



## Architect-Engineer Services to Support Environmental Programs

# **Abbreviated Environmental Assessment for the Northwest Infrastructure, Phase II**

## **Spangdahlem Air Base, Germany**

**December 2007**

*Submitted to:*

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DEPARTMENT OF THE AIR FORCE  
52D FIGHTER WING (USAFE)

MEMORANDUM FOR RECORD

FROM: 52 FW/CV  
UNIT 3680 BOX 190  
APO AE 09126

20. FEB. 2008

SUBJECT: Letter of Approval – Spangdahlem Air Base (SAB) Abbreviated Environmental Assessment (AEA) for the North-West Infrastructure Military Construction Program and Projects

1. Attached are the AEA for validation of major and significant environmental impacts caused by the proposed North-West expansion area infrastructure program and military construction projects at SAB in accordance with (IAW) Air Force Instruction (AFI) 32-7061 and the United States Air Force in Europe (USAFE) Supplement to this AFI. The conclusion of this AEA is a Finding Of No Significant Impact (FONSI); no further environmental assessment is required effective immediately. However, considered environmental damage impacts must be compensated by all means with the construction projects IAW host nation laws.
2. Elements of this AEA were coordinated with HQ USAFE/A7AV and 52 CES units.
3. The Office of Primary Responsibility for this AEA is the 52 CES, Environmental Flight. The AEA is filed on the shared drive in folder S:\52ces\external\CEV\Conservation Pgm\AEA\AEA-SAB-NW Expansion Phase II, 6-Dec-07.pdf. Direct questions/comments to 52 CES/CEV, extension 452-7257, or e-mail at 52ces.cev2@spangdahlem.af.mil.

THOMAS J. FELDHAUSEN, Colonel, USAF  
Vice Commander

1 Attachment:  
AEA Report w/ Recommended FONSI for the  
North-West Expansion Infrastructure Program  
and MILCON Construction Projects





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## LIST OF ABBREVIATIONS AND ACRONYMS

AB	Air Base
ACM	Asbestos containing material
AEA	Abbreviated Environmental Assessment
AF	Air Force
AFI	Air Force Instruction
amsl	Above mean sea level
AT/FP	Antiterrorism /Force Protection
bgs	Below Ground Surface
BlmA	Bundesanstalt für Immobilienaufgaben (Federal Republic of Germany land use management)
BNatSchG	<i>Bundesnaturschutzgesetz</i> (Federal Nature Protection Law)
BX	Base exchange
°C	Degrees Celcius
dB	Decibel
DoD	Department of Defense
DWTP	Drinking Water treatment plant
EIAP	Environmental Impact Analysis Process
ESOHC	Environmental, Safety and Occupational Health Council
°F	Fahrenheit
FGS-G	Final Governing Standards-Germany
FONSI	Finding of No Significant Impact
ft	Foot
FRG	Federal Republic of Germany
FY	Fiscal year
GB	<i>Geschäftsbereich</i>
GBB	<i>Geschäftsbereich Bundesbau</i>
ha	Hectare
HN	Host Nation
IAW	accordance with
IRP	Installation Restoration Program
IUCN	International Union for the Conservation of Nature

km	Kilometer
LBB	Landesbetrieb Liegenschafts- und Baubetreuung (former Staatsbauamt)
LHKW	<i>Leichtflüchtige Halogenkohlenwasserstoffe</i> (volatile halogenated hydrocarbons)
LBP	Lead-based paint
LPB	Landschaftspflegerische Begleitplan
LPfIG	<i>Landespflegegesetz</i> (Rhineland Palatine State Landscape Conservation Law)
LWaldG	<i>Landeswaldgesetz</i> (Rhineland Palatine State Forest Law)
LWG	<i>Landeswassergesetz</i> (Rhineland Palatine State Water Law)
m	Meter
m <sup>2</sup>	Square meter
MFH	Military Family Housing
NEPA	National Environmental Policy Act
PA	Proposed Action
RDB	Red Data Books
RL	<i>Rote Liste gefährdeter Tier- und Pflanzenarten</i> (Red List of endangered flora and fauna species)
RP	Rhineland Palatine
SAB	Spangdahlem Air Base
SSI-RP	Suspected Sites Inventory-Rhineland Palatine
US	United States
USAFE	United States Air Forces in Europe
UVS	<i>Umweltverträglichkeitsstudie</i> (German EIAP documentation)
VOC	Volatile organic carbons
WSG	<i>Wasserschutz-Gebiet</i> (Drinking Water Protection Area)

# Executive Summary

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## **PURPOSE**

This Abbreviated Environmental Assessment (AEA) evaluates the impact of the Proposed Action (PA) to develop the Northwest Infrastructure, Phase II area at Spangdahlem Air Base (SAB), Germany. In this report, the site measurement provided by L.A.U.B., 38.67 ha (96 acres), was used for this evaluation of potential environmental impact to the AEA survey area. The PA area, the portion of the AEA survey area that will be developed according to the current plans provided by SAB and the 2007 L.A.U.B. landscape survey, will encompass 15 ha (37 acres) of land.

The proposed action involves a common area infrastructure constructing and to include construction of a high school, fitness center, commissary and base exchange (BX). The PA area is adjacent to the existing northwest boundary of SAB. This area of expansion is part of the overall plan to enhance the mission of the 52<sup>d</sup> Fighter Wing at SAB. Supporting features will include a fence and road along the perimeter, connecting roads, sidewalks and parking areas, underground utility systems (electrical, communication, water and sewer lines), landscaping, reforestation, and all other necessary work, as required. The design and construction of this project will comply with Department of Defense (DoD) and European Command Anti-Terrorism/Force Protection (AT/FP) standards (Appendix A) (SAB, Fiscal Year [FY] 2007 DD Form 1391).

This AEA discusses potential impacts to flora, fauna, cultural resources, geology, soils, groundwater, surface water, wetlands, air quality, hazardous materials and hazardous waste generation, noise, and land use associated with the PA and compares them to the No Action Alternative.

## **ENVIRONMENTAL IMPACT OF THE PA**

**1. Local Species and Habitat:** The PA may result in a minor loss of forests and their associated functions, with a minimal effect on the local species habitats. Depending on the layout of the PA, some groups of trees as well as isolated trees on the AEA survey area will be cleared. Depending on feasible mitigation measures, approximately 0.33 ha (0.82 acres) of forest will be affected as an AT/FP Clear Zone area of a 10-meter (m) (32.81-foot [ft]) width on either side of the installation boundary is required. This impact could be mitigated by the replacement of trees on- and off-base in consultation with the local forest manager (*Forstmeister*), by careful planning prior to construction to minimize the number of trees to be removed, and by proper dust and erosion control during construction. Although there will likely be minimal impact to flora and fauna, these impacts could be mitigated by improving existing species habitats either elsewhere on base or adjacent to or near the area of PA.

**2. Cultural Resources:** Based on the findings, no impacts to cultural resources are expected (see figure 9). If any impacts are encountered, they will be addressed as prescribed in the Final Governing Standards for Germany (FGS-G).

**3. Soils:** Minor impacts to soils are expected, mainly due to subsurface construction of a previously undeveloped area of land. Soil excavation, relocation, and compaction will alter some areas as the new buildings with their associated utilities are installed, while other PA areas will be paved for parking and through roads. The anticipated area of construction and soil impact is

approximately 15 ha (37 acres) (L.A.U.B., 2007). It is assumed that any construction will extend beyond 1.5 m (49 ft), which will result in minor impact to the soil and no local geological impact.

**4. Surface Water:** Surface water infiltration into the local groundwater will also be slightly impacted, as will the surface water runoff. Neither should affect the surrounding areas in a negative way. Approximately 0.33 ha (0.82 acres) of forest outside the AEA survey area will be affected in compliance with the AT/FP Clear Zone area. The effects of these actions could be mitigated by paying attention to the landscaping of the unused and undeveloped areas of the AEA survey area, providing soils for percolation and groundwater recharge and by replanting an equal area of forest in another location. Replanting forests at other locations as required per the state forest law (Landeswaldgesetz-LWaldG), would minimize the loss of species habitat, and the seeding of grass on open spaces would mitigate the impact on developed land and minimize erosion. Potential flooding risk downstream of SAB due to increased effluent into the *surrounding* Rivers from the development of previously unsealed soils could be mitigated by limiting the areas that will become sealed surfaces.

**5. Drinking Water:** Since the AEA survey area overlaps with drinking water protection zone III, avoiding subsurface construction and storage of water endangering substances, and stringent compliance with applicable host nation (HN) legislation would help to protect drinking water.

**6. Air Quality and Noise Levels:** Air quality and noise levels at the site and in the surrounding areas would be impacted during the construction and development of the currently unimproved area. Possible mitigation of this impact could include the use of sound and dust barriers and other available materials or methods. Once the construction is completed, however, there will still be minor changes in the air quality as there will be an increase in activity due to the presence of community facilities, with an increase in vehicular and personnel activity. Replacing the removed trees could help in suppressing the increased noise levels towards the Spangdahlem MFH and community areas.

**7. Hazardous Materials:** There should be no threat of asbestos or lead-based paint (LBP) impact as there is no known source of either currently at the site. New construction should comply with the FGS-G and should not include the use of either substance. Other hazardous material usage during the construction processes is observed and overseen by the German construction agency (Landesbetrieb Liegenschafts- und Baubetreuung [LBB] Niederlassung [NL] Trier) in accordance with Federal and European construction standards.

## **SUMMARY OF OVERALL FINDING**

Impacts to geology and soils, groundwater, surface water and wetlands, air quality, hazardous waste, noise, and land use have been deemed of less than significant harm to the environment. Minimal environmental impacts have been identified for the category of flora and fauna, predominantly because of the permanent loss of an area of grassed and forested areas and their associated functions. Per DoD Directive 6050.7 and United States Air Forces in Europe (USAFE) Supplement 1 to AFI 32-7061, the PA should result in no impacts to cultural resources and hazardous materials. However, other impacts to the environment can be compensated through the replanting comparable forests and grass lands in cooperation with the local forest authority of the Federal Republic of Germany (FRG) land use management (Bundesanstalt für Immobilienaufgaben [BImA]) in Baumholder. Therefore, the PA is recommended for a finding of no significant impact (FONSI).

# 1.0 Northwest Infrastructure Development at Spangdahlem Air Base

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## 1.1 Introduction

### 1.1.1 Objective

This AEA evaluates the potential environmental impacts to local and regional resources resulting from the construction of a common area infrastructure outside the current SAB property boundary. It analyzes the impacts of the PA as well as a No-Action Alternative. By objectively evaluating potential impacts of the PA, this AEA provides for informed decision-making to minimize detrimental effects upon the environment.

### 1.1.2 Structure of the Report

This AEA consists of five sections. Section 1 includes the background, purpose, and description of the PA, and discusses project alternatives. Section 2 presents the environmental setting at the SAB Northwest Infrastructure expansion area, as well as the areas immediately surrounding the expansion area. Strategies to mitigate potential impacts are also presented. Section 3 describes host nation (HN) participation and compliance with HN regulations. Section 4 presents the conclusions of the Environmental Impact Analysis Process (EIAP) required AEA. Section 5 provides a list of references.

## 1.2 Background and Purpose of PA

### 1.2.1 Purpose of PA

The PA at SAB is planned under the Eifel Consolidation Program. The PA consists of the construction of a fence and road along the perimeter of the AEA survey area, connecting roads, sidewalks and parking areas, underground utility systems (electrical, communication, water, storm water and sewer lines), rainwater retention basins, landscaping, reforestation actions and all other necessary work, as required, for the eventual construction of a school complex, a fitness center, and a new BX and commissary complex. The area is currently undeveloped and is used primarily for farming. The site is directly adjacent to a forested area along the eastern and eastern half of the northern borders.

The following options will be evaluated:

1. **The No Action Alternative** is analyzed, per the requirement of AFI32-7061, *Environmental Impact Analysis Process* (12 March 2003).

2. **The Northwest Infrastructure Construction Elsewhere Onsite Alternative** is not analyzed because there is no construction space available within the installation boundary that complies with mission related security requirements.
3. **The Northwest Infrastructure Construction Immediately Outside the Installation Perimeter Alternative** is not analyzed because there is no other construction space available that complies with mission related security requirements along the outer perimeter of the installation that would be suitable for expansion other than what is discussed under the PA.
4. **The Outside Installation Perimeter Northwest Infrastructure Construction Alternative** within another community is not analyzed because this alternative would isolate the facilities from the SAB community. In addition, the construction of a new school complex is included in the PA to replace the outdated facility currently located off-base at the Bitburg Annex and provide a more convenient location to service the SAB community (SAB, FY 2010 DD Form 1391).
5. **The Northwest Infrastructure Phase II PA**. Currently, the base is inundated with facilities, with an unsatisfactory layout of the residential, community, industrial and operational use areas that lie inside explosive safety arcs. The PA would ease the congestion and explosive safety violations by moving the frequently used community facilities to a more favourable location, isolated from the everyday operational traffic of SAB.

### 1.2.2 General Setting of PA Area

The PA area and SAB is in Rhineland Palatine, a federal state in western Germany. It is in the eastern *Bitburger Gutland*, between the villages of *Binsfeld* to the southeast, *Beilingen* to the southwest, and *Spangdahlem* to the west. SAB is bordered by the *Kailbach* River to the east and the *Spangerbach* River to the west.

The area of PA is on a flat plateau west of the *Kailbach* River with a soft northwest sloping relief between 340 and 370 m (1,115 and 1,214 ft) above mean sea level (amsl). The *Dahlemer* Brook springs near the northwest corner and flows southwest. The eastern and the eastern half of the northern borders travel through forest, partially bordered by small pathways. The northwestern border travels between agricultural fields, and the western border follows along a local road. The southern border is the existing northwest corner of the SAB property. The terrain to the east of the PA area and SAB drops steeply by approximately 5 m (16.40 ft) over a 70 m (229.66 ft) width towards the *Kailbach* River.

The vicinity is rich in natural and cultural resources with the *Landschaftsschutzgebiet Zwischen Uess und Kyll* commencing directly north of the new highway (*Bundesautobahn*) A60 and the *Binsfelder Tongruben*, a former open pit clay mine approximately 3,850 m (2.39 miles) south of the PA area. The closest nature reserve is the 43,819 ha (108,278.7 acres) Nature Park *Südeifel* approximately 18 kilometers (km) (11.18 miles) west-northwest of SAB in the district of *Bitburg-Prüm* that crosses into Luxembourg. Cultural resources include Stone Age, Celtic, Roman, and Roman/Mediaeval Age archaeological sites. The biotope object 6006-1008 *Im Saalholz* is mapped 600 m (656 yards) east of the construction area of PA. The 3.8-ha (9.4-acre) biotope is not protected pursuant to §28 LNatSchG but is classified as III Schongebiet (Tetra Tech, 2005).



Local geology consists of *Bunter Sandstone* sediments, which regionally is a good aquifer providing significant groundwater storage (Tetra Tech, 2005).

The region's climate is characterized by warm summers and cool wet winters with occasional storms. There has never been a recorded temperature greater than 38° Celsius (°C) (100° Fahrenheit [°F]) or less than -17°C (0°F) at SAB. Summer daily highs average less than 21°C (70°F). During the coldest month of winter, January, the average daily low is approximately -1°C (30°F) (Tetra Tech, 2005).

### 1.2.3 USAFE Environmental Impact Analysis Process

The EIAP is required by the National Environmental Policy Act (NEPA) (Office of Federal Activities, 1982) for any action that may affect the environment, and is implemented by the Air Force (AF) through AFI 32-7061 (12 March 2003), and in Europe through USAFE Instruction 32-7061, Supplement 1 (21 March 1996). The EIAP is initiated by AF Form 813, Request for Environmental Impact Analysis, which documents the need for, and level of, environmental analysis necessary for a PA.

The EIAP must be completed as part of the planning process for the PA, and incorporate HN participation and regulations. The purpose is to collect, analyze and evaluate potential impacts to environmental resources, and to identify mitigation to reduce such impacts prior to implementation of the PA or preferred alternative.

In the case of the proposed Northwest Expansion, Phase II, the AF Form 813 determination was that further analysis of the environmental implications of the PA is required (Appendix A).

The appropriate level of environmental analysis pursuant to EIAP is the preparation of an AEA as defined in the USAFE Supplement to 32-7061 for the following reasons:

- The AF Form 813 for the land acquisition for the Eifel Consolidation SAB determined that the PA does not qualify for a categorical exclusion from the requirements of environmental impact analysis under AF instructions and NEPA, and further environmental analysis is required.
- Subsequent analysis has concluded that the PA does not have the potential to significantly harm the environment.

## 1.3 Description of the Proposed Action

### 1.3.1 Proposed Action

The PA consists of the development of the grass and farm land adjacent to the current SAB military family housing (MFH) area to facilitate the daily operations and congestion at SAB. This project is Phase II of the planned SAB expansion (Figure 1), and it is anticipated that this phase will be carried out during Phase III of the first phase.

In response to the mission changes resulting from the Rhein-Main Transition Program and the 52<sup>d</sup> Fighter Wing efforts as part of the Spangdahlem enhancement plan and in support of the

Spangdahlem consolidation plan (Appendix A) (SAB, FY 2007 DD Form 1391), the AF is working to develop the AEA survey area to help facilitate these changes. The intent of this project is to upgrade the SAB quality of life by expanding the base to provide a central location for the frequently used community facilities. The facilities proposed for this expansion area include a new school to replace the outdated and inconveniently located High School at the Bitburg Annex, a fitness center, and a new commissary and BX. Prior to the construction of these facilities, common area infrastructure will be developed, to include the installation of utilities, fencing, access roads, and parking areas, among others as outlined below in Table 1.1.

According to the FY 2007 DD Form 1391, Develop Northwest Infrastructure Phase II, the AEA survey area totals approximately 34.5 ha (85 acres); according to AF Form 813, the area is approximately 37 ha (91 acres); and according to the landscape survey conducted by L.A.U.B (2007), the AEA survey area is 38.67 ha (85 acres).

Figures 1 and 2 outline the AEA survey area of 38.67 ha (96 acres) on which the PA, with a construction area of approximately 15 ha (37 acres) is planned. This 15-ha area is henceforth called PA area. Figure 3 illustrates the proposed layout of the PA as of November 2007.

Table 1-1 Proposed Action Overview

Construction	Supporting Facilities	Execution Period	Total Estimated Construction Area
Northwest Infrastructure, Phase II	<ul style="list-style-type: none"> <li>• Water distribution system</li> <li>• Sanitary/storm sewer system</li> <li>• Roads/pavement</li> <li>• Communication ducts</li> <li>• Jogging trail</li> <li>• Electrical distribution</li> <li>• Reforestation actions</li> <li>• Force protection (perimeter fence)</li> <li>• Environmental compensation</li> </ul>	TBD	15,255 LM
High School Complex	<ul style="list-style-type: none"> <li>• Electrical</li> <li>• Water, sewer, storm drainage</li> <li>• Sports fields</li> <li>• Communications</li> <li>• Access and paving</li> <li>• Site improvements</li> <li>• Passive force protection measures (5%)</li> </ul>	TBD	7,150 m <sup>2</sup> / 1.77 acres
Fitness Center (including the facility, indoor swimming pool, and antiterrorism force protection)	<ul style="list-style-type: none"> <li>• Site improvements</li> <li>• Fire alarm system</li> <li>• Communications</li> <li>• Passive force protection measures</li> </ul>	TBD	7,820 m <sup>2</sup> / 1.93 acres
Commissary / BX	Data not available	TBD	
Clear Zone along the new perimeter fence	Tetra Tech has assessed the impact of a clear zone to adjacent/ offsite forest.		0.33 ha / 0.82 acres

TBD – To be determined  
m<sup>2</sup> – Square meters

*Sources:*

*Spangdahlem Air Base. FY 2007 Military Construction Project Data, DD Form 1391 – Develop Northwest Infrastructure, Phase II. Undated.*

*Spangdahlem Air Base. FY 2010 Military Construction Project Data, DD Form 1391 – Construct High School Complex. Undated.*

*Spangdahlem Air Base. FY 2014 Military Construction Project Data, DD Form 1391 – Fitness Center. Undated.*

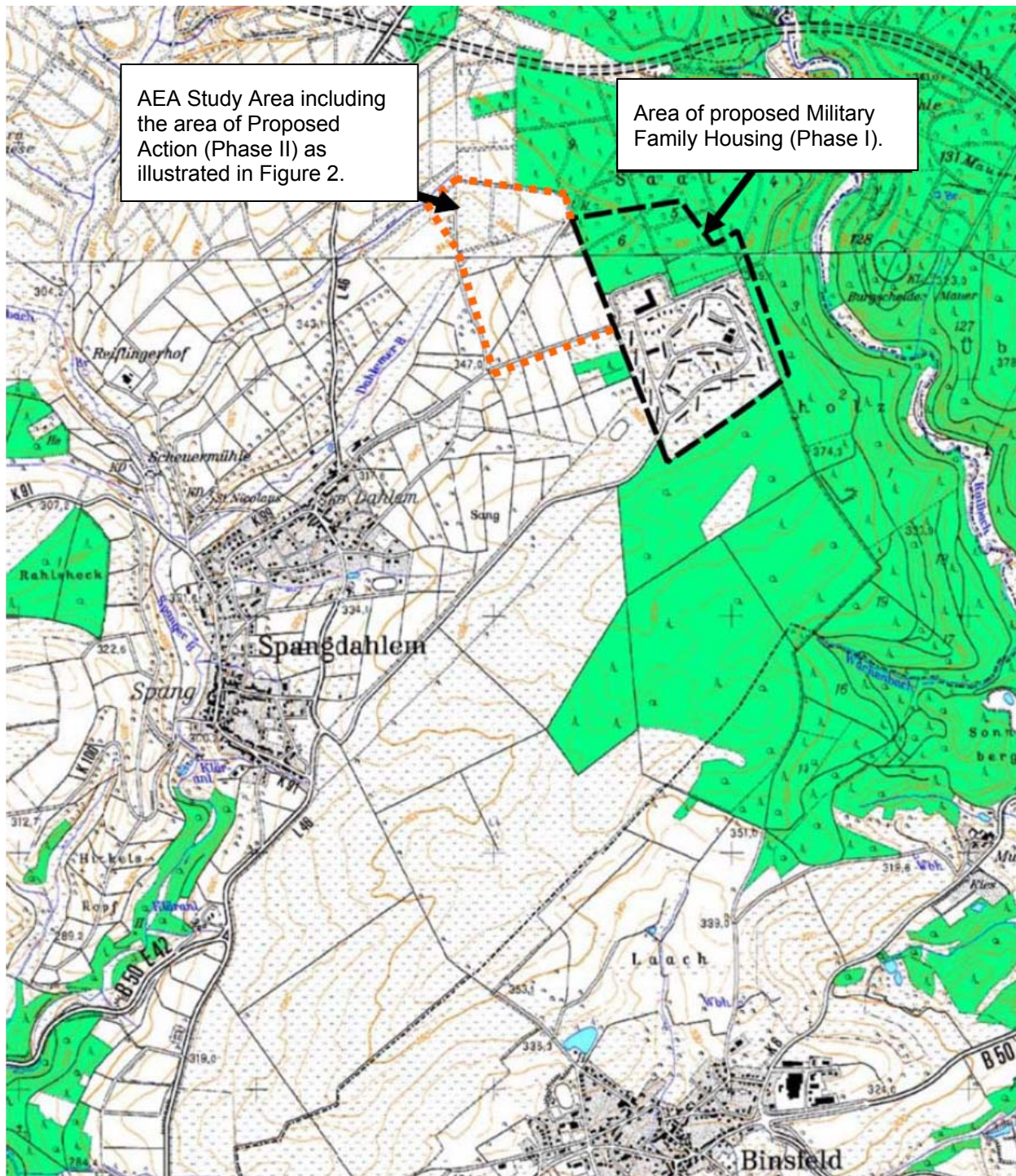


Figure 1: AEA Survey Area for PA at SAB.

Source: Landesbetrieb Liegenschafts- und Baubetreuung (LBB) des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. Ausbau Spangdahlem Air Base Housing. Dokumentation zur Untersuchung der Umweltauswirkungen (UVS-Dokumentation).



