Fact Sheet

U.S. DEPARTMENT OF ENERGY | Legacy Management

Amchitka, Alaska, Site

A Weapons-Related and Vela Uniform Site/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, meadowlike tundra grasses at lower elevations. 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 three miles of the island is covered by 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% of the time. Low clouds cover the sky 50% to 90% of the time. Low ceilings and fog are more frequent in the summer months and often last 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 mostly made of igneous rock from past volcanism. A thin layer of soil lies over the volcanic bedrock.

Although the island is uninhabited, it's the ancestral home of the Unangaŷ people. The Unangaŷ people occupied Amchitka intermittently from about 4,000 years ago until the late 1700s. At the beginning of World War II, Amchitka had only an abandoned Russian fishing village. The nearest community is the town of Adak on Adak Island, about 200 miles east of Amchitka.

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 would not interfere with certain other uses, such as military activities. In 1980, Amchitka was added to 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 (USFWS) and the U.S. Department of the Interior.

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

Military occupancy reached its peak at 15,000 troops. World War II naval operations at the island ended 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, which was decommissioned in 1993.

In the early 1960s the U.S. Atomic Energy Commission (AEC), a predecessor agency of the U.S. Department of Energy (DOE), investigated and developed alternative sites or "Offsites" to the Nevada National Security Site (formerly known as the Nevada Test Site) for underground nuclear

testing. It was during this time that the U.S. government conducted three underground nuclear tests on Amchitka; the U.S. Department of Defense and AEC 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 below ground surface. 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 areas 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. These locations are outside the designated wilderness area on the island and are not part of Alaskan Native conveyed lands.

Contaminants Identified at the Amchitka Site

Anomalous concentrations of tritium (a radioactive isotope of hydrogen with a half-life of 12.3 years and 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, suggesting 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. There was no drilling at the remaining sites. AEC activities disturbed approximately 195 acres.

Drilling at the three nuclear test sites and the three exploratory locations used large quantities of drilling mud, which is made of water, diesel fuel, and other additives, including bentonite, chrome lignosulfonate, chrome lignite, cement, paper, and sodium bicarbonate. AEC left the drilling mud pits in place after the tests, and they stayed open until DOE began reclamation work in 2001. Chemical analysis of mud-pit samples collected during a 1998 site investigation showed that the pits contained various organic compounds and

Amchitka Island; view from the east end looking north (U.S. Fish and Wildlife Service photo).

chromium, but the only analytes with concentrations exceeding Alaska Department of Environmental Conservation (Alaska DEC) cleanup standards were diesel-range organic compounds. Additional analyses indicated that, although there were drilling-related compounds in sediments from nearby surface-water drainages, those compounds weren’t in shallow groundwater samples at the sites.

Two underground storage tanks adjacent to one of the runways marked the location of a former mixing plant where asphalt surfacing material was mixed during construction operations during World War II. The underground tanks contained about 19,000 gallons of a thick black petroleum-based fluid and 4,000 gallons of water with a petroleum odor.

Environmental Cleanup at the Amchitka Site

Because tritium concentrations are below drinking-water standards, tritium was not a contaminant of concern in fresh water. In 2001 and 2011, DOE plugged all of its shallow monitoring wells, following Alaska DEC requirements. Groundwater monitoring was discontinued at the Amchitka site following the well abandonments.

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

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

biota species and surface water (as shown in the picture to the right). DOE has placed monuments at each of the surface ground zero sites to mark the locations of the detonation test cavities.

Regulatory Setting

The federal government owns, and DOE is responsible for, radioactive and other hazardous materials that DOE and its predecessor agencies generated 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).

USFWS is responsible for management of the surface of Amchitka Island. Title 50 *Code of Federal Regulations*, Part 36.39, restricts access to the island, requiring that USFWS and the U.S. Navy authorize access. The agencies must notify DOE of any activity on the island that could disturb the surface. The DOE Office of Legacy Management (LM) has set institutional controls in the form of deed restrictions and signage at each of the former test locations and mud pit locations.

Public Law 96-487 designated part of Amchitka Island as a wilderness area. This law also defines the claims of the Alaska Native Tribes, allowing the tribes to select certain parts of Alaska to be considered for return to the Native populations. Amchitka Island has many claims that have been conveyed.

Federal regulations that protect threatened and endangered species and cultural resources also apply.

Legacy Management Activities

LM manages the Amchitka site according to a site-specific Long-Term Surveillance and Maintenance Plan to make sure that site conditions continue to be protective of the environment. Under this plan, LM inspects the site to evaluate the condition of surface features, performs site maintenance as necessary, and collects samples of water, plants, and animals.

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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