No. 003. The area of the Patch Theater and the Non-commissioned Officer (NCO) Club discharges via Outfall No. 004. However, these facilities and the surrounding area are not considered to be industrial in nature. The western portion of Patch Barracks falls within Water Protection Zone IIIB as designated by the City of Stuttgart (*Landeshauptstadt Stuttgart*). This designation does not affect the requirements of the USAG Stuttgart or the SWPP Manager as this area does not contain industrial activity (schools, multilevel parking structure, and childcare facility).

Three (3) OWS are integrated into the combined sewer system at strategic locations throughout the Barracks.

- #7727-2 associated with the Car Wash at Bldg. 2384;
- #7727-3 at the Power Plant #2 at Bldg. 2316; which is inactive as it is damaged beyond repair and programmed for replacement.
- #7727-4 at the AAFES Gas Station at Bldg. 2349.

3.2.4 Stuttgart Army Airfield (SAAF)

The Stuttgart Army Airfield consists of two (2) separate areas, the Northern Hangar and Flight Line Area and the Southern Entrance Area (**Appendix 1 - Figure A-4**). Storm water is drained via

different systems at the SAAF. The drainage system in the Northern Hangar Area is owned and operated by the host airport, FSG; whereas the U.S. Army is responsible for operation and maintenance of the drainage system in the Southern Entrance Area. An as-built survey and functionality tests of the southern entrance area were conducted in 2022 and are incorporated into **Appendix 1 - Figure A-4**.

Northern Hangar and Flight Line Area:
Storm water near buildings, roads, taxiways, and the flight line in the northern area is drained via different storm sewer systems (see **Appendix 1 - Figure A-4**). There are six (6) outfalls identified along the installation boundary of the northern part of the SAAF.

Outfalls No. 001 through 003 predominantly drain the Flight Line and Taxiways towards the north into the storm sewer of the FSG. The storm water discharges to the off-post Rainwater Retention Basin Middle; this water is monitored automatically for total organic content (TOC). Based on these readings, the water is discharged either to the "*Wagenbach*" Creek or to the waste water treatment plant Plieningen. It was not possible to enter the Flight Line of the FSG during the site walk to verify the presence and conditions of these outfalls.

The Wash Rack at Building 3259 (DES Fire Department) and the Wash Rack/Aircraft Fueling Pad near Building 3226 (Hangar 4) are connected to the combined sanitary and storm sewer which drains via Outfall No. 004B to the municipal waste water treatment plant at Sielmingen.
OWS #7722-1 is associated with the Wash Rack/Aircraft Fueling Pad near Building 3226. Adjacent Outfall No. 004A is a storm water drain for Building 3258 and the southern side of Hangar 5 (Building 3227) discharging into the off-post Rainwater Retention Basin South, which drains into the "*Katzenbach*" Creek[1]. Storm water from the area surrounding Hangar 4 (Building 3226) and parts of Hangar 5 (Building 3227) appears to drain via outfall No. 005, which also flows into the Rainwater Retention Basin South.

Parts of the Hangar area including Hangars 1 through 3, the Maintenance Pad north of Hangar 2 (Bldg. 3220), the Waste Oil Collection Point (Bldg. 3262), and the HWAP (adjacent to Bldg. 3219) appear to drain via Outfall No. 006. In summer, the water is discharged via the off-post Rainwater Retention Basin South into the "*Katzenbach*" Creek. In winter or in case of an emergency, the gate/valve in Shaft 20000095 is closed and the storm water is re-routed via a pump station in Shaft 26009000 and directed to the off-post Rainwater Retention Basin Middle; this water is monitored permanently (see above) and discharges accordingly either to the "*Wagenbach*" Creek or waste water treatment plant Plieningen.

There may be some minor off-post storm water flow from areas close to the installation boundary and other areas of the northern part during heavy rain.

Southern Entrance Area:
Storm water in the southern entrance area is drained by separate storm discharge systems (see **Appendix 1 - Figure A-4**). A system of perforated pipes set in underground gravel percolation drainage beds that disperse storm water directly into the subsurface is established in the western portion of the Southern Entrance Area (see **Appendix 1 - Figure A-4**). Reportedly, the infiltration pipes are overlain with an absorbent fabric to protect the drainage system from overload (due to unusually heavy rainfall or rapid snowmelt). Furthermore, this infiltration system drains into the "*Katzenbach*" Creek via Outfall No. 007 (overflow, **Appendix 1 - Figure A-4**). The sealed hardstand near Building 3215 (including the former POL Yard and Mobile Gas Station) and the

[1] The "*Katzenbach*" Creek or parts of the "*Katzenbach*" Creek are also referred to as "*Brühlgruben*" Creek in some documents. In this plan, only the term "*Katzenbach*" Creek is used for consistency purposes.

open, unsealed storage areas north and west of Building 3217 are drained via the infiltration system ultimately to "*Katzenbach*" Creek via Outfall No. 007 (overflow; **Appendix 1 - Figure A-4**). However, the 2022 survey identified sewer damage restricting flow from the drainage systems associated with Building 3215 and the adjacent Building 3214.

Other industrial-use areas, such as the Wash Rack near Building 3217, are connected to the municipal sewer system. A pump station (Building 3298 and Outfall No. 008 on **Appendix 1 - Figure A-4**) pumps the water in an underground pipeline to the waste water treatment plant at Sielmingen. OWS #7722-2 is associated with the wash rack near Building 3217.

The remaining areas of the western portion of the Southern Entrance Area are either connected to the sewer system or are drained via the infiltration pipes/ditches or percolation beds to the ground and/or the "*Katzenbach*" Creek.

The majority of the elongated area extending to the south-east of the Southern Entrance Area is drained through an infiltration ditch system running along the northern site boundary and discharges into a Rainwater Collection Basin at the south-eastern end of the installation (see **Appendix 1 - Figure A-4**). The collected rainwater infiltrates into the ground or evaporates; an outfall is not associated with this Rainwater Collection Basin. If the Rainwater Collection Basin is filled, it can be emptied to Outfall No. 007 via a pump station and emergency overflow piping along the north edge of elongated south-eastern end of the installation. Furthermore, rainwater from the newly established hardstand of the 405th AFSB Transportation Motor Pool is collected separately, drains via the new OWS #7722-3, the pump station (Bldg. 3298), and Outfall No. 008 (see **Appendix 1 – Figure A-4**; also see above) to the municipal sewer system, and discharges to the waste water treatment plant at Sielmingen.

In case of heavy rain events, overland flow runoff and direct infiltration into the ground may occur at the Southern Entrance Area.

3.2.5 Kornwestheim Golf Course

Storm water is drained by a combined sanitary and storm sewer system in the maintenance area (Building Complex 979), the Fuel Point north of Bldg. 977A, and the Golf Caddy Garage (Bldg. 980) of Kornwestheim Golf Course (see **Appendix 1 – Figure A-5**). The Fuel Point north of Bldg. 977A drains through OWS #7726-1 into the city wastewater drainage system and the main wastewater treatment plant at Stuttgart-Muehlhausen. Drainage from the Wash Rack and the area in front of the Maintenance Complex 979 passes through a grit chamber and OWS (#7726-2) directly to outfall 001 to the city wastewater drainage system. The Wash Pad in front of the Golf Caddy Garage (Building 980) drains through OWS #7726-3 also into the city wastewater drainage system.

Most of the overland flow of storm water from the areas with industrial activities flows to the local municipal wastewater treatment plant. The remainder of the area is a golf course and is drained by overland flow through a series of earthen ditches, creeks, and ponds.

3.2.6 Robinson Barracks

Storm water is drained by a combined sanitary and storm sewer system at Robinson Barracks (see **Appendix 1 – Figure A-6**). The collected storm water from Robinson Barracks flows to the main municipal wastewater treatment plant at Stuttgart-Muehlhausen via wastewater outfalls on the North, Northeast, and east side of the barracks.

There are minimal industrial activity areas at Robinson Barracks with limited potential for storm water contamination. These industrial activities are on a flat area at the top of a hill. It is assumed that storm water from the industrial activity areas at Robinson Barracks discharge to the combined

sewer system. However, an up-dated sewer map of this area was not available for review. It is assumed that storm water from the industrial activity areas may also infiltrate to the subsurface during very heavy rains.

There may be some minor off-post storm water flow from areas close to the installation boundary and other areas during very heavy rain.

3.3 LICENSED WASTEWATER TREATMENT FACILITY

The USAG Stuttgart does not own or operate a wastewater treatment facility at any of its installations; therefore, additional SWPP requirements pertaining to licensed wastewater treatment facilities do not apply to the USAG Stuttgart.

3.4 SITE MAPS

Site maps for each area of the USAG Stuttgart, provided in Appendix 1, indicate where industrial activities are located. These site maps illustrate the entire USAG Stuttgart; indicate property boundaries, buildings and operation or process areas; and provide information on storm water drainage, storm water control structures, and receiving streams. These site maps will assist in assessing where potential storm water pollutants are located, where they enter the storm water drainage system, and where storm water flows from the installations. All this information is essential in identifying the best opportunities for storm water pollution prevention/control and appropriate BMPs.

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), as described in Appendix 1. The digital mapping files are maintained at the DPW-ED and are regularly updated to minimize revisions generated during the annual review.

A comprehensive update of the stormwater and sanitary sewer mapping layers was completed for the 2024 SWPPP revision. This revision included integration of several surveys, as-built drawings, and final design documents related to sewer updates since the 2017 SWPPP update and conversion of the existing CAD utility and feature layers into SDS compliant GIS maps.

Documents incorporated into the stormwater and sanitary sewer mapping layers during the 2024 update include:

All locations:

USAG_STUTTGART_STORMWATER_DATA.gdb (Primary Source Unless Indicated)

SWPPP 2017 AutoCAD Drawings

OWS_GDB.gdb

Kelley Barracks:

Project: Repair Underground Sewage System, Project No. N1-00360-8P

B-8L001_Kelley_As_built_Kanal_20200807.dwg

B-8L002_Kelley_As_built_Kanal_20200807.pdf

B-8L003_Kelley_As_built_Kanal_20200807.pdf

B-8L004_Kelley_As_built_Kanal_20200807.pdt

B-8L005_Kelley_As_built_Kanal_20200807.dwg

Project: Repair Storm Water Pipe (Körsch), Project No. N1-00484-7P

B-8L001_Koersch_As_built_Kanal_20201124.dwg

Project: Repair Storm Water Pipe (Weidach), Project No. N1-00495-7P

B-8L001_Weidach_As_built_Kanal_20201124.dwg

Project: ACP Drainage

C5_Leitgsplan_Schmutz+Regenwasser.pdf

C11_RRB_Draufsicht.pdf

Project: Repair Underground Sewer Distributions Lines

2014_KelleyAFH-Ost_M_500.pdf

Robinson Barracks:

Project: Robinson_sewer_survey-2016-A

3.1 Kanalbestand Teil 1.pdf (Primary Source)

3.2 Kanalbestand Teil 2.pdf (Primary Source)

Project: Robinson_sewer_survey-2016-B

160518-Vermessungsplan Rob. Bks neu.pdf

Project: RB-sewer-planning

4.1_a Lageplan Teil 1.pdf

Patch Barracks:

Project: New Elementary School

Elementary School Corrected Final Design (As Built Not Available)

Patch-ES-Overview_map_D-5U 032.pdf

Project: Floridastrasse Rain Retention Basin and Storm Sewer upgrade Final Design

Final Design (As Built not Available)

C3_B-5L101_Lageplan_Kanal_1_20180731.pdf

C3_B-5L101_Lageplan_Kanal_2_20180731.pdf

C3_B-5L101_Lageplan_Kanal_3_20180731.pdf

C3_B-5L101_Lageplan_Kanal_4_20180731.pdf

Project: Other

Kanalbestand_Middle-School_M500_20160401

Building 2338 sewer plan, provided by Company Reik

Panzer Kaserne:

Project: Panzer Kaserne Stormwater Utility As-Built Survey

StormwaterUtility_Panzer_Kaserne_AS_Built_Survey.gdb (Primary Source)

Project: Panzer Hotel

Anlage 4-96.54.30-101.pdf (wastewater layers only)

Stuttgart Army Airfield:

Project: Survey of South Area Conducted 2022

SAAF_SW_Utilities_SDSFIE_4_0_2.gdb (Primary Source South Base and background on North Base).

4 BMP AND SITE ASSESSMENT PROCESS

4.1 BEST MANAGEMENT PRACTICES

Potential storm water pollution is controlled through the use of BMPs. BMPs include prevention of exposure of industrial activities to precipitation, good housekeeping practices, illicit storm sewer discharge detection and elimination, and control of effluent from construction and development activities. BMPs are generally divided into three categories.

1. Baseline BMPs: Practices that are general in nature (e.g., good housekeeping).
2. Activity-specific BMPs: Practices that pertain to functions that generally occur at USAG Stuttgart (e.g., fueling).
3. Site-specific BMPs: Practices that pertain to a specific location (e.g., concrete containment around an individual fuel tank).

The goal in implementing BMPs is to reduce possible pollutant discharges at the source. **Source reduction** measures include preventive maintenance, chemical substitution, spill prevention, good housekeeping, training, and proper materials management. Where such practices are not appropriate to a particular source, or do not effectively reduce the storm water pollutant load, **source control** measures such as material segregation or covering, water diversion, and dust control may be used. The remaining class of BMPs, which involve **recycling or treatment** of storm water, attempt to lower pollutant concentrations prior to discharge, generally through structural controls.

4.2 ACTIVITY AND SITE EVALUATION

A comprehensive survey is performed annually to identify i.) new sources of potential storm water contamination, and ii.) measures taken to prevent contact of these materials with storm water.

The following steps are being taken to ensure a comprehensive survey of the USAG Stuttgart.

- The industrial activities throughout the USAG Stuttgart, as described in Section 3.1, are inventoried and updated as necessary.
- Tables 4-1a through 4-1f present the industrial activities associated with specific locations at the USAG Stuttgart; these tables should be reviewed and updated.
- The industrial activities are also illustrated on maps to supplement the written SWPPP; the maps should be updated to reflect any changes at the installations.
- Review and update the potential pollutants associated with each industrial activity listed in Tables 4-2a through 4-2f.
- Review and update BMPs assigned to each industrial activity area in Tables 4-3a through 4-3f.

To assist in the survey, a series of checklists for each industrial activity is included in Appendix 3. Activity BMP checklists should be completed by facility or building according to the matrix developed in Tables 4-1a through 4-1f. In addition to the Activity BMP checklists, Baseline and Site-specific BMP checklists can be completed by staff at each facility or building.

