

OACSIM Layer Descriptions

Installation Boundary (Installation Area)

The installation/site boundary consists of the outermost boundary of all lands owned by the DoD and certain less-than-fee interest areas (such as leased, licensed, state owned, and easements) that are operated and maintained by the DoD.

Services will provide at a minimum the boundary defining the geographic extent of land owned, leased, being used under license, permit, temporary Executive Order, etc. for each installation.

(Abstract from Metadata): Compiled by the OACSIM to support Installation Management by showing the boundary defining the geographic extent of land owned, leased, being used under license, permit, temporary Executive Order, etc. for each Army installation.

Range Complex Boundary (Military Range Area)

Depicts the outermost boundaries of those lands owned, leased, or protected by other restriction (e.g., withdrawn lands) by the DoD supporting range operations.

As per 40 CFR §266.201, a range is a designated land or water area set aside, managed, and used to conduct research, development, testing, and evaluation of military munitions, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas, and airspace areas designated for military use according to regulations and procedures established by the Federal Aviation Administration such as special use airspace areas, military training routes, or other associated airspace.

As per 40 CFR §266.201, an “active range” is a military range that is currently in service and is being regularly used for range activities. An “inactive range” is a military range that is not currently being used, but that is still considered by the military to be a potential range area, and that has not been put to a new use that is incompatible with range activities. A “closed” range is a military range that has been taken out of service as a range and has either been put to new uses that are incompatible with range activities or is not considered by the military to be a potential range area.

(Abstract from metadata): Compiled by the OACSIM to support Installation Management by showing the boundary defining the geographic extent of Special Use Airspace or land owned, leased, being used under license, permit, temporary Executive Order, for air-to-surface and active/inactive ground ranges.

Noise Contours (Noise Zone Area)

The geographic extent of noise on and beyond the boundaries of installations.

Noise levels generated from military activities are identified using contours delineating areas of equal sound pressure impact on the areas surrounding the source of the noise. The dataset will portray noise generated from fixed wing aircraft flight and rotary wing aircraft flight, associated ground maintenance activities, and large caliber weapons.

Two metrics are used to measure noise; “A” weighting and “C” weighting. “A” weighted noise (indicated by “dB(A)”) is noise generated from low amplitude long intensity sources such as aircraft overflight. “C” weighted noise (indicated by “dB(C)” or “LCDN”) is noise generated from

high amplitude short intensity sources such as weapons firing. When intermittent impulse noises such as those associated with bombing and gunnery ranges are of importance, such noises will be measured using standard “C” weighting of the various frequencies to ensure a description most representative of the actual human response.

For military airfields, aircraft flight and ground maintenance noise will be described by the best available noise contours using the Day Night Average Sound Level (DNL) as per Air Installation Compatible Use Zone (AICUZ) regulations, except for installations in the State of California. Aircraft and ground maintenance noise in the State of California will be described using the Community Noise Equivalent Level (CNEL) metric. Aircraft flight and ground maintenance noise contours will be provided for levels 60 dB(A) and above in California and levels 65 dB(A) and above at all other installations, in 5 dB contour increments.

The Federal Interagency Committee on Urban Noise (FICUN) (FICUN 1980) has developed land use guidelines, adopted by the Department of Defense, for areas on and/or near noise producing activities, such as highways, airports, and adapted for firing ranges. The Departments of Navy and Air Force Air Installations Compatible Use Zones (AICUZ) programs use the FICUN guidelines to assess and manage noise on its air installations and ranges. By projecting these zones onto a map display, land use guidelines can be used to help planners develop compatible land uses.

The Army and Navy have three land use zones:

- **Noise Zone III** – Areas where noise is considered so severe that noise-sensitive land uses will not be considered therein. Noise Zone III consists of areas around noise sources in which the DNL is 75 dB(A) for aircraft, vehicle, or small arms range noise and 70 dB(C) or greater for weapon systems larger than 20 mm.
- **Noise Zone II** – Areas where noise is considered significant and only certain land uses such as industrial, manufacturing, and transportation are permitted. Noise Zone II consists of areas around noise sources in which the DNL is between 65 and 75 dB(A) or between 62 and 70 dB(C).
- **Noise Zone I** – Areas generally suitable for all types of land use activities. Noise Zone I consists of areas around a noise source in which the DNL is less than 65 dB(A) or 62 dB(C).

