



CHARLESTOWN NAVAL AUXILIARY LANDING FIELD, RHODE ISLAND

HISTORICAL ENVIRONMENTAL PHOTOGRAPHIC ANALYSIS

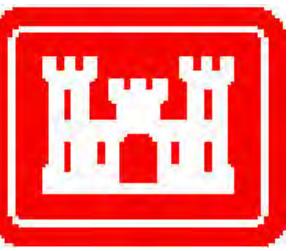


Photo Source: Larry Webster Collection

U.S. Army Geospatial Center (AGC)
Warfighter Geospatial Support Directorate
Hydrologic & Environmental Analysis Branch
Environmental Analysis Team
7701 Telegraph Road
Alexandria, Virginia 22315-3864



AUGUST 2018 FINAL REPORT

Prepared for the U.S. Army Corps of Engineers, New England District.

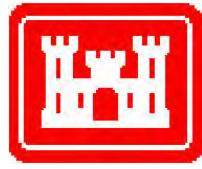


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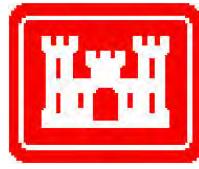
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NOTICE AND INTRODUCTION



Charlestown Naval Auxiliary Landing Field, Charlestown, Rhode Island Historical Environmental Photographic Analysis

By
U.S. Army Geospatial Center (AGC)
Warfighter Geospatial Support Directorate
Hydrologic and Environmental Analysis Branch
Environmental Analysis Team
7701 Telegraph Road
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Concord, MA

NOTICE

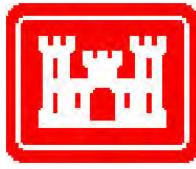
The views, opinions, and conclusions in this report are those of the author and should not be construed as official Department of Army positions or policy unless so designated by other documentation.

Photographic items contained in this report may be restricted for use other than research. It is the responsibility of the party using photographs from this study to contact the U.S. Army Geospatial Center, Warfighter Geospatial Support Directorate in order to ascertain clearance for use.

INTRODUCTION

This report of findings presents the results of a historical photographic analysis (HPA) of Charlestown Naval Auxiliary Landing Field (CNALF) located in Charlestown, Rhode Island. The Hydrologic and Environmental Analysis Branch of the Warfighter Geospatial Support Directorate was tasked to search, collect, and analyze historical photographic records and historical map data relative to the project area as part of the Formerly Used Defense Sites (FUDS) program.

This report contains select findings covering the existence of Department of Defense activity within the former CNALF.



METHODOLOGY



USGS aerial photograph of the CNALF, 29 March 1995. Source: http://www.airfields-free.com/RI/Airfields_RI.htm.

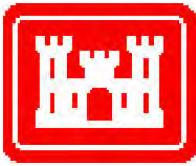
METHODOLOGY

The analysis presented in this report is primarily based upon interpretation of panchromatic aerial photography over the project area spanning 1941 to 2017. Stereo viewing was employed where overlapping photographs permitted its use. 2007 LiDAR sensor data, provided to AGC from NAE, was also examined within an ArcGIS software platform.

Significant features, derived through photo analysis, are displayed on select photos in this study. Buildings, roads, and other site names and numbers are derived from historical maps and textual documents.