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Table 4-1a. Kelley Barracks: Source Activities by Building Number

Source Activity	DPW Shops (3318)	FMWR Arts & Craft Shop (3319)	405th AFSB BASOPS (3320A)	FMWR Auto Skills (3320B)	Emergency Generator (3320)	AAFES / DLA Gas Station (3324)
Vehicle Fueling Operations						X
Vehicle Maintenance and Repair	X		X	X		
Vehicle Washing						
Bulk Fuel Storage Areas					X	X
Construction Activities						
Hazardous Substance Storage	X	X	X	X		X
Outdoor Material Storage Areas						
Power Production					X**	
Vehicle Storage Yards						

Note:

**Emergency Power Production only.

Table 4-1a. Kelley Barracks: Source Activities by Building Number *(continued)*

Source Activity	DPW Yard (3360 / 3370)	HWSA (3371)	POV Parking LOT (3372)	FMWR Car Wash & DPW Wash Rack (3390)	Construction throughout Barracks
Vehicle Fueling Operations					
Vehicle Maintenance and Repair					
Vehicle Washing				X	
Bulk Fuel Storage Areas					
Construction Activities					X
Hazardous Substance Storage	X	X		X	
Outdoor Material Storage Areas	X				
Power Production					
Vehicle Storage Yards	X		X		

Table 4-1b. Panzer Kaserne: Source Activities by Building Number

Source Activity	FMWR Auto Skills Center "Speedy Lube" (2930)	405th AFSB POV Shipping Yard (2931)	TüV Inspection Station (2935)	TLSC-E / MAV Maint. (2935) & Wash Rack	AAFES Car Care Center (2935)	DLA / 405th AFSB Gas Station (2953)	554th Military Police Maint. (2958)
Vehicle Fueling Operations						X	
Vehicle Maintenance and Repair	X	X	X	X	X		X
Vehicle Washing				X			
Bulk Fuel Storage Areas						X	X
Construction Activities							
Hazardous Sub. Storage	X		X	X	X		X
Outdoor Material Storage Areas	X			X	X		X
Power Production							X**
Vehicle Storage Yards				X			X

Note:

**Emergency Power Production only.

Table 4-1b. Panzer Kaserne: Source Activities by Building Number *(continued)*

Source Activity	NSWU/2 Boat Barn (2968)	1/10th SFG Maint. & Wash Pad (2969)	Naval Special Warfare Unit Two (NSWU/2) Maint. (2970)	HWAP (near 2958, 2969, 2970 & 2974)	Emergency Generators with AST Water Chlorination Facility (3182)* & LTA (3096)*
Vehicle Fueling Operations					
Vehicle Maintenance and Repair	X	X	X		
Vehicle Washing		X			
Bulk Fuel Storage Areas					X*
Construction Activities					
Hazardous Sub. Storage	X	X	X	X	X*
Outdoor Material Storage Areas	X		X		
Power Production					X*
Vehicle Storage Yards	X	X	X		

Note:

*Access to this facility was not granted during the 2023 site visit.

Table 4-1c. Patch Barracks: Source Activities by Building Number

Source Activity	HWAP (near 2316)	Outdoor fuel canister storage (near 2316)	Power Plant #2* (2316)	Centerra, Base Maintenance Contractors (2333 and North of 2353)	Outdoor Material Storage (2338 / 2366)	AAFES Gas Station (2349)	Commissary (2350)	Power Plant #1 (2363)	Power Plant #3 (2374)	FMWR Car Wash (2384)	Construction Projects Throughout Barracks
Vehicle Fueling Operations						X					
Vehicle Washing										X	
Bulk Fuel Storage Areas			X			X		X	X		
Construction Activities			(X)		(X)						X
Hazardous Substance Storage	X	X		X		X	X			X	
Outdoor Material Storage Areas		X	(X)	X	X	X	X				
Power Production			X**					X**	X**		

Notes:
(X) source activity is temporary.
*An upgrade into a larger and energy efficient plant is underway.
**Emergency Power Production only.

Table 4-1d. Stuttgart Army Airfield: Source Activities by Building Number

Source Activity	DES Fire Dept.										
	Station & Wash Rack (3259)	Hangar 1 (3219)	Flight Line / Taxiway	Wash Rack / Aircraft Fueling Pad (near 3226)	Waste Oil Collection Point (3262)	HWAP (adjacent 3219)	Maint. Pad (near 3220)	DET/WMR Aircraft Maint. - Marine Forces Europe Hangar 2 (3220)	Hangar 3* / Storage and Gym (3222)	Hangar 4 (3226)	Hangar 5 (3227)
Aircraft Ground Support Equipment Maintenance											X
Aircraft / Runway Deicing			X								
Aircraft / Vehicle Fueling Operations			X	X							
Aircraft / Vehicle Maintenance and Repair		X					X	X		X	X
Aircraft / Vehicle Washing	X			X							
Bulk Fuel Storage Areas											
Construction Activities											
Corrosion Control Activities				X				X			
Hazardous Substance Storage	X	X		X	X	X		X		X	X
Outdoor Material Storage Areas											
Vehicle Storage Yards									X		

Note:
*Currently used for storage of equipment packaged for transport. The floor of Hangar 3 / Building 3222 is cracked and the facility would not be suitable for aircraft/vehicle maintenance.

Table 4-1d. Stuttgart Army Airfield: Source Activities by Building Number *(continued)*

Source Activity	Storage / Parking area (former POL Yard and near 3215)	Mobile Gas Station (near 3215)	Naval Unit 2 Hangar (3215)**	SOCEUR / Wash Rack (3217)	Motor Pool 405th Army Field Support Brigade (3241)
Aircraft Ground Support Equipment Maintenance					
Aircraft / Runway Deicing					
Aircraft / Vehicle Fueling Operations		X			
Aircraft / Vehicle Maintenance and Repair			X		
Aircraft / Vehicle Washing				X	
Bulk Fuel Storage Areas		X			
Construction Activities					
Corrosion Control Activities					
Hazardous Substance Storage		X	X	X	X
Outdoor Material Storage Areas	X			X	X
Vehicle Storage Yards	X			X	X

Note:
** Interior access unavailable during site walk.

Table 4-1e. Kornwestheim Golf Course: Source Activities by Building Number

Source Activity	Maintenance Complex (979)	Fuel Point (north of 977A)	Old Maintenance Facility (977 & 977A)	Golf Caddy Garage and Wash Pad (980)
Vehicle Fueling Operations		X		
Vehicle Maintenance and Repair	X			
Vehicle Washing	X			X
Vehicle Storage Yard	X		X	
Bulk Fuel Storage Areas		X		
Hazardous Substance Storage	X		X	
Outdoor Material Storage Areas	X			
Pesticide Operations	X			

Table 4-1f. Robinson Barracks: Source Activities by Building Number

Source Activity	HWAP (near 116)	Commissary (backside, southeast of 146)	Recycling Area (northeast of 146)	Contractor Area / unoccupied (northeast of 146)*
Vehicle Fueling Operations				X*
Bulk Fuel Storage Areas				X*
Hazardous Substance Storage	X			X*
Outdoor Material Storage Areas		X	X	X*

Note:
* Unoccupied and no source activities take place.

Table 4-2a. Kelley Barracks: Potential Storm Water Pollutants

Storm Water Pollutants	DPW Shops (3318)	FMWR Arts & Craft Shop (3319)	405th AFSB BASOPS (3320A)(1)	FMWR Auto Skills (3320B)	Emergency Generator (3320)	AAFES / DLA Gas Station (3324)
Petroleum, oils, lubricants	X		X	X	X	X
Waste oil and other waste POL	X		X			X
Solvents	X	X	X	X		
Antifreeze			X			X
Battery acid			X			X
Detergent/Cleaners	X		X	X		
Paint, byproducts, related chemicals	X	X	X	X		
Pesticides						
Sediment/Particulates						

Note:
(1) Industrial activities inside the bays. Temporary collection / storage of hazardous substances in Connex in yard.

Table 4-2a. Kelley Barracks: Potential Storm Water Pollutants (*continued*)

Storm Water Pollutants	DPW Yard (3360 / 3370)	HWSA (3371)	Contractor Area (north of DPW Yard)	POV Parking LOT (3372)	FMWR Car Wash & DPW Wash Rack (3390)	Construction Throughout Barracks
Petroleum, oils, lubricants	X	X	X	X	X	X
Waste oil and other waste POL	X	X		X	X	
Solvents	X	X			X	
Antifreeze	X	X		X	X	
Battery acid		X		X		
Detergent/Cleaners	X	X			X	
Paint, byproducts, related chemicals	X	X				
Pesticides		X				
Sediment/Particulates	X		X		X	X

Table 4-2b. Panzer Kaserne: Potential Storm Water Pollutants

Storm Water Pollutants	FMWR Auto Skills Center "Speedy Lube" (2930)	405th AFSB POV Shipping Yard & Wash Pad (2931)(1)	TüV Inspection Station (2935)	TLSC-E / MAV Maint. (2935)(2) & Wash Rack	AAFES Car Care Center (2935)	DLA / 405th AFSB Gas Station (2953)
Petroleum, oils, lubricants	X		X	X	X	X
Waste oil and other waste POL	X	X	X	X	X	
Solvents	X		X	X	X	
Antifreeze	X		X	X	X	
Battery acid	X		X	X	X	
Detergent/Cleaners	X			X	X	
Paint, byproducts, related chemicals				X		
Sediment/Particulates	X			X		

Notes:

(1) All fluids of cars are removed / only final check before shipping/ Hazardous container is provided for used oil.

(2) All activities inside the building.

Table 4-2b. Panzer Kaserne: Potential Storm Water Pollutants *(continued)*

Storm Water Pollutants	554th Military Police Maint. (2958)	NSWU/2 Boat Barn (2968)	1/10th SFG Maint. & Wash Pad (2969)	Naval Special Warfare Unit Two (NSWU/2) Maint. (2970)	HWAP (near 2958, 2969, 2970, & 2974)	Emergency Generators with AST Water Chlorination Facility / Former Officers Club (3182)
Petroleum, oils, lubricants	X	X	X	X	X	X
Waste oil and other waste POL	X	X	X	X	X	
Solvents	X	X	X	X	X	
Antifreeze	X	X	X	X	X	
Battery acid	X	X	X	X	X	
Detergent/Cleaners	X	X	X	X	X	
Paint, byproducts, related chemicals		X	X	X	X	
Sediment/Particulates	X		X			

Table 4-2c. Patch Barracks: Potential Storm Water Pollutants

Storm Water Pollutants	HWAP & Outdoor Fuel Canister Storage (near 2316)	Power Plant #2[1] (2316)	Centerra, Base Maintenance Contractors (2333 and North of 2353)	Outdoor Material Storage (2338 / 2366)	AAFES Gas Station (2349)	Commissary (2350)	Power Plant #1 (2363)	Power Plant #3 (2374)	FMWR Car Wash (2384)	Construction throughout Barracks
Petroleum, oils, lubricants	X	X	X		X		X	X	X	X
Waste oil and other waste POL	X	X	X		X		X	X	X	
Solvents	X									
Antifreeze	X	X	X		X				X	
Battery acid	X	X	X		X					
Detergent/Cleaners	X				X				X	
Paint, byproducts, aerosols, related chemicals	X					X				
Sediment/Particulates		(X)	X	X					X	X

Note:

(1) An upgrade into a larger and energy efficient plant is planned.

Table 4-2d. Stuttgart Army Airfield: Potential Storm Water Pollutants

Storm Water Pollutants	Fire Dept. Station & Wash Rack (3259)	Fire Dept. Hangar 1 (3219)	Flight Line / Taxiways	Wash Rack / Aircraft Fueling Pad (near 3226)	Waste Oil Collection Point (3262)	HWAP (adjacent 3219)	Maint. Pad (near 3220)	DET/WMR Aircraft Maint. - Marine Forces Europe Hangar 2 (3220)	Hangar 3[1] (3222)	Hangar 4 (3226)	Hangar 5 (3227)
Petroleum, oils, lubricants	X	X	X	X		X	X	X		X	X
Waste oil and other waste POL	X		X	X	X	X	X	X		X	X
Solvents						X	X	X		X	X
Antifreeze	X			X		X					X
Deicing solution			X	X							
Battery acid	X					X					X
Detergent/Cleaners	X	X		X		X	X	X	X	X	X
Fire suppression chemicals	X	X	X			X					
Paint, byproducts, related chemicals		X				X		X		X	X
Sediment/Particulates	X		X	X		X					X

Note:
(1) Predominantly used for equipment storage

Table 4-2d. Stuttgart Army Airfield: Potential Storm Water Pollutants *(continued)*

Storm Water Pollutants	SOCEUR & Wash Rack (3217)	Storage / Parking area (former POL Yard and near 3215)	Mobile Gas Station (near 3215)	Naval Unit 2 Hangar (3215)*	Motor Pool 405th Army Field Support Brigade (3241)
Petroleum, oils, lubricants	X	X	X	X	X
Waste oil and other waste POL	X	X	X	X	X
Solvents	X			X	X
Antifreeze					X
Deicing solution					
Battery acid					X
Detergent/Cleaners	X				
Fire suppression chemicals					
Paint, byproducts, related chemicals					
Sediment/Particulates		(x)			

Note: * Based on assumed operations.

Table 4-2e. Kornwestheim Golf Course: Potential Storm Water Pollutants

Storm Water Pollutants	Maintenance Complex (979)	Fuel Point (north of 977A)	Old Maintenance Facility (977 & 977A)	Golf Caddy Garage and Wash Pad (980)
Petroleum, oils, lubricants	X	X	(X)	
Waste oil and other waste POL	X			
Antifreeze	X			
Battery acid	X			X
Pesticides/Herbicides/Fertilizers	X			
Detergent/Cleaners	X			(X)
Paint, byproducts, related chemicals	X		(X)	
Sediment/Particulates	X	X		X

Table 4-2f. Robinson Barracks: Potential Storm Water Pollutants

Storm Water Pollutants	HWAP (near 116)	Commissary (backside, southeast of 146)	Recycling Area (northeast of 146)	Contractor Area / unoccupied (northeast of 146)*
Petroleum, oils, lubricants	X			X*
Waste oil and other waste POL	X		X	X*
Solvents	X			
Antifreeze	X			
Battery acid	X			
Pesticides/Herbicides/Fertilizers	X			
Detergent/Cleaners	X			
Paint, byproducts, related chemicals	X		X	
Sediment/Particulates		X	X	X*

Note:
* unoccupied and no source activities take place.

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4.3 PROPOSED BMP IMPLEMENTATION

The inventory of industrial activity areas and potential storm water pollutants provides the basis for the determination of which BMP should be implemented at each area. By cross-referencing the association between industrial activities and pollutants (see Table 3-1) with industrial activities that occur at each area or building (see Tables 4-1a through 4-1f), the types of pollutants that are likely to be found at each building or activity area can be determined, as shown in Tables 4-2a through 4-2f.