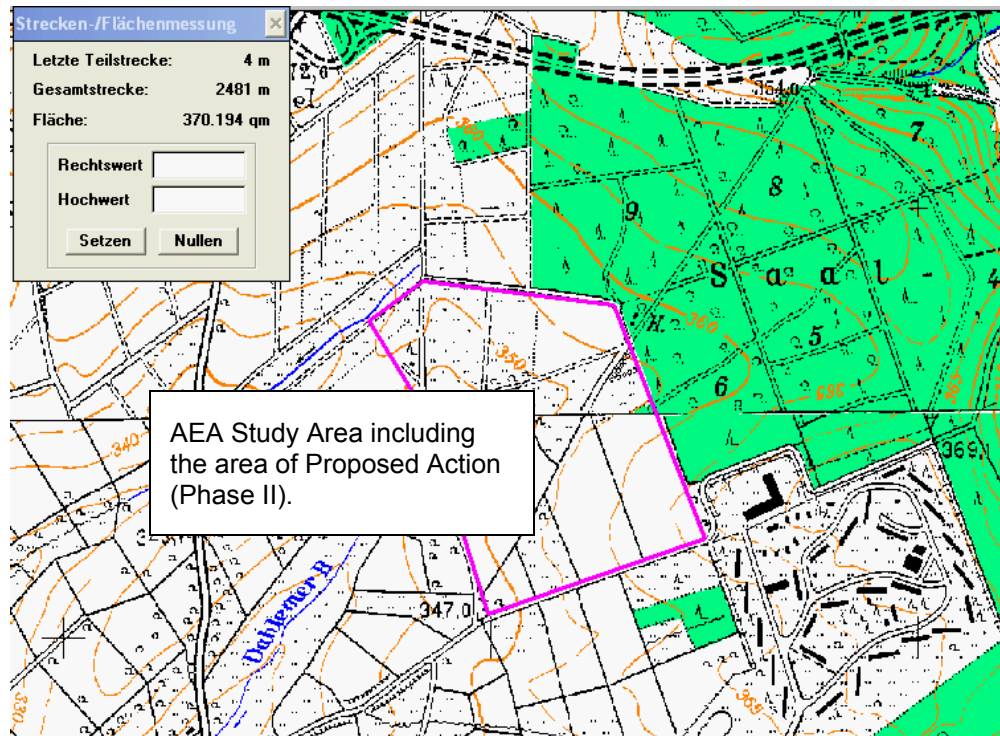
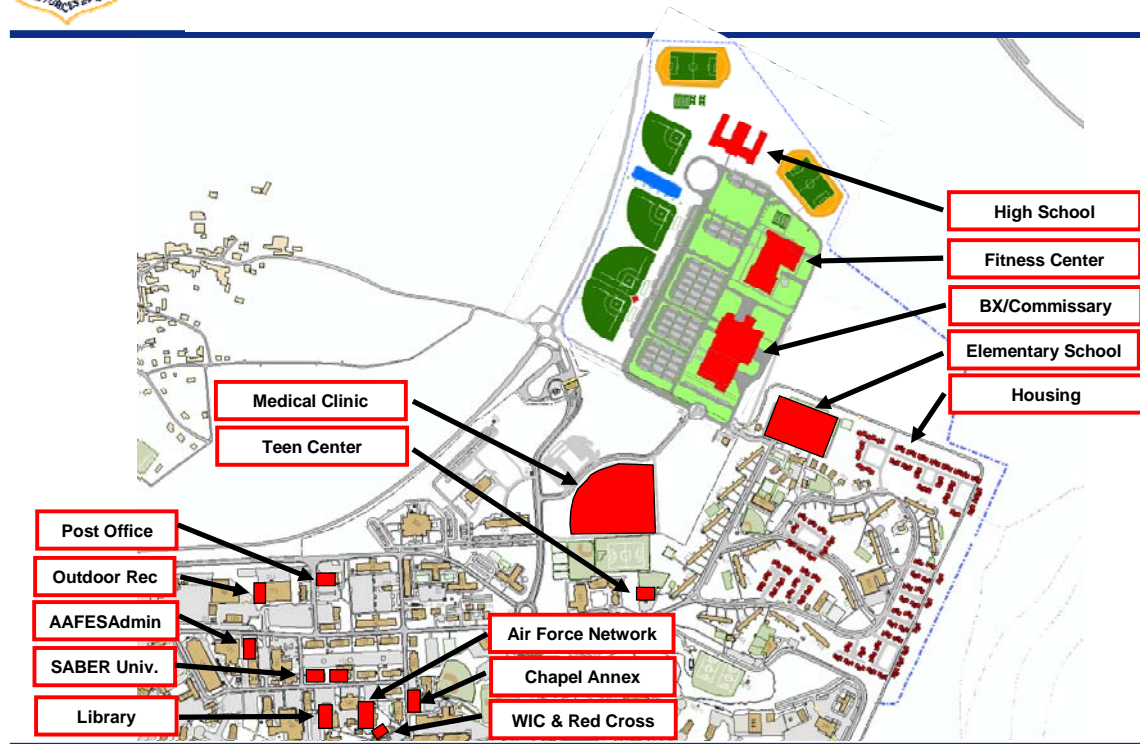


Figure 2: AEA Survey Area Size pursuant to Survey CD.

Source: Landesvermessungsamt Rheinland-Pfalz. 2001. *Topographische Karten Mosel Eifel Hunsrück*, CD-ROM Nr. 2.



## Spangdahlem 2015 Program



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Figure 3: Planned layout of the AEA survey area as of November 2007

Source: 52 CES/CC Base-to-Command Briefing September 2007.

### 1.3.2 Project Alternative: No Action

If a no action alternative is chosen, the current layout and congestion of SAB will not be changed. However, the proposed alternative would result in no potential impacts to natural or cultural resources associated with the PA.

### 1.3.3 Project Alternative: Construction Elsewhere Onsite

The Construction Elsewhere Onsite Alternative is not a viable option as SAB in its current state is already at capacity and there are no other favorable or centralized areas for the construction of the frequently used community facilities.

### 1.3.4 Project Alternative: Construction Immediately Outside Installation Perimeter

The Construction Immediately Outside Installation Perimeter Alternative is not further analyzed. There are no other areas that would facilitate the current congestion problem, as any other area

would likely result in additional traffic throughout to base, whereas the current PA is conveniently located adjacent to the current MFH area.

### **1.3.5 Project Alternative: Construction Outside Installation Perimeter**

The Outside Installation Perimeter Alternative within another community is not further analyzed. This alternative would isolate the community facilities from associated infrastructure on SAB, which is one of the reasons for the PA as the current high school is located at the Bitburg Annex, and the current fitness center, commissary, and BX facilities are located in the middle of the base among the industrial and administrative areas.

## **1.4 Decision Authority and Time Table**

In accordance with current USAFE policy, this AEA shall be approved by the chairperson of the 52<sup>d</sup> Fighter Wing Environmental, Safety and Occupational Health Council (ESOHC) and forwarded to the USAFE Environmental Quality Division, USAFE/A7CV for their records. After the completion of the property acquisition, a time table to complete the expansion activities will be created.





## 2.0 Environmental Settings, Impacts and Mitigation

This section describes the current environmental setting at the projected expansion area, potential effects upon the environment resulting from the PA, and mitigation measures that may be implemented as part of the PA to reduce potential environmental impacts. The AEA study area totals 38.67 ha (96 acres) in an area adjacent to the northwest boundary of SAB as outlined in Figure 1 (L.A.U.B., 2007). It covers 38.37 ha (96 acres) of grass and farm land, including 0.30 ha (0.82 acres) of small forest groups and isolated trees and pathways. The construction area of the PA covers 15 ha (37 acres) of the AEA survey area (L.A.U.B., 2007).

AFI 31-101, *Air Force Installation Security Program*, indicates that for restricted areas, a 10-m (32.81-ft) clear zone is required on *both* sides of the perimeter fence. The required fence for the PA will pass through 330 m (1083 ft) of the adjacent forest, which would require approximately 3,300 m<sup>2</sup> (0.33 ha; 0.815 acres) of forested area to be cleared. In addition, a 330 m long and 5 meters width forest road along the fence line at the off-base location will be required while the existing community forest road will become in-accessible for the forest authority and the public with the construction of the fence line. This new forest road will be designed in adjacent to the clear zone along the new fence line.

Pursuant to USAFE EIAP instructions, this section focuses on those resource areas identified in the preliminary environmental survey of the AF Form 813 for the VYHK06-3200, Northwest Infrastructure Phase II completed by 52 CES/CECP, 22 December 2006 (Appendix A) as areas that may incur adverse impacts to the environment if the PA were implemented. As determined in AF Form 813, the PA may result in adverse impacts to air installation compatible use zone/land use, water resources, safety and occupational health, biological and cultural resources, geology and soils. This section will also describe existing noise conditions, air quality, and hazardous materials and waste, and briefly address potential impacts (construction and/or operational) to these resource areas.

### 2.1 Flora and Fauna

Protected plant and animal species in Germany are identified on the *Red List (RL) of Threatened Species*, a compilation of plant and animal species produced by the International Union for the Conservation of Nature (IUCN). The IUCN is a European union of governments, government agencies, and non-governmental organizations that publish the RL through its Species Survival Commission. RL species have been assessed and categorized by the species survival commission as either extinct, extinct in the wild, critically endangered, endangered, vulnerable, lower risk, or data deficient. RLs for species and valuable biotopes have been compiled in Germany on the Federal and State levels. The Rhineland Palatine RL (*Rote Liste Rheinland-Pfalz* [RL RP]) addresses locally protected species and biotopes.

In addition, the Ministry for Environment and Health (*Ministerium für Umwelt and Gesundheit*) provides red data books (RDB) for endangered species in Germany. RDBs include the current

population status for plant and animal species, as well as species-specific lists of threatened and endangered animals, plants and biotopes for an area. They function as a basis for legal arguments in matters concerning the protection of nature and species, although they are not legally binding on their own.

The SAB AEA survey area is under acquisition by the German *Bundesvermögensamt* (Federal Assets Agency-BImA) and will be leased to the United States (US) Government at no cost. The US Government will manage the land in coordination with the *Struktur- und Genehmigungsdirektion Nord* (SGD NordKoblenz), the Federal Forest Department (*Bundesforstverwaltung*), the State Forest Department (*Landesforstverwaltung*), and other German regulatory agencies, as appropriate. Daily land management operations will be directed by a local forest manager (*Forstmeister*) in consultation with military representatives on land management issues (Section 3.0, HN actions). Species and habitat protection criteria applicable to DoD installations and US Forces activities in Germany are outlined in Chapter 13 of the FGS-G. The FGS-G include the protection and management of species declared endangered or threatened by the HN or the US Government, and authorize programs for inventory and monitoring of protected species.

### 2.1.1 Setting

The following discussion focuses on the 38.67-ha (96-acre) survey area of the PA, and is based on the biotope survey map as outlined in Figures 4 and 5 (Appendix B). Actual data have been retrieved from the German landscape conservation plan (Landschafts-Pflegerischer Begleitplan-LPB, L.A.U.B., 2007) which is a HN authority required and developed document in accordance with (IAW) the German land acquisition law.

### 2.1.2 Vegetation

Vegetation on the AEA study area has been surveyed as part of the land acquisition process (ID No 3893) within the above referred LPB and comprises predominantly arable land and one small area classified as ornamental garden (Figures 4 and 5). The south and west of the AEA survey area are bordered by small paved roads. A pathway of open ground goes diagonally through from the southwest to the northeast. Several grassed pathways border the single properties. A biotope code description is provided below.

2.1.2.1 G12 spring brooks/Quellbäche, G5 rifts, ditches/Gräben, and G62 pond/Teich The community of Speicher has two ditches in natural ground depressions identified as source brooks, located in the northwestern portion of the site. These likely dewater into the Dahlemer Brook that springs adjacent to the west border of the AEA survey area running southwest. Both are of little value and thus not protected pursuant to §24 LPflG. Habitat specific flora is hardly developed and reduced to the junction of both source brooks. Other ditches within the AEA survey area include small drainage ditches along roads and paths that do not appear to be perennial. A pond is mapped within the ornamental garden near the northeast corner of the AEA survey area but could not be verified during a site walk on 22 May 2007.

2.1.2.2 L1 plough-land/Ackerland; L18 fallow land/Ackerbrache As stated previously, farmland covers the majority of the AEA survey area. It is intensively used. Isolated properties are mapped as fallows that were partly cultivated during the site walk on 22 May 2007. Its vegetation depends on the duration of being fallow and the adjacent vegetation.



Note: Biotope codes are legible when view is enlarged. The full-sized map is in Appendix B.

Figure 4: AEA Survey Area - Biotope Survey Map May 2005.

Source: *L.A.U.B.* 9 Mai 2005. *Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893. (North, not to scale)*

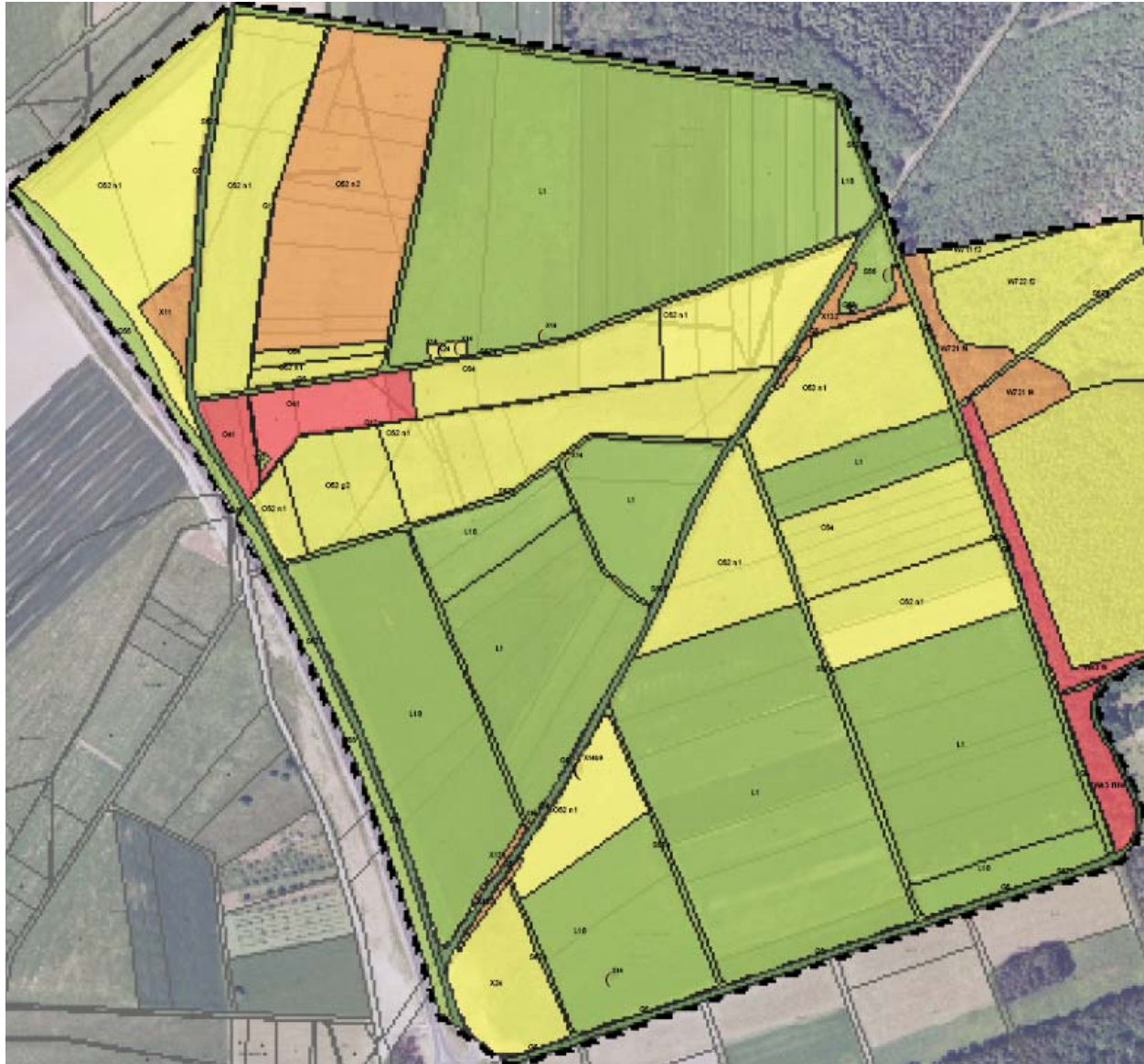
Spring brook, trench type		G12	Quellbach, grabenartig	
Rifts / trenches		G5	Graben	
Pond		G62	Teich	
Arable land		L1	Acker	
Fallow arable land		L18	Ackerbrache	
Humid meadow		O41	Feuchtwiese	
Meadow of fresh character		O62	Wiese / Weide mittlerer Standorte, frische Ausprägung	
Meadow with urban specific flora&fauna		O64	Wiese ruderalisiert	
Seeded meadow		O65	Wieseneinsaat	
Ornamental garden		S66	Freizeitgarten	
Road, path, area: paved, concrete, sealed		S621	Straße, Weg, Platz: asphaltiert, betoniert, versiegelt	
Road, path, area: graveled		S622	Straße, Weg, Platz: geschottert	
Grassed path		S624	Grasweg	
Soil path		S625	Erdweg	
beech (mixed) forest of mean sites		W42	Buchen(misch)wald mittlere Standorte	
oak forest		W43	Eichenwald	
cultivated deciduous forest		W711	Laubwald mit einheimischen Baumarten	
mixed pine and deciduous forest		W721	Mischwald aus Kiefer und Laubbäumen	
cultivated mixed deciduous and coniferous forests		W722	Naturferner Mischwald aus Laub- und Nadelbäumen	
Spruce forest		W732	Fichtenwald	
Lark forest		W733	Lärchenwald	
Field copse		X11	Feldgehölz	Zusatzmerkmale m1 Nutzungsintensität intensiv genutzt n2 extensiv genutzt
Bush hedge		X131	Strauchhecke	g2 Grünlandart Weide
Tree hedge		X132	Baumhecke	t1 Alter Naturverjüngung (bis 10 Jahre) t2 Dichtung (bis 20 Jahre) t3 Stangenholz (bis 50 Jahre) t4 Baumholz (bis 100 Jahre)
Single trees		X14	Einzelbäume	
Cleared plain		X21	Schlagflur	
Plain with urban near typical flora and fauna		X24	Ausdauernde Ruderalflur	
Deposit		Y32	Ablagerung	

Note: The full-sized map is in Appendix B.

Figure 4: AEA Survey Area – LEGEND Biotope Survey Map May 2005.

Source: L.A.U.B., 9 Mai 2005. Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893





Note: An enlarged map is available in Appendix B.

Figure 5: AEA Survey Area - Biotope Value Map May 2005.

Source: L.A.U.B. 9 Mai 2005. *Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893. (North, not to scale)*

Area of biotope survey, also referred to as AEA Study Area

### Evaluation

Areas and elements of very high importance to the species and biotope protection (red)

Areas and elements of high importance to the species and biotope protection (orange)

Areas and elements of middle importance to the species and biotope protection (yellow)

Areas and elements of low importance to the species and biotope protection (light green)

Areas and elements of very low importance to the species and biotope protection (dark green)



Geltungsbereich

### Bewertung



Flächen und Elemente mit sehr hoher Bedeutung für den Arten- und Biotopschutz



Flächen und Elemente mit hoher Bedeutung für den Arten- und Biotopschutz



Flächen und Elemente mit mittlerer Bedeutung für den Arten- und Biotopschutz



Flächen und Elemente mit geringer Bedeutung für den Arten- und Biotopschutz



Flächen und Elemente mit sehr geringer Bedeutung für den Arten- und Biotopschutz

Note: An enlarged map is available in Appendix B.

Figure 5: AEA Survey Area – LEGEND Biotope Value Map May 2005.

Source: L.A.U.B. 9 Mai 2005. Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893.

2.1.2.3 O41 permanently humid meadows/dauerfeuchte Wiesen and O5 meadows of middle sites/Wiesen mittlerer Standorte The grassland is concentrated in the moist ground depressions that are partly crossed by ditches and along the forest edge. The majority are intensively cultivated meadows of dry character (O52). A small wetland (humid meadow) was mapped in the junction of the two source brooks with habitat specific flora (O41). One meadow with flora typical in the vicinity of settlements or waysides was identified adjacent to the forest edge (O54). It is fallow grassland with habitat specific flora such as bur and mugwort. Single copses grow on older fallow grassland, which was observed on the southwest corner of the arable land. The biotope is classified as nitrophilous bank margin that is mostly rich in neophytes (X24). As stated before, the condition of the cultivated and fallow land observed during the site walk on 22 May 2007 partly varies from the biotope survey of 2005. Meadow seed was applied along the recently constructed L46 (O55).

2.1.2.4 X1 copses/Gehölze Copses grow by the path sides and in isolated patches on the arable land. The largest group of field copses was mapped in the northwest corner of the EBS area together with remains of a garden hut and some rubbish (X11). Both ends of the diagonal soil path (*Erdweg*) show evidence of bush and tree hedges (X131/X132). Single trees exist along one trench comprising fruit trees (predominantly apple) and willows (X14).

2.1.2.5 Others Other biotopes include left over grassed areas of a dumping area/deposit near the junction of the two source brooks (Y32) and an ornamental garden at the northeast end of the diagonal soil path (*Erdweg*) (S56) with a pond (G62). The dumping area and pond in the ornamental garden area were not verified on the 22 May 2007 site walk.

### **2.1.3 Wetlands**

Wetlands have not been delineated on the AEA survey area. Wet/moistening or permanently humid meadows (O41) are described above and were surveyed in the northwest at the two ditches/source brooks east of the *Dahlemer* Brook in 2005. No designated floodplains are present. With 270 m (886 ft) amsl, the valley of the *Kailbach* River is between 70 and 100 m (230 and 328 ft) lower than the AEA survey area.

### **2.1.4 Wildlife, Birds, and Fish**

Conservation of wildlife in Germany focuses on the protection of critical habitats and, therefore, biotope habitat surveys are conducted on federal land and other properties. No biotope or T&E species surveys have been performed for the AEA study area. Wild life may include common mammal species like hare, European wild cat, wild boar, and deer crossing the AEA study area as observed on the adjacent MFH construction area (Table 2-1) (LBB, 2006). The LPB mentioned that the skylark/Feldlerche was observed on the arable land (L.A.U.B., 2007). Since the study area lacks appropriate water bodies, there is no biotope for fishes. As mentioned in section 2.1.2.5, the pond inside the ornamental garden could not be verified during the 22 May 2007 site walk.

Table 2-1: Mammal Species Observed adjacent to the AEA Study Area in 2005

Scientific Name	German Name	English Name	Location	RL RP	RL FRG	§
<i>Lepus europaeus</i>	Feldhase	Hare	F, W		3	b
<i>Sciurus vulgaris</i>	Eichhörnchen	Squirrel	W, H			b
<i>Felis sylvestris</i>	Wildkatze	European wild cat	W	4	2	s
<i>Sus scrofa</i>	Wildschwein	Wild boar	W			b
<i>Capreolus capreolus</i>	Reh	Deer	F, W			b

Location: F Field/Feld, H Housing, W Forest/Wald

RL RP: Red List Status in Rhineland Palatine pursuant to Ministerium für Umwelt und Forsten MUF (1987)

RL FRG: Red List Status in Germany pursuant to German Federal Agency for Nature Conservation

Bund für Naturschutz BfN (1998): 2 – highly endangered, 3 – endangered

§: Protected species pursuant to BNatSchG, b especially protected, s strictly protected

Source: LBB des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. Ausbau Spangdahlem Air Base Housing. Anlage 4: Fachgutachterlicher Beitrag Tierwelt.

Fauna species inhabiting the adjacent properties may travel through the AEA survey area. A formal animal species survey has been conducted on the area of proposed MFH (Northwest Infrastructure Phase I) as part of the German EIAP documentation *Umweltverträglichkeitsstudie UVS* (LBB, 2006 – Anlage 4). The map illustrating the observed fauna overlaps a small strip of land on the east of the AEA survey area, showing that only hare were observed.

### 2.1.4.1 Protected Animal Species

Animals from adjacent properties may travel through the AEA area. Selected survey data of the vicinity is summarized in Table 2-2.

Table 2-2: Protected Animal Species Observed Adjacent to the AEA Study Area in 2005

Strictly Protected Animal Species			
Scientific Name	German Name	English Name	Status*
<i>Myotis bechsteini</i>	Bechsteinfledermaus	Bechstein's bat	N
<i>Myotis mystacinus/brandti</i>	Kleine/Große Bartfledermaus	Whiskered/Brandt's bat	N (K)
<i>Myotis nattereri</i> (suspected)	Fransenfledermaus	Natterer's bat	N (K)
<i>Nyctalus leisleri</i>	Kleiner Abendsegler	Leisler's bat	N (K)
<i>Pipistrellus pipistrellus</i>	Zwergfledermaus	Pipistrelle bat	N, K
<i>Felis sylvestris</i>	Wildkatze	European wild cat	Ke
<i>Milvus milvus</i>	Rotmilan	Red kite	Ü
<i>Picus viridis</i>	Grünspecht	Green woodpecker	N
<i>Dryocopus martius</i>	Schwarzspecht	Black woodpecker	N

#### \*Status

Bats: N food seeking, (K) location of colony likely, K location of colony confirmed

Wild cat: Ke (study area is core habitat including hunting and reproduction)

Birds: N food guest, Ü: flying over area

Source: LBB des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. Ausbau Spangdahlem Air Base Housing. Dokumentation zur Untersuchung der Umweltauswirkungen (UVS-Dokumentation).