AGC = U.S. Army Geospatial Center

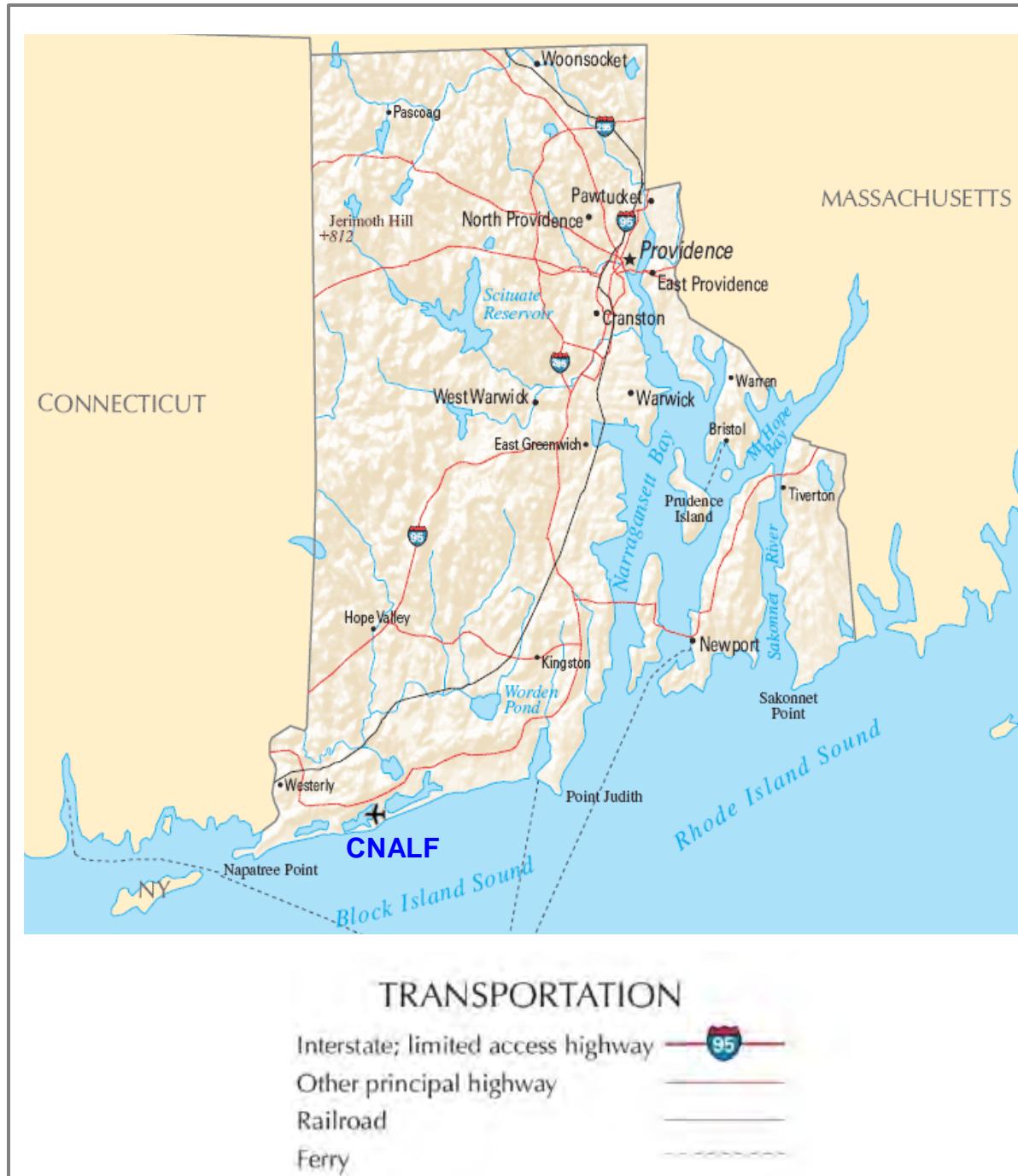
NAE = U.S. Army Corps of Engineers – New England District



PROJECT LOCATION



Rhode Island State Map



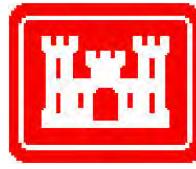
Map Source: <http://www.citytowninfo.com/images/state-maps/rhode-island-reference.gif>

The former CNALF is located in Charlestown, Rhode Island. Its approximate coordinates are 41°22' 05" N 071°39' 55" W.



Source: U.S. Geological Survey Quadrangle data, 2015, Quonochontaug and Carolina Rhode Island 7 1/2 Minute Series map sheets.