Recommended BMP may be structural in nature (requiring construction) or non-structural (source control). Following each annual survey, the DPW-ED reviews the recommended structural BMPs and discusses them with appropriate personnel to determine which BMP shall be adopted and scheduled for funding. Non-structural BMP may be implemented more easily and may be planned directly by the DPW-ED.

BMP should be implemented to the maximum extent practicable (MEP). Due to changing technology, MEP is an ever-changing goal. The DPW-ED will continue to review activities at the USAG Stuttgart to determine if additional BMP should be implemented at the various facilities. The Storm Water Compliance Plan table in Appendix 5 may be used to facilitate this process.

Additional BMP needs could result from changes in activities performed in the building or outside areas. Tables 4-3a through 4-3f below describe BMP based on the activities performed at each area (Table 3-1) and the potential sources of storm water pollution (Tables 4-2a through 4-2f).

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Table 4-3a. Kelley Barracks: Storm Water Best Management Practices

			BMP Status		BMP Type	
Bldg.	**Location**	**Best Management Practice**	**Existing**	**Recommended**	**Structural**	**Non-Structural**
Vehicle Fueling Operations						
3324	AAFES / DLA Gas Station	Good housekeeping.	X			X
3324	AAFES / DLA Gas Station	Inspect, clean, and maintain drains on a regular / as needed basis - ensure they are kept open and clean.	X			X
3324	AAFES / DLA Gas Station - pump area	Sealed roof structure to protect fueling area from storm water.	X		X	
3324	AAFES / DLA Gas Station - pump area	Provide and maintain spill response equipment at fueling station.	X			X
3324	AAFES / DLA Gas Station - pump area	Provide fire extinguisher at fueling station.	X			X
3324	AAFES / DLA Gas Station - pump area	Curb fueling area and treat with oil-water separator / drainage system according to applicable regulation.	X		X	
3324	AAFES / DLA Gas Station - pump area	Inspect, clean, and maintain the associated OWS #7737-6 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
3324	AAFES / DLA Gas Station - pump area	Visual self-inspect ("*Eigenkontrolle*") OWS #7737-6 throughout the installation on a monthly basis. Monthly monitoring is scheduled through a DLA contract.	X			X
Vehicle Maintenance and Repair						
3320A	405th AFSB BASOPS	Good housekeeping.	X			X
3320A	405th AFSB BASOPS	Perform maintenance / repair activities inside.	X		X	
3320A	405th AFSB BASOPS	Increase the height of the work area to allow maintenance of oversized equipment inside.		X	X	
3320A	405th AFSB BASOPS	Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.	X			X
3320A	405th AFSB BASOPS	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand.	X			X
3320	Parking Area	Use drip pans to capture drained / leaking fluids. Cap hoses to prevent drips and spills.	X			X
3320	Parking Area	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand.	X			X
3320	Parking Area	Treat (storm) water runoff with OWS with alarm system before discharge. No active OWS's are associated with this area.		X	X	
3320B	FMWR Auto Skills Repair Shop	Perform maintenance/repair activities inside.	X		X	
3320B	FMWR Auto Skills Repair Shop	Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.	X			X
3320B	FMWR Auto Skills Repair Shop	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand.	X			X

Table 4-3a. Kelley Barracks: Storm Water Best Management Practices *(continued)*

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Vehicle Washing						
3390	FMWR Car Wash & DPW Wash Rack	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.		X		X
3390	FMWR Car Wash & DPW Wash Rack	Capture wash water and send to wastewater treatment plant.	X		X	
3390	FMWR Car Wash & DPW Wash Rack	Treat wash water with OWS before discharge.	X			
3390	FMWR Car Wash & DPW Wash Rack	Limit the use of detergents used to wash vehicles as detergents can cause the OWS to malfunction.		X		X
3390	FMWR Car Wash & DPW Wash Rack	Store detergent / soap inside building.	X			X
3390	FMWR Car Wash & DPW Wash Rack	Fix foam brushes to prevent leaking when not in use		X	X	
3390	FMWR Car Wash & DPW Wash Rack	Inspect, clean, and maintain the associated OWS #7737-2 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
3390	FMWR Car Wash & DPW Wash Rack	Repair deficiencies in OWS #7737-2 identified during the General Inspection.		X	X	
3390	FMWR Car Wash & DPW Wash Rack / OWS #7737-2	OWS #7737-2 system was replaced in 2016. Visual self-inspect ("*Eigenkontrolle*") OWS #7737-2 on a monthly basis.	X			X
3390	FMWR Car Wash & DPW Wash Rack / OWS #7737-2	Correct deficiencies identified in OWS #7737-2 during 2022 General Inspection to ensure OWS functionality.		X	X	
Bulk Fuel Storage Areas						
3320	Inside building	UST double-walled with leak detection system.	X		X	
3324	AAFES / DLA Gas Station - fill port north of bldg	Good housekeeping.	X			X
3324	AAFES / DLA Gas Station - fill port north of bldg	The filling / fuel transfer area should be curbed and discharged via an OWS.	X		X	
3324	AAFES / DLA Gas Station - fill port north of bldg	UST fill ports provide containment when breaking connections	X			X
3324	AAFES / DLA Gas Station - fill port north of bldg	Use dry camlock connectors to reduce fuel loss	X			
Construction Activities						
NA	Throughout Barracks	Construct sediment dams / silt fences around construction sites. Cover dirt/soil piles with tarpaulin. Cover storm water inlets/gullies temporarily.		X		X

Table 4-3a. Kelley Barracks: Storm Water Best Management Practices (*continued*)

Building	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Hazardous Substance Storage						
3318	DPW Shops	Store hazardous materials inside or under cover.	X		X	
3318	DPW Shops	Reduce use of hazardous materials.		X		X
3319	FMWR Arts & Craft Shop	Store hazardous materials / waste in lockable cabinet inside the building.	X			X
3319	FMWR Arts & Craft Shop	Reduce use of hazardous materials.	X			X
3320A	405th AFSB BASOPS	Hazardous materials / waste stored in lockable cabinets inside the bays or in the lockable garage for hazardous waste.	X			X
3320A	405th AFSB BASOPS	Store hazardous products on secondary containments inside of bays.				X
3320A	405th AFSB BASOPS	Reduce use of hazardous materials		X		X
3320B	FMWR Auto Skills Repair Shop	Store hazardous materials inside or under cover.	X			X
3320B	FMWR Auto Skills Repair Shop	Reduce usage of hazardous materials.		X		X
3320B	FMWR Auto Skills Repair Shop	Store hazardous products on secondary containments inside of bays.		X		X
3324	AAFES / DLA Gas Station - outside of building	Store hazardous materials inside or under cover		X	X	
3324	AAFES / DLA Gas Station - outside of building	Reduce usage and storage of hazardous substances. Empty on a regular basis.		X		X
3360 / 3370	DPW Yard	Store hazardous materials inside or under cover.	X			
North of DPW Yard - 3370	Contractor area north of DPW Yard and HWSA	Store hazardous materials inside or under cover. Utilize secondary containment.	X			X
North of DPW Yard - 3370	Contractor area north of DPW Yard and HWSA	Reduce use of hazardous materials.		X		X
3371	HWSA to include yard around bldg inside fenceline	Good housekeeping. routinely sweep yard and remove debris.		X		X
3371	HWSA to include yard around bldg inside fence line	Store hazardous materials inside or under cover.	X			X
3371	HWSA to include yard around bldg inside fence line	Reduce use of hazardous materials.	X			X
3371	HWSA to include yard around bldg inside fence line	Curb storage area and slope floor towards a sump.	X		X	

Building	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Hazardous Substance Storage (*continued*)						
3371	HWSA to include yard around bldg inside fence line	Maintain sump in HWSA on a regular schedule. Blowing rain can enter and fill sump, reducing the volume of secondary containment provided by the sump.	X			X
3371	HWSA to include yard around bldg inside fence line	Consider the prohibition to store certain hazardous substances together ("*Zusammenlagerungsverbot*").		X		X
3371	HWSA to include yard around bldg inside fence line	Place collection bins on secondary containments and/or curbed area / use self-contained containers.	X		X	
3371	HWSA to include yard around bldg inside fence line	Provide and maintain spill response equipment and fire extinguisher.	X			X
3371	HWSA to include yard around bldg inside fence line	Do not place hazardous waste in the open area in front of HWSA.	X			X
Outdoor Material Storage Areas						
3360/3370	DPW Yard	Good housekeeping.		X		X
3360/3370	DPW Yard	Install berms at sand and earth bunkers to reduce particle runoff.		X	X	
3360/3370	DPW Yard	Store product drums inside or under cover.	X			X
3360/3370	DPW Yard	Reduce quantity of material stored outside. Ensure bins are emptied on regular basis and remain closed.		X		X
3370	Storage shed on west side of DPW Yard	Store product drums inside or under cover.	X			X
3370	Storage shed on west side of DPW Yard	Reduce quantity of material stored outside. Remove old and possibly leaking lawn and maintenance equipment.	X			X
North of DPW Yard - 3370	Contractor area north of DPW Yard and HWSA	Good housekeeping. Routinely sweep yard and remove debris and discarded materials.	X			X
North of DPW Yard - 3370	Contractor area north of DPW Yard and HWSA	Reduce quantity of material stored outside / Store product drums inside or under cover.		X		X
North of DPW Yard - 3370	Salt Silo (north of DPW Yard)	Remove salt when spilled / dropped on ground.	X			X
3371	HWSA to include yard around bldg. inside fence line	Reduce quantity of material stored outside / Store product drums inside or under cover.		X		
Power Production						
3320	Emergency Power Generator	Generator with diesel tank placed in secondary containment and under roof.	X		X	
3374/3379	Emergency Power Generator	Generator with diesel AST placed inside of building. Use dry camlock connectors to reduce fuel loss. Capture leaks and spills from power production equipment using drip pans, etc.	X			X

Table 4-3a. Kelley Barracks: Storm Water Best Management Practices (*continued*)

Building	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Vehicle Storage Yards						
3360/3370	DPW Yard	Good housekeeping.	X			X
3360/3370	DPW Yard	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids from DPW Maintenance trucks/vehicles stored in yard.		X		X
North of DPW Yard - 3370	Contractor area north of DPW Yard and HWSA	Check vehicles in storage for leaks and spills.		X		X
North of DPW Yard - 3370	Contractor area north of DPW Yard and HWSA	Use drip pans to capture drained / leaking fluids.		X		X
3372	POV parking lot	Good housekeeping.	X			X
3372	POV parking lot	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
Rainwater Retention System Maintenance*						
South Rainwater Retention Basin		Bimonthly inspection* of storm water retention system including visual inspection of the inflow, overflow, and outflow for deposits or blockage and an operational test of equipment (pump) and flow restrictors. Cleaning as needed.	X			X
Rainwater Retention Cistern at new ACP		Bimonthly inspection* of storm water retention system including visual inspection of the inflow, overflow, and outflow for deposits or blockage and an operational test of equipment (pump) and flow restrictors. Cleaning as needed.	X			X
North Rainwater Retention Basin		Bimonthly inspection* of storm water retention system including visual inspection of the inflow, overflow, and outflow for deposits or blockage and low restrictors. Cleaning as needed.	X			X
North Rainwater Retention Basin		Inspect, clean, and maintain the associated OWS #7737-5 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
General						
Throughout Kelley Barracks		Use split and/or sand instead of salt for deicing purposes during winter times		X		X
Storm water drainage system throughout Kelley Barracks		Inspect, clean, and maintain the storm water drainage system (inlets, gullies, drainage lines) on a regular schedule throughout the installation to ensure that it is kept open and clean, particularly along Pine Street.		X		X

Note:

* Also refer to Basin Operations Manual ("*Beckenbuch*").

Red text indicates a new BMP since 2017 update.

Table 4-3b. Panzer Kaserne: Storm Water Best Management Practices

			BMP Status		BMP Type	
Bldg.	**Location**	**Best Management Practice**	**Existing**	**Recommended**	**Structural**	**Non-Structural**
Vehicle Fueling Operations						
2953	DLA / 405th AFSB Gas Station	Good housekeeping.	X			X
2953	Fuel pump area	Sealed roof structure to protect fueling area from storm water.	X		X	
2953	Fuel pump area	Provide and maintain spill response equipment and fire extinguisher at fueling stations.	X			X
2953	Fuel pump area	Curb fuel transfer areas and treat with an oil-water separator	X		X	
2953	Fuel pump area	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
2953	Fuel pump area (OWS #7725-7)	Visual self-inspect ("*Eigenkontrolle*") OWS #7725-7 on a monthly basis.	X			X
2953	Fuel pump area (OWS #7725-7)	Inspect, clean, and maintain the associated OWS #7725-7 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
Vehicle Maintenance and Repair						
2930	FMWR Auto Skill Center	Good housekeeping.	X			X
2930	FMWR Auto Skill Center	Perform maintenance/repair activities inside.	X			X
2930	FMWR Auto Skill Center	Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.	X			X
2930	FMWR Auto Skill Center	Treat (storm) water runoff with OWS with alarm system before discharge.	X		X	
2930	FMWR Auto Skill Center	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand	X			X
2930	Yard south of building (OWS (#7725-12)	Visual self-inspect ("*Eigenkontrolle*") OWS #7725-12 on a monthly basis.	X			X
2930	Yard south of building (OWS (#7725-3)	Inspect, clean, and maintain the associated OWS system (#7725-12) on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
2935	Yard south of building	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean. Remove plants in drain.		X		X
2935	Yard south of building	Treat (storm) water runoff with OWS with alarm system before discharge.	X		X	

