

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.0 INTRODUCTION

This chapter describes existing environmental conditions (affected environment) for resources potentially affected by the alternatives described in Chapter 2 (Description of Proposed Action and Alternatives). Potential biological, physical, cultural, and social resource impacts (environmental consequences) are identified, described, and evaluated for the alternatives. As discussed in Chapter 2 (Description of Proposed Action and Alternatives), the type and tempo of existing training activities would continue at current levels under the No Action Alternative. The potential impacts of the No Action Alternative are compared to the potential impacts of activities proposed under Alternative 1 and Alternative 2.

The affected environment and environmental consequences are described and analyzed for 10 resource categories. The resource categories and their sections in this Environmental Impact Statement (EIS) are as follows:

- Soils (3.1)
- Air Quality (3.2)
- Water Quality (3.3)
- Noise (Airborne) (3.4)
- Biological Resources (3.5)
- Land Use and Recreation (3.6)
- Socioeconomics, Environmental Justice, and Protection of Children (3.7)
- Transportation (3.8)
- Cultural Resources (3.9)
- Public Health and Safety (3.10)

During the environmental impact analysis process, the resources analyzed are identified and the expected geographic scope of potential impacts for each resource is defined. Known as the resource's region of influence, this area is defined as the geographic area in which impacts to the subject resource have the potential to occur. For most resource categories, the region of influence coincides with the air and land training areas of the Fallon Range Training Complex (FRTC). For some resources, the region of influence encompasses broader regions.

Describing the environment and analyzing impacts requires a comprehensive and systematic review of relevant literature and data to ensure that only the best available information is used for analysis. Section 3.0.1 (Data Sources) describes the data used and the characteristics of the best available data.

The general approach to analysis is provided in Section 3.0.2 (General Approach to Analysis). This section describes how the Proposed Action is broken down into stressors that are analyzed for each resource. It provides a general analysis framework, preliminary impact screening, resource-specific individual stressor analysis, synthesis of ecosystem effects of the Proposed Action, and introduction to cumulative impacts analysis.

Chapter 3 concludes by assessing impacts on physical resources (soils, air quality, and water quality), biological resources (wildlife and vegetation), and human resources (land use and recreation, socioeconomics and environmental justice, transportation, cultural resources, and public health and

safety) (Sections 3.1 through 3.10). Each resource section has a more focused description of the regulatory framework applicable to that resource, a more focused approach to analysis, a discussion of the affected environment of that resource, the environmental consequences of the Proposed Action and alternatives, a summary of the impacts to that resource, and the regulatory determination of impacts on that resource.

In determining environmental consequences, this chapter incorporates current resource protection measures such as standard operating procedures, management practices, and conservation measures that are integral to the activities covered by the Proposed Action and its alternatives. If the analysis in a resource section identifies potential impact on the resource from the Proposed Action, methods are proposed that would minimize or mitigate the potential impacts identified. These mitigation measures are discussed at the end of each resource section and summarized in Chapter 5 (Management Practices, Monitoring, and Mitigation Measures).

3.0.1 DATA SOURCES

The Navy conducted a systematic review of relevant literature, regulatory requirements, mitigation provisions, and data for each resource category to ensure that best available science was used in the evaluation of potential environmental impacts in this EIS. Published and unpublished documents were used, including journals, books, periodicals, bulletins, Department of Defense operations reports, theses, dissertations, species management plans, and other technical reports published by government agencies, private businesses, or consulting firms. Internet searches were conducted, and websites were evaluated for credibility of the source, quality of the information, and relevance of the content to ensure the use of high-quality information in this document.

3.0.2 GENERAL APPROACH TO ANALYSIS

The EIS interdisciplinary team composed of United States (U.S.) Department of the Navy (Navy) and subject matter experts used a screening process to analyze training activities to identify those component activities in the alternatives that could act as stressors to the human environment. Other information evaluated to identify and analyze stressors included public and agency scoping comments; previous environmental analyses; agency consultations; resource-specific information; and applicable laws, regulations, and executive orders. This process was used to focus the information presented and analyzed in the affected environment and environmental consequences sections of this EIS. Table 3.0-1 compares range activities, the number of yearly training activities that would be associated with each alternative, and the category of stressors that potentially would occur related to those activities. Matrices were prepared to identify associations between stressors, resources, training activities, and alternatives (Table 3.0-1 and Table 3.0-2). The relevant stressors are as follows:

- Potential release of soil or water contaminants (military munitions, incidental spills)
- Air pollutant emissions (criteria air pollutant emissions, hazardous air pollutant emissions, fugitive dust)
- Noise (aircraft noise; military munitions or munitions noise; weapons firing, launch, and impact noise)
- Energy (electromagnetic radiation, Light Amplification by Stimulated Emission of Radiation [LASERS])
- Physical disturbance (aircraft and aerial targets strike, military expended material strikes, other ground-disturbing activities [training activities])
- Economics and usability (air training activities, land training activities, access/usability)
- Secondary stressors (soil quality, water quality, air quality)