CNALF = Charlestown Naval Auxiliary Landing Field



HISTORICAL REVIEW



HISTORICAL REVIEW OF QUONSET POINT NAVAL AIR STATION

Quonset Point Naval Air Station (N.A.S. Quonset) was established as part of the Lend Lease Act of 1941, shortly before the United States entered World War Two. It served as the major northeastern naval base during the war and subsequent years. During its heyday, Quonset's workforce, combined with that of adjacent Davisville Construction Battalion Center, and was the largest in the state of Rhode Island.

The U.S. Navy established the Construction Battalion Center at Davisville less than a year after N.A.S. Quonset was completed. Davisville would become the birthplace of the 'Seabees', a portion of service personnel in the U.S. Navy tasked with building bases, creating roadways, airstrips, and numerous other construction projects during conflicts dating back to the creation of what is now known as the Quonset Hut.

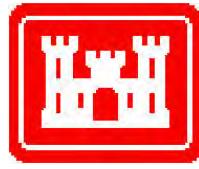
During World War Two, N.A.S. Quonset was involved in the development of a naval night fighter aircraft. After the war, N.A.S. Quonset saw depletion in the development in ships on the base. It then went on to become a Naval Air Rework Facility where it specialized in reciprocating engines and repaired and manufactured naval aircrafts.

Like other WWII-eras military installation across the country, N.A.S. Quonset fell victim to military budget cuts during the Nixon years. The base was decommissioned on June 28, 1974. The U.S. Navy declared most of the base surplus as its needs and the land and buildings were offered to the State of Rhode Island and North Kingstown for civilian use.

Though Davisville avoided N.A.S. Quonset's fate and managed to remain functional through the 1970s, activity gradually tapered off as the military's strategic focus shifted toward the Pacific Ocean. By the 1980s, Davisville's facilities had been stripped back to a skeleton crew and many of its buildings were sealed. Davisville was selected for closure during the Base Realignment and Closure (BRAC 1991) program and operational closure occurred on April 1, 1994.

Following their closures, the land at the former N.A.S. Quonset and Davisville were managed and developed by various state entities until the Quonset Development Corporation (QDC) was created by the Rhode Island General Assembly on July 1, 2004 (RIGL 42-64.9), which became effective on January 1, 2005.

Source: <http://www.quonset.com> - Quonset Business Park.



HISTORICAL REVIEW



HISTORICAL REVIEW OF CHARLESTOWN NAVAL AUXILIARY LANDING FIELD (CNALF)¹

The Federal Government's control of the area began between April and September 1942 when the Department of the Navy acquired by condemnation 631.3 acres of land near Charlestown, Rhode Island. On 6 September 1942, the Secretary of the Navy approved the construction of auxiliary landing fields under the control of N.A.S. Quonset. The construction of the first of three runways began at CNALF in the late spring of 1942, even before land acquisition formalities were completed.

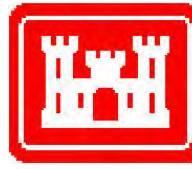
Initial runway, billeting, administrative, messing, roads and grounds, general troop/station support, and ordnance storage facilities construction on the base was accomplished to support a heavy bomber squadron (VB) consisting of 24 torpedo bomber aircraft. General construction at the facility continued during World War Two to accommodate an increased squadron support mission. On 29 December 1943, the station support complement increased to accommodate 45 carrier aircraft and 8 scouting lanes. On 26 January 1944 the station support complement increased to 161 fighter planes (132 being night fighters), 19 reconnaissance, weather, photography, or general utility aircraft, and 41 scouting planes.

Ordnance-related structures consisted of a ready magazine, inert storage magazine, pyrotechnic magazine, small arms magazine, fuse and detonator magazine, high explosive magazine, a machine gun range (shoot-in-butt), and both a skeet and a trap range.

Pilot training for the projected station complement of Charlestown was scheduled to commence on 1 January 1943, however, due to construction delays, the base was not ready for usable completion until 15 May 1943. The first fighter bomber contingent arrived at Charlestown on 1 June 1943 to commence training with TBF Avenger Aircraft.