Table 4-3b. Panzer Kaserne: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Vehicle Maintenance and Repair (*continued*)						
2935	Yard south of building (OWS (#7725-3)	Inspect, clean, and maintain the associated OWS system (#7725-3) on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
2935, TLSC-E /MAV Maint.	South 4 bays of bldg and associated yard	Good housekeeping.	X			X
2935, TLSC-E /MAV Maint.	South 4 bays of bldg and associated yard	Perform maintenance/repair activities inside.	X		X	
2935, TLSC-E /MAV Maint.	South 4 bays of bldg and associated yard	Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.	X			X
2935, TLSC-E /MAV Maint.	South 4 bays of bldg and associated yard	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand	X		X	
2935, AAFES Car Care Center	North half of bldg and area to west	Good housekeeping – routinely sweep bays and yard and remove debris and discarded materials.		X		X
2935, AAFES Car Care Center	North half of bldg and area to west	Perform maintenance/repair activities inside.	X		X	
2935, AAFES Car Care Center	North half of bldg and area to west	Use drip pans to capture drained fluids. Cap hoses to prevent drips and spills.	X			X
2935, AAFES Car Care Center	North half of bldg and area to west	Inspect, clean, and maintain drains in front of maintenance bay doors on a regular / as needed basis - ensure that it is kept open and clean. Remove buildup of dirt and debris.		X		X
2958, 554th MP Maint.	To include yard to north of bldg 2956	Good housekeeping.	X			X
2958, 554th MP Maint.	To include yard to north of bldg 2956	Perform maintenance/repair activities inside.	X			X
2958, 554th MP Maint.	To include yard to north of bldg 2956	Use drip pans to capture drained fluids from vehicles in lots. Cap hoses to prevent drips and spills.	X			X
2958, 554th MP Maint.	To include yard to north of bldg 2956	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand.	X			X
2958, 554th MP Maint.	To include yard north of Bldg. 2956	Treat (storm) water runoff with OWS with alarm system before discharge.	X		X	
2958, 554th MP Maint.	To include yard north of Bldg. 2956	Visual self-inspect ("*Eigenkontrolle*") new OWS on a monthly basis.	X			X
2958, 554th MP Maint.	To include yard north of Bldg. 2956	Inspect, clean, and maintain the associated OWS system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X

Table 4-3b. Panzer Kaserne: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Vehicle Maintenance and Repair (*continued*)						
2968, NSWU/2 Boat Barn	Bldg. 2968 and associated yard	Good housekeeping.	X			X
2968, NSWU/2 Boat Barn	Bldg. 2968 and associated yard	Perform maintenance/repair activities inside.				
2968, NSWU/2 Boat Barn	Bldg. 2968 and associated yard	Use drip pans to capture drained fluids from vehicles. Cap hoses to prevent drips and spills.		X		X
2968, NSWU/2 Boat Barn	Bldg. 2968 and associated yard	Treat (storm) water runoff with an active OWS with alarm system before discharge. OWS 7725-11 was shut down in 2020.		X	X	
2968, NSWU/2 Boat Barn	Bldg. 2968 and associated yard	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand	X			X
2969 & 2970	To include yard surrounding Bldgs.	Yard drains through OWS #7725-10 - inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
2969 1/10th SFG Maint.	To include yard to north and yard to north of 2968	Good housekeeping.	X			X
2969 1/10th SFG Maint.	To include yard to north and yard to north of 2968	Perform maintenance/repair activities inside.	X		X	
2969 1/10th SFG Maint.	To include yard to north and yard to north of 2968	Use drip pans to capture drained fluids from vehicles in lots. Cap hoses to prevent drips and spills.	X			X
2969 1/10th SFG Maint.	To include yard to north and yard to north of 2968	Majority of vehicles parked on concrete hardstand specifically constructed for pollution prevention. (Other portions of yard have been left cobbled.)	X		X	
2970, NSWU/2	To include yard to south and west	Good housekeeping.	X		X	
2970, NSWU/2	To include yard to south and west	Perform maintenance/repair activities inside.	X			X
2970, NSWU/2	To include yard to south and west	Use drip pans to capture drained fluids from vehicles in lots. Cap hoses to prevent drips and spills.	X			X
Vehicle Washing						
2969, 1/10th SFG Wash Pad	Wash Pad north of bldg	Limit the use of detergents used to wash vehicles as detergents can cause the OWS #7725-10 to malfunction.	X			X
2969, 1/10th SFG Wash Pad	Wash Pad north of bldg	Treat wash water with OWS #7725-10.	X		X	
2969, 1/10th SFG Wash Pad	Wash Pad north of bldg	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
2969, 1/10th SFG Wash Pad	Wash Pad north of bldg	Inspect, clean, and maintain the associated OWS system (#7725-10) on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
2969, 1/10th SFG Wash Pad	Wash Pad north of bldg	Visual self-inspect ("*Eigenkontrolle*") OWS #7725-10 on a monthly basis.	X			X

Table 4-3b. Panzer Kaserne: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Bulk Fuel Storage Areas						
2935	West of bldg	One UST double-walled with leak detection system.	X		X	
2953	Fill ports south of pumps	Use dry camlock connectors to reduce fuel loss. Capture spills with drip pans when breaking connections.	X			X
2953	Fill ports south of pumps	Fill ports provide secondary containment for loading of UST and surrounding area drains through OWS.	X		X	
2969	West of bldg	One UST double-walled with leak detection system.	X		X	
Construction Activities						
NA	Throughout Kaserne	Construct sediment dams / silt fences around construction sites. Cover dirt/soil piles with tarpaulin. Cover storm water inlets/gullies temporarily.		X		X
Hazardous Substance Storage						
2930	FMWR Auto Skill Center	Good Housekeeping. Store hazardous materials inside or under cover. Ensure all liquids are placed on secondary containment.	X		X	
2930	FMWR Auto Skill Center	Reduce use of hazardous materials.		X		X
2930	HWAP west of Bldg 2930	Ensure secondary containment is in place during transfer operations. Consider methods for transfer that reduce risk of spills and storm water contamination.		X		X
2930	HWAP west of Bldg 2930	HW containers are self-contained and double-walled to minimize potential of a spill that could contaminate storm water.	X		X	
2935, TLS C-E /MAV Maint.	South 4 bays of bldg and associated yard	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	
2958, 554th MP Maint.	HWAP to east of bldg	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	
2958, 554th MP Maint.	inside	Self-contained parts washer inside.	X		X	
2958, 554th MP Maint.	Northeast corner of bldg	Good housekeeping.	X			X
2968 / NSWU/2	Boat Barn and associated yard	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X			X
2969 1/10th SFG Maint.	Southwest corner of bldg	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	
2970, NSWU/2 Maint.	Southeast corner of bldg	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	

Table 4-3b. Panzer Kaserne: Storm Water Best Management Practices (*continued*)

Building	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Outdoor Material Storage Areas						
2935	Area west of bldg	Perform routine inspections of material and equipment stored outdoors to ensure material and/or equipment is not leaking pollutants to ground surface. Pay particular attention to the area under the waste oil container. Store product drums inside or under cover. Reduce quantity of material stored outside.	X			X
2958	Northeast corner of Bldg. 2958	Good housekeeping.	X			X
2969	Near Bldg. 2969	Good housekeeping. Ensure all containers containing liquids are placed in secondary containment. Store product drums inside or under cover. Reduce quantity of material stored outside.	X			X
Salt Silo	Across from 2953	Curb storage area. Clean up spills promptly.		X	X	
Vehicle Storage Yards						
2958	Yard to north of bldg	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.	X			X
2966	OWS #7725-4	OWS #7725-4 is scheduled to be closed down. Repair or replace OWS.		X	X	
2968, NSWU/2 Boat Barn	Bldg. 2968 and associated yard	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.	X			X
2969	Yard to north of bldg	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.		X		X
2970	Yard to south of bldg	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.		X		X
Rainwater Retention System Maintenance*						
Rainwater Retention System at the Panzer Hotel (Bldg. 2905)		Bimonthly inspection* of storm water retention system including visual inspection of the inflow, overflow, and outflow for deposits or blockage and flow restrictors. Cleaning as needed.	X			X
Rainwater Retention System at the Stuttgart Elementary and High Schools (Bldgs. 3080 and 3081)		Bimonthly inspection* of storm water retention system including visual inspection of the inflow, overflow, and outflow for deposits or blockage. Cleaning as needed.	X			X
General						
Throughout Panzer Kaserne		Use split and/or sand instead of salt for deicing purposes during winter times		X		X
Storm water drainage system throughout Panzer Kaserne		Inspect, clean, and maintain the storm water drainage system (inlets, gullies, drainage lines) on a regular schedule throughout the installation to ensure that it is kept open and clean.		X		X

*also refer to basin operations manual ("*Beckenbuch*")

Table 4-3c. Patch Barracks: Storm Water Best Management Practices

			BMP Status		BMP Type	
Bldg.	**Location**	**Best Management Practice**	**Existing**	**Recommended**	**Structural**	**Non-Structural**
Vehicle Fueling Operations						
2349	AAFES Gas Station	Good housekeeping.	X			X
2349	Fuel pump area	Sealed roof structure to protect fueling area from storm water.	X		X	
2349	Fuel pump area	Provide and maintain spill response equipment and fire extinguisher at fueling stations.	X			X
2349	Fuel pump area	Curb fueling area and install drainage system according to applicable regulation.	X		X	
2349	Fuel pump area	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
2349	Fuel pump area	Inspect, clean, and maintain the associated OWS #7727-4 system on a regular schedule as required according to applicable regulations. Repair deficiencies identified during the 2022 General Inspection.		X		X
2349	Fuel pump area	Visual self-inspect ("*Eigenkontrolle*") OWS #7727-4 on a monthly basis.	X			
Vehicle Washing						
2384	FMWR Car Wash	Capture wash water and send to wastewater-treatment plant. Treat wash water with OWS before discharge.	X		X	
2384	FMWR Car Wash	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.		X		X
2384	FMWR Car Wash	Re-design the drainage system to avoid run-off *remaining since 2017 update		X	X	
2384	FMWR Car Wash	Inspect, clean, and maintain the associated OWS #7727-2 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
2384	FMWR Car Wash	Visual self-inspect ("*Eigenkontrolle*") OWS #7727-2 on a monthly basis.	X			
2384	FMWR Car Was	Limit the use of detergents used to wash vehicles as detergents can cause the OWS to malfunction.		X		X
Bulk Fuel Storage Areas						
2349	AAFES Gas Station UST loading	Fill ports provide secondary containment for filling of UST and surrounding area drains through OWS.	X		X	
2349	AAFES Gas Station UST loading	Use dry camlock connectors to reduce fuel loss. Capture spills with drip pans when breaking connections.	X			X
2363	Power Plant #1	Monitor and drain containment on regular schedule.		X		X
2363	Power Plant #1	Use dry camlock connectors to reduce fuel loss. Capture spills with drip pans when breaking connections.	X			X
2363	Power Plant #1	Curb fuel transfer areas, treat with Oil Water Separator		X	X	
2316	Power Plant #2	Monitor and drain containment on regular schedule.		X		X

Table 4-3c. Patch Barracks: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Bulk Fuel Storage Areas (*continued*)						
2316	Power Plant #2	Use dry camlock connectors to reduce fuel loss. Capture spills with drip pans when breaking connections.	X			X
2316	Power Plant #2	Visually self-inspect ("*Eigenkontrolle*") OWS #7727-3 on a monthly basis.		X		
2316	Power Plant #2	Last inspection of OWS #7727-3 system dated 04/2007, significant deficiencies and leaks have been determined and the system is not operated in compliance. Repair is required – however, an up-grade of the power plant #2 is underway.		X	X	
2316	Power Plant #2	Reconsider BMPs after upgrade of the plant is completed.		X		X
2316	Power Plant #2	Ensure the secondary containment for the fuel tanks is tight, as vegetation growth was observed.		X	X	
2374	Power Plant #3	Monitor and drain containment on regular schedule.		X		X
2374	Power Plant #3	Use dry camlock connectors to reduce fuel loss. Capture spills with drip pans when breaking connections.	X			X
2350	Commissary UST loading	During fueling of AST for generator: i) use dry camlock connectors to reduce fuel loss; ii) use secondary containment iii) provide spill response equipment.		X		X
2398	Main Gate	Ultimately replace the oil-based heater system.	X			X
Construction Activities						
NA	Throughout Barracks	Construct sediment dams / silt fences around construction sites. Cover dirt/soil piles with tarpaulin. Cover storm water inlets/gullies temporarily.		X		X
NA	Throughout Barracks	Reduce quantity of material stored outside.		X		X
NA	Throughout Barracks	Good Housekeeping. Periodically clean streets and/or utilize BMPs to reduce tracking of soil away from construction site or soil piled.		X		X
Hazardous Substance Storage						
2316	HWAP north of Bldg.	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	
2316	HWAP north of Bldg.	Good housekeeping – remove dirt and debris from HWAP.		X		X
2316	HWAP north of Bldg.	Consider the prohibition to store certain hazardous substances together ("*Zusammenlagerungsverbot*").	X			X
2316	HWAP north of Bldg.	Provide and maintain spill response equipment at fueling stations.	X			X
2316	HWAP north of Bldg.	Install mount for fire extinguisher.	X			X
2316	HWAP north of Bldg.	Curb storage area and / or floor should slope towards a sump.	X		X	
2316	HWAP north of Bldg.	Place collection containers and drums on proper secondary containment.		X		X
2316	HWAP north of Bldg.	Maintain sump in HWAP on a regular schedule. Blowing rain can enter and fill sump, reducing the volume of secondary containment provided by the sump.	X			X

Table 4-3c. Patch Barracks: Storm Water Best Management Practices *(continued)*

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Hazardous Substance Storage (*continued*)						
2316	HWAP north of bldg	Do not place hazardous waste in the open area in front of the HWAP.		X		X
2349	AAFES Gas Station	Store hazardous materials inside or under cover.		X		X
2349	AAFES Gas Station	Good housekeeping.		X		X
2349	AAFES Gas Station	Remove waste battery collection box (remove or move inside building/under roof)	X			X
2384	Car Wash	Good housekeeping.	X			X
2384	Car Wash	Limit the use of detergents used to wash vehicles as detergents can cause the OWS to malfunction.	X			X
2384	Car Wash	Store soap and detergent inside or under cover.	X			X
2333	Centerra, Base Maintenance Contractors - inside building	Good Housekeeping	X			X
2333	Centerra, Base Maintenance Contractors - inside building	Store hazardous substances in lockable, metal cabinets or special collection / storage containers.	X			X
2333	Centerra, Base Maintenance Contractors	Do not use hazardous substances in the yard in front of building.	X			X
Outdoor Material Storage						
2316	Outdoor fuel canister storage near 2316	Reduce quantity of material stored outside.		X		X
2316	Power Plant #2 and associated construction laydown area	Reduce quantity of material stored outside.		X		X
2333	Outdoor fuel canister storage north of 2333	Reduce quantity of material stored outside.		X		X
2338/2366	Open Material Storage	Good Housekeeping. Periodically clean up debris from the site.		X		X
2338/2366	Open Material Storage	Reduce quantity of material stored outside.		X		X
2338/2366	Open Material Storage	Construct sediment dams / silt fences. Cover dirt/soil piles with tarpaulin. Use/install sand/material boxes. Store dirt/soil at the lowest point. Good housekeeping (clean/maintain drainage inlets on a regular basis).		X		X
2349	AAFES Gas Station	Reduce quantity of material stored outside.		X		X