Protected or protection worthy flora and fauna species have been recorded on the biotope objects 6006-1007 *Orchard Meadow/Streuobstbestand N' Dahlem*, -1008 *Deciduous Forest/Laubwald Im Saalholz* and -1044 *Brook Area/Humid Meadows* near the AEA survey area (Section 2.1.4.2). The authorities hand over the associated lists only on justified request as protection measure against private collectors. Appendix C gives an overview for the biotope object 6006-1008.

The animal species survey referenced above concluded that the construction area of the proposed MFH is a habitat of local through regional importance to bats, birds, and butterflies and a habitat of federal importance to the wild cat (with focus on the forest of the MFH expansion off-base adjacent to the east of the AEA area). Based on the site visits in 2005, the MFH area provides habitat to nine strictly protected fauna species as listed in Table 2-2.

**2.1.4.1.1 Wild Cat Species:** The European wild cat species has been observed on the northeast portion of the AEA survey area (Figure 6). It is potentially endangered (RL RP 4) per state law and highly endangered (RL FRG) per Federal law. The species was nearly extinct in Germany in 1900. Several hundred wild cats exist within the German highlands (Der Brockhaus in Text und Bild Edition 2002). The species was identified by telemetry during surveys between 2001 and 2005. Four wild cats have been confirmed on the slopes of the Kailbach River valley 1,000 m (0.62 miles) east of the AEA survey area. The forest complex off-base adjacent to the SAB housing area and to the east of the AEA survey area belongs to the core habitat of the wild cat for food and reproduction. This core habitat area Kyllburger Waldeifel is one of the five biggest core areas of Rhineland Palatine with spacious connection to wild cat populations in the mountain regions of Hocheifel and Hunsrück. The wild cats visit the forest edge adjacent to the PA area to forage for food. The existing housing area is less appropriate as wild cat habitat.

**2.1.4.1.2 Mammal Species:** Other mammal species observed or indirectly confirmed adjacent to the east and southeast of the AEA survey area are wide spread and not endangered (Table 2-3).

**2.1.4.1.3 Bird Species:** The only bird species observed at the AEA survey area is the breeding bird skylark/Feldlerche *Alauda arvensis* (L.A.U.B., 2007). It is protected pursuant to the Vogelschutzrichtlinie [VSR] Anhang: Art.1 and strictly protected pursuant to BNatSchG Anhang b. The skylark is also on the pre-warning list of already diminished but not yet endangered species of the RL Germany (RL FRG).

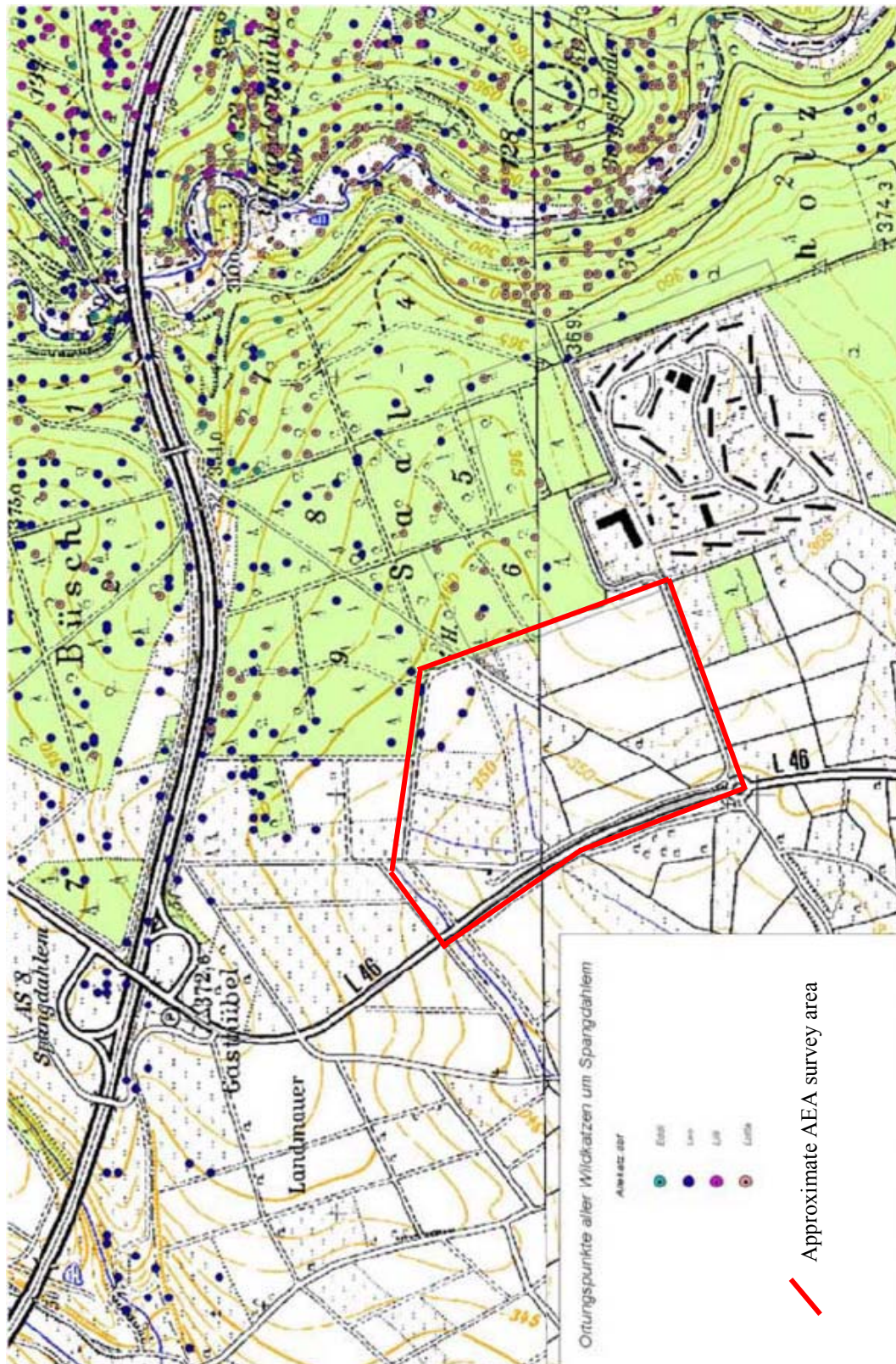


Figure 6: Location of Wild Cat Species in Vicinity of SAB

Source: Landesbetrieb Liegenschafts- und Baubetreuung LBB des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. Ausbau Spangdahlem Air Base Housing. Anlage 4: Fachgutachterlicher Beitrag Tierwelt. North, not to scale.





Table 2-3: Biotope Objects (6006-)1007, 1008, 1044 near the AEA Survey Area.

Object Name	Object No	Biotope	Biotope Groups [%]	Evaluation/Biotope Value	Survey Date
Streuobstbestand N' Dahlem	1007	Orchard Meadow	O 100	III Schongebiet, not protected pursuant to § 24 LPflG Rlp, now §28 LNatSchG	Source: Biotope Map, 9-Dec-94  Appendix D
Laubwald im Saalholz	1008	Deciduous Forest (Timber Forest, Undergrowth)	W 100	III Schongebiet, not protected pursuant to § 24 LPflG Rlp, now §28 LNatSchG	8-Jun-99  Appendix D
Tributary to the Dahlemer Stream	1044	Brook Area, Humid Meadows	G, O	III Schongebiet, not protected pursuant to § 24 LPflG Rlp, now §28 LNatSchG	Source: Biotope Map, 26-Nov-96  Appendix D

**Notes:**  
 G - Water body and embankment (Gewässer und Uferzone)  
 F - Rock/rock pile (Fels/Gesteinshalde)  
 O - Grassland/fallow land/heathland (Grasland/Brache/Heide)  
 W - Forest (Wald)

*Source: Landesamt für Umwelt, Wasserwirtschaft und Gewerbeaufsicht, Oppenheim. 1993-99. Biotopkartierung Rheinland-Pfalz. Erfassungsblätter ausgewählter Biotope.*

The biotope surveyed within the German LPB (L.A.U.B., 2007) has been evaluated and classified pursuant to its value to the species and biotope protection. There are five biotope values from very low to very high as outlined in Table 2-8 below. The AEA survey area includes arable land and a private garden near the northeast corner of the survey area as well as small groups of trees and isolated trees. In relation to the entire AEA survey area, approximately 18% are classified as areas of high and very high importance to species and biotope protection (Figure 5, Table 2-4). The latter does not overlap with the construction area.

Table 2-4 Evaluation of Biotope Identified on the Construction Area of PA

Biotope Value	Biotope
Very low importance or even negative impact to the species and biotope protection	Asphalt and paved roads, paths, and places Residential buildings Utility infrastructure Sports fields and playgrounds Graveled paths Soil paths
Low importance to the species and biotope protection	Residential/ornamental garden – park lawn Seeded meadow Grassed paths Small plantings of ornamental copse along roads and buildings conifers planting at the waste accumulation points Spruce reforestation
Middle importance to the species and biotope protection	Deciduous forest with indigenous tree species Deciduous forest with indigenous tree species and pre-forest Vorwald / succession forest of mean locations Sukzessionswald mittlere Standorte Pre-forest Vorwald / succession forest of mean locations Sukzessionswald mittlere Standorte Mixed pine and deciduous forests (string wood Stangenholz) Mixed deciduous and coniferous forests (reforestation, string wood/Stangenholz) Spruce forest Larch forest Younger isolated copse and copse groups with high portion of coniferous cops or non-indigenous deciduous tree species ornamental copse with some deciduous trees Garden Edge overgrown with moisture indicating flora Ditches Cleared plain
High importance to the species and biotope protection	Mixed pine and deciduous forests (tree wood Baumholz) Mixed deciduous and coniferous forests (tree wood Baumholz) Spruce forest (tree wood/Baumholz) Deciduous forest with indigenous tree species, mixed with spruce forest (reforestation/tree wood with high portion of natural forest renovation Naturverjüngung) Older isolated woods and wood groups of site-appropriate/ standortgerecht species Moistening area, occasionally dry
Very high importance to the species and biotope protection	Beech (mixed) forest Oak forest (tree wood with high portion of natural forest renovation Naturverjüngung) Mixed pine and deciduous forests (tree wood with high portion of natural forest renovation Naturverjüngung)

Source: LBB des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. Ausbau Spangdahlem Air Base Housing. Dokumentation zur Untersuchung der Umweltauswirkungen (UVS-Dokumentation).

### 2.1.4.3 Protected Areas

There are no areas or biotopes protected pursuant to §28 LNatSchG designated within the AEA survey area (Tetra Tech, 2005).

There are no other protected environments pursuant to Section 4 LNatSchG (nature conservation areas, national reserves, biosphere reserves, landscape conservation areas, nature reserves, natural monuments, protected landscape components) overlapping the PA area (Tetra Tech, 2005).

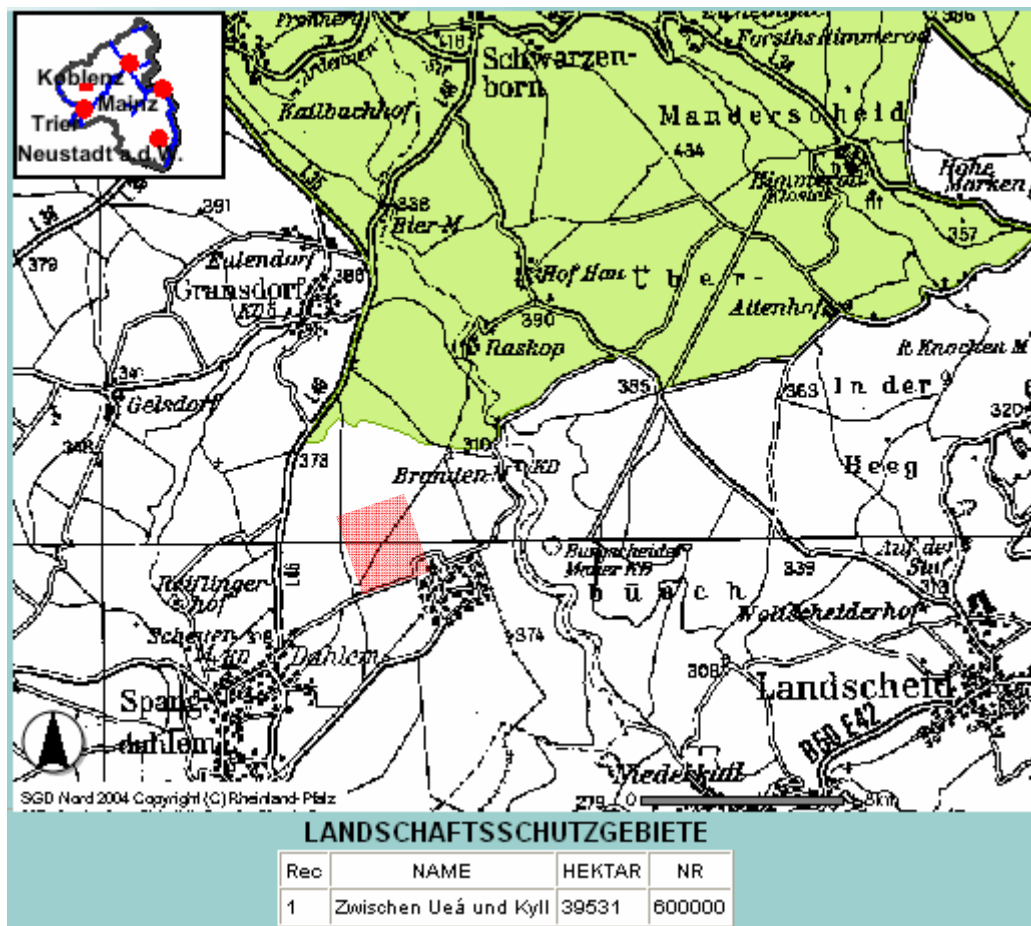
The *Kailbach* Stream valley east of the PA area is rich in protected biotopes pursuant to §28 LNatSchG as illustrated in Figure 7.

The landscape conservation area *Zwischen Uess und Kyll* begins directly north of the new highway, A60, approximately 630 m (689 yards) north of the AEA survey area (Figure 8). It extends north to the villages of *Usch* and *Zendscheid*. This area was declared a landscape conservation area on 12 May 1982.

The drinking water protection area, zone III (Wasserschutzgebiet-WSG, Schutzzone III, weitere Schutzzone/wider protection zone) of the *Kailbach* Drinking Water Treatment Plant (DWTP) within the *Kailbach* Stream Valley overlaps with the PA area (Section 2.4, Figure 14).

The AEA survey area is classified as noise abatement zone (Section 2.9).

The forest management plan of the local forest department designates the forest population east of the AEA survey area and north of the existing SAB MFH partly as forest for soil protection, for noise abatement, and for recreation.




 AEA Study Area (approximate boundaries)

Figure 8: Landscape Conservation Area between Uess and Kyll.

Source: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.

### 2.1.5 Impact of Proposed Action

The PA consists of the construction of three non-industrial facilities and associated infrastructure as outlined in Figure 3. Design of PA is still in progress, and the final layout may differ from what is shown in this figure (Fowler, 2007; SAB, FY 2007 DD Form 1391). Currently, about two thirds of the construction area overlaps with land of very low and low importance to species and biotope protection. Impacts to biological resources from the PA are discussed below.

### 2.1.5.1 Flora

The main impacts of the PA to existing flora can be summarized as follows:

**2.1.5.1.1 Modification/loss of vegetation** would occur by development of buildings, associated infrastructure (utility lines, roads, paved space), sport fields, and ornamental gardens. Forest populations of varying biotope values to animal and plant species protection are included within the 10 m-wide clear zone outside along the northeast and east of the AEA survey area and would be impacted. Also impacted would be the ornamental garden in the northeast corner of the site with surrounding trees. The impact significance would depend on the value of biotope to animal and plant species protection affected by the PA as outlined in Figure 5. The PA would predominantly impact biotope of low importance (Table 2-5).

Table 2-5 Impact Summary to Flora

Biotope value on the AEA Study Area	Impacted Area [ha]	Impacted Area [%]
Very low	0.70	1.82
low	22.38	57.86
medium	11.96	30.94
high	2.65	6.86
very high	0.98	2.52
(not within the construction area, Figures 4 and 5)		
<b>Total on AEA Survey Area</b>	<b>38.67</b>	<b>100.00</b>
<b>Forest clearing</b>		
Clear Zone outside along perimeter fence	0.33	

Source: L.A.U.B.mbH. 10 Juni 2007. Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893. Modified.

**2.1.5.1.2 Vegetation population** adjacent to the PA area could be **endangered** during construction activities, such as excavation, general access, vehicular traffic, and material storage. Modification of habitat conditions like increased exposure to the sunlight by clearing of adjacent land could also impact the PA bordering wood population.

**2.1.5.1.3 Dust pollution** during construction activities could impact the assimilation ability of plants, especially during dry seasons, and could impact the SAB MFH occupants. Immediate coverage and seeding of open soil storage piles and other developed open land is highly recommended.

**2.1.5.1.4 Soil erosion** during construction activities could impact the community streams with settleable solids and sediments washed off with rainwater into the surrounding surface waters. Construction of temporary settling ponds for storm water runoff would minimize the erosion impacts.

### 2.1.5.2 Fauna

The main impacts of the PA to existing fauna can be summarized as follows:

**2.1.5.2.1 Loss of habitat** would occur by implementation of the PA. The off-base expansion would require tree clearing of approximately 0.33 ha (0.82 acres) outside the perimeter fence along the



northeastern and eastern borders of the site. Habitat of the wild cat, bat, bird, and butterfly species would be lost.

2.1.5.2.2 Visual and acoustical impacts would occur by implementation of the PA. The proposed infrastructure would increase the anthropogenic impacts in general, predominantly by noise emission. Based on the current plans, the main area of impact would overlap with arable land of low importance to species and biotope protection. Noise emission associated with construction activities would be limited to its duration, noise emission associated with the facility operation (predominantly vehicle traffic) would last. Visual impact would be strongest looking from the north and the west towards the AEA survey area. The European wild cat is highly vulnerable to any impact. Impact to flying insect species could be generated by artificial lightning.

2.1.5.2.3 Biotope connecting travel corridors would be impacted by the PA. This affects the European wild cat, as well as common mammals like hare and deer, that uses the *Kailbach* River Valley as distribution and travel trail connecting individual habitat areas.

### **2.1.5.3 Mitigation**

Public and private open space should generally be grassed to restore ecologic basic soil functions and erosion protection. The land with high importance to species and biotope protection in the northwest of the AEA survey area does not overlap with the PA area. Development of this land should preserve its biotope value. Transportation areas as well as public and private green space should be covered with ornamental shrubs and other appropriate planting to compensate the loss of ornamental shrubs and copses. Plantings along the perimeter fence, but in compliance with the clear zone requirement, could mitigate the visual impact of the PA to the surrounding environment and in specific to the European wild cat population.

Plantings around the outdoor sport fields associated with the fitness center and the school complex as well as along the parking areas would mitigate visual and acoustic impact to habitats of birds and mammals and serve itself as habitat.

Soundproofed equipment shall be applied for construction activities. Also, keeping a likely perimeter road unpaved would reduce speed and thus noise emission.

Light emissions should be mitigated using screens to reduce scattered light, choosing a low source point (e.g. low lighting poles) as well as applying lamps with light that is less attractive to night-active insects (e.g. gaslight, fluorescent tube).

Mitigation measures for the proposed clear zone outside the PA area primarily consists of the replacement of trees as required per state forest law §14 LWaldG in consultation with the local Forest Master (*Forstmeister*). The replacement ratio is not necessarily 1 : 1. Replacement area is calculated by direct loss of forest plus the indirect loss of habitat caused by the impacts which could vary in negative impacts to the eco-balance. This measure would apply for the loss of forest outside the AEA study area along its northeast corner. The LPB for Northwest Infrastructure Phase I and Phase II (L.A.U.B. June 2007) lists areas for mitigation measures that predominantly address the higher impacts on the MFH area (Phase I-III) adjacent to the east of the AEA study area (Phase II).

### **2.1.6 No Action Alternative**

If no construction took place, current conditions would not change and no impacts to fauna and flora would occur.

## 2.2 Cultural Resources

### 2.2.1 Setting

Within the 2005 EBS, Dr. Hans Nortmann, at the Rhineland Regional Museum (*Rheinisches Landesmuseum*) in Trier, provided an inventory of cultural resources in the SAB area. Although none of the known archaeological discovery sites overlap with the AEA survey area, Mr. Nortmann stated that care should be taken to ensure protection of archaeological findings in case excavation work is conducted associated with the proposed construction activities (personal communication, 9 February 2005, statement on 15 February 2005).

As shown in Figure 9, there are nine **archaeological discovery sites** within 600 m (656 yards) of the AEA study area's perimeter (Table 2-6). The Alte Trierer Strasse runs along the western limit of the AEA survey area.

Table 2-6 Archaeological Discovery Sites near SAB

No	Map	Finding as illustrated on Figure 9	Age
20	6006	On-base, discovery site 'Eckbüsch/Lutscherot'	Stone
6	5906	Hill 'Saalholz', structure associated with the Burgscheider Mauer, a Celtic ring barrier	Not available
1	6006	No data available, likely associated with No 11	Not available
18	6006	Graves 'Geimershöh'	Roman
19	6006	On-base, settlement remains at height 346.5	Roman
11	6006	Settlement remains 'Auf dem Ly/Im Ly/Op Li'	Roman/Mediaeval
3	6006	No data available	Not available
4	5906	Settlement 'Gasthübel'/'Beim Heidenkreuz'/'Steinbüsch'	Roman
5	5906	Settlement 'Gasthübel'	Stone/Roman

Source: Tetra Tech, Inc. August 2005. *Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.*

The LNatSchG designates **natural monuments** that could be interpreted as cultural resources like the *Burgscheider Mauer* with relics approximately 80 m (262 ft) north of the northeast corner of the forested MFH expansion (represented in Table 2-11 and Figure 9 by discovery site 6 *Hügel Saalholz*). The main structure of the *Burgscheider Mauer* is 1,200 m (3,937 ft) east of the AEA survey area on the opposite slope of the river valley. It is a ring barrier of Celtic age, constructed at 366 m amsl in the first century AD. The wall is approximately 6 m (20 ft) thick and 1.2 m (4 ft) high with a moat and was considered by the Celts as castle for seeking refuge (*Fliehbürg*). Approximately 100 m north of the *Fliehbürg* are the remainders of bricked houses near the ground surface, estimated to be 100 to 150 years younger than the ring barrier. A circular brick well, characteristic of findings at this elevation, and bronze cups, drinking glasses, wine jugs and amphorae were found during additional excavation. Other natural monuments are summarized in Table 2-7 and illustrated in Figure 10. None of the referred resources overlap with the AEA survey area.