Following the period of training commencement, N.A.S. Quonset sent various composite squadrons, fighter squadrons, torpedo and bombing squadrons, and a night carrier air group (fighter and torpedo squadron) to CNALF for training. In February 1944, CNALF was selected as the principal night fighter base on the Atlantic Coast. Following this action, night fighter squadrons were formed and solely night fighter squadron units trained at CNALF until November 1944. In November 1944, the Night Attack and Combat Training Unit-Atlantic (NACTULANT) was formed, which required individual fighter pilot training versus fighter squadron training. From this time until the end of World War Two, NACTULANT pilots were trained at CNALF.

1. CNALF is the final facility name and will be used throughout this Historical Photographic Analysis report.



HISTORICAL REVIEW



HISTORICAL REVIEW OF CHARLESTOWN NAVAL AUXILIARY LANDING FIELD (CNALF)

Following World War Two, CNALF remained open to support two Carrier Air Groups which rotated between the station and carriers at sea. The Secretary of the Navy also established a Navy Air Navigation Electronic Project at CNALF.

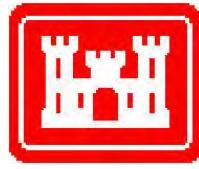
On 31 March 1947, the Carrier Air Group units were transferred to N.A.S. Quonset, and air operations were maintained only from 0700 to 1800 hours. On 31 May 1950, the facility was disestablished. Although re-designated an Outlying Field for N.A.S. Quonset, only a crash crew and minimum facilities were provided there.

In March 1950 Naval Auxiliary Air Station (NAAS) Charlestown closed and then re-opened as an Outlying Landing Field (OLF) of N.A.S. Quonset Point. Carrier landing field practice for Anti-submarine and Airborne Early Warning ensued during this time at CNALF for aircraft based at N.A.S. Quonset. From this point on, there were never more than 150 personnel on the airfield and no aircraft based at CNALF until its closing in the 1970s.

The U.S. Navy declared the former Naval Auxiliary Landing Field land excess, and it was transferred to the General Services Administration (GSA) in 1974 for disposition. Approximately 172.4 acres of land were conveyed to the Town of Charlestown by deed dated 22 May 1981. The deed required that the land be utilized for public park and recreational uses. In addition, 55 acres were conveyed to the town by deed dated 18 June 1982 with no restrictions, recapture clause, or restoration process. This area is located adjacent to the recreational area and is utilized by the Town for municipal purposes. The remaining 403.9 acres of the site transferred from GSA to the Department of Interior, Fish and Wildlife Service in three separate transactions, the first by letter dated 21 March 1971 (27.5 acres), the second by letter dated 29 November 1979 (316.4 acres), and the third by letter dated 2 April 1982 (60 acres).

The property of the former CNALF is currently owned by the City of Charlestown and the U.S. Fish and Wildlife Service (USFWS). While a large portion of the FUDS property is a wildlife refuge, a section of the former CNALF property is open to the public (as Ninigret Park), and is used for recreational purposes.

Sources: 1) DERP for FUDS, Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, 27 April 1999. 2) Site Inspection Report for Naval Auxiliary Land Field – Final, Prepared by Alion Science and Technology for the U.S. Army Engineering and Support Center, Huntsville and the U.S. Army Corps of Engineers, Baltimore District, document D01RI000806_01.09_0500_a.pdf, August 2008, 3) Charlestown Naval Airfield Memorial Brochure.