(Abstract from metadata): Compiled by the OACSIM to support Installation Management by depicting the geographic extent of the Noise Contours at each Army installation.

Accident Potential Zones (APZ's) (Air Accident Zone Area)

Overlay layer illustrating the geographic extent of clear zones and accident potential zones around runways for installations.

Clear zones and accident potential zones will be mapped to their fullest extent both within and beyond the boundaries of installations. Areas immediately beyond the ends of the runways and along primary flight paths are subject to more aircraft accidents than other areas. For this reason certain land use restrictions apply within these areas. The following areas will be included in the IVT Accident Potential Zone overlay layer:

- **Clear Zone** – Areas immediately beyond the end of the runway, or directly centered on the helipad; an area that possesses a high potential for accidents, and has traditionally been acquired by the Government in fee and kept clear of obstructions to flight. No buildings are allowed in the CZ;

- **Accident Potential Zone I – (APZ I)** The area beyond the Clear Zone that possesses a significant potential for accidents. Land use within APZ I are limited to industrial, manufacturing, open space and agricultural uses, transportation, etc.;
- **Accident Potential Zone II – (APZ II)** The area beyond APZ I having a measurable potential for accidents. Additional land uses are permitted, but are generally limited to low density activities.

(Abstract from metadata): Compiled by the OACSIM to support Installation Management by depicting the geographic extent of Clear Zones and Accident Potential Zones I and II around runways and heliports at DoD installations.

Explosive Safety Quantity Distance Arcs (ESQD) (Military Quantity Distance Arc Area)

Includes the composite ESQD arcs based on inhabited building distance (IBD) for all potential explosion sites (PES) at installations. As per DoD 6055.9-STD, IBD is the minimum allowable distance to non-related exposures from explosives locations.

The ESQD arc overlay, includes closed polygons depicting the outer-most composite arc (boundaries between overlapping arcs will be removed or *dissolved*) originating from all PES.

(Abstract from metadata): Compiled by the OACSIM to support Installation Management by depicting the composite geographic extent of inhabited building distance (IBD) explosive safety quantity distance (ESQD) arcs, for Army installations.

Floodplain – 100 Year (Flood Zone Area)

The outermost extent of the 100-year floodplain within installation boundaries.

The U.S. Army Corps of Engineers (USACE) defines a “floodplain” as the portion of any river valley that has historically been inundated by a river during floods. The Federal Emergency Management Agency (FEMA) defines a “floodplain” as the relatively flat lowland that borders a river, coastal area, lakeshore, or other low-lying area, usually dry but subject to flooding. The term “100-year flood” is a statistical designation that identifies an area that has a 1-in-100 (1%) chance, according to historical statistics, of being inundated by floodwaters in any given year.

FEMA has specific mandates within the National Flood Insurance Act of 1968, as amended, to identify flood hazards, including the geographic extent of 100-year floodplains, nationwide and to publish and update flood hazard information in support of the National Flood Insurance Program (NFIP). FEMA is required to consult with local officials in identifying flood-prone areas, and specific procedures are described in the Act for establishing proposed flood elevations resulting in the delineation of 100-year floodplain extents, based on FEMA-approved engineering techniques established by the USACE Hydrologic Engineering Center (HEC).

The 100-year floodplain overlay layer will depict one or more polygons showing the extent of the 100-year floodplain, as defined by FEMA. Floodplains will be mapped to the installation boundary at a minimum, and may extend up to one mile beyond the base boundary. Areas of high ground enclosed fully enclosed within a 100-year floodplain, if any, will be represented as empty areas or topological polygons.

(Abstract from metadata): Compiled by the OACSIM to support Installation Management by depicting the geographic extent of the 100-year floodplain at each Army installation.

Wetlands (Wetland Area)

In general terms, wetlands are lands on which water covers the soil or is present either at or near the surface of the soil or within the root zone, all year or for varying periods of time during the year. The recurrent or prolonged presence of water (hydrology) at or near the soil surface is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface.