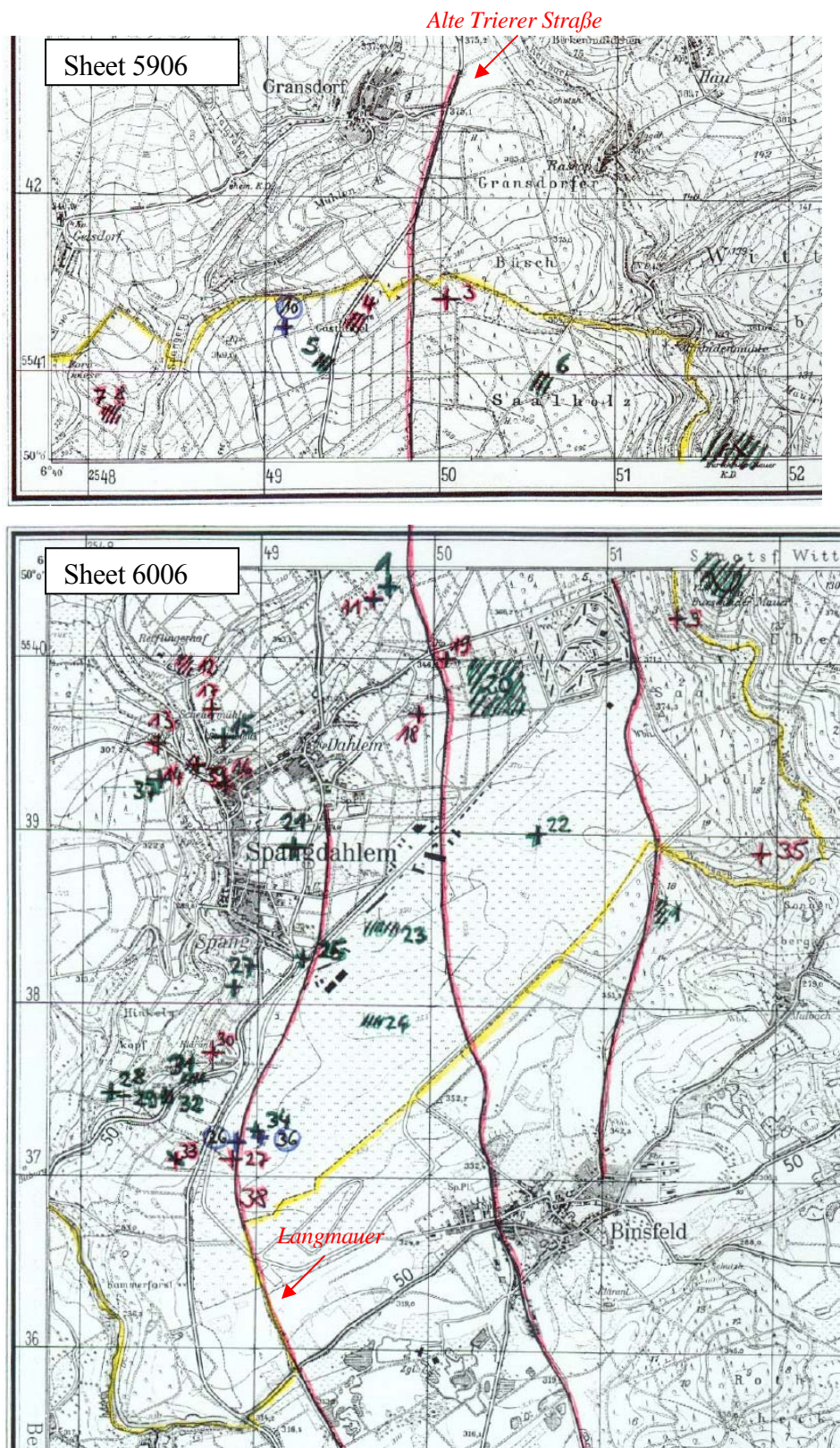


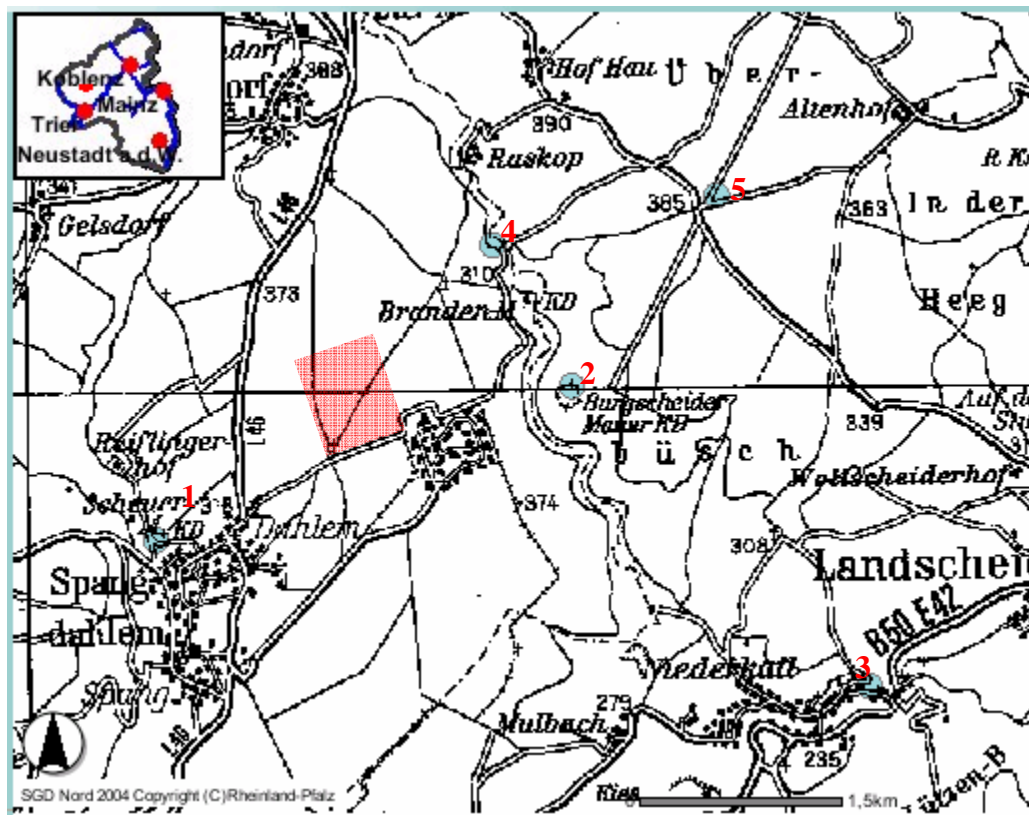
Figure 9: Cultural Resources Map SAB

Source: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.

Table 2-12 Natural Monuments near SAB

Map Location	Natural Monument of Figure 10
1	(11 Linden) Linden bei der Kapelle am Nikolausberg/limes near the chapel at the Nikolaus hill
2	Burscheider Mauer (Steinwall, keltische Mauer/stone wall, Celtic wall)
3	Alte Eiche/Old Oak (Zirbeseiche)
4	Dreiarmlige Fichte/three-armed spruce (Rottanne)
5	Doppelstämmige Buche/double trunk beech

Source: Gemeinschaftsprojekt des Ministeriums für Umwelt und Forsten und der Struktur- und Genehmigungs-  
 direktionen, Landschaftsinformationssystem Rheinland-Pfalz, Karten und Daten der Landespflege (North, not to scale).  
 In: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey,  
 Spangdahlem Air Base, Germany.




 AEA Study Area (approximate boundaries)  
 1-5 Defined in Table 2-12

Figure 10: Natural Monuments in Vicinity of AEA Study Area

Source: Gemeinschaftsprojekt des Ministeriums für Umwelt und Forsten und der Struktur- und Genehmigungs-  
 direktionen, Landschaftsinformationssystem Rheinland-Pfalz, Karten und Daten der Landespflege (North, not to scale).  
 In: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey,  
 Spangdahlem Air Base, Germany.



**Other subject goods** are limited to arable land for income and ornamental gardens for recreation. The entire AEA survey area is used for agriculture, with the exception of the small ornamental garden (S56) in the northeast portion of the survey area and a triangle of field corpses (X11) in its northwest.

### 2.2.2 Impact of Proposed Action

There are no cultural resources recorded on the AEA survey area and thus there is no impact to the PA area. The German EIAP respects the income value of arable land as other subject goods. This would get lost as well as the ornamental garden for recreation purposes.

#### 2.2.2.1 Mitigation

No mitigation measures are required since there are no cultural resources recorded on the PA area. The loss of private property and associated income from farming will be compensated within the land acquisition procedure.

### 2.2.3 No Action Alternative

If no construction were to take place, current conditions would not change and no impacts to cultural resources would occur.

## 2.3 Geology and Soils

### 2.3.1 Setting

The region of the AEA survey area is part of the *Trier-Bitburg* geosyncline within the Rheinische Schiefergebirge. The geo-syncline has a south-southwest dipping syncline axis. The PA area is at the northeast corner of the syncline, close to the hinge. The AEA survey area and its surrounding are in the *Bitburger Gutland*, which consists of a series of sloping sediments from the *Trier-Bitburg Mesozoic* era. Significant faults crossing perpendicular to the syncline axis have been mapped in this region. These faults flank the south-southwest and north-northeast boundaries of SAB.

Local geology comprises small layers of Eocene to Oligocene gravel and sand with loam and clay over *Upper Bunter Sandstone (so)*, and *Middle Bunter Sandstone (sm)* (Figure 11). Thickness of the tertiary sediments increases from east to south to several meters. However, boring logs from monitoring well installations on SAB indicate that the subsurface of the base and the northern adjacent AEA survey area consist only of *Upper* and *Middle Bunter Sandstone* sediments (Figure 12). The border of the *Upper* and *Middle Bunter Sandstone* formation has been mapped off-base close to the eastern perimeter fence. The *Kailbach* River, east of the AEA survey area, flows through *Middle Bunter Sandstone* sediments, though could have historically passed through and eroded the overlying *Upper Bunter Sandstone* sediments. Boring logs of monitoring well TB5 at the south of the SAB housing area revealed predominantly *sm* sediments with overlying *Upper Bunter Sandstone* of a smaller thickness. To the east-southeast of the base's south gate, clay from tertiary sediments is extracted from open-pit mines in the *Binsfelder Tongruben* (Tetra Tech, 2005).

Soils consist mainly of base-poor brown soils and para-brown soils (pale soils). These are often found to be compressed with a tendency to wet (LBB, 2006).

According to Figure 5, there is a small area of deposited materials (Y32) in the northern half of the site, near the western border and current access road. These deposits were not observed during the site visit.

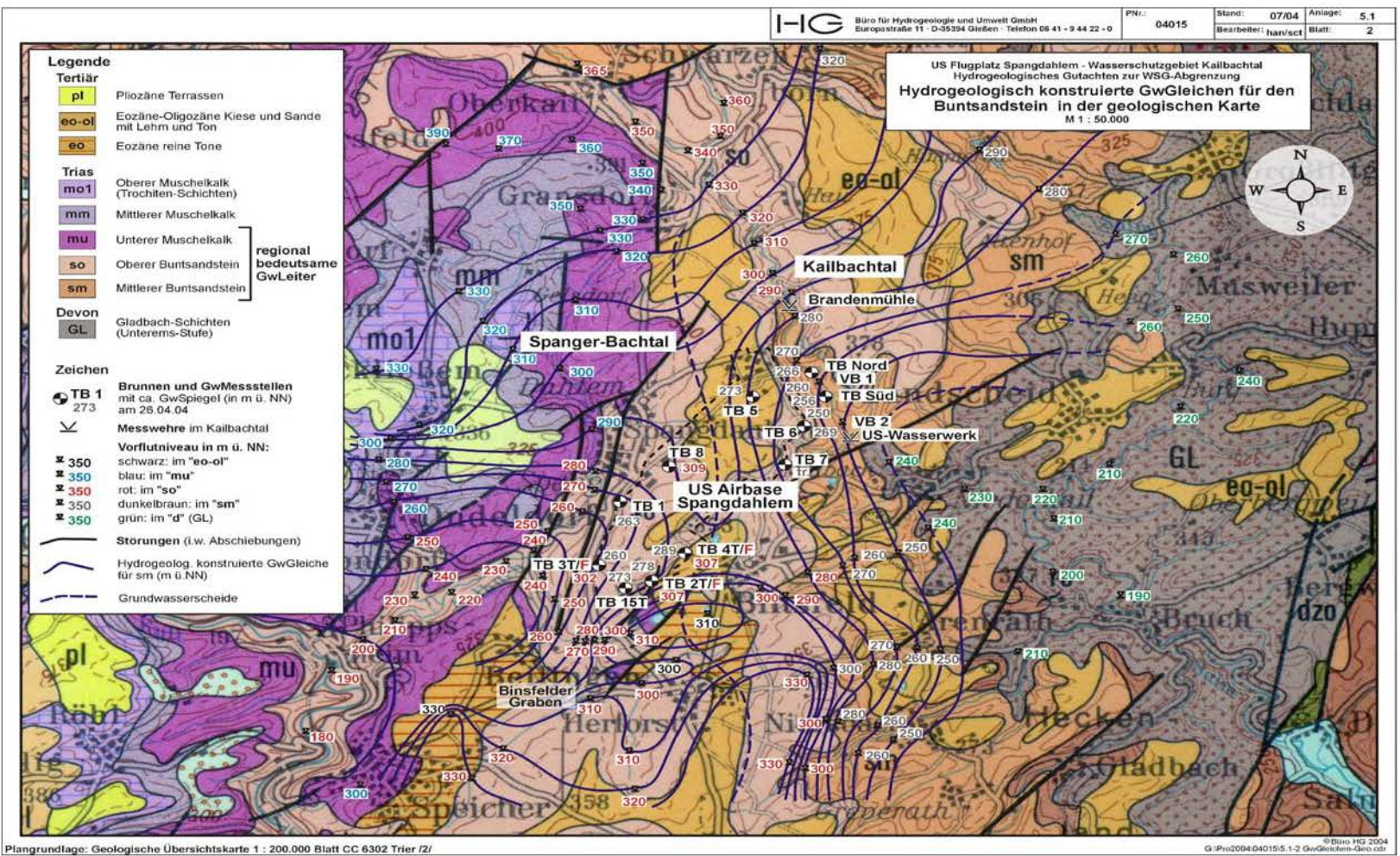


Figure 11: Geology and Groundwater Contours (sm) - SAB

Source: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.

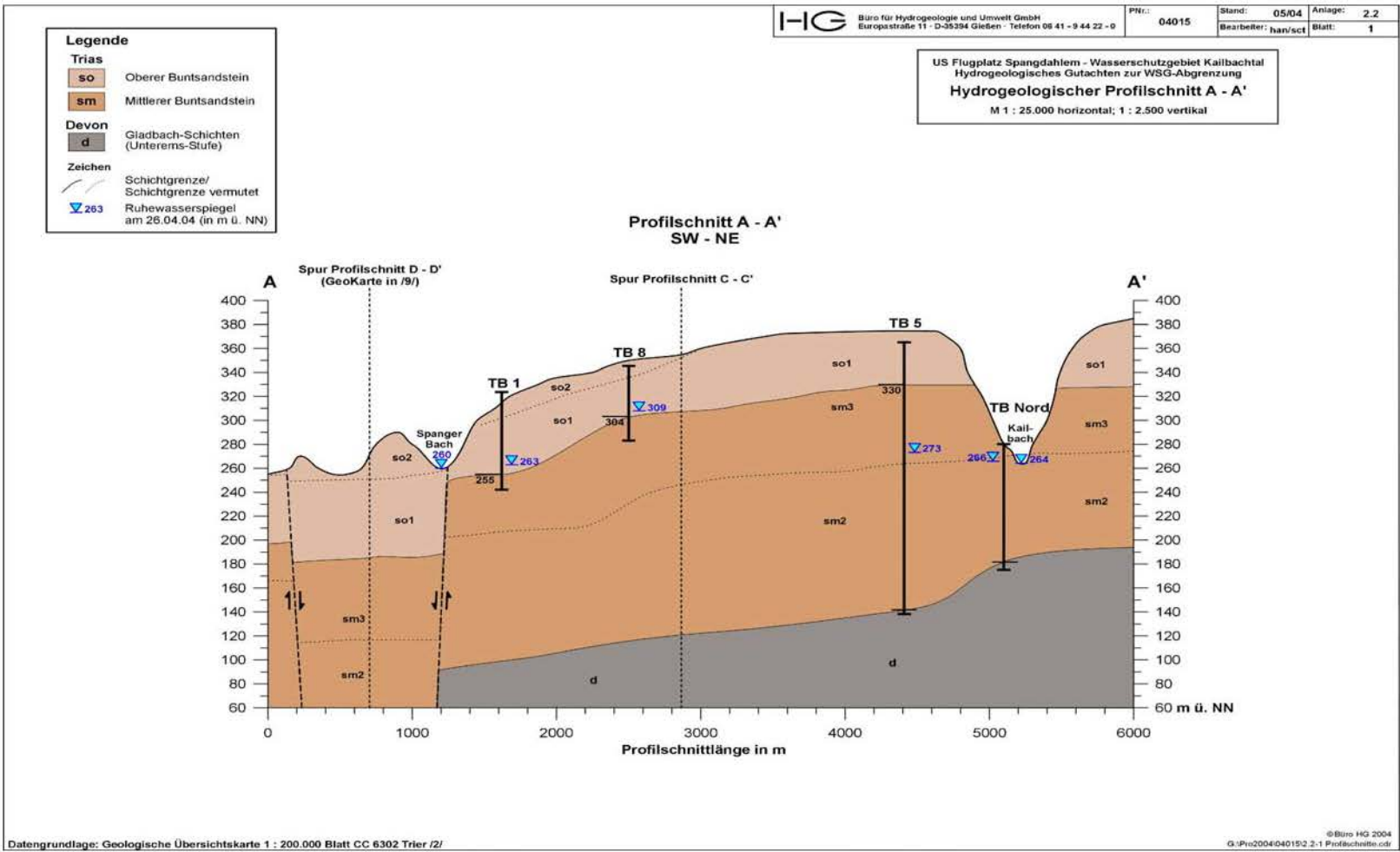


Figure 12: Geological Cross Section SW-NE - SAB

Source: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.



### 2.3.2 Impact of Proposed Action

There is no significant impact to geology in this area.

During the site development, the soil might be impacted by relocation and compression. The original soil composition could change by excavation and refilling for grading, landscaping, and other surface preparation techniques.

Once the construction activities are completed, impact to soil in the size of 15 ha (37 acres) (L.A.U.B., 2007) will be covered with buildings, associated structures, and paved parking and driving areas. The remaining areas will be landscaped and open areas, which should be covered primarily with vegetation, hindering any potential for soil erosion. Also, since the ground surface of the PA area as well as the areas immediately surrounding it are relatively flat, there is little threat of significant soil erosion by surface water runoff mainly only during the construction activities.

#### 2.3.2.1 Mitigation

Techniques to prevent the potential erosion of soil during construction activities should be included in the work plans, and construction inspectors should ensure proper use and placement of erosion control structures. Any permanent loss of soil by the PA could be mitigated by unsealing areas with similar biotopes in proximity to the PA area. These areas could include, but are not limited to, the Oberweis Annex, the Bitburg Annex, and Prüm Air Station (Tetra Tech, 2006).

### 2.3.3 No Action Alternative

If no construction took place, current conditions would not change and impacts to geology and soils would not occur.

## 2.4 Groundwater

### 2.4.1 Setting

Groundwater beneath the PA area is within the *Bunter Sandstone* sediments. Regionally, the *Bunter Sandstone* is a good aquifer that provides significant groundwater storage. Flow within the aquifer is predominantly by fissure flow. Water supply wells generally provide a good-to-very-good yield. The underlying folded *Devonian* slates form an aquiclude. However, analysis of cores from monitoring well TB5 revealed that here the groundwater flow is inter-granular. TB5 is on SAB at the south edge of the MFH area just southeast of the AEA survey area (Figures 11, 12, 14 and 15).

It was previously reported that the uppermost 40 to 55 m (131 to 180 ft) underlying the SAB area consist of sediments primarily of mud and clay rich sediments, which provide a low permeability barrier to significant vertical groundwater movement. At approximately 30 m (98 ft) below ground surface (bgs), these sediments are inter-bedded with thin beds of fine-grained sandstone, allowing for horizontal groundwater flow. These beds discharge to the surface as springs with the balance percolating deeper into the formation. A layer of cleaner, fine- to medium-grained sandstone is underneath that forms the major aquifer within this sequence (Tetra Tech, 2005).

Geophysical logging and geological map analysis indicated that the rock layers in this area dip west-northwest. This assists the conceptual understanding of likely groundwater flow in this particular

rock unit that is influenced by the less permeable clay layers. As a result, springs predominantly discharge in this direction.

Figure 11 illustrates groundwater contours within the deeper *Middle Bunter Sandstone* aquifer showing that flow direction beneath the AEA survey area is to the east-southeast, towards the *Kailbach* stream (Tetra Tech, 2005). The schematic cross-section in Figure 12 illustrates the conceptual understanding of the geology beneath SAB. The cross-section shows that the impermeable *Devonian* slates were encountered during the installation of well TB5 southeast of the PA area at 140 m (460 ft) amsl. Figure 13 summarizes the local hydrology. The area of PA is close to the groundwater flow divide to east-northeast and west. Based on current data, it is unknown how far the perched groundwater bearing horizon is developed beneath the AEA survey area.

The AEA survey area lies just east of the western extent of the water protection area (*Wasserschutzgebiet*-WSG), zone III, for the new *Kailbach* water production wells. The limits of the protection zones have been under investigation since 2004 (Tetra Tech, 2005) and are now established for the main portion, as delineated in Figure 14. The two production wells of the *Kailbach* wells southeast of the AEA area, and within the *Kailbach* Stream Valley, supply SAB. However, no groundwater production or monitoring wells are located within the PA area.

#### **2.4.2 Impact of Proposed Action**

The PA would result in the development and sealing of 15 ha (37 acres) soil reducing groundwater recharge. In addition, the construction of community facilities in this area will result in an increase in water consumption and an increase in the demand from the *Kailbach* wells depending on the grade of replacement or addition to the existing community facilities (Figure 15).

Groundwater quality should not be compromised by the development of the AEA survey area and the additional use of the area groundwater, as no construction (infrastructure and supply lines) should extend beyond 1.5 m (49 ft) bgs. Potential future HazMat spills in the PA area would require immediate response and cleanup actions, also including contractor caused spills during the construction activities.

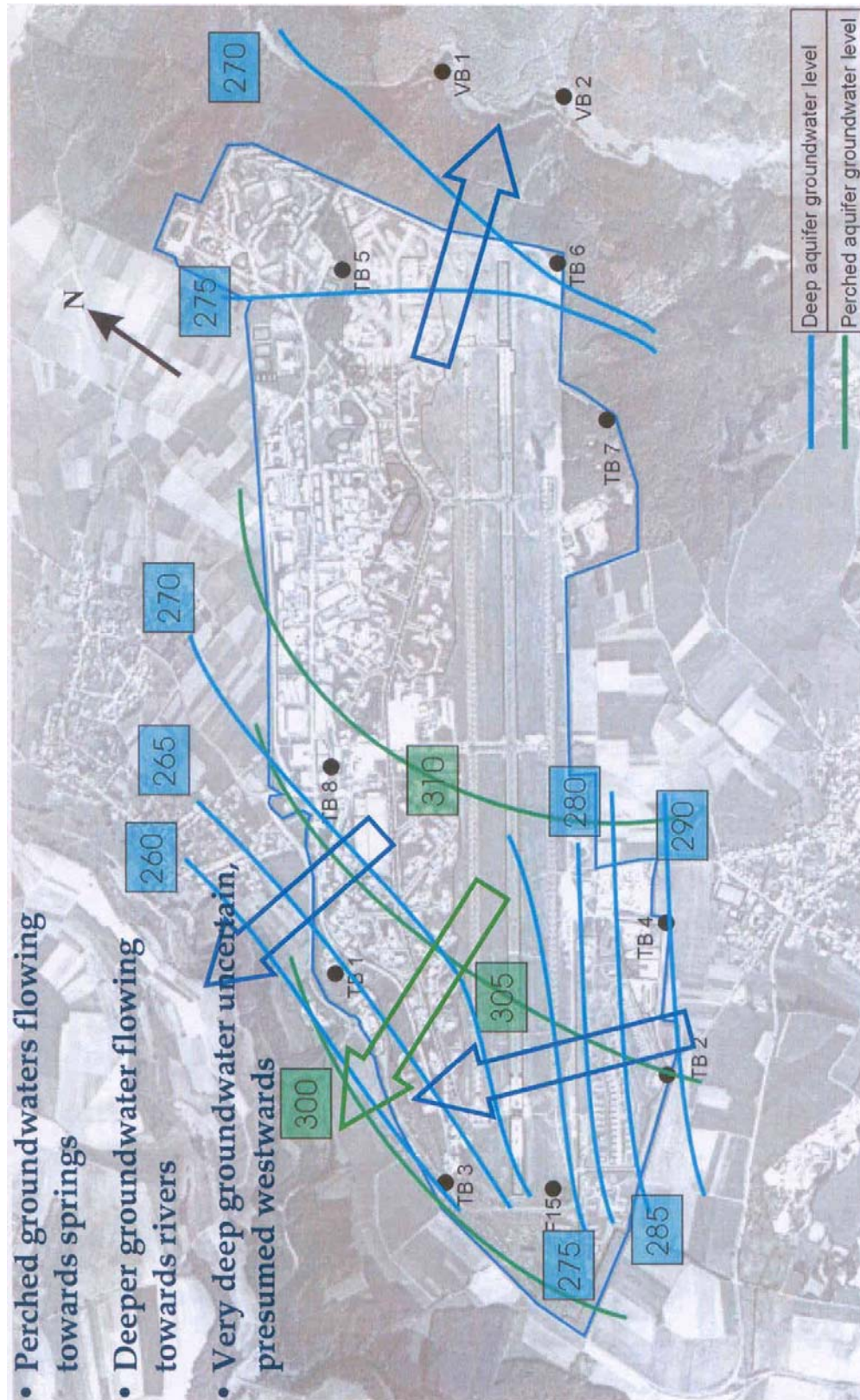


Figure 13: Groundwater Flow Directions - SAB

Source: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.



