



Amchitka, Alaska, Site

A Nevada Offsite

This fact sheet provides information about the **Amchitka site**. Long-Term stewardship responsibilities for this site are managed by the **U.S. Department of Energy Office of Legacy Management**.

Site Information and History

Amchitka Island is near the western end of the Aleutian Island chain and is the largest island in the Rat Island Group. The island is located about 1,340 miles west-southwest of Anchorage, Alaska, and 870 miles east of the Kamchatka Peninsula in eastern Russia. The island is 42 miles long and 1 to 4 miles wide, with an area of approximately 74,240 acres. Elevations range from sea level to more than 1,100 feet above sea level. The coastline is rugged; sea cliffs and grassy slopes surround nearly the entire island. Vegetation on the island is low-growing, meadow-like tundra grasses at lower elevations. No trees grow on Amchitka. The lowest elevations are on the eastern third of the island and are characterized by numerous shallow lakes and heavily vegetated drainages. The central portion of the island has higher elevations and fewer lakes. The westernmost 3 miles of the island contains a windswept rocky plateau with sparse vegetation.

The island is cool, windy, and generally cloudy or foggy. August is the warmest month, with an average temperature of 48 °F. January is the coldest month, with an average temperature of 31 °F. Wind speed averages 22 to 30 miles per hour year-round. Winds are calm less than 1 percent of the time. Low clouds cover the sky between 50 and 90 percent of the time. Low ceilings and fog are more frequent in the summer months and often persist for days at a time.

Amchitka formed about 50 million years ago from tectonic uplift and deposition of volcanic flow and marine sediments collectively known as the Amchitka Formation. Amchitka

Island has no active volcanoes but is composed almost entirely of igneous rock from past volcanism. A thin, dis-continuous veneer of soil overlies the volcanic bedrock.

Although the island is currently uninhabited, it is an ancestral home of the Unangaꥯ people, an indigenous people whose nearest community is Adak, on Adak Island about 170 miles east of Amchitka. The Unangaꥯ people occupied Amchitka intermittently from about 4,000 years ago until the late 1700s. At the beginning of World War II, Amchitka contained only an abandoned Russian fishing village.

President William Taft set aside the Aleutian Islands, including Amchitka, in 1913 as the Aleutian Island Reservation. President Taft's Executive Order specified that designation of the island as a reservation should not interfere with certain other uses, such as military activities. In 1980, Amchitka was included in the Alaska Maritime National Wildlife Refuge as part of the Aleutian Islands Unit. Management of the island is under the jurisdiction of the U.S. Fish and Wildlife Service of the U.S. Department of the Interior.

The U.S. military began using Amchitka in January 1943 to build an airbase to launch an assault on Japanese-held Kiska Island, about 60 miles west of Amchitka. The military constructed roads, numerous buildings, and three airstrips on the island.

Military occupancy reached its peak at 15,000 troops. World War II naval operations at the island ceased in 1945, and the U.S. Army abandoned its facilities in 1950. The U.S. Air Force operated a weather station on Amchitka in the early 1950s, a White Alice (White [for snow] Alaska Integrated Communication and Electronics) system from 1959 to 1961, and a temporary relay site in the 1960s and 1970s. The U.S. Navy established a radar station on the island in 1987. That facility was decommissioned in 1993.

The U.S. government conducted three underground nuclear tests on Amchitka; the U.S. Department of Defense and the U.S. Atomic Energy Commission (AEC), a predecessor of the U.S. Department of Energy (DOE) jointly conducted the first two, and AEC conducted the third. The first test, named Long Shot, was a nuclear detection research experiment detonated in October 1965 at a depth of 2,297 feet below ground surface, with a yield of 80 kilotons (TNT equivalent). The second test, Milrow, was a high-yield (about 1 megaton) weapons calibration test detonated in October 1969 at a depth of 4,003 feet. The third test, known as Cannikin, was detonated in November 1971 at a depth of 5,873 feet below ground surface, with a yield of less than 5 megatons. Cannikin remains the largest underground nuclear test in U.S. history.

DOE Responsibilities

Under the revisions to the Atomic Energy Act of 1954 (as amended), DOE was assigned responsibility for certain AEC properties. In an April 2001 Letter of Agreement, DOE accepted responsibility for seven locales on Amchitka Island: three drilling locations, three test locations, and the former asphalt plant near the north-south runway. DOE is responsible for only these locations, collectively referred to as the Amchitka site, not the entire island. All these locations are outside the designated wilderness area on the island and are not near potential Alaskan Native Tribal claims.

Contaminants Identified at the Amchitka Site

Anomalous concentrations of tritium (a radioactive isotope of hydrogen with a half-life of 12.3 years and also a “fingerprint” left by a nuclear detonation) were detected in surface water samples collected near the Long Shot test site. Tritium activity was monitored in samples of surface water and shallow groundwater from 1965 to 2001. The maximum detected concentration was about 16,000 picocuries per liter in 1966. The U.S. Environmental Protection Agency drinking water standard for tritium is 20,000 picocuries per liter. Tritium concentrations in surface water and shallow groundwater samples around the Long Shot test site are decreasing faster than would be predicted from radioactive decay alone, indicating that dilution is also a factor.