Table 4-3c. Patch Barracks: Storm Water Best Management Practices *(continued)*

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Power Production						
2363	Power Plant #1	Capture leaks and spills from power production equipment using drip pans.	X			X
2363	Power Plant #1	Good housekeeping – remove dirt and debris from containment of AST.		X		X
2316	Power Plant #2	Capture leaks and spills from power production equipment using drip pans.	X			X
2316	Power Plant #2	Good housekeeping – remove dirt and debris from containment of AST.		X		X
2374	Power Plant #3	Capture leaks and spills from power production equipment using drip pans.	X			X
2374	Power Plant #3	Good housekeeping – remove dirt and debris from containment of AST (if present in the enclosure).		X		X
General						
Throughout Patch Barracks		Use split and/or sand instead of salt for deicing purposes during winter times		X		X
Storm water drainage system throughout Patch Barracks		Inspect, clean, and maintain the storm water drainage system (inlets, gullies, drainage lines) on a regular schedule throughout the installation to ensure that it is kept open and clean.	X			X

Table 4-3d. Stuttgart Army Airfield: Storm Water Best Management Practices

			BMP Status		BMP Type	
Bldg.	**Location**	**Best Management Practice**	**Existing**	**Recommended**	**Structural**	**Non-Structural**
Aircraft Ground Support Equipment Maintenance						
3227	Hangar 5	Good housekeeping	X			X
3227	Hangar 5	Perform maintenance/repair activities inside.	X			X
3227	Hangar 5.	Cap hoses to prevent drips and spills.	X			X
3227	Hangar 5	Use drip pans to capture leaking fluids.	X			X
Aircraft / Taxiway Deicing						
Flight Line / Taxiway		Put critical aircraft in hangars/shelter during inclement weather.		X	X	
Flight Line / Taxiway		Complete aircraft deicing on commercial side of airfield. Comply with all applicable requirements.	X			X
Flight Line / Taxiway		Comply with deicing requirements of the FSG.	X		X	
Aircraft / Vehicle Fueling Operations						
Flight Line / Taxiway		Provide spill response equipment at fueling locations.	X			X
Flight Line / Taxiway		Curb fuel transfer areas and treat with an oil-water separator. The Wash Rack near 3226 meets this requirement and may be used if mission allows.		X	X	
Flight Line / Taxiway		Where curbed fuel transfer areas are unavailable or do not meet mission requirements, ensure fueling occurs only on sealed surfaces/hardstand. Ensure the entire aircraft is on sealed surface before initiating fueling.	X			X
near 3215	Mobile Gas Station	Good housekeeping.	X			X
near 3215	Mobile Gas Station	Install sealed roof structure to protect fueling area from storm water. Storage tanks are sheltered in small shed but dispensing area is uncovered		X	X	
near 3215	Mobile Gas Station	Provide and maintain spill response equipment at fueling stations.	X			X
near 3215	Mobile Gas Station	Provide fire extinguisher at fueling stations.	X			
near 3215	Mobile Gas Station	Curb fuel transfer areas and treat with an oil-water separator.		X	X	
near 3215	Mobile Gas Station	Use lockable fuel dispensers and keep locked.	X			X
near 3215	Mobile Gas Station	Capture spills with drip pans when breaking connections.		X		X
Near 3226	Wash Rack and Fueling Pad	Provide and maintain spill response equipment at fueling stations.		X		X
Near 3226	Wash Rack and Fueling Pad	Provide fire extinguisher at fueling stations.		X		X
Near 3226	Wash Rack and Fueling Pad	Curb and cover fuel transfer areas and treat with an oil-water separator	X		X	

Table 4-3d. Stuttgart Army Airfield: Storm Water Best Management Practices *(continued)*

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Aircraft / Vehicle Maintenance and Repair						
3215	Naval Unit 2 Hangar	Perform maintenance/repair activities inside. Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.		X		X
3215	Naval Unit 2 Hangar	Treat (storm) water runoff with OWS with alarm system before discharge.		X	X	
3215	Naval Unit 2 Hangar	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand	X			X
3220	Maintenance pad north of bldg	Good housekeeping.	X			X
3220	Maintenance pad north of bldg	Perform maintenance/repair activities inside (e.g. Hangar 2 / 3220).		X		X
3220	Maintenance pad north of bldg	Use drip pans to capture drained fluids. Cap hoses to prevent drips and spills.	X			X
3220	Maintenance pad north of bldg	Maintenance pad is curbed.	X		X	
3220	Hangar 2	Good housekeeping.	X			X
3220	Hangar 2	Perform maintenance / repair activities inside. Use drip pans to capture drained fluids. Cap hoses to prevent drips and spills.	X			X
3220	Hangar 2	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
3226	Hangar 4	Good housekeeping.	X			X
3226	Hangar 4	Perform maintenance/repair activities inside.	X			X
3226	Hangar 4	Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.		X		X
3226	Hangar 4	Treat (storm) water runoff with OWS with alarm system before discharge.		X	X	
3226	Hangar 4	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand	X			X
3226	Hangar 5	Good housekeeping.	X			X
3226	Hangar 5	Perform maintenance/repair activities inside.	X			X
3226	Hangar 5	Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.	X			X
3226	Hangar 5	Treat (storm) water runoff with OWS with alarm system before discharge.		X	X	
3226	Hangar 5	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand	X			X
3219	DES Fire Dept. Hangar 1	Good housekeeping.	X			X
3219	DES Fire Dept. Hangar 1	Perform maintenance of fire extinguisher inside.	X			X
3219	DES Fire Dept. Hangar 1	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.		X		X

Table 4-3d. Stuttgart Army Airfield: Storm Water Best Management Practices *(continued)*

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Aircraft / Vehicle Washing						
3259	Fire Department – lot to east of bldg	Good housekeeping.	X			X
3259	Fire Department – lot to east of bldg	Capture washwater and send to wastewater-treatment plant.	X		X	
3259	Fire Department – lot to east of bldg	Treat washwater with oil-water separator before discharge.		X	X	
3259	Fire Department – lot to east of bldg	Limit the use of detergents used to wash vehicles as detergents.	X			X
3259	Fire Department – lot to east of bldg	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
3259	Fire Department – lot to east of bldg	Renew the cracked surface of lot / wash pad.		X	X	
3226	Wash Rack at northwest corner of bldg	Good housekeeping.	X			X
3226	Wash Rack at northwest corner of bldg	Captured wash water discharges to the municipal wastewater treatment facility via an OWS.	X		X	
3226	Wash Rack at northwest corner of bldg	Limit the use of detergents used to wash aircrafts as detergents can cause the OWS to malfunction.	X			X
3226	Wash Rack at northwest corner of bldg	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
3226	Wash Rack at northwest corner of bldg	Inspect, clean, and maintain the associated OWS #7722-2 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
3217	Wash Rack	Good housekeeping.	X			X
3217	Wash Rack	Captured wash water discharges to the municipal wastewater treatment facility via an OWS.	X		X	
3217	Wash Rack	Limit the use of detergents used to wash vehicles and equipment as detergents can cause the OWS to malfunction.	X			X
3217	Wash Rack	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
3217	Wash Rack	Inspect, clean, and maintain the associated OWS #7722-1 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X

Table 4-3d. Stuttgart Army Airfield: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Bulk Fuel Storage Areas						
3215	Mobile Gas Station	Use dry camlock connectors to reduce fuel loss.		X		X
3215	Mobile Gas Station	Capture spills with drip pans when breaking connections.		X		X
3215	Mobile Gas Station	Curb fuel transfer areas, treat with oil-water separator.		X	X	
3215	Mobile Gas Station	Use dry camlock connectors to reduce fuel loss.		X		X
Hazardous Substance Storage						
3215	Mobile Gas Station	Store hazardous materials inside or under cover.	X			X
3215	Naval Unit 2 Hangar	Store hazardous materials inside or under cover.	X			X
3217	Wash Rack and area around building	Store materials inside, including detergent / soap.		X		X
3219	DES Fire Dept. Hangar 1	Good housekeeping.	X			X
3219	DES Fire Dept. Hangar 1	Store hazardous materials inside / in lockable cabinets / use secondary containment.	X			X
3219	HWAP east of bldg	Good housekeeping and maintenance – clean HazMat Collection area on a regular basis, use proper containers, containment, labeling, placement, etc.	X			X
3219	HWAP east of bldg	Maintain sump in HWAP on a regular schedule. Blowing rain can enter and fill sump, reducing the volume of secondary containment provided by the sump. Install mount for fire extinguisher		X		X
3219	HWAP east of bldg	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	
3219	HWAP east of bldg	Place collection containers and drums on proper secondary containment.	X			X
3219	HWAP east of bldg	Provide and maintain spill response equipment.	X			X
3219	HWAP east of bldg	Consider the prohibition to store certain hazardous substances together ("*Zusammenlagerungsverbot*").	X			X
3219	HWAP east of bldg	Floor should slope towards sump.	X			X
3219	HWAP east of bldg	Do not place hazardous waste in the open area in front of the HWAP.	X			X
3220	Maintenance pad north of bldg	Store hazardous materials inside or under cover.	X			X
3220	Hangar 2	Store hazardous materials inside or under cover.	X			X
3226	Wash Rack at northwest corner of bldg	Store detergent / soap inside.	X			X
3226	Hangar 4	Good housekeeping.	X		X	
3226	Hangar 4	Store hazardous materials inside / in lockable cabinets / use secondary containment.	X			X
3227	Hangar 5	Good housekeeping.	X			X
3227	Hangar 5	Store hazardous materials inside / in lockable cabinets / use secondary containment.	X		X	
3241	Motor Pool 405th Army Field Support Brigade	Good housekeeping	X			X
3241	Motor Pool 405th Army Field Support Brigade	Store hazardous materials inside / in lockable cabinets / use secondary containment.	X			X
3241	Motor Pool / non-functional vehicle lot	Store hazardous materials inside / under cover / use secondary containment. Do not allow accumulation of batteries and other waste in lot.		X	X	
3259	Fire Department – lot to east of bldg	Store detergent / soap inside or under cover.	X			X

Table 4-3d. Stuttgart Army Airfield: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Hazardous Substance Storage (*continued*)						
3259	North of bldg	Store hazardous materials inside / in lockable cabinets / use secondary containment.	X			X
3262	Waste Oil UST	Good housekeeping	X			X
3262	Waste Oil UST	Keep shed locked at all times.	X			X
3262	Waste Oil UST	Store hazardous materials inside or under cover.	X		X	
3262	Waste Oil UST	Use funnel for waste oil transfer. Waste oil transfer only inside.	X		X	
3262	Waste Oil UST	Capture spills with drip pans when breaking connections after product transfer.		X		X
Outdoor Material Storage Areas						
near 3215	Yard to the northeast / former POL Yard	Reduce quantity of material stored outside.		X		X
3217	Area around bldg	Reduce quantity of material stored outside.		X		X
3217	Area around bldg	Store hazardous materials/substances/products inside (e.g. in warehouse or in the Connex).		X		X
3241	Motor Pool 405th Army Field Support Brigade	Reduce quantity of material stored outside.		X		X
Vehicle Storage Yards						
near 3215	Yard to the northeast / former POL Yard	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.	X			X
3217	Area around bldg	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.		X		X
3242	Motor Pool	Good housekeeping	X			X
3242	Motor Pool	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.		X		X
3242	Motor Pool / non-functional vehicle lot	Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand		X		X
3242	Motor Pool	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.		X		X
3242	Motor Pool	Inspect, clean, and maintain the associated OWS #7722-3 system on a regular schedule as required according to applicable regulations.	X			X
3242	Motor Pool	Repair OWS #7722-3 IAW findings from 2022 GI. Re-Inspect when repairs are complete.		X	X	
3259	Fire Department	Check vehicles in storage for leaks and spills. Use drip pans to capture leaking fluids.		X		X
General						
Throughout SAAF		Use split and/or sand instead of salt for deicing purposes during winter times.		X		X
Storm water drainage system throughout SAAF		Inspect, clean, and maintain the storm water drainage system (inlets, gullies, drainage lines) on a regular schedule throughout the installation to ensure that it is kept open and clean.	X			X

Table 4-3e. Kornwestheim Golf Course: Storm Water Best Management Practices

			BMP Status		BMP Type	
Bldg.	**Location**	**Best Management Practice**	**Existing**	**Recommended**	**Structural**	**Non-Structural**
Vehicle Fueling Operations						
977A	North of bldg	Good housekeeping.	X			X
977A	North of bldg	Provide and maintain spill response equipment and fire extinguisher at Fueling Pad.	X			X
977A	North of bldg	Curb fueling area and install drainage system according to applicable regulation.	X		X	
977A	North of bldg	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
977A	Southwest corner of Fuel Pad	Inspect, clean, and maintain the associated OWS #7726-1 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
977A	Fuel Pad	Construct a sealed roof structure to protect the Fueling Pad area from storm water.		X	X	
Vehicle Maintenance and Repair						
Maintenance Complex 979	Northern bldgs	Perform maintenance / repair activities inside. Cap hoses to prevent drips and spills.	X		X	
Maintenance Complex 979	Northern bldgs	Provide and maintain spill response equipment.	X			X
Maintenance Complex 979	Northern bldgs	Use drip pans to capture drained fluids.	X			X
Vehicle Washing						
Maintenance Complex 979	Wash Pad	Limit the use of detergents used to wash vehicles as detergents can cause the OWS to malfunction.	X			X
Maintenance Complex 979	Wash Pad	Capture wash water and send to wastewater-treatment plant. Treat wash water with OWS before discharge.	X		X	
Maintenance Complex 979	Wash Pad	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
Maintenance Complex 979	Wash Pad	Inspect, clean, and maintain the associated OWS #7726-2 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
Maintenance Complex 979	OWS #7726-2	Repair leaking OWS #7726-2.	X		X	
980 Golf Caddy Garage	Wash Pad west of Bldg 980	Limit the use of detergents used to wash vehicles as detergents can cause the OWS to malfunction.	X			X
980 Golf Caddy Garage	Wash Pad west of Bldg 980	Capture wash water and send to wastewater-treatment plant. Treat wash water with OWS before discharge.	X		X	
980 Golf Caddy Garage	Wash Pad west of Bldg 980	Inspect, clean, and maintain drains on a regular / as needed basis - ensure that it is kept open and clean.	X			X
980 Golf Caddy Garage	Wash Pad west of Bldg 980	Inspect, clean, and maintain the associated OWS # 7726-3 system on a regular schedule as required according to applicable regulations - ensure that it is kept open and clean.	X			X
980 Golf Caddy Garage	OWS #7726-3	Repair leaking OWS #7726-3.	X		X	