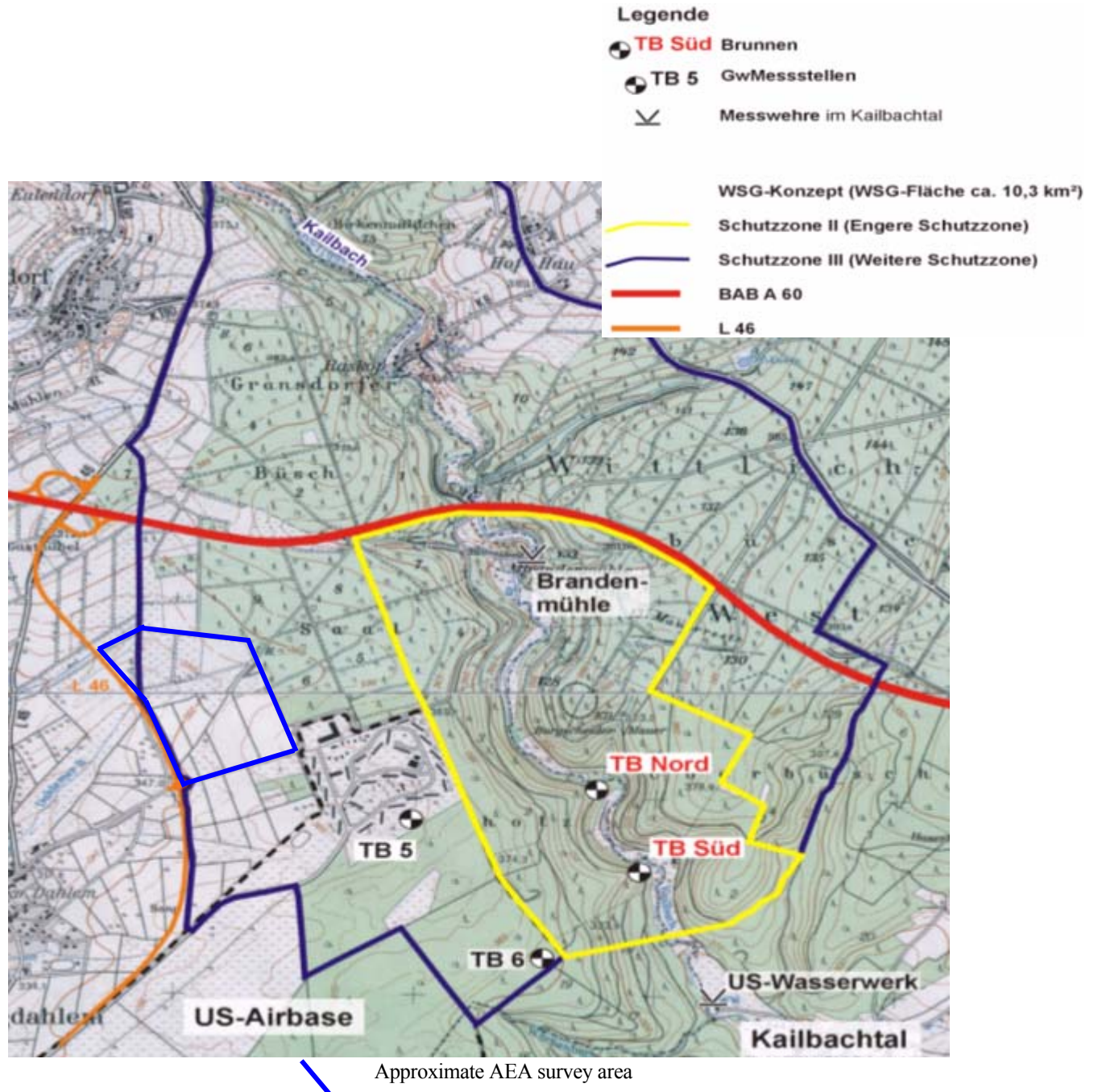


Figure 14: Niederkail WTP Water Protection Zones

Source: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany. (North, not to scale)

### 2.4.2.1 Mitigation

Appropriate mitigation measures could consist of the minimization of sealing and strict compliance with the HN regulation on the water protection zones. Construction and operation of all PA sewer systems inside water protection zones should comply with the relevant guidelines (ATV-DVWK, [now German association for water business, wastewater, and waste *Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall*], work sheet *Arbeitsblatt A 142* on sewer and sewage pipes inside water protection zones). All construction associated with the PA is in the WSG zone III. In accordance with §6 Section 3 VAWs *Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen*, the Order on plant used to handle water-endangering substances and on special works, aboveground facilities of endangering level D and underground facilities of endangering level C and D should not be installed in TWSZ III.

Also, in accordance with §2 *Landeswassergesetz* (LWG), the state water act, the ratio of evaporation, precipitation, and discharge should not change after PA implementation. Wastewater and potentially contaminated storm water would be discharged to and treated by the wastewater treatment plant (WWTP) of SAB. It is assumed that once the fitness center, commissary, and BX are opened, the current facilities will either be closed, demolished, or converted into another facility. This should result in an insignificant change the current water consumption amount and wastewater discharge amount to the WWTP. Water use at the new high school should also be relatively insignificant as there are no activities that should require a great amount of water.

### 2.4.3 No Action Alternative

If no construction took place, current conditions would not change and no impacts to groundwater would occur.

## 2.5 Surface Water and Wetlands

### 2.5.1 Setting

The AEA survey area belongs to the catchment area of the *Mosel* River, the primary surface watercourse in the area. The *Mosel* River, flowing in a southwesterly to northeasterly direction approximately 21 km (13 miles) east of the site, dewater into the *Rhine* River to the northeast, significantly contributing to the regional groundwater supply and recharge according to the state water act *Landeswassergesetz* LWG, Attachment 1. SAB is bordered by the *Kailbach* Stream to the east and the *Spangerbach* Stream and its continuation, the *Aulbach* Stream, to the west. The State regulation on secondary surface water courses, *Landesverordnung über die Gewässer 2. Ordnung*, lists the *Kailbach* Stream as being a secondary water course that springs at the *Bierbach* Stream mouth northeast of the village of *Gransdorf*, drains into another secondary water course, the *Salm* River, south of the town of *Landscheid* and northeast of SAB, and finally into the *Mosel* River at *Klüsserath*.

There was no surface water observed on the AEA survey area during the 22 May 2007 site walk. However, a small pond is noted as part of the ornamental garden area in the northeastern portion of the survey area, and there are two ditches/streams mapped onsite that extend onsite from the brook to the west of the site. These may be perennial, but are likely dry throughout the year. Surface

water from this area drains directly or via small tributaries into the *Kailbach* Stream in the east and predominantly towards the *Dahlemer* Brook 500 m (547 yards) west of the AEA survey area.

As discussed in Section 2.1.3, no wetland areas have been delineated on the AEA survey area. Wet, moist or permanently humid meadows (O41) were surveyed in the northwestern portion of the site near two source brooks, east of the *Dahlemer* Brook in 2005. These brooks were not observed during the 22 May 2007 site visit, so they are assumed to be perennial. There are no designated floodplains present.

Several drainage ditches dewater the single farmland properties of the AEA survey area. During the 22 May 2007 site visit, some were found dry and some (in the northeast corner) were found water-filled.

### **2.5.2 Impact of Proposed Action**

During the construction of the planned infrastructure, surface water runoff may transport loose sediments into the drainage ditches and ultimately off of the AEA survey area. While it is unlikely that these sediments will be transported as far as the local surface water bodies, they may still be displaced elsewhere on-site or directly off-site.

Upon completion of construction activities, the surface drainage of the site will be altered with the addition of infrastructure and paved areas. However, even with the small amount of forest that may be affected by the implementation of the required clear zone on either side of the perimeter fence, it is unlikely that a significant impact to the surface water drainage into the nearby surface water bodies will be affected. The existing drainage ditches may empty predominantly into either the *Dahlemer* Brook to the west or less to the *Kailbach* River to the east. With increased sealing future surface water runoff will increase which all will drain off into the *Dahlemer* Brook surface water.

#### **2.5.2.1 Mitigation**

Standard erosion control methods such as silt curtains and/or hay bales could be used as appropriate to minimize construction-related runoff of sediments. Construction techniques to prevent soil erosion should be included in work plans, and construction inspectors should ensure proper use and placement of erosion control structures. Increase of sediment loading of the surface water runoff could be mitigated by the lay out of green space intersecting the PA area.

An appropriate waste water system would manage the increased excess drainage or storm water runoff from PA. The system would be connected to the existing SAB sewer system with outlet into the environment at licensed discharge points. The closure of the community facilities replaced by the PA would balance out the amount of storm water discharge.

### **2.5.3 No Action Alternative**

If no construction took place, current conditions would not change and no impacts to the local surface water and possible wetlands would occur.

## 2.6 Air Quality

### 2.6.1 Setting

The area surrounding SAB and the area of PA is primarily agricultural and forest. There are no areas of heavy industry or other similar activities in the vicinity, although there is relatively heavy air traffic as a result of the current flight missions of SAB.

### 2.6.2 Impact of Proposed Action

Generally, fugitive dust and vehicular emissions are anticipated during construction of the PA. The PA would not result in any operational air emission impacts other than exhaust from commuter traffic. The heating system of the buildings will be connected to district heating as is the rest of the SAB facilities. The cooling systems that will likely be present in some of the facilities will be restricted for usage of ozone depleting substances but will not likely result in an impact to the air quality.

The forested area, which provides dust filtration and fresh air, may be affected as the required clear zone area is implemented. This affected area will be minimal, however, so the impact of the PA should be minimal on air quality.

In addition, an increase in surface temperature of the survey area is possible with the installation of infrastructure and paved areas, reducing the amount of grassed areas to absorb the heat. This change in surface temperature would likely be negligible.

#### 2.6.2.1 Mitigation

Mitigation measures during construction activities would include the use of dust suppressants, if deemed necessary, and regular vehicle maintenance to ensure meeting appropriate emissions standards. Sealing and paving should be minimized, if possible, to preserve as much green space as possible, including any trees or forested areas. Any green areas affected should be replaced.

### 2.6.3 No Action Alternative

If no construction took place, current conditions would not change and no impacts to air quality would occur.

## 2.7 Hazardous Materials

### 2.7.1 Setting

The AEA survey area is completely undeveloped and is used primarily as farmland. It is unlikely that any hazardous materials were previously used on site during farming activities other than herbicides, insecticides and fertilizer, or if any industrial activities with significant hazardous material use have occurred at the site. The use and storage of hazardous materials should be managed in accordance with all applicable rules and regulations, including the FGS-G, Chapter 5.

### **2.7.1.1 Asbestos Containing Materials**

As there has been no construction or industrial activity at the subject site, it is presumed that there are no asbestos containing materials (ACM) present.

### **2.7.1.2 Lead-Based Paint**

Pursuant to FGS-G, Chapter 17, the identification, control or elimination of LBP hazards in child-occupied facilities is required in a manner protective of human health and the environment. As there has been no construction or industrial activity at the AEA survey area, it is assumed that there is no LBP present.

## **2.7.2 Impact of Proposed Action**

Potential impact involved in the construction of the proposed infrastructure on a previously undeveloped area of farmland should be minimal as LBP should no longer be used, and ACM should be used at a minimum and only if necessary in compliance with current HN legislation. Hazardous materials may be used and stored at the PA area in the form of cleaning supplies, heating fuel, diesel fuel for emergency generators and operation equipment, other type of general hazardous substances and other maintenance materials.

### **2.7.2.1 Mitigation**

As there is currently no ACM or LBP present on the site, there is no mitigation necessary. If these substances are discovered or brought to the site, they should be managed in accordance with all applicable rules and regulations, including the FGS-G, Chapters 15 and 17, respectively.

## **2.7.3 Impact of No Action Alternative**

If no construction took place, current conditions would not change and no impacts due to hazardous materials would occur.

# **2.8 Hazardous Waste**

## **2.8.1 Setting**

Hazardous materials used in a non-consumptive manner, such as cleaning and landscape maintenance, generate hazardous waste. The PA would introduce community activity to the previously unoccupied area with the construction of a new commissary and base exchange, high school, and fitness center. This activity would then result in the generation of hazardous waste as a result of the use and regular maintenance of these facilities.

Although it is not anticipated, any discovery of contaminated soils revealed by the proposed construction activities will require the appropriate disposal measures.

### **2.8.1.1 Installation Restoration Program Sites**

As the AEA survey area is not yet under USAF control, the Installation Restoration Program (IRP) is not implemented for this area.



### 2.8.1.2 Other Contaminated Sites and Landfills

Pursuant to the information of SGD Nord Trier, there are no contaminated sites or former landfill areas overlapping with the PA area. The authority maintains a Suspected Site Inventory of Rhineland Palatine (SSI-RP) and provided information about five former landfills in the vicinity of the PA area of which four are located on SAB (Figure 15) but none is located at the PA area.

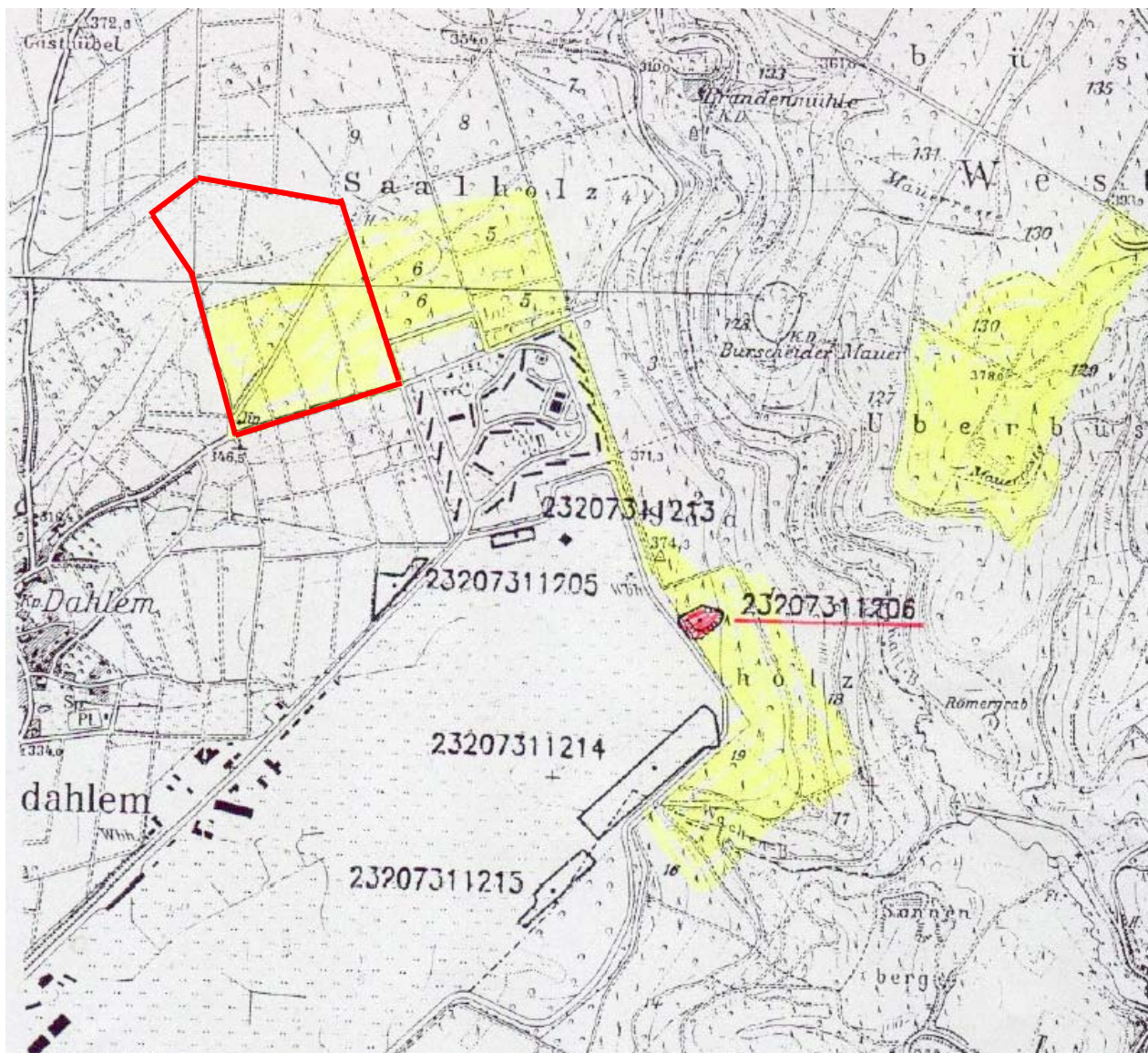
The SSI-RP Site #23207311213 is the closest listed site, located to the southeast at an elevation of approximately 370 m (1214 ft) amsl, slightly uphill from the PA area (Figure 15). Local authorities cannot provide information regarding this site because it is located on base. Former disposal sites or other areas of concern on base are typically maintained within the IRP. No information concerning this site was available.

Pumped contaminated groundwater requires disposal as hazardous waste if it exceeds established limit values. Contamination of the groundwater beneath SAB by *Leichtflüchtige Halogenkohlenwasserstoffe* (LHKW) volatile halogenated hydrocarbons) including volatile chlorinated hydrocarbons (VCH) and including volatile organic carbons (VOC) has been summarized in the EBS for the PA area (Tetra Tech, 2005). However, because of the shallow construction depth of PA, there is minimal potential to reach the aquifer horizons that bear likely contaminated groundwater (Figure 16).

### 2.8.2 Impact of Proposed Action

The PA at the AEA survey area would result in the generation of hazardous waste in association with the regular use and maintenance of the community facilities.

There are no SSI-RP sites located on the AEA survey area. The closest SSI-RP Site, #23207311213, is located on SAB, south of the MFH area and to the southeast of the AEA survey area. No details on kind, size and dates of disposal was available. No evidence of contamination is known for SSI-RP Site #23207311213 (Tetra Tech, 2006). Because of the anticipated shallow construction depth of the PA and the distance of the construction area from the SSI-RP site, the potential to encounter soil or groundwater contamination associated with this SSI-RP site during construction of PA is assumed to be minimal. Perched groundwater has been reported in the area; however, based on current data, it is unknown how far the perched groundwater bearing horizon has developed beneath the AEA survey area.



Approximate AEA survey area

Figure 15: SSI-RP Site 23207311206 near the AEA Survey Area.

Source: Struktur- und Genehmigungsdirektion (SGD) Nord Trier, Regionalstelle Wasserwirtschaft, Abfallwirtschaft, Bodenschutz, Herr Manfred Weber. 21 Februar 2005. Auskunft aus dem Altablagerungskataster. Auskunft zu Wasserschutzgebieten. (North, not to scale)

In: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.





### 2.8.2.1 Mitigation

In the case that contaminated soil or groundwater is encountered, it should be managed under the direction of 52 CES/CEV. In the event that contaminated soil is discovered, 52 CES/CEV should be contacted for further action prior to continuation of work. Potential remediation should be coordinated with 52 CES/CEV, and be part of the project (AF Form 813, Appendix A).

Wastes generated as a result of regular cleaning and maintenance of the PA area should be managed in accordance with all applicable rules and regulations, including the FGS-G, Chapter 6. Waste generated during the construction activities must be removed by the construction contractors IAW European Waste Management directives.

### 2.8.3 No Action Alternative

If no construction took place, current conditions would not change and no impacts due to hazardous waste would occur.

## 2.9 Noise

### 2.9.1 Setting

Ground noise generated by the PA is anticipated to be limited to road traffic and vehicle movement. Significant noise impacts are generated by SAB air traffic. The most recent aircraft noise study was performed in May 2006 pursuant to US standards (AFCEE Technical Directorate 2006). Pursuant to this study, the south portion of the AEA study area with the PA of fitness center and BX as outlined in Figure 3 would be exposed to noise levels between 65 and 70 decibel (dB) and would require noise level reduction measures. The northern portion with the school complex would be exposed to noise levels of  $\leq 65$  dB (Figure 17). This study has not yet been approved by the USAFE/A7AV experts (Steffes, 22 May 2007) and therefore, results of below referred study are analyzed as well. In case the aircraft type will be changed from F-16C to F-22 or other type of fighter aircraft, the noise contours will drastically increase for the PA area.

An aviation noise study was conducted in 2001 for the former Staatsbauamt (LBB NL Trier) to support HQ USAFE in completing the German Air Traffic Act permit application to expand SAB.

Based on the analysis of air traffic noise submitted by AVIA Consult Rüdiger Bartel & Klaus Schmelter GbR in June 2001, the south of the AEA survey area is within noise protection zone 2 under the 'initial situation' scenario and will predominantly lie outside any noise protection zone under the 'post upgrade' situation scenario (Figure 17). The initial scenario is based on DES-MIL 06/1996 forecasting 2006 and the post upgrade scenario is based on DES-MIL 02/2000 forecasting 2010 that includes the mission change respectively closure of Rhein-Main Air Base (RMAB) and transferring AMC type aircraft operation to SAB airfields as part of the Rhein-Main transition program (RMTP).

### **2.9.2 Impact of Proposed Action**

Construction-related noise would occur over the time of PA implementation. Once implemented, the sustained operation of the three facilities would predominantly generate noise emission from road traffic and other vehicle movements.



(Values given in decibels)

Figure 17: 2006 Baseline Noise Levels, SAB

Source: Air Force Center for Environmental Excellence AFCEE Technical Directorate. May 2006. Aircraft Noise Study Spangdahlem Air Base, Germany.



### 2.9.2.1 Mitigation

Heavy vehicles used during work activities for the PA are assumed to comply with noise emission standards and workers are assumed to wear personal protection equipment. Further, regular vehicle maintenance is expected to ensure compliance with noise directives (Council Directive 70/157/EEC of 06 February 1970 amended by Council Directive 92/97/EEC of 10 November 1992 and Commission Directive 96/20/EC of 27 March 1996). With closure of the community facilities replaced by PA, its noise emission would balance out with the noise emissions of PA (but remote school).

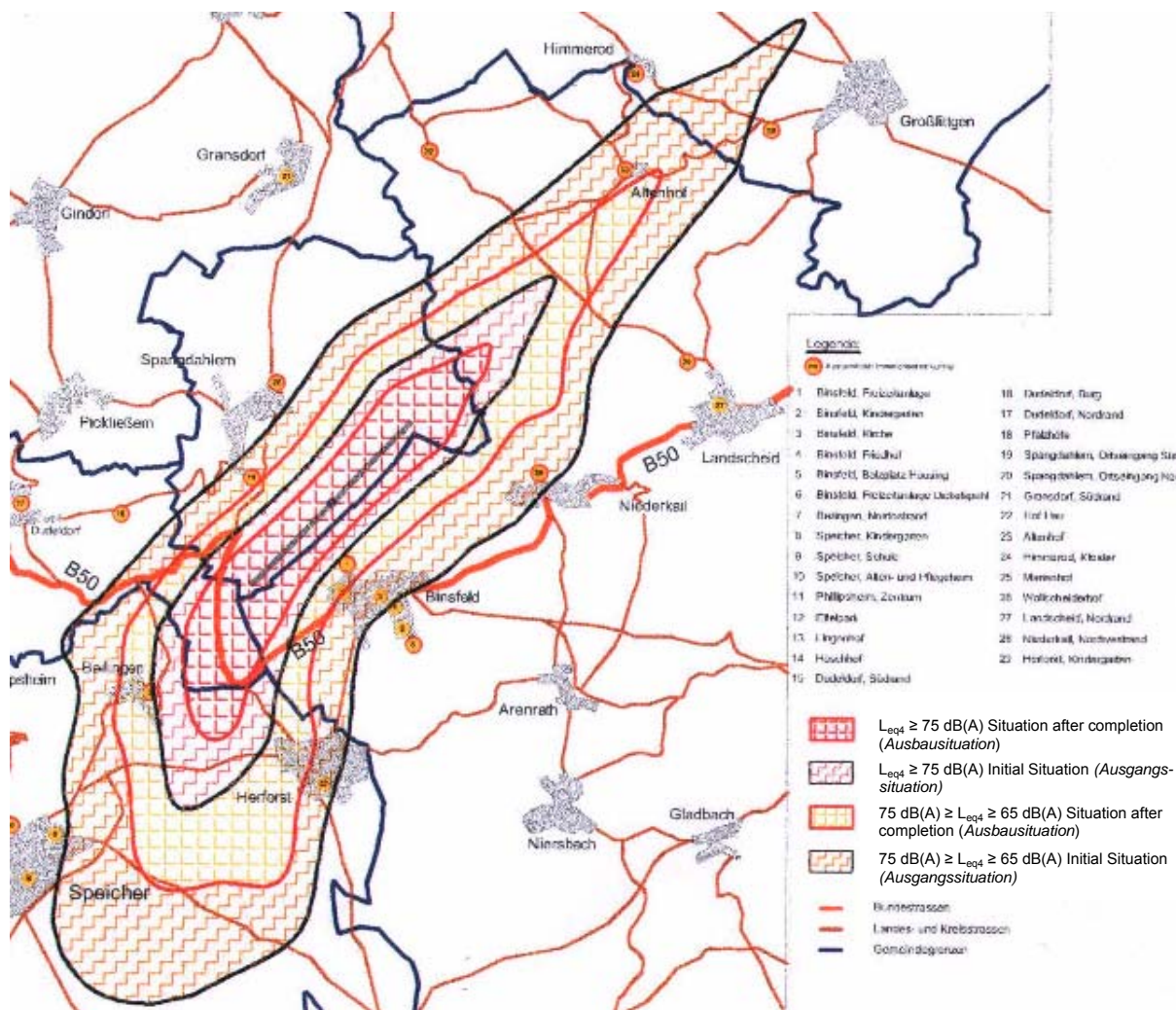


Figure 18: German Air Traffic Act Noise Contours ( $q=4$ ), 'Initial Situation' and 'Situation After RMTP Completion', SAB

Source: AVIA Consult Rüdiger Bartel & Klaus Schmelter GbR, Juni 2001, Noise Study Spangdahlem AB (North, not to scale)

In: Tetra Tech, Inc. August 2005. Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany.