PHOTOGRAPHIC SOURCES



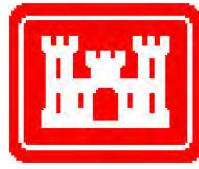
DATE	APPROX. SCALE	SOURCE	REMARKS
1941 October 09	1:28,800	USGS	9" x 9" B&W photo, partial coverage
1942 October 09	NA	NARA	B&W aerial photo
1943 January 23	NA	NARA	B&W aerial photo
1943 October 12	NA	NARA	B&W aerial photo
1943 Nov-Dec	NA	QDC	Ground and Oblique Photos
1944 January 31	1:24,000	NARA	9" x 9" B&W photo (Single)
1944-early 1950s	NA	Larry Webster Collection ¹	Electronic scans of aerial photography
1945 Mar-Oct	-	NARA	9" x 9" B&W photos (stereo) & Still Photos
1947 October 16	-	USFWS	Electronic scans of B&W aerial photography
1951 November 12	-	NARA, RIDOA-PIC	9" x 9" B&W photos (stereo)
1954 April 21	1:20,000	NOAA	9" x 9" B&W photos (stereo)
1960 May 01	1:60,000	USGS	9" x 9" B&W photos (stereo)

1. A personal collection of Larry Webster (an archivist/historian located in Charlestown, RI - associated with the former Quonset Air Museum).

B&W = black and white NA = non-applicable NARA = National Archives and Records Administration NOAA = National Oceanic and Atmospheric Administration

QDC = Quonset Development Corporation RIDOA-PIC = Rhode Island Department Of Administration Planning Information Center

USFWS = U.S. Fish and Wildlife Service USGS = U.S. Geological Survey

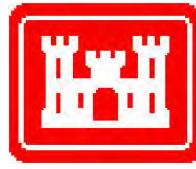


PHOTOGRAPHIC SOURCES CONTINUED



DATE	APPROX. SCALE	SOURCE	REMARKS
1962 April 04	-	RIDOA-PIC	9" x 9" B&W photos (partial stereo)
1963 June 16	1:20,000	USDA - FSA	9" x 9" B&W photos (stereo)
1963 September 02	1:20,000	USDA	9" x 9" B&W photos (stereo)
1965 September 27	1:20,000	NOAA	9" x 9" B&W photos (stereo)
			Declassified CORONA satellite imagery 70 mm panoramic film strip
1968 August 15	6 foot GSD	NARA	Mission 1104-2 Pass 127 Camera: Aft
1970 March 10	1:24,000	USGS	9" x 9" B&W photos (stereo)
1970 April 19	NA	RIDOA-PIC	9" x 9" B&W aerial photography
1972 April 21	NA	RIDOA-PIC	9" x 9" B&W aerial photography
1975 April 23	1:12,000	RIDOA-PIC.	Electronic scans of B&W aerial photography
1976 May 05	1:38,000	USDA	Electronic scans of aerial photography
1979 August 07	1:30,000	NOAA	Electronic scans of aerial photography
1980s	-	USFWS	Electronic scans of B&W aerial photography
1981 April 22	-	RIDOA-PIC	9" x 9" B&W photo

B&W = black and white FSA = Farm Service Agency GSD = Ground Sample Distance NARA = National Archives and Records Administration
NOAA = National Oceanic and Atmospheric Administration RIDOA-PIC = Rhode Island Department Of Administration Planning Information Center
USDA = U.S. Department of Agriculture USFWS = U.S. Fish and Wildlife Service USGS = U.S. Geological Survey



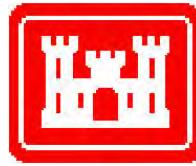
PHOTOGRAPHIC SOURCES CONTINUED



USGS aerial photograph of the CNALF, 29 March 1995. Source: http://www.airfields-freeman.com/RI/Airfields_RI.htm.