Table 4-3e. Kornwestheim Golf Course: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Bulk Fuel Storage Areas						
977A	North of bldg	Use dry camlock connectors to reduce fuel loss. Capture spills with drip pans when breaking connections.	X			X
977A	North of bldg	Curb fuel transfer areas, treat with OWS.	X		X	
Construction Activities						
NA	Throughout golf course and grounds	Construct sediment dams / silt fences around construction sites. Cover dirt/soil piles with tarpaulin. Cover storm water inlets/gullies temporarily.		X		X
Hazardous Substance Storage						
979	Maintenance Complex	Store hazardous materials inside, under roof and/or in lockable Connex (outside) and cabinet (inside)	X		X	
979	Maintenance Complex	Place hazardous material collection containers / drums on secondary containment.	X			X
979	Maintenance Complex	Provide and maintain fire extinguisher and oil spill equipment at HazMat Collection Point.	X			X
979	Maintenance Complex	Good housekeeping and maintenance – clean HazMat Collection area on a regular basis, use proper containers, containment, placement, etc.	X			X
979	Maintenance Complex	Consider the prohibition to store certain hazardous substances together ("*Zusammenlagerungsverbot*")	X			X
Outdoor Material Storage Areas						
Maintenance Complex 979	Courtyard	Cover and/or curb sand piles.	X			X
Maintenance Complex 979	Courtyard	Good housekeeping – keep courtyard area and drainage system free of sediment, sand, dirt, and debris through routine sweeping of courtyard area.	X			X
Maintenance Complex 979	Courtyard	Store equipment / vehicles under roof as much as possible. Check equipment/vehicles for leaks and spills. Use drip pans to capture leaking fluids.		X		X
Maintenance Complex 979	Courtyard	Drain the entire area through an OWS.	X		X	
977	around bldg	Remove old equipment as needed. Check equipment / vehicles for leaks and spills. While old tractors / equipment / machines are still stored in this area, use drip pans to capture leaking fluids.	X			X

Table 4-3e. Kornwestheim Golf Course: Storm Water Best Management Practices (*continued*)

Bldg.	Location	Best Management Practice	Existing	Recommended	Structural	Non-Structural
Pesticide Operations						
Maintenance Complex 979	Southeast bldg	Capture rinse water when mixing chemicals. Designated pesticide / fertilizer mixing area with drainage collection sump.	X		X	
Maintenance Complex 979	Southeast bldg	Lock pesticides and fertilizer; just in-time-delivery.	X			X
Maintenance Complex 979	Southeast bldg	Store spray equipment inside.	X			X
General						
Throughout Kornwestheim Golf Course		Use split and/or sand instead of salt for deicing purposes during winter times.		X		X
Storm water drainage system throughout Kornwestheim Golf Course		Inspect, clean, and maintain the storm water drainage system (inlets, gullies, drainage lines) on a regular schedule throughout the installation to ensure that it is kept open and clean.	X			X

Table 4-3f. Robinson Barracks: Storm Water Best Management Practices

			BMP Status		BMP Type	
Bldg.	**Location**	**Best Management Practice**	**Existing**	**Recommended**	**Structural**	**Non-Structural**
Construction Activities						
NA	Throughout Barracks	Construct sediment dams / silt fences around construction sites. Cover dirt/soil piles with tarpaulin. Cover storm water inlets/gullies temporarily.		X		X
Hazardous Substance Storage						
116	HWAP near 116	Store hazardous materials inside or under cover. Reduce use of hazardous materials.	X		X	
116	HWAP near 116	Good housekeeping - clean HWAP on a regular basis. Ensure containers are not contaminated with waste.		X		X
116	HWAP near 116	Provide and maintain sump in HWAP.		X		X
116	HWAP near 116	Provide and maintain spill response equipment.	X			X
116	HWAP near 116	Install mount for fire extinguisher.	X			X
116	HWAP near 116	Place collection drums and containers on secondary containment.	X			X
116	HWAP near 116	Consider the prohibition to consolidate hazardous waste ("*Zusammenlegungsverbot*").		X		X
146	Southeast / back side of bldg.	Store hazardous materials (fuel cylinders) inside or under cover. Reduce use / storage of hazardous materials.		X	X	
Outdoor Material Storage Areas						
146	Southeast / back side of bldg.	Reduce quantity of material stored outside.		X		X
146	Southeast / back side of bldg.	Good housekeeping - routinely sweep yard and remove dirt, trash, debris, and discarded materials.		X		X
146 / Contractor Area*	Northeast of 146*	Reduce quantity of materials and equipment stored outside.	X*			X
146 / Contractor Area*	Northeast of 146*	Ensure spills from the salt silos are cleaned up promptly	X			X
146	Recycling Area northeast side of bldg.	Reduce quantity of material stored outside. Ensure dumpsters are kept closed to minimize exposure of materials to rainwater.		X		X
146	Recycling Area northeast side of bldg.	Good housekeeping - routinely sweep yard and remove dirt, trash, debris, and discarded materials.	X			X
General						
Throughout Barracks		Use split and/or sand instead of salt for deicing purposes during winter times.		X		X
Storm water drainage system throughout Robinson Barracks		Inspect, clean, and maintain the storm water drainage system (inlets, gullies, drainage lines) on a regular schedule throughout the installation to ensure that it is kept open and clean.	X			X

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5 TRAINING

Training is essential for effective implementation of the SWPPP. Personnel at all levels of responsibility that are involved in the activities described in Table 3-1 are trained in the components and goals of the SWPPP. Training addresses each component of the SWPPP, including how and why BMPs are to be implemented.

At a minimum, the following is included in the training program:

1. Personnel are trained to identify and **manage potential spills** that can occur from equipment and containers of petroleum products (i.e. gas, diesel fuel, oil, lubricating grease, hydraulic fluids, etc.).
2. Personnel are trained in **proper good housekeeping practices** which include the following.
    - Regular vacuuming and/or sweeping.
    - Prompt cleaning and proper disposal of spilled materials.
    - Identification of the storage location of brooms, vacuums, sorbents, foams, neutralizing agents, and other housekeeping and spill response equipment.
    - Instruction on securing drums and containers.
    - Prohibition on the disposal of any foreign material into the storm water drainage system. Such actions are illegal and could potentially result in monetary penalties and criminal prosecution.
3. Personnel are trained to **recognize toxic and hazardous substances** located at the USAG Stuttgart. Personnel are trained in:
    - Proper organization and storage of materials; and
    - Identification of toxic and hazardous substances stored, handled, and produced on-site.
4. Personnel are trained in the impacts of construction activities on storm water and the benefits of **sediment and erosion control measures** at the USAG Stuttgart. Personnel are trained in the practices of:
    - Reducing soil erosion; and
    - Containing and treating storm water runoff carrying eroded sediments.
5. Personnel are trained to recognize the **water protection zones** located at the USAG Stuttgart. The characteristics of the following water protection zones are included in the training:
    - Zone I - Well Head Protection Area ("*Fassungsbereich*");
    - Zone II - Closer Protection Zone ("*Engere Schutzzone*"); and
    - Zone III - Wider Protection Zone („*Weitere Schutzzone*").

To facilitate successful personnel training, storm water pollution or control problem areas should be identified and training sessions should be conducted to stimulate personnel feedback. Memoranda, bulletin board updates, suggestion boxes, and routine meetings can be used to enhance personnel training.

New personnel receive training following assignment to the USAG Stuttgart. All personnel training is documented and the training records are maintained by the DPW-ED. A sample training form is included in **Appendix 4**. SWPP training is also included in the training program for all Environmental Officers (EO) in accordance with Army in Europe Regulation (AE) 200-100.

APPENDIX 1

USAG STUTTGART MAPS – SWPPP-SPECIFIC

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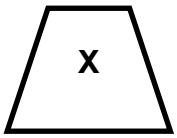
USAG STUTTGART Map – SWPPP Specific

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Each symbol will be followed by the 5-digit facility number of the building nearest to the activity, practice, or outfall.

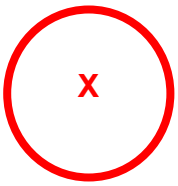


Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier.

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas - ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards



Storm Water Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

X

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:

1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the Tri-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

To Weidach Creek

101O

POV Parking Lot

DPW Yard

To Weidach Creek

101B

To Weidach Creek

101A

North Storm Water Retention and Sedimentation Basin

5, 7

Hazardous Waste Storage Area

FMWR Car Wash & DPW Wash Rack

AAFES / DLA Gas Station

To Back Gate

DPW Shops

FMWR Auto Skills

3320 GENERATOR

Access Control Point (ACP)

Cistern (Underground)

Pump Station South

South Storm Water Retention Basin

To Koersch Creek

002

003

To Wastewater Treatment Plant Moehringen

Plieninger Straße

Filderhauptstraße

Ahornstraße

Eichenstraße

Birkenstraße

Oleanderstraße

Eichenstraße

Ahornstraße

Poplarstraße

Ashstraße

Maplestraße

Oakstraße

Pinestraße

Vestastraße

Applestraße

Chinholdstraße

Legend

- HWAP
- HWSA
- OIl Water Separator Abandoned
- Oil Water Separator (OWS) Active
- Oil Water Separtor (OWS) (Inactive - Should be Removed)
- Oil Water Separator (OWS) Removed
- To Wastewater Treatment Plant
- Storm Water Outfall
- Leader Line
- Sanitary Flow
- Stormwater Flow
- Industrial/Construction Activity
- Best Management Practice
- Industrial/Construction Activity Area
- Stormwater Catch Basin
- Stormwater Downspout
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Wastewater Pump Station
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Spill Containment
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas - ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:

1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the Tri-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

0 40 80 160 Feet

0 10 20 40 Meters

N

Stuttgart SWPPP 2023
Kelly Barracks [GE 44F]

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS
CHECKED BY: EKD
Plot Date: 12/20/2024

File Name: SWPPP_Kelley.aprx

FIGURE NUMBER 1

REVISION A

Legend

- HWAP
- OII Water Separator Abandoned
- Oil Water Separator (OWS) Active
- Oil Water Separtor (OWS) (Inactive - Should be Removed)
- Oil Water Separator (OWS) Removed
- To Wastewater Treatment Plant
- Storm Water Outfall
- Leader Line
- Sanitary Flow
- Stormwater Flow
- Industrial/Construction Activity
- Best Management Practice
- Industrial/Construction Activity Area
- Stormwater Catch Basin
- Stormwater Discharge
- Stormwater Downspout
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Wastewater Channel
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Spill Containment
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas – ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:

1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the 'In-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Image Provided by Google

0 55 110 220 Feet

0 15 30 60 Meters

N

Stuttgart SWPPP 2023 Panzer North

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS CHECKED BY: Plot Date:12/22/2024 FIle Name:: SWPP_PanzerAll.aprx	FIGURE NUMBER 1 REVISION A

Legend

- HWAP
- OII Water Separator Abandoned
- Oil Water Separator (OWS) Active
- To Wastewater Treatment Plant
- Storm Water Outfall
- Leader Line
- Sanitary Flow
- Stormwater Flow
- Industrial/Construction Activity
- Best Management Practice
- Industrial/Construction Activity Area
- Stormwater Catch Basin
- Stormwater Downspout
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Drainage Divide, Stormwater
- Wastewater Channel
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Spill Containment
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas - ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:
1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the Tri-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Image Provided by Google

0 40 80 160 Feet

0 10 20 40 Meters

N

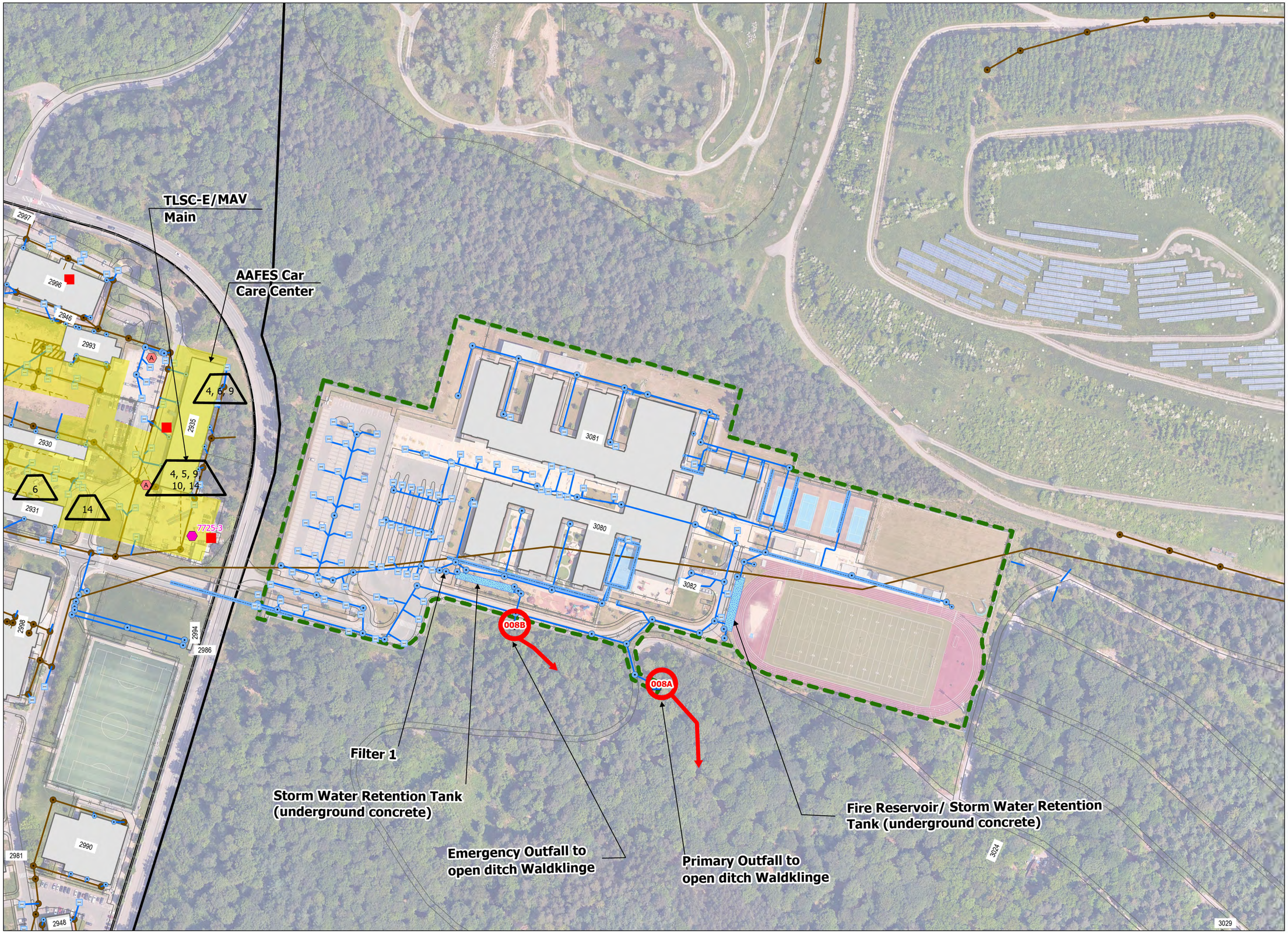
Stuttgart SWPPP 2023
Panzer South

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS
CHECKED BY:
Plot Date:12/22/2024
File Name: SWPP_PanzerAll.aprx

FIGURE NUMBER 1

REVISION A



Legend

- HWAP
- Oil Water Separator Abandoned
- Oil Water Separator (OWS) Active
- Oil Water Separtor (OWS) (Inactive - Should be Removed)
- Storm Water Outfall
- Leader Line
- Stormwater Flow
- Industrial/Construction Activity
- Stormwater Catch Basin
- Stormwater Discharge
- Stormwater Downspout
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Spill Containment
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

X Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier .

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas – ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

X Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

X Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:
1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the In-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Image Provided by Google

0 40 80 160 Feet

0 10 20 40 Meters

N

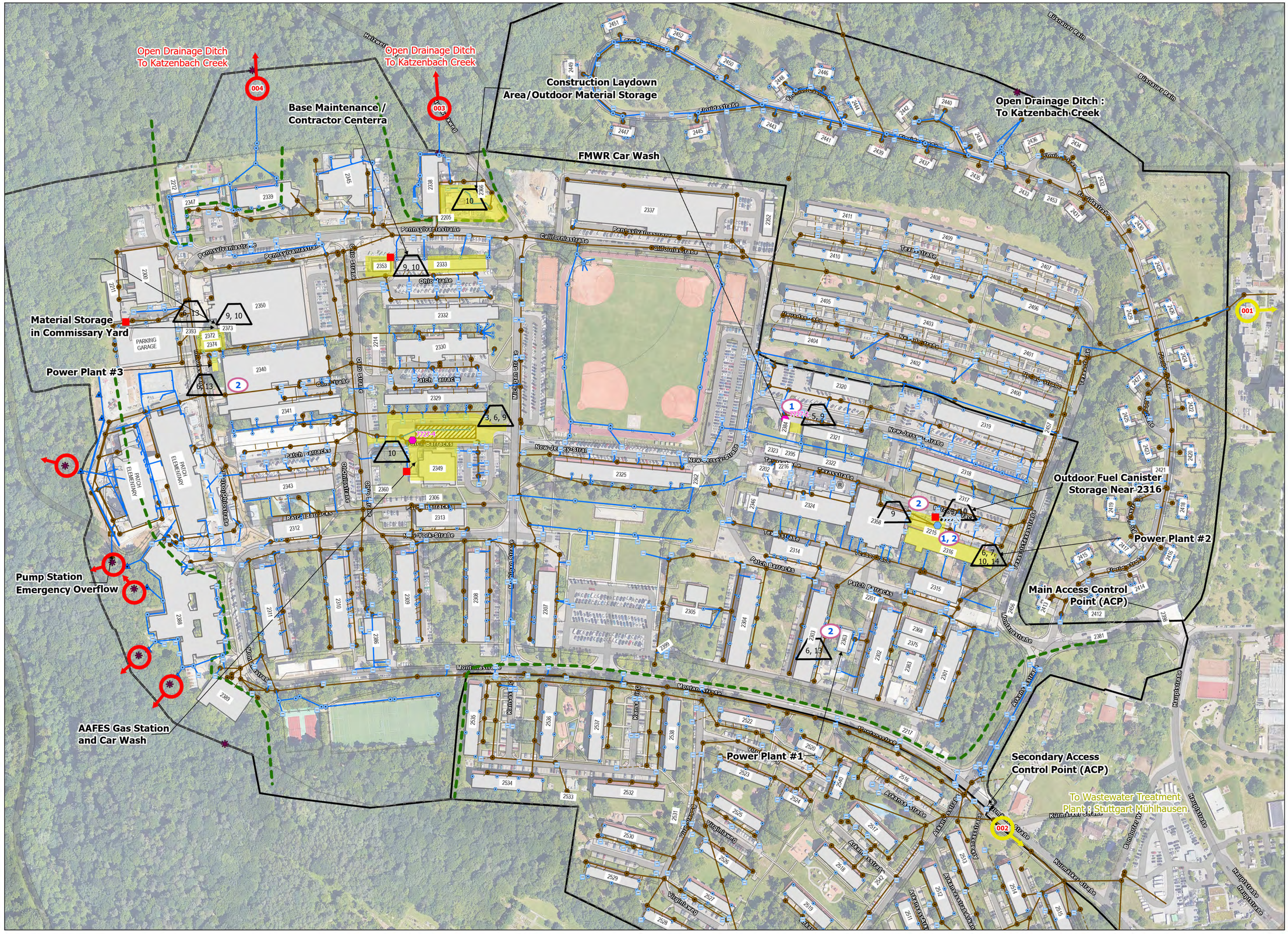
Stuttgart SWPPP 2023
Panzer Elementary

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS
CHECKED BY:
Plot Date:12/22/2024
File Name: SWPP_PanzerAll.apex

FIGURE NUMBER 1

REVISION A



Legend

- HWAP
- Oil Water Separator (OWS) Active
- Oil Water Separtor (OWS) (Inactive - Should be Removed)
- Oil Water Separator (OWS) Removed
- To Wastewater Treatment Plant
- Storm Water Outfall
- Leader Line
- Sanitary Flow
- Stormwater Flow
- Industrial/Construction Activity
- Best Management Practice
- Industrial/Construction Activity Area
- Stormwater Catch Basin
- Stormwater Discharge
- Stormwater Downspout
- Stormwater Manhole
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Wastewater Pump Station
- Outfall, Wastewater
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Spill Containment
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas - ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:
1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the Tri-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Text

0 55 110 220 Feet

0 15 30 60 Meters

N

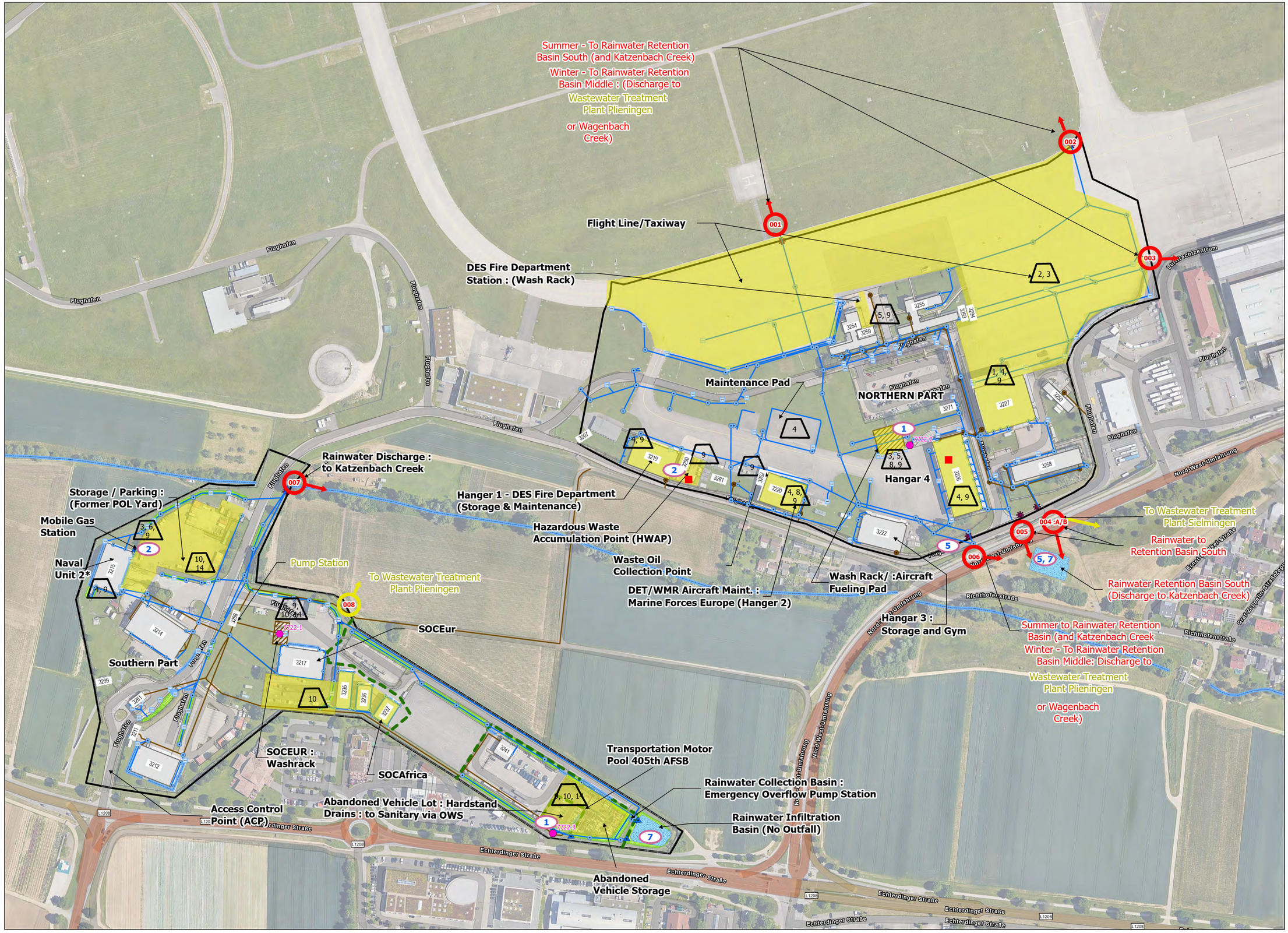
Stuttgart SWPPP 2023
Patch Barracks [GE 656]

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS 12/22/2024
CHECKED BY: EKD
Plot Date: 12/22/2024
File Name: SWPP_Patch2.aprx

FIGURE NUMBER 1

REVISION A



Legend

- HWAP
- Oil Water Separator (OWS) Active
- To Wastewater Treatment Plant
- Storm Water Outfall
- Leader Line
- Sanitary Flow
- Stormwater Flow
- Industrial/Construction Activity
- Best Management Practice
- Stormwater Catch Basin
- Stormwater Discharge
- Stormwater Downspout
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Spill Containment
- Inner Boundary
- Swale

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas - ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:
1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the In-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Image provided by Google

Stuttgart SWPPP 2023
Stuttgart Army Airfield [GE 19B]

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS 10/30/2023 CHECKED BY: Plot Date: 12/22/2024 File Name: SWPP_Airfield.aprx	FIGURE NUMBER 1 REVISION A

Legend

- HWAP
- HWSA
- OII Water Separator Abandoned
- Oil Water Separator (OWS) Active
- Oil Water Separtor (OWS) (Inactive - Should be Removed)
- Oil Water Separator (OWS) Removed
- To Wastewater Treatment Plant
- Storm Water Outfall
- Leader Line
- Sanitary Flow
- Stormwater Flow
- Industrial/Construction Activity
- Best Management Practice
- Industrial/Construction Activity Area
- Potential Industrial/Construction Activity Area
- Stormwater Catch Basin
- Stormwater Discharge
- Stormwater Downspout
- Stormwater Fitting
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Wastewater Channel
- Wastewater Pump Station
- Fitting, Wastewater
- Outfall, Wastewater
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Spill Containment
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas – ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:
1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the Tri-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Image Provided By Google

0 20 40 80 Feet

0 5 10 20 Meters

N

Stuttgart SWPPP 2023
Kornwestheim Golf Course [GE 46J]

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS CHECKED BY: Plot Date: 12/21/2024 File Name: SWPP_Golf.aprx	FIGURE NUMBER 1 REVISION A

Legend

- HWAP
- To Wastewater Treatment Plant
- Leader Line
- Sanitary Flow
- Industrial/Construction Activity
- Industrial/Construction Activity Area
- Stormwater Catch Basin
- Stormwater Discharge
- Stormwater Downspout
- Stormwater Fitting
- Stormwater Manhole
- Stormwater Open Drain
- Stormwater Pipes
- Retention Basin
- Drainage Divide, Stormwater
- Fitting, Wastewater
- Outfall, Wastewater
- Wastewater Manhole
- Gravity Main, Wastewater
- Lateral Line, Wastewater
- Environmental Discharge
- Buildings
- Inner Boundary
- Outer Boundary

Symbols for Storm Water Pollution Prevention Plan Mapping Layer

Industrial/Construction Activity

Each industrial activity should be designated on the USAG Stuttgart Map in the following configuration. Each activity does not need a unique identifier .

X = INDUSTRIAL ACTIVITY as selected from the following list:

1. Aircraft Ground Support Equipment Maintenance Areas
2. Aircraft/runway deicing
3. Aircraft/Vehicle fueling operations – Outdoor Liquid Transfer
4. Aircraft/Vehicle maintenance and repair
5. Aircraft/Vehicle washing areas
6. Bulk fuel storage areas – ASTs
7. Construction activities
8. Corrosion control activities
9. Hazardous material storage
10. Outdoor material storage areas
11. Outdoor painting/de-painting operations
12. Pesticide operations
13. Power production
14. Vehicle storage yards

Stormwater Outfall

Existing storm water outfalls should be designated on the USAG Stuttgart Map in the following configuration.

Best Management Practice

Existing BMPs should be designated on the USAG Stuttgart Map in the following configuration. Each BMP does not need a unique identifier.

X = BMP as selected from the following list:
1. Oil Water Separator
2. Absorbent Materials
3. Booms
4. Skimmer Dam
5. Spill Control Gate/Valve
6. Vegetative Filters
7. Retention Pond

All drawings must be compatible with USAREUR Spatial Data Standards (SDS), formerly known as the Tri-Service Spatial Data Standards, as well as all applicable Federal Geographic Data Committee (FGDC) standards.

Image Provided By Google

0 80 160 320 Feet

0 20 40 80 Meters

N

Stuttgart SWPPP 2023
Robinson Barracks

Prepared for USAG Stuttgart
Department of Public Works Environmental Division

DRAWN BY: GJS CHECKED BY: EKD Plot Date: 12/22/2024	FIGURE NUMBER 1
File Name: SWPP_Robinson.aprx	REVISION A

APPENDIX 2

STORM WATER OUTFALLS

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Table A-2.1.a Kelley Barracks: Outfalls with Industrial Activities

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA[2] (m^2)	RECEIVING STREAM / FACILITY
001A	Hazardous Waste Storage Area DPW Yard POV Parking Lot Contractor Area	3371 3360/3370 NA / 3391 back of DPW Yard	33,130	via on-post North Storm Water Retention and Sedimentation Basin and OWS #7735-5 to *Weidach* Creek (which eventually discharges to *Koersch* Creek)
001B	None	Northern part of Spruce Street	none	*Weidach* Creek (connects to drain of outfall 001A off-post and which eventually discharges to Koersch Creek)
002	AAFES / DLA Gas Station 405th AFSB BASOPS / FMWR Repair Shops DPW Shops Emergency Generator	3325 3320 3318 3322	3,650	via the South Storm Water Retention Basin to the *Koersch* Creek
003	FMWR Car Wash / DPW Wash Pad	3392/3390	760	Municipal Sewer System / Waste Water Treatment Plant Moehringen
Cistern	ACP	4518	11,150	Reportedly, to the *Koersch* Creek

[2] The total areas as indicated in Tables A-2.1.a through A-2.1.f comprise all sealed areas that deliver storm water to the respective outfall exclusively from industrial / construction activity areas.