### 2.9.3 No Action Alternative

If no construction took place, current conditions would not change and noise emissions from the three facilities would not occur.

## 2.10 Land Use

### 2.10.1 Setting

The PA area is estimated to be 15 ha (37 acres). This includes approximately 0.30 ha (0.7 acres) of forest (small tree groups, field corpses, and isolated trees) and pathways on the AEA survey area (L.A.U.B., 2007). Generally, land use is classified into the three basic types: developed, semi-improved, and unimproved land (Tetra Tech, 2005). These categories indicate the level of man-made disturbance on the natural environment. Developed land is defined as land with buildings, pavement and other permanent structures that has been removed from the natural system. Semi-improved land refers to land that has not been completely removed from the natural system, but retains little of the original value as habitat and wildlife forage (such as mowed land and areas of regular maintenance). Land without regular maintenance or management, which retains a close similarity to natural conditions, is categorized as unimproved land. Unimproved lands generally retain biodiversity, and some naturalness and wildlife value.

The land use for PA area is categorized as 100% semi-improved, as there is currently no permanent infrastructure or sealing but the few portions of predominately unsealed pathways.

### 2.10.2 Impact of Proposed Action

The PA would result in changes to existing land use on the 15-ha (37-acre) PA area. The development of this area would change the land use classification from semi-improved to developed, possibly altering the continuity of habitat. The land on the AEA survey area that is not impacted by the PA would change from arable land to ornamental gardens. This does not change the current land use category of semi-improved.

#### 2.10.2.1 Mitigation

Under the PA scenario, the land use classification would change for 15 ha (37 acres) of the affected 38.67-ha (96-acre) AEA survey area. Careful design/alignment of the facilities in a way to minimize the potential disruption of habitat continuity, taking advantage of existing clearing and available areas that would not require filling or grading is recommended. Designs and work plans should take these issues into consideration. Planting trees, grass, and appropriate indigenous flora species on open space would minimize the impacts to developed land. Replanting trees on other locations would create unimproved land and replace species habitat getting lost by the PA. At a minimum, forest compensation at a 1:1 ratio would be required pursuant to federal and state forest laws.

### 2.10.3 No Action Alternative

If no construction took place, current conditions would not change and no impacts to land use would occur.



## 3.0 Host Nation Actions

The PA would impact the arable land that is under acquisition. SAB is federal land maintained by the Federal Assets Agency (*Bundesanstalt für Immobilienaufgaben* [BImA], formerly *Bundesvermögensabteilung*) under the jurisdiction of the Ministry of Finances (*Bundesministerium der Finanzen*) of the FRG. BImA and its subdivisions represent the interests and demands of the guest forces associated with land transaction and management including restoration. BImA administration section, *Geschäftsbereich [GB] Verwaltungsaufgabe*, is responsible for land transaction, representation as land owner, and associated administration. BImA federal forestry section, *GB Bundesforst*, is responsible for forestry and, with the nature protection section in Nürnberg, *Abteilung Naturschutz*, for landscape and nature protection affairs.

The upper finance management section, *Oberfinanzdirektion*, is mediator of finances between federal and state level. Its federal construction section, *GB Bundesbau (GBB)*, is involved in construction on federal property. In the region of SAB, this is the Upper Finance Management Koblenz (*Oberfinanzdirektion Koblenz, GBB Mainz*).

The PA would result in the permanent loss of 38.67 ha (96 acres) of arable land, including 0.30 ha (0.74 acres) of trees on the PA area, that requires an ecological mitigation pursuant to the BNatSchG and state-level subsidiary in similar biotopes on and near the PA area within the ‘Naturraum Bitburger Land’. This would happen in coordination with the BImA federal forestry section, *GB Bundesforst*, and its nature protection section, *Abteilung Naturschutz*, in Nürnberg. Mitigation measures of the minor impact can include, but aren’t limited to, tree planting elsewhere in the general vicinity, unsealing areas to create more grassed lands, and creating and maintaining landscaped and grass areas. The forested area affected by the implementation of a clear zone around the perimeter fence can also be mitigated by the replanting of trees in another nearby location.

All acquisition for the USAF is performed by the BImA administration section, *GB Verwaltungsaufgabe*, the regional office in Koblenz. This would bring the AEA survey area into federal ownership under BImA responsibility.

Species and biotope protection criteria applicable to DoD installations and US Forces’ activities in Germany are the FGS-G. Chapter 13 of the FGS-G addresses protection and management of species declared endangered or threatened by the HN or the US government, and authorizes programs for inventory and monitoring of HN protected species.



## 4.0 Conclusion

Although there will be some impacts caused by the proposed Northwest Expansion, Phase II construction, no significant impacts should occur. Foreseen impacts to flora and fauna minimal and could be minimized or mitigated through improvement of habitat existing on the construction area of the PA and on adjacent land. It could be mitigated by providing new habitat on the area of impact and on land within the Naturraum Bitburger Land. The permanent loss of approximately 0.33 ha (0.82 acres) of forests and its associated functions for the outer clear zone could be mitigated by replanting trees on the PA area and adjacent properties or former community facility properties replaced by the PA in a ratio of 1:1.

Other potential impacts, including those on geology and soils, groundwater, surface water and wetlands, air quality, hazardous waste, noise, and land use are addressed in this report and are deemed less than significant. During construction work, there will be temporary negative impact, and upon completion of the PA, there will be an anticipated increase in water demand, air pollution, hazardous waste generation, and noise emissions as previously undeveloped land will be altered resulting in an increase in traffic.

The PA would not result in impacts to cultural and archaeological resources because no known artifacts exist on the affected land. The impacts to hazardous materials should be minimal as hazardous material storage will be IAW German VAWS and State of Rhineland Palatinate water protection law (LWG).

Table 4-1 summarizes potential environmental impacts that could result from the Northwest Expansion, Phase II construction.

Table 4-1 Summary of Potential Environmental Impacts from the PA

Impact Area	Potential Impacts
Fauna and Flora	-
Cultural and Archaeological Resources	O
Geology and Soils	-
Groundwater	-
Surface Water and Wetlands	-
Air Quality	-
Hazardous Materials	-
Hazardous Waste	-
Noise	-
Land Use	-

+	Positive impact
O	No impact
-	Minor negative impact
--	Major negative impacts that can be mitigated to less than significant levels
---	Significant negative environmental impacts that cannot be mitigated

After review of all the pertinent environmental information (along with any mitigation measures), it has been determined that this PA will not cause significant harm to the environment as per DoD Directive 6050.7 and USAFE Supplement 1 to AFI32-7061. Therefore, a FONSI is recommended herewith as conclusion of the AEA for approval by the 52d Fighter Wing ESOH Council.

## 5.0 References

### 5.1 Reports and Documents

52 CES/CC. September 2007. *Base-to-Command Briefing*.

52 CES/CERR. 12 January 2004. *Request for Environmental Impact Analysis, AF Form 813 – Land Acquisition Eifel Consolidation Spangdahlem Air Base*.

AFI 31-101, *The Air Force Installation Security Program*, 1 March 2003.

AFI 32-7061, *The Environmental Impact Analysis Process*, 12 March 2003.

AFI 32-7061, USAFE Supplement I. *The Environmental Impact Analysis Process*, 21 March 1996.

Air Force Center for Environmental Excellence AFCEE Technical Directorate. May 2006. *Aircraft Noise Study Spangdahlem Air Base, Germany*.

ATV-DVWK (now German association for water business, waste water, and waste *Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall* [DWA]), work sheet *Arbeitsblatt A 142* on sewer and sewage pipes inside water protection zones

AVIA Consult Rüdiger Bartel and Klaus Schmelter GbR. June 2001.

Bundesgesetzblatt GBl. Teil III (Federal Law Gazette III)/Fundstellennachweis A FNA 2129-20. 5 September 2001. *Gesetz über die Umweltverträglichkeitsprüfung UVPG. (Environmental Impacts Assessment Act.)*

Directive 70/157/EEC of 6 February 1970 made by the Council of the European Communities on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles, as amended by Council Directive 92/97/EEC of 10 November 1992 and Commission Directive 96/20/EC of 27 March 1996.

L.A.U.B.mbH. 9 Mai 2005. *Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893*.

L.A.U.B.mbH. 22 Juni 2005. *Eifel Consolidation Landschaftspflegerischer Begleitplan zum Landbeschaffungsverfahren ID Nr. 3893*.

Landesbetrieb Liegenschafts- und Baubetreuung LBB des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. *Ausbau Spangdahlem Air Base Housing. Anlage 4: Fachgutachterlicher Beitrag Tierwelt. (Development Spangdahlem Air Base Housing. Appendix 4: Expertise Contribution on Fauna.)*

Landesbetrieb Liegenschafts- und Baubetreuung LBB des Landes Rheinland-Pfalz, Niederlassung Trier. 2 Mai 2006. *Ausbau Spangdahlem Air Base Housing. Dokumentation zur Untersuchung der Umweltauswirkungen (UVS-Dokumentation). (Extension of Spangdahlem Air Base Housing. Documentation to the study of environmental compatibility [ECS-documentation].)*

Landesvermessungsamt Rheinland-Pfalz. 2001. *Topographische Karten Mosel Eifel Hunsrück*, CD-ROM Nr. 2. (Topographic map of Mosel-Eifel-Hunsrück)

Spangdahlem Air Base. *FY 2007 Military Construction Project Data, DD Form 1391 – Develop Northwest Infrastructure, Phase II*. Undated.

Spangdahlem Air Base. *FY 2010 Military Construction Project Data, DD Form 1391 – Construct High School Complex*. Undated.

Spangdahlem Air Base. *FY 2014 Military Construction Project Data, DD Form 1391 – Fitness Center*. Undated.

Tetra Tech, Inc. June 2005. *AEA for the Construction of a Perimeter Patrol Road, Sembach Administrative Annex, Germany*.

Tetra Tech, Inc. August 2005. *Final Eifel Consolidation Program North Expansion Environmental Baseline Survey, Spangdahlem Air Base, Germany*.

Tetra Tech, Inc. September 2006. *AEA for MFH Replacement and Expansion Program, Spangdahlem 2015, Spangdahlem Air Base, Germany*.

U.S. Army, Europe, Office of the Deputy Chief of Staff, Engineer. *Environmental Final Governing Standards for Germany*, January 2003.

US Air Forces in Europe. 21 March 1996. USAFE Supplement 1 AFI 32-7061.

US Department of the Air Force. 12 March 2003. AFI 32-7061.

US Department of the Air Force. 24 January 1995. AFI 32-7061.

VaWS *Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen*, the Order on plant used to handle water-endangering substances and on special works.

Wassergesetz für das Land Rheinland-Pfalz (Landeswassergesetz - LWG -) (Rhine Palatinate Water Act) in der Fassung der Bekanntmachung vom 22. Januar 2004.

## 5.2 Persons Interviewed

Colby, Alex 52 CES/CECP

Fowler, Paula J GS - 13 USAFE/A7AV

Harenz, Werner 52 CES/CECP

Steffes, Franz J FN GE 52 CES/CEV

Turner, Christian Civ 52 CES/CEV





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## **Appendix A**

### **AF Form 813**

#### **Request for Environmental Impact Analysis (01 Dec 2004)**

Land Acquisition Eifel Consolidation Spangdahlem Air Base

### **AF Form 813**

#### **Request for Environmental Impact Analysis (12 May 05)**

Northwest Infrastructure Phase II

### **AF Form 813**

#### **Request for Environmental Impact Analysis (08 November 07)**

Construct New BX and Commissary

### **DD Form 1391**

#### **FY 2007 Military Construction Project Data**

### **DD Form 1391**

#### **FY 2008 Military Construction Project Data**

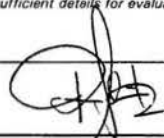

### **DD Form 1391**

#### **FY 2010 Military Construction Project Data**

### **DD Form 1391**

#### **FY 2014 Military Construction Project Data**



REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS: 2
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).		
<b>SECTION I - PROPONENT INFORMATION</b>		
1. TO (Environmental Planning Function) 52 CES/CEV	2. FROM (Proponent organization and functional address symbol) 52 CES/CERR	2a. TELEPHONE NO. 452-7510
3. TITLE OF PROPOSED ACTION Land Acquisition Eifel Consolidation Spangdahlem Air Base		
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date) Perform environmental base line survey on land to be acquired for Eifel Consolidation Spangdahlem Air Base (NW expansion area towards autobahn).		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.)		
6. PROPONENT APPROVAL (Name and Grade) RUDOLF SCHMITZ Chief, Real Estate	6a. SIGNATURE 	6b. DATE 20040112
<b>SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY.</b> (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)		
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)		+ 0 - U X
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)		X
9. WATER RESOURCES (Quality, quantity, source, etc.)		X
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)	X	
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)		X
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.)	X	
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)		X
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)	X	
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)	X	
16. OTHER (Potential impacts not addressed above.)		X
<b>SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION</b>		
17. <input type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR <input checked="" type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.		
18. REMARKS  EBS for Eifel Consolidation to be programmed/ performed for FY... 05 Also must program/complete compensation studies...		
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) 1LT LISA M MABBUTT	19a. SIGNATURE 	19b. DATE 13 JAN 04

AF FORM 813, 19990901 (EF-V1)

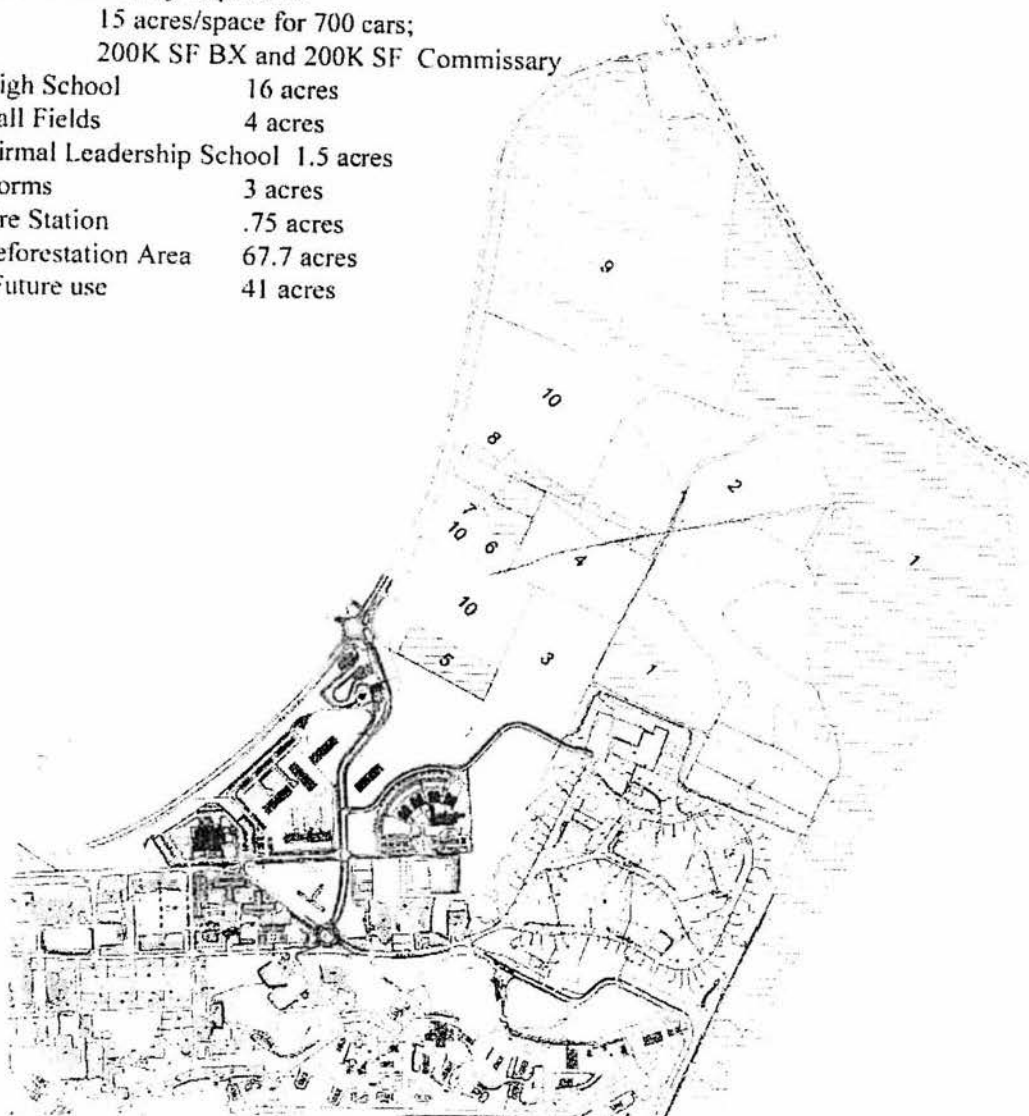
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PREVIOUS EDITIONS OF BOTH FORMS ARE OBSOLETE.

PAGE 1 OF

PAGE(S)

## Future Land Acquisition

1. Forest 130.5 acres
2. Housing 65 acres/space for 600 units  
at a density of 9 units per acre
3. BX/Commissary Superstore  
15 acres/space for 700 cars;  
200K SF BX and 200K SF Commissary
4. High School 16 acres
5. Ball Fields 4 acres
6. Airmal Leadership School 1.5 acres
7. Dorms 3 acres
8. Fire Station .75 acres
9. Reforestation Area 67.7 acres
10. Future use 41 acres



REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS: 20051222A
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).		
<b>SECTION I - PROPONENT INFORMATION</b>		
1. TO (Environmental Planning Function) 52 CES/CEV	2. FROM (Proponent organization and functional address symbol) 52 CES/CECP	2a. TELEPHONE NO. 452-6210
3. TITLE OF PROPOSED ACTION VYHK 06-3200, NORTHWEST INFRASTRUCTURE PHASE II		
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date) Develop newly acquired property by constructing common area infrastructure. Spangdahlem's existing footprint is saturated with facilities and expansion will relieve the congestion and explosive safety arcs.		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.) Develop approximately 85 acres of existing farmland and forest area by constructing common area infrastructure for additional area to construct newly planned facilities.		
6. PROPONENT APPROVAL (Name and Grade) HARENZ, WERNER, CIV	6a. SIGNATURE 	6b. DATE 20051205
<b>SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY.</b> (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)		
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)		X
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)	X	
9. WATER RESOURCES (Quality, quantity, source, etc.)		X
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)		X
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)	X	
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.)		X
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)		X
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)		X
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)	X	
16. OTHER (Potential impacts not addressed above.)		X
<b>SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION</b>		
17. <input checked="" type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR <input type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.		
18. REMARKS (EV: Area is sited in a water protection zone (currently in design), area 3, and is located in noise contour area 67-62 dB(A).		
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) FRANZ-JOSEF STEFFES Environmental Flight Chief	19a. SIGNATURE 	19b. DATE 22 Dec 2005

AF FORM 813, 19990901 (EF-V1)

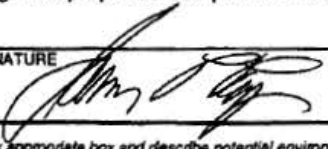
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REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS: 95-2007113A
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as Necessary. Reference appropriate item numbers.		
<b>SECTION I - PROPONENT INFORMATION</b>		
1. TO (Environmental Planning Function) 52 CES/CECP (Alex Colby) Spangdahlem AB, Germany	2. FROM (Proponent organization and functional address symbol) HQ AAFES (RE-E) Greg Smith 3911 S. Walton Walker Blvd., Dallas, TX 75236 smithgregory@aafes.com	2a. TELEPHONE NO. 214-312-2109
3. TITLE OF PROPOSED ACTION Construct New BX and Commissary \ PN 7262-07-000001		
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date) The Bitburg BX and Commissary will be closed. The current BX and Commissary in Spangdahlem are inadequate sized for sales and storage. Parking and food concessions are also inadequate to serve the military community. The new BX and Commissary in Spangdahlem AB bundles the AAFES and DeCA shopping operations into a single project.		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total section.) The proposed BX + Commissary will be a 6.0 module sized at 102,000 SF with Retail Space, a Food Court, and space for Concessions/Services. Military Clothing Sales Store will also be located in the BX. The Commissary will be 52,000 SF. The new complex will provide for one stop shopping. The proposed complex is to be located north of the Burgstrasse in close vicinity of the Main Gate.		
6. PROPONENT APPROVAL (Name and Grade) JAMES P. PAGE, Lt Col, USAF Chief, Environmental Division	6a. SIGNATURE 	6b. DATE 8 Nov 07
<b>SECTION II PRELIMINARY ENVIRONMENTAL SURVEY.</b> (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; O = no effect; - = adverse effect; U = unknown effect)		+ O - U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential encroachment, etc.)		
8. AIR QUALITY (Emission, attainment status, state implementation plan, etc.)		
9. WATER RESOURCES (Quality, quantity, source, etc.)		
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, etc.)		
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)		
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, flora, fauna, etc.)		
13. CULTURAL RESOURCES (Native American burial sites, archeological, historical, etc.)		
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)		
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)		
16. OTHER (Potential impacts not addressed above.)		
<b>SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION</b>		
17. <input checked="" type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____; OR <input type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX, FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED		
18. REMARKS CEV: An AEA is in preparation by US AFE funded source, 60301607. A host nation type natural expert survey is required to validate impact and to plan and budget compensation. It		
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) NEPA Program Manager, Umweltschutzabteilung 52 CES/CEV, Flugplatz Spangdahlem	19a. SIGNATURE Ernst-Josef Steffes	19b. DATE 13 Nov 07

AF FORM 813, AUG 93 (EF-VI) (PerFORM PRO)  
PAGE 1 OF PAGE(S)

THIS FORM CONSOLIDATES AF FORMS 813 AND 814.



1. COMPONENT AIR FORCE	FY 2007 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY		4. PROJECT TITLE DEVELOP NORTHWEST INFRASTRUCTURE, PHASE II		
5. PROGRAM ELEMENT  27596	6. CATEGORY CODE  923-322	7. PROJECT NUMBER  VYHK063200	8. PROJECT COST (\$000)  7,700	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
NORTHWEST INFRASTRUCTURE, PHASE II				5,663
WATER DISTRIBUTION SYSTEM	LM	3,000	131	( 393 )
SANITARY/STORM SEWER SYSTEM	LM	3,000	170	( 510 )
ROADS/PAVEMENT	LM	3,000	1,245	( 3,735 )
COMMUNICATION DUCTS	LM	1,500	20	( 30 )
JOGGING TRAIL	LM	5,000	115	( 575 )
ELECTRICAL DISTRIBUTION	LM	3,000	140	( 420 )
SUPPORTING FACILITIES				1,247
REFORESTATION ACTIONS	LS			( 171 )
FORCE PROTECTION (PERIMETER FENCE)	LM	3,100	52	( 161 )
ENVIRONMENTAL COMPENSATION	LS			( 915 )
SUBTOTAL				6,910
CONTINGENCY (5.0%)				346
TOTAL CONTRACT COST				7,256
SUPERVISION, INSPECTION AND OVERHEAD (6.5%)				472
TOTAL REQUEST				7,727
TOTAL REQUEST (ROUNDED)				7,700
10. Description of Proposed Construction: Develop approximately 85 acres of existing farmland and forest area by constructing common area infrastructure. The project includes construction of the following: fence and road along the perimeter, connecting roads, sidewalks and parking areas, underground utility systems (electrical, communication, water and sewer lines), landscaping, reforestation actions and all other necessary work, as required. The design and construction of this project will comply with DoD and EUCOM Anti-Terrorism/Force Protection (AT/FP) standards.				
11. Requirement: 345000 SM Adequate: 0 SM Substandard: 0 SM				
PROJECT: Develop approximately 85 acres of existing farmland and forest area by constructing common area infrastructure.				
REQUIREMENT: The construction of common infrastructure systems is the first step required to develop an expansion area so the 52d Fighter Wing can smoothly enhance its mission at Spangdahlem Air Base as part of the Spangdahlem enhancement plan and to support the Spangdahlem consolidation plan.				
CURRENT SITUATION: The base's existing footprint is saturated with facilities. The current community layout is an unsatisfactory mix of residential, community, industrial and operational use areas that lie inside explosive safety arcs. The Air Force is acquiring new property to relieve the congestion and explosive safety violations. This newly acquired parcel of empty land is undeveloped and has no roads or utilities.				