DATE	APPROX. SCALE	SOURCE	REMARKS
1985 March 11	1:9,600	NAE	9" x 9" B&W photos
1985 March 16	1:58,000	RIDOA-PIC	USGS NHAP - 9" x 9" color infrared photos (stereo)
1988 April 13	-	RIDOA-PIC	9" x 9" B&W photo
1992 March 16	-	RIDOA-PIC	Electronic scans of aerial photography
1994 September 11	1:30,000	NOAA	Electronic scans of aerial photography
1995 March	-	www.airfields-freeman.com	USGS aerial B&W photo (see Page 5)
2005 September 06	1:30,000	NOAA	Electronic scans of aerial photography
2007 April	0.5 foot pixel resolution	NAE	Ortho-rectified natural color imagery. Sky Research, Inc.
2007 April	-	NAE	Lidar coverage. Sky Research, Inc.
2009 April 24	1:21,600	USGS	Natural color
2011 April 29	-	USGS	High-resolution satellite imagery - Natural color
2016 February 02	1 foot pixel resolution	NGA Hi-Resolution	Ortho-Satellite Imagery - Natural color
2016 August 22	-	GoogleEarth	High-resolution satellite imagery - Natural color
2017 March 15	1 foot pixel resolution	NGA Hi-Resolution	Ortho-Satellite Imagery - Natural color. Partial cloud cover

B&W = black and white Lidar = Light, Imaging, Detection, and Ranging NAE = U.S. Army Corps of Engineers, New England District NGA = National Geospatial-Intelligence Agency
NHAP = National High Altitude Photography NOAA = National Oceanic and Atmospheric Administration RIDOA-PIC = Rhode Island Department Of Administration Planning Information Center