Table 3.0-1: Range Activities and Potential Stressors

Range Activity	Location	Annual Number of Training Activities			Stressor Category						
		No Action Alternative	Alternative 1	Alternative 2	Potential Release of Soil or Water Contaminants	Air Pollutant Emissions	Noise	Energy	Physical Disturbance	Economics and Usability	Secondary Stressors
Air Warfare											
Air Combat Maneuvers	NAWDC 1, NAWDC 2, RENO MOA	2,582	2,582	2,841		✓	✓			✓	✓
Strike Warfare											
Bombing Exercise (Air-to-Ground)	B-16, B-17, B-19, B-20	1,293	1,293	1,422	✓	✓	✓	✓	✓	✓	✓
Close Air Support	B-17, B-19	378	378	416	✓	✓	✓	✓	✓	✓	✓
Urban Close Air Support	FA-18	92	92	101	✓	✓	✓	✓	✓	✓	✓
Combat Search and Rescue	NAWDC 1, NAWDC 2	45	115	127		✓	✓		✓	✓	✓
Gunnery Exercise (Air-to-Ground)	B-16, B-17, B-19, B-20	36	40	44	✓	✓	✓		✓	✓	✓
HARMEX (Suppression of Enemy Air Defense [simulation only])	EW Range	8	20	22		✓	✓	✓	✓	✓	✓
Missile Exercise (Air-to-Ground)	B-17, B-19, B-20	30	112	123	✓	✓	✓	✓	✓	✓	✓
Naval Special Warfare											
Convoy Operations	Dixie Valley Training Area	32	32	35	✓	✓	✓		✓	✓	✓

Table 3.0-1: Range Activities and Potential Stressors (continued)

Range Activity	Location	Annual Number of Training Activities			Stressor Category						
		No Action Alternative	Alternative 1	Alternative 2	Potential Release of Soil or Water Contaminants	Air Pollutant Emissions	Noise	Energy	Physical Disturbance	Economics and Usability	Secondary Stressors
Naval Special Warfare											
Insertion/Extraction	NAWDC 1, NAWDC 2	31	31	34		✓	✓		✓	✓	✓
Tactical Ground Mobility	B-16, Dixie Valley Training Area	12	12	13	✓	✓	✓	✓	✓	✓	✓
Ground Maneuver Tactics	Dixie Valley Training Area	4	4	4	✓	✓	✓		✓	✓	✓
Large Force Exercises											
Carrier Air Wing Large Force Exercise	NAWDC 1, NAWDC 2	382	382	420	✓	✓	✓	✓	✓	✓	✓
Desert Rescue Large Force Exercise	NAWDC 1, NAWDC 2	70	70	77	✓	✓	✓	✓	✓	✓	✓
Long-Range Strike for JTFEX and COMPTUEX	NAWDC 1, NAWDC 2	4	4	4	✓	✓	✓	✓	✓	✓	✓
Electronic Warfare											
Electronic Warfare Operations	NAWDC 1, NAWDC 2	4,025	4,025	4,428		✓	✓	✓	✓	✓	✓
Expeditionary Warfare											
Land Demolitions, Explosive Ordnance Disposal (EOD)	B-16, B-17, B-19, B-20	78	78	86	✓	✓	✓		✓	✓	✓

Table 3.0-1: Range Activities and Potential Stressors (continued)

Range Activity	Location	Annual Number of Training Activities			Stressor Category						
		No Action Alternative	Alternative 1	Alternative 2	Potential Release of Soil or Water Contaminants	Air Pollutant Emissions	Noise	Energy	Physical Disturbance	Economics and Usability	Secondary Stressors
Other Activities											
Dismounted Fire and Maneuver	Bell Canyon (B-17)	0	4	4	✓	✓	✓		✓	✓	✓
Ground LASER Targeting	Dixie Valley Training Area, Shoal Site, B-16, B-17, B-19	0	378	416	✓	✓		✓	✓	✓	✓
Mission Area Training – Marksmanship	Nevada National Guard Small Arms Range	185	210	231	✓		✓		✓	✓	✓

¹ Annual number of events unless noted otherwise
 Notes: COMPTUEX = Composite Training Unit Exercise, EW = Electronic Warfare, HARMEX = High-Speed Anti-Radiation Missile Exercise, JTFEX = Joint Task Force Exercise, MOA = Military Operations Area, NAWDC = Naval Aviation Warfighting Development Center

3.0.2.1 Resources and Issues Evaluated

Physical resources and issues evaluated include soils, water quality, and air quality. Biological resources evaluated include, but are not limited to, mammals, birds (including migratory birds), aquatic life, and vegetation. Other impact topics evaluated in this EIS include land use, cultural resources, socioeconomics, transportation, and public health and safety.