1. COMPONENT AIR FORCE	FY 2007 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE DEVELOP NORTHWEST INFRASTRUCTURE, PHASE II	
5. PROGRAM ELEMENT  27596	6. CATEGORY CODE  923-322	7. PROJECT NUMBER  VYHK063200	8. PROJECT COST (\$000)  7,700	
<p>IMPACT IF NOT PROVIDED: The future development of Spangdahlem Air Base requires this expansion at the northwest side of the base. Furthermore, the planned closure of Bitburg Annex, due to the Spangdahlem consolidation plan, can not be executed. The land is uninhabitable until a minimum infrastructure system is constructed. Without this primary infrastructure of roads, water, sewer and electricity, the required facility construction cannot be started. The facility construction required on this land includes a High School complex, a fitness center and a new BX/Commissary complex.</p> <p>ADDITIONAL: This project is not NATO eligible. Despite being ineligible for NATO funds, this project is critical to the 52d Fighter Wing's long-term development and to the USAF mission of conducting safe flying operations in peace and in war. A preliminary analysis of reasonable options was done and indicates that this is the only option that meets operational requirements, therefore, an economic analysis will not be prepared. A certificate of exception will be prepared. (Northwest Infrastructure, Phase II: 345,000 SM = 85 acres)</p> <p>Base Civil Engineer: Lt Col Kathryn L. Kolbe, 011-49-6565-61-6302</p> <p>FOREIGN CURRENCY: PCF Budget Rate Used: EURO-DOLLAR .853</p> <p>JOINT USE CERTIFICATION: Mission requirements, operational considerations and location are incompatible with use by other components.</p>				

1. COMPONENT AIR FORCE	FY 2007 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE DEVELOP NORTHWEST INFRASTRUCTURE, PHASE II	
5. PROGRAM ELEMENT 27596	6. CATEGORY CODE 923-322	7. PROJECT NUMBER VYHK063200	8. PROJECT COST (\$000) 7,700	
12. SUPPLEMENTAL DATA: a. Estimated Design Data: (1) Status: (a) Date Design Started (b) Parametric Cost Estimates used to develop costs YES * (c) Percent Complete as of 01 JAN 2006 * (d) Date 35% Designed (e) Date Design Complete (f) Energy Study/Life-Cycle analysis was/will be performed NO (2) Basis: (a) Standard or Definitive Design - NO (b) Where Design Was Most Recently Used - (3) Total Cost (c) = (a) + (b) or (d) + (e): (\$000) (a) Production of Plans and Specifications 0 (b) All Other Design Costs 0 (c) Total 0 (d) Contract 0 (e) In-house 0 (4) Construction Contract Award (5) Construction Start (6) Construction Completion * Indicates completion of Project Definition with Parametric Cost Estimate which is comparable to traditional 35% design to ensure valid scope, cost and executability. b. Equipment associated with this project provided from other appropriations: N/A				





1. COMPONENT AIR FORCE	FY 2008 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE NORTHWEST INFRASTRUCTURE, PHASE II	
5. PROGRAM ELEMENT 27596	6. CATEGORY CODE 923-322	7. PROJECT NUMBER VYHK063200	8. PROJECT COST (\$000) 7,700	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT	COST
NORTHWEST INFRASTRUCTURE, PHASE II				5,663
WATER DISTRIBUTION SYSTEM	LM	3,000	131	( 393 )
SANITARY/STORM SEWER SYSTEM	LM	3,000	170	( 510 )
ROADS/PAVEMENT	LM	3,000	1,245	( 3,735 )
COMMUNICATION DUCTS	LM	1,500	20	( 30 )
JOGGING TRAIL	LM	5,000	115	( 575 )
ELECTRICAL DISTRIBUTION	LM	3,000	140	( 420 )
SUPPORTING FACILITIES				1,247
REFORESTATION ACTIONS	LS			( 171 )
FORCE PROTECTION (PERIMETER FENCE)	LM	3,100	52	( 161 )
ENVIRONMENTAL COMPENSATION	LS			( 915 )
SUBTOTAL				6,910
CONTINGENCY (5.0%)				346
TOTAL CONTRACT COST				7,256
SUPERVISION, INSPECTION AND OVERHEAD (6.5%)				472
TOTAL REQUEST				7,727
TOTAL REQUEST (ROUNDED)				7,700
10. Description of Proposed Construction: Develop approximately 85 acres of existing farmland and forest area by constructing common area infrastructure. The project includes construction of the following: fence and road along the perimeter, connecting roads, sidewalks and parking areas, underground utility systems (electrical, communication, water and sewer lines), landscaping, and reforestation actions, and all other necessary work, as required. The design and construction of this project will comply with DoD and EUCOM anti-terrorism/force protection (AT/FP) standards.				
11. Requirement: 345000 SM Adequate: 0 SM Substandard: 0 SM				
PROJECT: Develop approximately 85 acres of existing farmland and forest area by constructing common area infrastructure.				
REQUIREMENT: Develop approximately 85 acres of existing farmland and forest area by constructing common area infrastructure. The construction of these common infrastructure systems is the first step required to develop this expansion area so the 52d Fighter Wing can smoothly enhance its mission at Spangdahlem Air Base as part of the Spangdahlem Enhancement plan.				
CURRENT SITUATION: The base's existing footprint is saturated with facilities. The current community layout is an unsatisfactory mix of residential, community, industrial and operational use areas that lie inside explosive safety arcs. The Air Force is acquiring new property to relieve the congestion and explosive safety violations. This newly acquired parcel of empty land is undeveloped and has no roads or utilities.				
IMPACT IF NOT PROVIDED: The future development of Spangdahlem Air Base requires this expansion at the northwest side of the base. The land is uninhabitable until a minimum				

1. COMPONENT AIR FORCE	FY 2008 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE NORTHWEST INFRASTRUCTURE, PHASE II	
5. PROGRAM ELEMENT  27596	6. CATEGORY CODE  923-322	7. PROJECT NUMBER  VYHK063200	8. PROJECT COST (\$000)  7,700	
<p>infrastructure system is constructed. Without this primary infrastructure of roads, water, sewer and electricity, the required facility construction cannot be started. The facility construction required on this land includes a High School complex, a fitness center, and a new BX/Commissary complex.</p> <p>ADDITIONAL: This project is not NATO eligible. Despite being ineligible for NATO funds, this project is critical to the 52d Fighter Wing's long-term development and to the USAF mission of conducting safe flying operations in peace and in war. A preliminary analysis of reasonable options was done and indicates that this is the only option that meets operational requirements, therefore, an economic analysis will not be prepared. A certificate of exception will be prepared. (Northwest Infrastructure, Phase II: 345,000 SM = 85 acres)</p> <p>Base Civil Engineer: Lt Col Mitchell R. Gordon, 011-49-6565-61-6302.</p> <p>FOREIGN CURRENCY: FCF Budget Rate Used: EURO--DOLLAR 0.8785</p> <p>JOINT USE CERTIFICATION: Mission requirements, operational considerations, and location are incompatible with use by other components.</p>				

FY 2008 MILITARY CONSTRUCTION PROJECT DATA (computer generated)		2 DATE 12DEC05
3 LOCATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY		
4 PROJECT TITLE NORTHWEST INFRASTRUCTURE, PHASE II		5. PROJECT NUMBER VYHK063200

**SPANGDAHLEM AIR BASE  
GERMANY**

1:5,000  
General Reference Map Scale: 1:5,000

**Legend**

- Roads
- On Base Structures
- Off Base Structures
- 2005 QID Areas
- Eifel Consolidation**
  - Facility
  - Road
  - Athletic
  - Track
  - Phase 1 Housing
  - Phase 2 Housing
  - Phase 3 Housing

**PROJECT LOCATION**

Base Facility Board Chairperson or BCE: <i>UDO STURMER</i> <b>UDO STURMER</b> Acting Deputy Base Civil Engineer	DATE: 14 DEC 2005
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DRAFT 1

1. COMPONENT AIR FORCE	FY 2010 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE CONSTRUCT HIGH SCHOOL COMPLEX	
5. PROGRAM ELEMENT  27596	6. CATEGORY CODE  730-785	7. PROJECT NUMBER  VYHK088000	8. PROJECT COST (\$000)  18,500	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
HIGH SCHOOL COMPLEX				11,662
HIGH SCHOOL COMPLEX	SM	7,150	1,631	( 11,662 )
SUPPORTING FACILITIES				4,924
ELECTRICAL	LS			( 550 )
WATER, SEWER, STORM DRAINAGE	LS			( 750 )
SPORTS FIELDS	LS			( 800 )
COMMUNICATIONS	LS			( 550 )
ACCESS AND PAVING	LS			( 1,049 )
SITE IMPROVEMENTS	LS			( 500 )
PASSIVE FORCE PROTECTION MEASURES (5%)	LS			( 725 )
SUBTOTAL				16,586
CONTINGENCY (5.0%)				829
TOTAL CONTRACT COST				17,415
SUPERVISION, INSPECTION AND OVERHEAD (6.5%)				1,132
TOTAL REQUEST				18,547
TOTAL REQUEST (ROUNDED)				18,500
EQUIPMENT FROM OTHER APPROPRIATIONS (NON-ADD)				( 500.0 )
<p>10. Description of Proposed Construction: Construct a high school complex at Spangdahlem Air Base. The project will include construction of the following: reinforced concrete foundation, masonry walls, structural steel frame, roof, fire protection system, utilities, communications, vehicle parking and pavements, site work/improvements, landscaping and all other necessary work. Supporting facilities for the school will include utilities, parking, bus loading/unloading area, sports facilities, signage, fencing, landscaping and security lighting. These facilities shall be designed in accordance with DoDEA Educational Specifications, AT/FP standards, Americans with Disabilities Act Accessibility Guidelines, National Fire Protection Association Life Safety Code, Standards of Seismic Safety for Federally Owned Buildings and energy conservation standards.</p>				
<p>11. Requirement: 7150 SM Adequate: 0 SM Substandard: 8950 SM</p> <p>PROJECT: Construct a high school complex at Spangdahlem Air Base.</p> <p>REQUIREMENT: Provide efficiently configured academic facility for students enrolled in grades 9-12. Project includes the construction of the following: general purpose classrooms, art classroom, music suite, computer labs, science labs, multipurpose room with kitchen, auditorium with stage, gymnasium, specialists' rooms, information center, administrative offices, teacher work rooms, professional/technical classrooms, specialized support areas, JROTC classroom, occupational therapy/physical therapy room, supply/storage rooms and all other necessary work. The school will incorporate communication systems and infrastructure to support technology program requirements and general communications requirements.</p> <p>CURRENT SITUATION: An existing high school supporting the Spangdahlem community is</p>				

DD FORM 1391, DEC 99

Previous editions are obsolete.

Page No.



DRAFT 1

1. COMPONENT AIR FORCE	FY 2010 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE CONSTRUCT HIGH SCHOOL COMPLEX	
5. PROGRAM ELEMENT  27596	6. CATEGORY CODE  730-785	7. PROJECT NUMBER  VYHK088000	8. PROJECT COST (\$000)  18,500	

located on Bitburg Annex. The current school is 30 years old, constructed in 1975. Most of the mechanical systems, along with the infrastructure are deteriorating. Upgrades are planned in excess of \$2.4 million to adequately continue minimal operation of the school. Projects planned include replacement of the water distribution system, replacement of the windows, Anti-terrorism/Force protection upgrades, replacement of the roof and Fire Doors/Fire System upgrades. The Bitburg school is located 10 miles away from Spangdahlem along a notoriously dangerous two-lane road, which degrades quality of life for Spangdahlem residents due to the inefficient location of the school. Replacement of this school is required to continue to provide education for students in grades 9 through 12.

IMPACT IF NOT PROVIDED: Spangdahlem's mission enhancement plan requires this construction to provide schooling for the dependents of the local Air Force community. It would be impossible to provide an off-base education program for the large number of dependent children at Spangdahlem. Constructing the school on Spangdahlem Air Base dramatically improves compliance with anti-terrorism/force protection measures by including the proper standoff distances in the new construction. Failure to construct this new high school will result in massively inefficient and unnecessary costs to pay for facility maintenance, utilities, travel, security and other base support, since base housing and all other functions at Bitburg Annex are being incorporated into the Spangdahlem mission enhancement plan.

ADDITIONAL: This project has been coordinated with the installation physical security plans and all AT/FP measures are included. This project is located on an enduring installation that will be retained for the foreseeable future. Sustainable principles will be integrated in the design, development, and construction of the project in accordance with Executive Order 13123 and other applicable laws and executive orders. Energy conservation and environmentally safe measures will be incorporated in this project wherever feasible, practical or required by regulation, host nation laws or Status of Forces Agreement. This project is not within an established NATO infrastructure category for common funding nor is it expected to become eligible. All known alternatives were considered during the development of this project. No other option could meet the mission requirements; therefore, no economic analysis was performed. A certificate of exclusion will be completed by Sep 06. (Construct High School Complex: 7,150 SM = 76,880 SF)

Base Civil Engineer: Lt Col Kathryn L. Kolbe, 011-49-6565-61-6302

FOREIGN CURRENCY: FCF Budget Rate Used: EURO-DOLLAR .853

JOINT USE CERTIFICATION: This project can be used by other components on an "as available" basis; however, the scope of the project is based on DoDEA requirements.

1. COMPONENT AIR FORCE	FY 2014 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY		4. PROJECT TITLE FITNESS CENTER		
5. PROGRAM ELEMENT 27596	6. CATEGORY CODE 740-674	7. PROJECT NUMBER VYHK043100	8. PROJECT COST (\$000) 26,000	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
FITNESS CENTER				21,276
FITNESS CENTER FACILITY	SM	6,950	2,329	( 16,187 )
INDOOR SWIMMING POOL	SM	870	4,250	( 3,698 )
ANTITERRORISM FORCE PROTECTION	SM	7,820	178	( 1,392 )
SUPPORTING FACILITIES				1,540
SITE IMPROVEMENTS	LS			( 613 )
FIRE ALARM SYSTEM	LS			( 332 )
COMMUNICATIONS	LS			( 268 )
PASSIVE FORCE PROTECTION MEASURES	LS			( 328 )
SUBTOTAL				22,816
CONTINGENCY (5.0%)				1,141
TOTAL CONTRACT COST				23,957
SUPERVISION, INSPECTION AND OVERHEAD (6.5%)				1,557
TOTAL REQUEST				25,514
TOTAL REQUEST (ROUNDED)				26,000
<p>10. Description of Proposed Construction: Construct a new fitness center. This project will include the following: foundation, structure, all utilities, lighting, parking, landscaping, site improvements, fire alarm/suppression systems, communications and all other necessary work. The new facility will include space for a lobby, administrative offices, support areas, cardio and weight rooms, locker rooms, a gymnasium, group exercise rooms, fitness equipment spaces, racquetball courts, an indoor running track, an indoor swimming pool, a Health and Wellness Center (HAWC) and all other necessary work. This project will be designed and constructed in compliance with DoD and EUCOM anti-terrorism/force protection (AT/FP) standards.</p>				
<p>11. Requirement: 7820 SM Adequate: 0 SM Substandard: 6783 SM</p> <p>PROJECT: Construct fitness center facility (current mission).</p> <p>REQUIREMENT: Construct a modern, adequately sized and properly configured fitness center to conduct comprehensive and balanced programs for physical fitness required for Spangdahlem Air Base personnel and their dependents. The construction of this new facility will greatly improve the quality of life for Airmen at Spangdahlem Air Base. Personnel require safe fitness programs including aerobics, health, mental, and nutritional training, indoor recreational athletic activities, and a health and wellness center in order to maintain compliance with Air Force physical fitness standards.</p> <p>CURRENT SITUATION: The existing building is severely undersized for the base population and current use, and has unreliable mechanical and electrical systems. Until recently, the fitness center was located in a high-risk Q-D (quantity-distance) explosive zone violating safety criteria. Base weapons safety officials have been forced to reduce the weapons loads for aircraft shelters located near the fitness</p>				

1. COMPONENT AIR FORCE	FY 2014 MILITARY CONSTRUCTION PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION SPANGDAHLEM AIR BASE, GERMANY			4. PROJECT TITLE FITNESS CENTER	
5. PROGRAM ELEMENT 27596	6. CATEGORY CODE 740-674	7. PROJECT NUMBER VYHK043100	8. PROJECT COST (\$000) 26,000	

center to keep this facility out of the explosive safety zone. This work around is detrimental to the wing fighter mission. Limited space results in overcrowding and makes the fitness center unavailable for much of the base population. A new fitness center is badly needed in order to keep our Spangdahlem Airmen physically trained in compliance with current Air Force standards. This new facility will also provide the resource necessary to ensure our Airmen are physically prepared for any contingency deployments.

IMPACT IF NOT PROVIDED: Physical conditioning and recreational programs will continue to be limited due to space restrictions. This condition adversely affects the morale, well-being and retention of assigned military personnel. Deficiencies in these areas will continue to negatively affect combat readiness, quality of life, fitness and morale of military members. Testing, training and both team and individual sports will continue to be hindered due to inadequate space. Finally, the wing fighter mission will continue to be hampered by not being able to store or handle optimum munitions loads in aircraft shelters near the Fitness Center. This work around will continue to limit 52nd Fighter Wing mission operations.

ADDITIONAL: This project is not eligible for NATO funding. This project meets the criteria/scope specified in AF Handbook 32-1084, "Facility Requirements" and the Air Force Fitness Center Master Plan criteria. This is a corporate Air Force directed project essential for personnel quality of life and retention of highly skilled personnel. Only one option meets the mission requirement. Therefore, a full economic analysis was not completed. A certificate of exception has been prepared. (Fitness Center: 6,950 SM = 74,782 SF; Indoor Swimming Pool: 870 SM = 9365 SF)

Base Civil Engineer: Lt Col Kathryn L. Kolbe, 011-49-6565-61-6040

FOREIGN CURRENCY: FCP Budget Rate Used: EURO-DOLLAR .853

JOINT USE CERTIFICATION: This facility is programmed for joint use with all other military components; however, it is fully funded by the Air Force.

## **Appendix B**

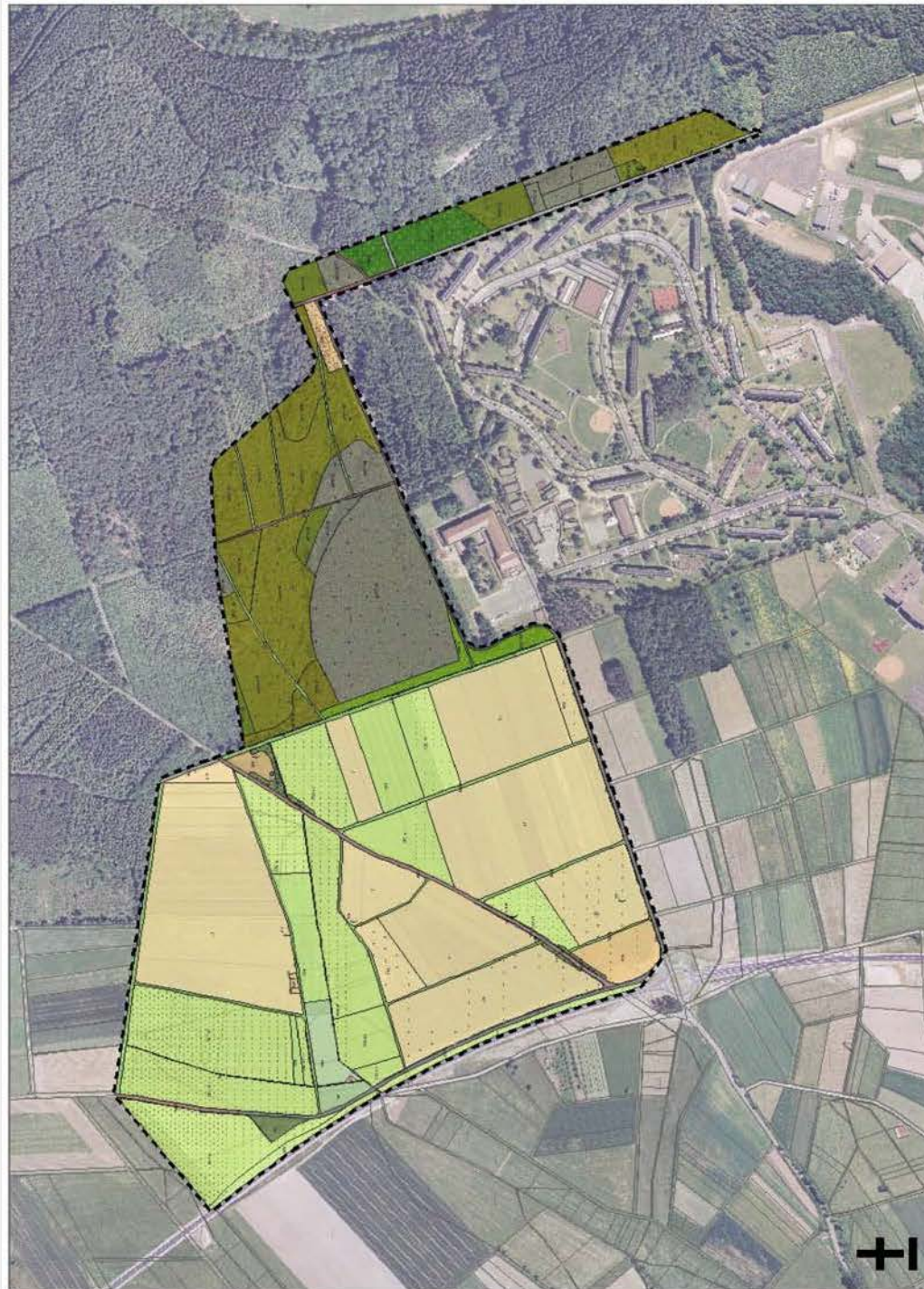
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### **Biotope Values of AEA Survey Area**

#### **Biotope Object (6006-) 1008 Im Saalholz**

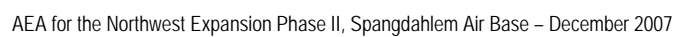














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## **Appendix C**

### **Flora and Fauna**



Scientific Name	German Name	English Name
<b>Flora</b>		
<i>acer pseudoplatanus</i>	Bergahorn	Sycamore Maple
<i>aconitum vulparia</i>	Gelber Eisenhut	Yellow Wolfbane
<i>aegopodium podagraria</i>	Zipperleinskraut	Bishop's Goutweed
<i>alisma plantago-aquatica</i>	Gewöhnlicher Froschlöffel	American Waterplaintain
<i>alnus glutinosa</i>	Schwarzerle	European Alder
<i>alopecurus pratensis</i>	Wiesen-Fuchsschwanz	Meadow Foxtail
<i>anthriscus sylvestris</i>	Wiesen-Kerbel	Wild Chervil
<i>arrhenatherum elatius</i>	Glatthafer	Tall Oat Grass
<i>athyrium filix-femina</i>	Wald-Frauenfarn	Common Ladyfern
<i>avenella flexuosa</i>	Draht-Schmiele	Wavy Hair Grass
<i>callitriche</i>	Wasserstern	Water Star
<i>caltha palustris</i>	Sumpfdotterblume	Marsh marigolds
<i>calystegia sepium</i>	Zaunwinde	Hedge Bindweed
<i>carex acutiformis</i>	Sumpf-Segge	Lesser Pond Sedge
<i>carex remota</i>	Winkel-Segge	Remote Sedge
<i>carpinus betulus</i>	Hainbuche	European Hornbeam
<i>chrysosplenium oppositifolium</i>	Gegenblättriges Milzkraut	Opposite-leaved Golden Saxifrage
<i>cirsium palustre</i>	Sumpf-Kratzdistel	Marsh Thistle
<i>colchicum autumnale</i>	Herbst-Zeitlose	Autumn Crocus
<i>convallaria majalis</i>	Maiglöckchen	European Lily of the Valley
<i>crepis paludosa</i>	Sumpf-Pippau	Marsh Hawksbeard
<i>cruciata laevipes</i>	Gewimpertes Kreuzlabkraut	Smooth Bedstraw
<i>cystopteris fragilis</i>	Zerbrechlicher Blasenfarn	Brittle Bladderfern
<i>deschampsia cespitosa</i>	Rasen-Schmiele	Bronze Veil Hair Grass
<i>dryopteris carthusiana</i>	Gewöhnlicher Dornfarn	Spinulose Woodfern
<i>epilobium angustifolium</i>	Wald-Weidenröschen	Fireweed
<i>equisetum sylvaticum</i>	Wald-Schachtelhalm	Woodland Horsetail
<i>fagus sylvatica</i>	Rotbuche	Beech
<i>filipendula ulmaria</i>	Maedesüss	Meadowsweet
<i>galium aparine</i>	Kletten-Labkraut	Stickywilly
<i>galium hircynicum</i>	Harzer Labkraut	Heath Bedstraw
<i>geranium robertianum</i> agg.	Stinkender-Storchschnabel	Herb-Robert
<i>glechoma hederacea</i> agg.	Gundelrebe	Ground Ivy
<i>glyceria fluitans</i>	Flutendes Süßgras	Water Mannagrass
<i>hedera helix</i>	Efeu	English Ivy
<i>hepaticae</i>	Lebermoose	Liver Wort/Moss
<i>holcus lanatus</i>	Wolliges Honiggras	Common Velvet Grass
<i>impatiens noli-tangere</i>	Rühr mich nicht an	Touch-Me-Not
<i>iris pseudacorus</i>	Gelbe Schwertlilie	Yellow Flag Iris
<i>juncus acutiflorus</i>	Spitzbluetige Binse	Sharp-Flowered Rush
<i>juncus effusus</i>	Flatter-Binse	Common Rush
<i>lonicera periclymenum</i>	Wald-Geissblatt	European Honeysuckle
<i>lysimachia nemorum</i>	Hain-Gelbweiderich	Yellow Pimpernel
<i>maianthemum bifolium</i>	Schattenblümchen	False Lily of the Valley
<i>matteuccia struthiopteris</i>	Straussfarn	Todaro Ostrich Fern