USDA = U.S. Department of Agriculture USFWS = U.S. Fish and Wildlife Service USGS = U.S. Geological Survey



PROJECT AREAS OF INTEREST (AOI)



In this report, AGC is providing historical photographic analysis over the following Areas of Interest:

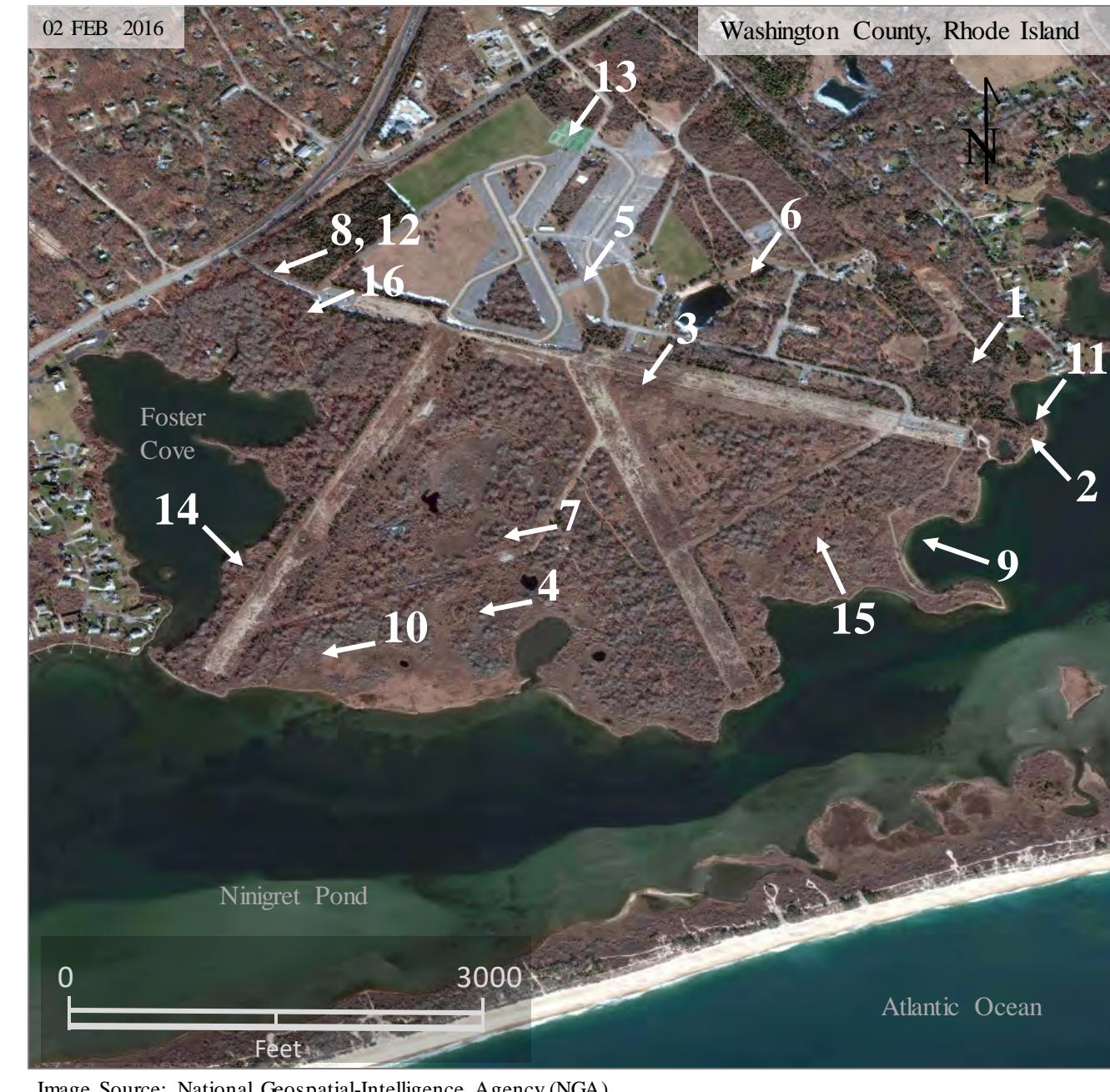
- (1) HTRW Site No. 1: Charlestown Landfill. Location coincides with MRS 4 – Dump Site.
- (2) HTRW Site No. 2: Eastern Area Landfill. Location coincides with MRS 3 – Hunter Island Dump Site.
- (3) HTRW Site No. 3: Burn Pit Area.
- (4) HTRW Site No. 4: Ninigret Wildlife Refuge Landfill. Location coincides with MRS 2 – Inland Toxic Waste Dump.
- (5) Underground Aviation Gasoline Storage Tanks – Taxiway No. 3 location.
- (6) HTRW Site No. 8: Tank Farm (Underground Aviation Gasoline Storage Tanks).¹
- (7) MRS 5 – Shoot-In-Butt (located at aviation machine gun range).
- (8) MRS 1 – Fill from Shoot-In-Butt.
- (9) MRS 7 - Range Complex No. 1.
- (10) MRS 6 – Pistol Range.
- (11) Boat Dock Facilities.
- (12) Disturbed Ground West of Runway 12².
- (13) Disturbed Ground Near Runways 17 and 22².
- (14) Disturbed Ground Near Runway 4 and Foster Cove².
- (15) Disturbed Ground Near Taxiway No. 6².
- (16) Disturbed Ground South of Runway 12².