Table A-2.1.b Panzer Kaserne: Outfalls with Industrial Activities

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
001	FMWR Auto Skill Center 405th AFSB POV Shipping Yard TLSC-E / MAV Maintenance & Wash Rack / TüV Inspection Station / AAFES Car Care Center	2930 2931 2935	17,800	Almost all storm water flows to the Storm Water Retention Pond and the local waste water treatment plant Böblingen, unless very heavy rain occurs, in which case there may be some minor overland flow runoff.
002	DLA / 405 AFSB Gas Station Salt Silos 554th MP Maintenance 405th AFSB Reuse Center 1/10th SFG Maintenance & Wash Pad NSWU/2 Boat Barn NSWU/2 Maintenance HWAP	2953 East of 2953 2958 2956 2969 2968 2970 2958/2974	18,200	Almost all storm water flows to the Storm Water Retention Pond and the local waste water treatment plant Böblingen, unless very heavy rain occurs, in which case there may be some minor overland flow runoff.
003 through 007	NA	NA	Only drain the south side of the road	All storm water drains to the drainage ditch south of the road, unless very heavy rain occurs, in which case there may be some minor overland flow runoff.

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
008	Stuttgart Elementary School and High School *	3080 and 3081	86,500	Storm water from the roof, driveways, the parking lot, and the walkways of the school's discharge via storm water storage basin or a fire water / rain water reservoir into the *Waldklinge* Creek and associated ponds (the downgradient biotopes are protected).
009	Panzer Hotel *	2905	25,900	Storm water from the roof, driveways, the parking lot, and the walkways of the Panzer Hotel drain into the *Wolfsburger Hau* Creek and eventually into the down-gradient *Ganssee* Lake.
010	Panzer Exchange *	2903	-	Storm water from the roof of the Panzer Exchange drain into an open rainwater infiltration and evaporation basin north of the building. During major rain events the overflow discharges via outfall 010 to the combined sewer system, the Storm Water Retention Basin, and the local waste water treatment plant Böblingen.

*** NOTE:** This drainage area is not industrial in nature.

Table A-2.1.c Patch Barracks: Outfalls with Industrial Activities

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
001	HWAP Power Plant #1 Power Plant #2 Power Plant #3 Total Maint. Contr. Shops FMWR Car Wash (wash rack) Main Gate Commissary AAFES Gas Station	2316 2363 2316 2374 2333 / North of 2353 2384 2398 2350 2349	7,000	Almost all storm water flows to the sanitary sewer unless very heavy rain occurs, in which case there may be some minor overland flow runoff / Waste Water Treatment Plant Stuttgart-Mühlhausen.
002	NA	Drains Kurmärker Straße east of the eastern end of Kefurt Loop	none	Almost all storm water flows to the sanitary sewer unless very heavy rain occurs, in which case there may be some minor overland flow runoff / Waste Water Treatment Plant Stuttgart-Mühlhausen.
003	Open Material Storage Area	2338 / 2366	included in 001	Drain appears to discharge to open ditch which runs into the "*Katzenbach*" Creek.
004 [Note: outfall is not industrial in nature]	Patch Theater and NCO Club	2339 / 2345	included in 001	Drain appears to discharge to open ditch which runs into the "*Katzenbach*" Creek.

Table A-2.1.d Stuttgart Army Airfield: Outfalls with Industrial Activities

Storm water outfalls in the northeast majority of the Airfield are underground. The storm water system at SAAF disperses storm water back into the ground through a series of pipes and percolation beds underground, drains into the "*Katzenbach*" Creek (e.g. via a water retention basin) or discharges to the municipal waste water treatment plant. Refer to Section 3.2.5 for a discussion of the storm sewer drainage system at SAAF.

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
001*	Flight Line / Taxiway	Portion northwest of 3259	47,200	via off-post Rainwater Retention Basin Middle; this water is monitored automatically for TOC and the water is discharged either to "*Wagenbach*" Creek or waste water treatment plant Plieningen
002*	Flight Line / Taxiway	Portion west-northwest of 3255		
003*	Flight Line / Taxiway Aircraft Ground Support Equipment and Aircraft Maintenance (Hangar 5)	Portion northwest of 3227		
004A*	Aircraft Ground Support Equipment and Aircraft Maintenance (Hangar 5) NA	Portion south of 3227 3258	500	Rainwater Retention Basin South (and from there to "*Katzenbach*" Creek).
004B*	DES Fire Department with Wash Rack Wash Rack / Fueling Pad / OWS #7722-1	3259 Northwest of 3226	840	Waste Water Treatment Plant Sielmingen
005	Aircraft/Equipment Maintenance (Hangar 4) N/A	3226 Remaining area	900	Rainwater Retention Basin South (and from there to "*Katzenbach*" Creek).

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
006	Maintenance Pad Hazardous Waste Accumulation Point Waste Oil Collection Point Hangars 1 through 3	North of 3220 Adjacent to 3219 3262 3219 / 3220 / 3222	1,900	In Summer: via off-post Rainwater Retention Basin South (and from there to "*Katzenbach*" Creek) In Winter: the gate/valve in shaft 20000095 is closed and the storm water is re-routed via a pump station in shaft 26009000 and directed to off-post Rainwater Retention Basin Middle; this water is monitored automatically for TOC and the water is discharged either to "*Wagenbach*" Creek or waste water treatment plant Plieningen.
007	Outdoor Material Storage / Mobile Gas Station / Former POL Yard Naval Unit 2 Hangar	3215	5,250	Percolation to the ground and discharge to the "*Katzenbach*" Creek during heavy rain events.
008	Wash Rack / OWS #7722-2 Motor Pool 405th AFSB / OWS # 7722-3	3217 3241	10,700	Waste Water Treatment Plant Sielmingen
---	none	Sealed areas and roads in the north-western portion of the Southern Entrance Area		Rainwater Collection Basin (infiltration and evaporation - no outfall)

Note: *Outfalls were not accessible during 2023 up-date.

Table A-2.1.e Kornwestheim Golf Course: Outfalls with Industrial Activities

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
001	Wash Rack Maintenance Garage HWAP Vehicle/Material Storage	Building Complex 979	950	Almost all storm water flows to sanitary sewer via OWS #7726-2 unless very heavy rain occurs, in which case there may be some minor overland flow runoff / Waste Water Treatment Plant Stuttgart-Muehlhausen.
002	Fuel Pad	North of 977A	45	Almost all storm water flows to sanitary sewer via OWS #7726-1 unless very heavy rain occurs, in which case there may be some minor overland flow runoff / Waste Water Treatment Plant Stuttgart-Muehlhausen.
003	Wash Pad	New Golf Caddy Garage 980	200	Almost all storm water flows to sanitary sewer via OWS #7726-3 unless very heavy rain occurs, in which case there may be some minor overland flow runoff / Waste Water Treatment Plant Stuttgart-Muehlhausen.

Table A-2.1.f Robinson Barracks: Outfalls with Industrial Activities

OUTFALL NO.	INDUSTRIAL ACTIVITIES	ASSOCIATED BUILDINGS	TOTAL AREA (m^2)	RECEIVING STREAM / FACILITY
001	Hazardous Waste Accumulation Point Outdoor Material Storage behind Commissary Recycling Area and unoccupied contractor area next to Commissary	Near 116 southeast of 146 northeast of 146	4,150	Almost all storm water flows to sanitary sewer unless very heavy rain occurs, in which case there may be some minor overland flow runoff / Waste Water Treatment Plant Stuttgart-Muehlhausen.

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APPENDIX 3

BMP CHECKLISTS

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BMP Checklists

Baseline BMP

1.0 Good Housekeeping

2.0 Preventive Maintenance

3.0 Visual Inspection

4.0 Spill Prevention and Response

5.0 Runoff Management and Pollution Prevention

6.0 Personnel Training and Record Keeping

Activity-Specific BMP

7.0 Equipment, Aircraft, and Vehicle Maintenance

- ❑ Perform maintenance/repair activities inside.
- ❑ Use drip pans to capture leaking fluids. Cap hoses to prevent drips and spills.
- ❑ Treat (storm) water runoff with OWS with alarm system before discharge.
- ❑ Park vehicles (particularly damaged/leaking vehicles) on sealed surface/hardstand

8.0 Aircraft/Runway Deicing

- ❑ Perform anti-icing before the storm.
- ❑ Put critical aircraft in hangars/shelters.

9.0 Aircraft/Vehicle Fueling Operations

- ❑ Seal roof structure to protect fueling area from storm water.
- ❑ Provide and maintain spill response equipment at fueling stations.
- ❑ Provide fire extinguisher at fueling stations.
- ❑ Curb fuel transfer areas and treat with an oil-water separator

10.0 Equipment, Aircraft, and Vehicle Washing

- ❑ Capture washwater and send to wastewater-treatment plant.
- ❑ Treat washwater with oil-water separator before discharge.
- ❑ Limit the use of detergents used to wash vehicles as detergents can cause the OWS to malfunction.

11.0 Bulk Fuel Storage Areas

- ❑ Use dry camlock connectors to reduce fuel loss.
- ❑ Capture spills with drip pans when breaking connections.
- ❑ Curb fuel transfer areas, treat with oil-water separator.

12.0 Construction Activities

- ❑ Construct sediment dams/silt fences around construction sites.

13.0 Hazardous Materials Storage

- ❑ Store hazardous materials inside or under cover.
- ❑ Reduce use of hazardous materials.

14.0 Outside Material Storage Areas/Vehicle Storage Yards

- ❑ Cover and curb salt, coal, urea piles.
- ❑ Store product drums inside or under cover.
- ❑ Reduce quantity of material stored outside.

15.0 Corrosion Control and Outdoor Painting/Depainting Operations

- ❑ Capture solvent/soaps used to prepare aircraft for painting.
- ❑ Perform corrosion control activities inside.

16.0 Pesticide Operations

- ❑ Capture rinse water when mixing chemicals.
- ❑ Store spray equipment inside.

17.0 Power Production

- ❑ Capture leaks and spills from power production equipment using drip pans, etc.

Site-Specific BMP

18.0 Site-Specific Practices

APPENDIX 4

SWPPP TRAINING FORM

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SWPPP TRAINING FORM

The following SWPPP Training Form should be completed each time a training session related to the SWPPP is performed. Participants should print their name, their Unit or title, telephone extension, and then sign their name in the appropriate spaces provided below. The trainer should complete the upper portion of the form, including topics covered in addition to the general review of the plan and spill events.

Trainer:	**Date:**

The SWPPP training session included a review and discussion of the following items:

- ❑ Each section contained within this SWPPP;
- ❑ Managing potential spills;
- ❑ Recognizing toxic and hazardous substances;
- ❑ Sediment and erosion control measures; and
- ❑ Water Protection Zones.

Other topics and/or discussion items which were reviewed included the following:

- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

Participant's Name	Unit/Title & Phone Extension	Participant's Signature

Trainer's Signature:

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APPENDIX 5

STORM WATER COMPLIANCE PLAN

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Table A-5.1. Storm Water Compliance Plan

INSTALLATION	BLDG.#	DEFICIENCY	DESCRIPTION OF WORK	EST. FY	ROM / IGE / AWARD	PROJECT NUMBER
Panzer	2948	Not Industrial/SWPPP	Expand parking lot behind Bldg. 2948	19	$ 250,000	P1-00657-9P
Panzer		Of interest to SWPPP as changes to vehicle storage yards impacts future storm water management	Planning charrette for parking deck on Panzer	19	$ 80,000	N1-00151-9P
Panzer		Of interest to SWPPP as changes to vehicle storage yards impacts future storm water management	Charrette for Motor Pool study Panzer	20	$ 199,000	N1-00300-0P
Panzer		Identified deficiencies of drainage system	Re-grade Capuzzo Weg to improve drainage	21	-	E7-00378-1P
Patch	2447	Identified deficiencies and leakage of drainage system	Repair clogged drainage line B2447	17	$ 55,653	HG-00567-7P
Patch	2452	Identified deficiencies and leakage of drainage system	Repair Drainage System and Leaking Buried Rainwater Pipes to Prevent Basement Flooding B2452	18	$ 15,000	HG-00484-8P
Patch	All	Identified deficiencies and leakage of water systems	Upgrade plumbing items Patch	18	$ 200,000	N1-00447-8P
Patch	2526	Identified deficiencies and leakage of drainage system	Repair Drainage System and Leaking Buried Rainwater Pipes to Prevent Basement Flooding B2526	18	$ 11,000	HF-00485-8P
Patch	G03PB	From the 2017 General Inspection the OWS has no function due to major deficiencies and must be replaced.	Replace oil separator B2316	22	$ 50,000	N1-00010-2P
Patch	2349	GI April 2022: The manhole must be sealed afterwards leakage test have to be carried out.	Repair deficiencies in OWS #7727-4 identified during the 2022 General Inspection.	-	-	-

Kelley	3362	Not Industrial/SWPPP	Repair parking and walkways around 3362	15	$ 1,028,007	N1-00288-5P
Kelley	3310	Restoration of site condition before construction	Repair sidewalk and asphalt related to work in TR room B3310	20	$ 10,000	AC-00461-0P
Kelley	ACP	Reduce particulate runoff from ACP	Create security and erosion control area Kelley ACP	20	$ 12,000	P1-00526-0P
Kelley	3350	Identified deficiencies in parking surface	Repair entire parking lot with new asphalt layer beside Bldg. 3350 ROF 400000498029	22	-	N1-00037-2P
Kelley	3390	GI April 2022: The coalescence material must be replaced.	Repair deficiencies in OWS #7737-2 identified during the 2022 General Inspection.	-	-	-
SAAF	3241	GI April 2022: The manhole must be sealed afterwards leakage test have to be carried out.	Repair deficiencies in OWS #7722-3 identified during the 2022 General Inspection.	-	-	-
SAAF		Identified deficiencies and leakage of drainage system	Replace drainpipe. ROF 9874648	21	-	M5-00376-1P