Scientific Name	German Name	English Name
<i>melampyrum pratense</i>	Wiesen-Wachtelweizen	Common Cow Wheat
<i>melica uniflora</i>	Einblütiges Perlgras	Wood Melick
<i>milium effusum</i>	Flattergras	Golden Millet Grass
<i>mycelis muralis</i>	Mauerlattich	Wall Lettuce
<i>myosoton aquaticum</i>	Wassermiere	Water Chickweed
<i>oxalis acetosella</i>	Wald-Sauerklee	Wood Sorrel
<i>petasites hybridus</i>	Gewöhnliche Pestwurz	Butterbur
<i>phalaris arundinacea</i>	Rohrglanzgras	Reed Canarygrass
<i>poa chaixii</i>	Wald-Rispengras	Broadleaf Bluegrass
<i>poa nemoralis</i>	Hain-Rispengras	Wood Bluegrass
<i>polygonum bistorta</i>	Wiesenknöterich	Meadow Bistort
<i>pteridium aquilinum</i>	Adlerfarn	Brackenfern
<i>quercus petraea</i>	Traubeneiche	Sessile Oak
<i>rubus idaeus</i>	Himbeere	Red Raspberry
<i>salix fragilis</i>	Bruchweide	Crack Willow
<i>sambucus nigra</i>	Schwarzer Holunder	Elderberry
<i>scirpus sylvaticus</i>	Wald-Simse	Wood Club-Rush
<i>stellaria nemorum</i>	Wald-Sternmiere	Wood Stitchwort
<i>succisa pratensis</i>	Gewöhnlicher Teufelsabbiss	Devilsbit (Scabious)
<i>symphytum officinale</i> agg.	Gewöhnlicher Beinwell	Common Comfrey
<i>urtica dioica</i>	Große Brennessel	Stinging Nettle
<i>vaccinium myrtillus</i>	Heidelbeere	Bilberry
<b>Fauna</b>		
<i>aegithalos caudatus</i>	Schwanzmeise	Long-tailed Tit
<i>ancylus fluviatilis</i>	Flussnapfschnecke	River Limpet
<i>araschnia levana</i>	Landkärtchen	Map Butterfly
<i>braconidae</i>	Brackwespen	Braconid Wasp
<i>bumbus terrestris</i>	Dunkle Erdhummel	Dark Bumblebee
<i>calopteryx virgo</i>	Blauflügel-Prachtlibelle	Beautiful Demoiselle Dragonfly
<i>certhia brachydactyla</i>	Gartenbaumläufer	Short-Toed Treecreeper
<i>cottus gobio</i>	Groppe	Bullhead
<i>crabro cribrarius</i>	Grabwespen	Slender-Bodied Digger Wasp
<i>dendrocopos major</i>	Buntspecht	Great Spotted Woodpecker
<i>diptera</i>	Zweiflügler	True Fly
<i>ephemeroptera</i>	Eintagsfliege	Mayfly
<i>lampetra planeri</i>	Bachneunauge	Brook Lamprey
<i>lymnaea ovata</i>	Eiförmige Schlammschnecke	Wandering Pond Snail
<i>lymnaea peregra</i>	Gemeine Schlammschnecke	Common Snail
<i>motacilla cinerea</i>	Gebirgsbachstelze	Grey Wagtail
<i>natrix natrix</i>	Ringelnatter	European Grass Snake/Ringed Snake
<i>neomys fodiens</i>	Wasserspitzmaus	Eurasian Water Shrew
<i>omocestus viridulus</i>	Bunter Grashüpfer	Common Green Grasshopper
<i>parus ater</i>	Tannenmeise	Coal Tit
<i>parus palustris</i>	Sumpfmiese	Marsh Tit
<i>phylloscopus sibilatrix</i>	Waldlaubsänger	Wood Warbler

Scientific Name	German Name	English Name
<i>polygonia c-album</i>	C-Falter	Comma Butterfly
<i>rana esculatena</i>	Grümfrosch	Green Frog
<i>rana temporaria</i>	Grasfrosch	Common Frog
<i>regulus ignicapillus</i>	Sommergoldhähnchen	Firecrest
<i>salamandra salamandra</i>	Feuersalamander	Spotted/Fire Salamander
<i>salmo trutta</i>	Forelle	Brown Trout
<i>sylvia atricapilla</i>	Mönchsgrasmücke	Blackcap
<i>talpa europaea</i>	Maulwurf	European Mole
<i>troglodytes troglodytes</i>	Zaunkönig	Winter Wren



## **Appendix D**

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### **Biotope Data Sheets:**

**6006-1007**

**6006-1008**

**6006-1044**



## Biotopkartierung Rheinland-Pfalz

Biotopkartierung Rheinland-Pfalz Objektnummer: 1007  
 TK25-Nr.: 6006  
 Objektbezeichnung:  
 Streuobstbestand N Dahlem  
 Naturraum: 261.5 Gindorfer Hochfläche; Meßtischblätter: 6006  
 Gemeinde(n): Spangdahlem (G)  
 Verbandsgemeinde(n): Speicher (V)  
 Kreis(e): Bitburg-Prüm (L)  
 Fläche: ??? ha; Gauß-Krüger: R ??? H ???;  
 Höhe über NN: 340 m; Breite: 10 m  
 X Relief: 12 Rücken; X Neigung: 23 flach, 24 eben; X Bodenart: 42 Lehm; X  
 Bodenfeuchte: 53 frisch  
 T Biotoptypenkomplex: 16 Gebiete mittlerer Standorte  
 Biototypengruppen: O 100%  
 O Grasland/Brache/Heide:  
 11 Wiese mittlerer Standorte; \*23 Streuobstbestand; 31 Nutzung intensiv,  
 32 Nutzung extensiv; 21 beweidet  
 E Bestehende Beeinträchtigung:  
 Art: 11 Straßen/Wege, 24 Düngung, 25 Biozide, 42 Umbruch; Grad: 73  
 mäßig;  
 Lage: 81 im Gebiet, 82 in der Nähe  
 P Vorschlag zur Entwicklung:  
 12 Erhaltung des kulturbedingten Zustands  
 M Wertbestimmende Merkmale:  
 Gefährdung: 31 Biototyp/Lebensgemeinschaft, 33 Tiere; Wichtige  
 Tiergruppen: 52 Vögel; Lage: 61 Refugium in ausgeräumter Landschaft;  
 Ausbildung des Biototyps/der Lebensgemeinschaft: 72 typisch  
 Bemerkungen:  
 O23/32: mit absterbenden Bäumen, höhlenreicher Baumbestand  
 2 Teilflächen  
 Q Bewertung: 31 III Schongebiet  
 Vegetationseinheiten der realen Vegetation:  
 Arrhenatherion elatioris  
 Bestandsbildende Pflanzen:  
 Spermatophyta - Samenpflanzen  
 Ranunculus acris - Scharfer Hahnenfuß  
 Malus domestica - Gartenapfelbaum  
 Pyrus communis agg. - Gartenbirne  
 Trifolium repens - Weiß-Klee  
 Crepis biennis - Wiesen-Pippau  
 Taraxacum officinale agg. - Wiesen-Löwenzahn  
 Elymus repens ssp. repens  
 Arrhenatherum elatius - Glatthafer

<http://www.naturschutz.rlp.de/Dokumente/biotexte/60061007.htm> (1 of 2)6/25/2007 1:18:31 PM

## Biotopkartierung Rheinland-Pfalz

*Dactylis glomerata* - Wiesen-Knäuelgras

*Holcus lanatus* - Wolliges Honiggras

*Lolium multiflorum* - Vielblütiger Lolch

Gefährdete und/oder besonders erwähnenswerte Pflanzen:

Spermatophyta - Samenpflanzen

*Knautia arvensis* (2) - Wiesenknautie

*Campanula glomerata* - Büschel-Glockenblume

*Campanula rapunculus* - Rapunzel-Glockenblume

Gefährdete und/oder besonders erwähnenswerte Tiere:

Rote-Liste-Arten sind nicht aufgeführt

Informanten:

Hansen, M. (B 162)

Lieser, M./Valerius, K. (Z 154)

Bearbeiter:

Matzke, G., Aufnahmedatum: 14.06.88

Peukert, M., Aufnahmedatum: 06.09.94

Achtung: Abfrage Feld Z (§24-Flächen) erst ab Aufnahmedatum = 1992 sinnvoll

Landesamt für Umweltschutz und Gewerbeaufsicht, Oppenheim, Stand: 09.12.94



<b>Biotopkartierung Rheinland-Pfalz</b>	<b>Objektnummer: 1008</b>
	<b>TK25-Nr.: 6006</b>
<b>Objektbezeichnung:</b> Laubwald im "Saalholz"	
<b>Naturraum:</b> 277.21 Wittlicher Wald; <b>Meßtischblätter:</b> 6006 5906 <b>Gemeinde(n):</b> Spangdahlem (G) <b>Verbandsgemeinde(n):</b> Speicher (V) <b>Kreis(e):</b> Bitburg-Prüm (L) <b>Fläche:</b> ??? ha; <b>Gauß-Krüger:</b> R ??? H ???; <b>Höhe über NN:</b> 350 m <b>X Relief:</b> 13 Hang; <b>X Neigung:</b> 22 mittel, 23 flach; <b>X Exposition:</b> 32 Ost; <b>X Bodenart:</b> 42 Lehm, 43 Sand; <b>X Bodenfeuchte:</b> 53 frisch	
<b>T Biotoptypenkomplex:</b> 16 Gebiete mittlerer Standorte <b>Biototypengruppen:</b> W 100% <b>W Wald:</b> 27 Wald mittlerer Standorte; 33 Hochwald; 42 Waldstück innerhalb Wald; 45 Unterwuchs <b>E Bestehende Beeinträchtigung:</b> <b>Art:</b> 21 Immissionen, 52 Forst, 55 Militär; <b>Grad:</b> 73 mäßig; <b>Lage:</b> 81 im Gebiet, 82 in der Nähe <b>P Vorschlag zur Entwicklung:</b> 11 freie Entwicklung <b>M Wertbestimmende Merkmale:</b> <b>Wichtige Tiergruppen:</b> 52 Vögel; <b>Ausbildung des Biototyps/der Lebensgemeinschaft:</b> 72 typisch <b>Q Bewertung:</b> 31 III Schongebiet	
<b>Vegetationseinheiten der realen Vegetation:</b> Sambuco-Salicion capreae Luzulo-Fagenion <b>Bestandsbildende Pflanzen:</b> Pteridophyta - Gefäß-Sporenpflanzen Pteridium aquilinum - Adlerfarn Spermatophyta - Samenpflanzen Fagus sylvatica - Rotbuche Quercus petraea - Traubeneiche Carpinus betulus - Hainbuche Rubus idaeus - Himbeere Impatiens noli-tangere - Rühr mich nicht an Oxalis acetosella - Wald-Sauerklee Geranium robertianum agg. - Stinkender Storchschnabel Epilobium angustifolium - Wald-Weidenröschen Hedera helix - Efeu Lonicera periclymenum - Wald-Geißblatt Sambucus nigra - Schwarzer Holunder Melica uniflora - Einblütiges Perlgras Miliun effusum - Flattergras Poa nemoralis - Hain-Rispengras <b>Gefährdete und/oder besonders erwähnenswerte Pflanzen:</b> Spermatophyta - Samenpflanzen Lysimachia nemorum (2) - Hain-Gelbweiderich Melampyrum pratense (2) - Wiesen-Wachtelweizen Mycelis muralis (2) - Mauerlattich Convallaria majalis (2) - Maiglöckchen Maianthemum bifolium (2) - Schattenblümchen Poa chaixii (2) - Wald-Rispengras	

Biotopkartierung Rheinland-Pfalz		Objektnummer: 1008
		TK25-Nr.: 6006
Objektbezeichnung:		
Laubwald im "Saalholz"		
Gefährdete und/oder besonders erwähnenswerte Tiere:		
Aves - Vögel		
Dendrocopos major/002 - Buntspecht		
Phylloscopus sibilatrix/002 - Waldlaubsänger		
Parus palustris/002 - Sumpfmehse		
Certhia brachydactyla/002 - Gartenbaumläufer		
Informanten:		
Dreesen, J. (B 179)		
Bearbeiter:		
Matzke, G., Aufnahmedatum: 17.06.88		
Peukert, M., Aufnahmedatum: 06.09.94		
Achtung: Abfrage Feld Z (§24-Flächen) erst ab Aufnahmedatum ≥1992 sinnvoll		
Landesamt für Umweltschutz und Gewerbeaufsicht, Oppenheim, Stand: 08.06.99		

<b>Biotopkartierung Rheinland-Pfalz</b>	<b>Objektnummer: 1503</b>
	<b>TK25-Nr.: 6006</b>
<b>Objektbezeichnung:</b> Sturzquelle im Wald "Saalholz"	
Naturraum: 277.21 Wittlicher Wald; Meßtischblätter: 6006 Gemeinde(n): Spangdahlem (G) Verbandsgemeinde(n): Speicher (V) Kreis(e): Bitburg-Prüm (L) Fläche: ??? ha; Gauß-Krüger: R ??? H ???; Höhe über NN: 300 m; Breite: 1 m; Länge: 5 m X Relief: 13 Hang; X Neigung: 22 mittel; X Exposition: 32 Ost; X Bodenart: 43 Sand, 47 Fels	
T Biotoptypenkomplex: 11 Quellgebiete Biotoptypengruppen: G 100% G Gewässer und Uferzone: 41 Sturzquelle; 13 rasch fließend; 32 beschattet E Bestehende Beeinträchtigung: Art: 11 Straßen/Wege, 52 Forst, 63 standortfremde Art; Grad: 72 stark; Lage: 81 im Gebiet, 82 in der Nähe Bemerkungen: E63: Fichtenforst E11: direkt unterhalb der Quelle Z § 24 Nr.: 10b Quellbereiche	
<b>Bearbeiter:</b> Peukert, M., Aufnahmedatum: 14.09.94 Achtung: Abfrage Feld Z (§24-Flächen) erst ab Aufnahmedatum ≥1992 sinnvoll Landesamt für Umweltschutz und Gewerbeaufsicht, Oppenheim, Stand: 07.02.96	



Biotopkartierung Rheinland-Pfalz Objektnummer: 1044  
 TK25-Nr.: 6006  
 Objektbezeichnung:  
 Wiese NE Dahlem  
 Naturraum: 261.41 Herforder Sandsteinhochfläche; Meßtischblätter: 6006  
 Gemeinde(n): Spangdahlem (G)  
 Verbandsgemeinde(n): Speicher (V)  
 Kreis(e): Bitburg-Prüm (L)  
 Fläche: ??? ha; Gauß-Krüger: R ??? H ???;  
 Höhe über NN: 350 m  
 X Relief: 13 Hang; X Neigung: 23 flach; X Bodenart: 42 Lehm; X  
 Bodenfeuchte: 53 frisch, 55 wechselfeucht  
 T Biotoptypenkomplex: 16 Gebiete mittlerer Standorte  
 Biotoptypengruppen: G 3%, O 97%  
 G Gewässer und Uferzone:  
 55 Graben; 12 langsam fließend; 14 temporär; 73 Lehm-/Tonufer;  
 74 Steilufer; 82 Hochstauden, 91 geschlossener Bewuchs  
 O Grasland/Brache/Heide:  
 +12 Feuchtwiese; 11 Wiese mittlerer Standorte; 32 Nutzung extensiv  
 E Bestehende Beeinträchtigung:  
 Art: 21 Immissionen, \*24 Düngung, \*34 Entwässerung, 55 Militär; Grad:  
 72 stark; Lage: 81 im Gebiet, 82 in der Nähe; 71 akut gefährdeter Biotop  
 P Vorschlag zur Entwicklung:  
 14 Änderung der Bewirtschaftung  
 M Wertbestimmende Merkmale:  
 Gefährdung: 31 Biototyp/Lebensgemeinschaft; Lage: 61 Refugium in  
 ausgeräumter Landschaft; 74 Artenvielfalt  
 Bemerkungen:  
 O12 < 1000 qm, kein P24  
 P14: Extensivierung  
 E71: akute Gefährdung des Artenreichtums durch Düngung und  
 Entwässerung;  
 einzige artenreiche Wiese in ausgeräumter Ackerlandschaft  
 Vorschlag: Aufnahme in BSP  
 Q Bewertung: 31 III Schongebiet  
 Vegetationseinheiten der realen Vegetation:  
 Agrostietalia stoloniferae  
 Arrhenatherion elatioris  
 Bestandsbildende Pflanzen:  
 Spermatophyta - Samenpflanzen  
 Ranunculus repens - Kriechender Hahnenfuß  
 Hypericum maculatum - Geflecktes Johanniskraut  
 Filipendula ulmaria - Mädesüß  
 Trifolium pratense - Roter Wiesenklée  
 Agrostis stolonifera - Weißes Straußgras  
 Agrostis tenuis - Rotes Straußgras  
 Alopecurus pratensis - Wiesen-Fuchsschwanz  
 Arrhenatherum elatius - Glatthafer  
 Holcus lanatus - Wolliges Honiggras  
 Trisetum flavescens - Gewöhnlicher Goldhafer  
 Rote-Liste-Arten sind nicht aufgeführt  
 Gefährdete und/oder besonders erwähnenswerte Pflanzen:  
 Spermatophyta - Samenpflanzen  
 Polygonum bistorta (2) - Wiesenknöterich

<http://www.naturschutz.rlp.de/Dokumente/biotexte/60061044.htm>

6/26/2007

*Alchemilla xanthochlora* (2)  
*Sanguisorba minor* (2) - Kleiner Wiesenknopf  
*Knautia arvensis* (2) - Wiesenknautie  
*Succisa pratensis* (2) - Gewöhnlicher Teufelsabbiß  
*Campanula glomerata* (2) - Büschel-Glockenblume  
*Achillea ptarmica* (2) - Sumpf-Schafgarbe  
*Leontodon hispidus* (2) - Rauher Löwenzahn  
*Colchicum autumnale* (2) - Herbst-Zeitlose  
Bearbeiter:  
Peukert, M., Aufnahmedatum: 06.09.94  
Achtung: Abfrage Feld Z (§24-Flächen) erst ab Aufnahmedatum =1992  
sinnvoll  
Landesamt für Umweltschutz und Gewerbeaufsicht, Oppenheim, Stand:  
26.11.96

# **EBS for Spangdahlem AB Northwest Infrastructure Phase II**

## **Attachment ‘Photograph Log’**

All photographs were taken during the site visit on 22 May 2007 if not stated otherwise.





Overview of the AEA subject property 'Northwest Infrastructure Phase II': Agricultural fields with forest bordering to the east and Spangdahlem Air Base (SAB) to the south. View to southeast with a triangle of field copse (X11, biotope map) in the center.



Overview of the AEA subject property 'Northwest Infrastructure Phase II' with the triangle of field copse (X11, biotope map) to the right.



A view along the road bordering the AEA subject property to the south with Building 416 of SAB housing in the background.



A view to the northeast along the road bordering the AEA subject property to the south with Building 416 in the background. The subject property is left and the SAB fence is right.



A view along the same southern boundary road with the SAB fence on the left and the AEA subject property to the right. View to west-southwest.



A view from the southern boundary road looking at the AEA subject property to the northwest.





A view from the southern boundary road looking at the AEA subject property to the north.



A view from the southern boundary road looking at the AEA subject property to the northeast.



A view looking south along the eastern border of the AEA subject property with the adjacent forested area on the left (east) and the subject property on the right (west).



A view looking west at a break in plant species on the AEA subject property from the eastern border (same photo position as before).





A view north along the eastern border of the AEA subject property with the site on the left (west) and the adjacent forested area to the right (east). Same photo position as before.



A view looking west at a break in plant species on the site from the eastern border. Photo position further north.



One of the crops growing on the AEA subject property.



A view looking south along the eastern border of the site with the adjacent forested area on the left (east) and the subject area on the right (west). Same photo position as before.





Raised hide at the east border of the AEA subject property. view to north.



AEA subject property drainage ditch along the site's east border at the raised hide. View to north.





Site drainage pipes detail.



AEA subject property overview from the raised hide with the recreation garden hidden by forest in the background (S56, biotope map). View to north.



AEA subject property overview from the raised hide with tree hedges (X132, biotope map) next to the recreational garden. View to northwest.





AEA subject property overview from the raised hide. View to west.



AEA subject property overview from the raised hide. View to west-southwest.



AEA subject property overview from the raised hide. View to southwest.



AEA subject property overview from the raised hide. View to south.





At the recreational garden (S56, biotope map) in the northeast of the AEA subject property.  
View to north along the pathway marking the site's east border.



Site drainage ditch.





Recreational garden in the northeast of the AEA subject property. The biotope map of April 2005 shows a little pond on this garden portion. View to west.





Northwest border of the recreational garden. View along the main pathway crossing the AEA subject property from NE to SW. View to southwest.





Same photo position as above. View to west-southwest.



Northeast corner of the AEA subject property behind/north of the recreational garden.  
View to north.





Same photo position as above. View to the north border of the AEA subject property marked by mixed forest on the eastern half. View to northwest.



Same photo position as above. View to the north border of the AEA subject property marked by fields on the western half. Triangle of field copses in the right background. View to west.



Same photo position as above. View to the west border of the AEA subject property marked by country road L46. Triangle of field copses in the left background. View to west-southwest.



Same photo position as above at the recreational garden. View to the southwest corner of the AEA subject property. View to southwest.





View into the recreational garden. Above: View to south. Below: View to south-southeast.







North corner of recreational garden. View to east-southeast.



At the northeast corner of the AEA subject property. View to west-northwest.





At the northeast corner of the AEA subject property. View to west-southwest with the triangle of field copses (X11, biotope map) in the right background.



At the northeast corner of the AEA subject property. View back south toward the recreational garden with the site to the right/west and the adjacent forest to the left/east.



At the northeast corner of the AEA subject property. View to southwest with tree hedges (X132, biotope map) in the left background.



At the main pathway crossing the AEA subject property from NE to SW. Drainage ditch along the east side of this pathway. View to south-southeast with forest parcel in the left background that is on SAB west-southwest of Building 416.





Same photo location, west side of the pathway. View to southwest.



Example of local fauna species.





View from crossing main pathway towards the south border of the AEA subject property with the SAB forest parcel in the background. View to south-southeast.



Same photo location, view to the southwest corner of the AEA subject property. View to south-southwest.



Same photo location, view to the west border of the AEA subject property with the triangle of field copses in the center background. View to south-southwest.



View from crossing main pathway towards the southeast corner of the AEA subject property with SAB Housing Building 416 in the right background. View to east-southeast.





View from same photo location as above towards the south border of the AEA subject property with SAB Housing Building 416 in the background. View to southeast.



View from same photo location as above towards the south border of the AEA subject property with SAB newly constructed facilities in the background. View to south.



View from same photo location as above towards the south border of the AEA subject property with SAB newly constructed facilities in the background. View to south-southwest.



View from same photo location as above towards the southwest corner and west border of the AEA subject property. View to southwest.





Same photo location as above towards the west border of the AEA subject property. View to west.



Same photo location as above towards the west border of the AEA subject property.  
View to northwest.





Same photo location as above towards the north border of the AEA subject property.  
View to north-northwest.



Same photo location as above towards the north border of the AEA subject property. View to north.



On the pathway parallel to the country road L46 with the triangle of field copses in the left background. Looking north towards the north border of the AEA subject property.



View from the north border to the southeast with the forest parcel on SAB southwest of Building 416 and new SAB infrastructure in the right background. Forest corner in the left foreground and isolated bush in the foreground mark the north border of the AEA subject property.





Same photo location as above. On-base forest parcel in the left background, new SAB infrastructure in the center background, L46 to the right. View to south.



View to south-southwest with the southwest corner of the AEA subject property in the left background and an L46 section in the middle background.



Looking along the north limit of the AEA subject property showing all forest bordering the site (eastern half of north border and entire east border). View to east.



Same photo location as above. Looking to the south border of the AEA subject property with Building 416 in the left background and SAB new infrastructure on the right background.





Same photo location as above. Looking along the west border of the AEA subject property running to the middle background of photograph.



Same photo location as above. View to south along the west border of the AEA subject property running to the left background of photograph.



Same photo location as above. Northwest corner (O52 n1, biotope map) of the AEA subject property north of the field coves triangle (X11, biotope map). View to southwest.