Table 3.0-2: Stressors Analyzed for Each Resource Category or Impact Topic

Stressor	Resource Category or Impact Topic									
	Soils	Air Quality	Water Quality	Noise	Biological Resources	Land Use and Recreation	Socioeconomics and Env. Justice	Transportation	Cultural Resources	Public Health and Safety
Potential Release of Contaminants										
Military Munitions	✓		✓		✓					
Incidental Spills	✓		✓		✓					
Air Pollutant Emissions										
Criteria Air Pollutant Emissions		✓								
Hazardous Air Pollutant Emissions		✓								
Fugitive Dust		✓								
Noise										
Aircraft Noise				✓	✓	✓	✓		✓	
Munitions Noise				✓	✓	✓	✓		✓	
Weapons Firing, Launch, and Impact Noise				✓	✓	✓	✓		✓	
Energy										
Electromagnetic Radiation					✓					
Lasers					✓					
Physical Disturbance										
Aircraft and Aerial Target Strike					✓		✓		✓	✓
Military Munitions Strike	✓		✓		✓		✓		✓	✓
Other Ground-Disturbing Activities (Training Activities)	✓		✓		✓		✓		✓	
Economics and Usability										
Air Training Activities							✓			
Land Training Activities							✓			
Access/Usability						✓	✓	✓		
Secondary Stressors										
Soil quality					✓					✓
Water quality					✓		✓			✓
Air quality					✓		✓			

3.0.2.2 Identification of Stressors for Analysis

The proposed training activities were evaluated to identify specific components that could act as stressors (see Table 3.0-1 and Table 3.0-2) by having direct or indirect impacts on the environment. This evaluation included identification of the spatial variation of the identified stressors. The warfare areas, along with their associated stressors, are identified in Table 3.0-1. A preliminary analysis based on scoping, previous National Environmental Policy Act (NEPA) analyses, and opinions of subject matter experts identified the stressor/resource interactions that warrant further analysis in this EIS.

3.0.2.3 Resource-Specific Effects Analysis

The direct and indirect effects of each stressor carried forward for further analysis were analyzed for each resource. Quantitative and semi-quantitative methods were used to the extent possible, but inherent scientific limitations required the use of qualitative methods for most stressor/resource interactions. Resource-specific methods are described in respective sections of Chapter 3, where applicable. While specific methods used to analyze the effects of individual stressors varied by resource, the following generalized approach was used for all stressor/resource interactions:

- The frequency, duration, and spatial extent of exposure to stressors were analyzed for each resource. The frequency of exposure to stressors or frequency of a proposed activity was characterized as intermittent or continuous and was quantified in terms of number per unit of time when possible. Duration of exposure was expressed as short- or longer-term and was quantified in units of time (e.g., seconds, minutes, hours) when possible. The spatial extent of exposure was generally characterized as widespread or localized, and the stressor footprint or area (e.g., square feet, square kilometers) was quantified when possible.
- An analysis was conducted to determine whether and how resources are likely to respond to stressor exposure or be altered by stressor exposure based on available scientific knowledge. This step included reviewing available scientific literature and empirical data. For many stressor/resource interactions, a range of likely responses or endpoints was identified. For example, exposure of an organism to sound produced by an explosion could result in no response, a physiological response such as increased heart rate, a behavioral response such as being startled, or injury or mortality.
- The information obtained from the steps described in the first two bullet points was used to analyze the likely effects of individual stressors on a resource and to characterize the type, duration, and intensity (severity) of effects. The type of effect was generally defined as beneficial or adverse, and was further defined as a specific endpoint (e.g., change in behavior, mortality, change in concentration, or loss of habitat). When possible, the endpoint was quantified. The duration of an effect was generally characterized as short-term (e.g., minutes, days, weeks, or months, depending on the resource), long-term (e.g., months, years, or decades, depending on the resource), or permanent. For biological resources, the analysis started with individual organisms and their habitats, and then addressed populations, species, and communities, as appropriate. All of the above were analyzed to make a significance determination for each resource individually, in compliance with 40 CFR §1508.27.

3.0.2.4 Cumulative Impacts

A cumulative impact is the impact on the environment that results when the incremental impact of the action is added to other past, present, and reasonably foreseeable future actions. The cumulative impacts analysis (Chapter 4) considers other actions regardless of what agency (federal or nonfederal) or person undertakes the actions. "Cumulative impacts can result from individually minor but collectively

significant actions taking place over a period” (40 Code of Federal Regulations §1508.7). The goal of the analysis is to provide the decision makers with a “big picture” view of the effects on the future sustainability of important resources, not only of the proposed action and alternatives but of all other actions occurring within the same geographic region.

Similar to the resource-specific combined effects analysis described above, the cumulative impact analysis considers additive, synergistic, and antagonistic effects in relation to past, present, and reasonably foreseeable actions. The following process was used to identify the cumulative impacts of the Proposed Action and alternatives.

- Other past, present, and reasonably foreseeable future actions that have affected, or will affect, the same resources as the proposed action were identified through the scoping process, communications with other agencies, a review of other military activities, literature review, and previous NEPA analyses. Individual actions were grouped to the extent possible so that the cumulative impacts analysis could focus on aggregate effects of the actions.
- The effects of past, present, and reasonably foreseeable future actions on each resource were identified and summarized. Available information concerning the effects of other actions was derived from existing NEPA documents, the literature, and best professional judgment.
- The incremental effects of each alternative were analyzed to determine if a significant cumulative effect would occur when added to the effects of past, present, and reasonably foreseeable actions.