The Federal regulations implementing Section 404 of the 1972 Clean Water Act define wetlands as “those areas that are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas.”¹ The U.S. Army Corps of Engineers prepared a Wetlands Delineation Manual in 1997 providing instructions for wetlands delineation in accordance with Section 404 of the Clean Water Act.

Jurisdictional wetlands are those that are regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act and must exhibit the three following characteristics: hydrology, hydrophytes, and hydric soils as per the 1987 USACE Wetlands Delineation Manual. Some areas that function as wetlands ecologically, but exhibit only one or two of the three characteristics, do not currently qualify as USACE jurisdictional wetlands. Thus activities in these wetlands are not regulated under the Section 404 program, but may still represent constraints or require careful consideration as to restrictions to development.

The Wetlands overlay layer will include polygons depicting the extent of wetlands (delineated using any number of different wetlands definitions and classification systems) up to the extent of the installation boundary, and may extend up to one mile beyond the base boundary. Specific wetlands categories will not be depicted in the IVT Wetlands overlay layer; individual boundaries between specific wetlands areas will be *dissolved* (removed). Non-wetland areas wholly enclosed within a wetland polygon, if any, will be represented as empty areas or topological polygons.

(Abstract from metadata): Compiled by the OACSIM to support Installation Management by depicting the geographic extent of the Wetlands at each Army installation.

Imagery

Two different resolutions of imagery are being provided for IVT visualization – 1-meter ground resolution and 5-meter ground resolution². 1-meter resolution imagery is provided for areas on US Army installations. 5-meter resolution imagery is provided for US Army installation maneuver and range areas. NIMA is paying the DoD Title 50 uplift, thereby enabling distribution and use of the imagery amongst DoD organizations. Non-DoD organizations and private citizens are not entitled to use of DoD-purchased imagery under Title 50 guidelines.

¹ 40 CFR 232.2(r)

² *Ground resolution* (also known as *ground sample distance*, or “GSD”) is a measure of the smallest linear separation between two objects that can be resolved by an imagery sensor. For example, the smallest detectable feature that a 1-meter sensor can detect is 1-meter in diameter in photographs and 1-meter square in digital imagery. However, spatial (or image) resolution has no direct correlation to positional accuracy. It is a common misconception that the higher the pixel resolution, the more accurate the image will be. In fact, accuracy is related to ground control and the scale of the image, yet not the scale of the image alone. Other image characteristics that do relate directly to spatial resolution are scale, types of features that can be extracted from the image (typically larger than the image resolution itself); file size; and geographic extent of single scene/frame.

1-meter ground resolution imagery specifications:

- Visible spectrum panchromatic and color (“*pan sharpened*”);
- Orthorectified 4-meter CE-90 horizontal accuracy ³;
- 20% cloud-free or less if possible;
- Snow free, same-season/same-year imagery for any given installation or facility, if possible;
- Imagery acquisition date no earlier than 1 Jan 00;

Minimum scene size 100 km² as per imagery vendor minimum purchase requirements.

The following 5 meter specifications may no longer be applicable for the 5 meter imagery. I believe this was written before the purchase of the national 5 meter imagery.

5-meter ground resolution imagery specifications:

- Visible spectrum color;
- Orthorectified 25-meter CE-90 horizontal accuracy;
- 20% cloud-free or less if possible;
- Snow free, same-season/same-year imagery for any given installation or facility, if possible;
- Imagery acquisition date no earlier than 1 Jan 00;

Minimum scene size 1,000 km² as per imagery vendor minimum purchase requirements.

The geographic extent of both 1-meter and 5-meter imagery extends beyond the installation or range complex boundary to enable visualization of the immediate vicinity surrounding the facility. Imagery footprints, or *areas of interest* (AOI), extend one mile beyond the furthest extent of any of the following criteria:

- Installation or range complex boundary;
- Aviation noise 65 decibels or greater;
- Accident Potential Zones I and II; and
- Outer-most extent of explosive safety quantity distance arcs.

If the outermost extent of the above-listed elements, buffered by one mile, does not cover 100 km² (1-meter resolution imagery) or 1,000 km² (5-meter resolution imagery), the AOI footprints have been extended to meet the minimum size requirements.

³ Horizontal positional accuracy and reporting requirements are described in Section 6.3.