In addition to the three underground test sites, six other sites were considered for possible nuclear testing. Large-diameter emplacement holes were drilled at two of the sites, and an exploratory hole was drilled at a third. These holes have been backfilled with native soils. The remaining sites were not drilled. Approximately 195 acres were disturbed by AEC activities.

Drilling at the three nuclear test sites and the three emplacement/exploratory locations used large quantities of drilling mud, which consisted of water, diesel fuel, and other additives, including bentonite, chrome lignosulfonate, chrome lignite, cement, paper, and sodium bicarbonate. The drilling mud pits were left in place when AEC completed the tests and remained open until DOE began reclamation work in 2001. Chemical analysis of mud pit samples collected during a 1998



*Amchitka Island; View From the East End Looking North
(U.S. Fish and Wildlife Service Photo).*

site investigation showed that the pits contained various organic compounds and chromium, but the only analytes with concentrations exceeding Alaska Department of Environmental Conservation cleanup standards were diesel-range organic compounds. Additional analyses indicated that, although drilling related compounds were present in sediments of nearby surface water drainages, none of the compounds were detected in samples of shallow groundwater at the sites.

Two underground storage tanks adjacent to one of the runways were the location of a former mixing plant where asphalt surfacing material was mixed during construction operations in World War II. The underground tanks contained about 12,000 gallons of a liquid tar-like substance.

Environmental Cleanup at the Amchitka Site

Because tritium concentrations are below drinking water standards, tritium was not considered a contaminant of concern in freshwater. In 2001, all shallow monitoring wells under DOE purview were plugged in agreement with Alaska Department of Environmental Conservation requirements. Groundwater monitoring was discontinued at the Amchitka site.

Drilling mud pits were stabilized by mixing the drilling mud with clean soil from a borrow area, homogenizing the mixture, and covering with a 30 mil (0.03 inch)-thick polyester geomembrane. The geomembrane was covered with 3 feet of soil and vegetated with a seed mixture.

All disturbed areas, including the soil borrow areas, were planted with the seed mix and covered with an erosion control blanket.

Contents of the underground storage tanks at the former asphalt mixing plant were removed and shipped off-site to an approved waste disposal facility. The tanks were filled with native soil, and the openings were grouted with concrete and closed in place.

Because no practicable technology exists to remove the radioactive material from the underground cavities formed by the nuclear tests, DOE will leave the material in place. The selected remediation for the subsurface is monitoring of biota species. Monuments have been placed at each of the surface ground zero sites (locations of underground disturbances) to designate the presence of the detonation test cavities.

Regulatory Setting

The U.S. Fish and Wildlife Service is responsible for the surface management of Amchitka Island. Title 50 *Code of Federal Regulations*, Part 36.39 restricts access to the island, requiring authorization by U.S. Fish and Wildlife Service and the U.S. Navy. DOE is to be notified of any activities on the island that would require surface disturbances.

The federal government holds title to, and DOE is responsible for, radioactive and other hazardous materials generated by DOE and predecessor agencies at the Amchitka site. DOE “owns” the radioactive material at the Amchitka site under the authority of the Atomic Energy Act of 1954 (Title 42 *United States Code*, Section 2011).

Federal regulations for protection of threatened and endangered species and cultural resources are also applicable.

Public Law 96-487 designated a portion of Amchitka Island as a wilderness area. This law also defines the claims of the Alaska Native Tribes, allowing the tribes to select certain portions of Alaska to be considered for return to the Native populations. Amchitka Island has numerous claims, but none has been finalized. Should the claims be awarded, institutional controls will have to be reviewed. LM has implemented institutional controls in the form of deed restrictions and signage at each of the former test locations and mud pit locations.

Legacy Management Activities

The DOE Office of Legacy Management (LM) manages the Amchitka site according to a site-specific Long-Term Surveillance and Maintenance Plan to ensure that site conditions continue to be protective of the environment. Under provisions of this plan, LM conducts inspections of the site to evaluate the condition of surface features, performs site maintenance as necessary, and collects samples of biota.

In June 2014, Amchitka experienced a magnitude 7.9 earthquake off the northwest coast. The earthquake and its aftershocks damaged several of the mud pit caps but no drilling mud material was exposed. LM performed annual inspections of the caps from 2014-2019. From these inspections, no new damage was observed. In 2022, DOE sent a team to investigate the geotechnical and chemical properties of the mud pits and completed maintenance repairs of the damaged areas. LM monitors seismic activity from the U.S. Geological Survey Earthquake Hazard website to document activity that may impact the site.



Amchitka Island.



CONTACT INFORMATION

**IN CASE OF AN EMERGENCY AT THE SITE,
CONTACT 911**

**LM TOLL-FREE EMERGENCY HOTLINE:
(877) 695-5322**

Site-specific documents related to the Amchitka site are available on the LM website at www.energy.gov/lm/amchitka-alaska-site

For more information about LM activities at the Amchitka site, contact:

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