These Sites are indicated on overview map data (see right) and are used throughout this report.

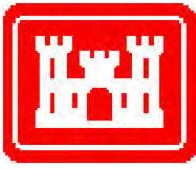
1. Prior to Site No. 8 (Underground AvGas Storage Tank Farm) being developed, AvGas USTs existed briefly at a location adjacent to Taxiway No.3. Analysis of this unnumbered site is also included in this report.
2. A potential new site based upon photo-interpretation of historical aerial photography by the U.S. Army Geospatial Center (AGC).

AGC's objectives, as defined by USACE-NAE are also to:

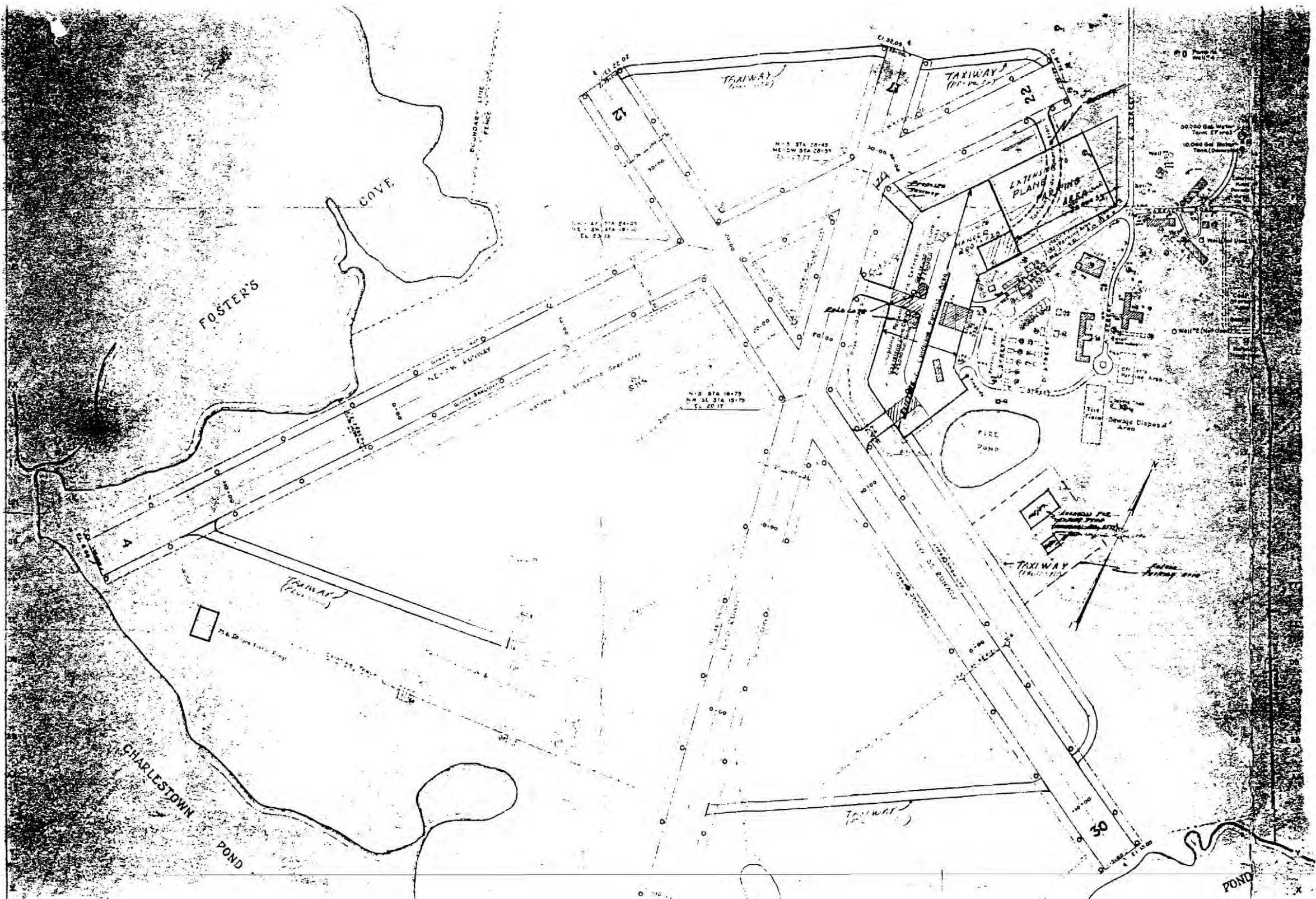
- 1) Identify site activities and changes over time to support HTRW investigations and potential remediation efforts.
- 2) Determine if any docks/piers or seaplane station existed near the Eastern Area Landfill Site (HTRW Site No. 2, MMRP Site No. 3), that may have been utilized for the loading or unloading of cargo.
- 3) Document land use changes before and after the transfer of DoD property to the FWS and the Town of Charlestown (circa 1978).
- 4) Investigate the existence of a fire training area near Site 3; specifically, based on photographic or textual documentation, did a burn pit ever exist or was it ever used.



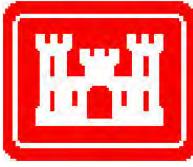
HTRW = Hazardous, Toxic, & Radioactive Waste FWS = U.S. Fish and Wildlife Service MMRP = Military Munitions Response Program MRS = Munition Response Site



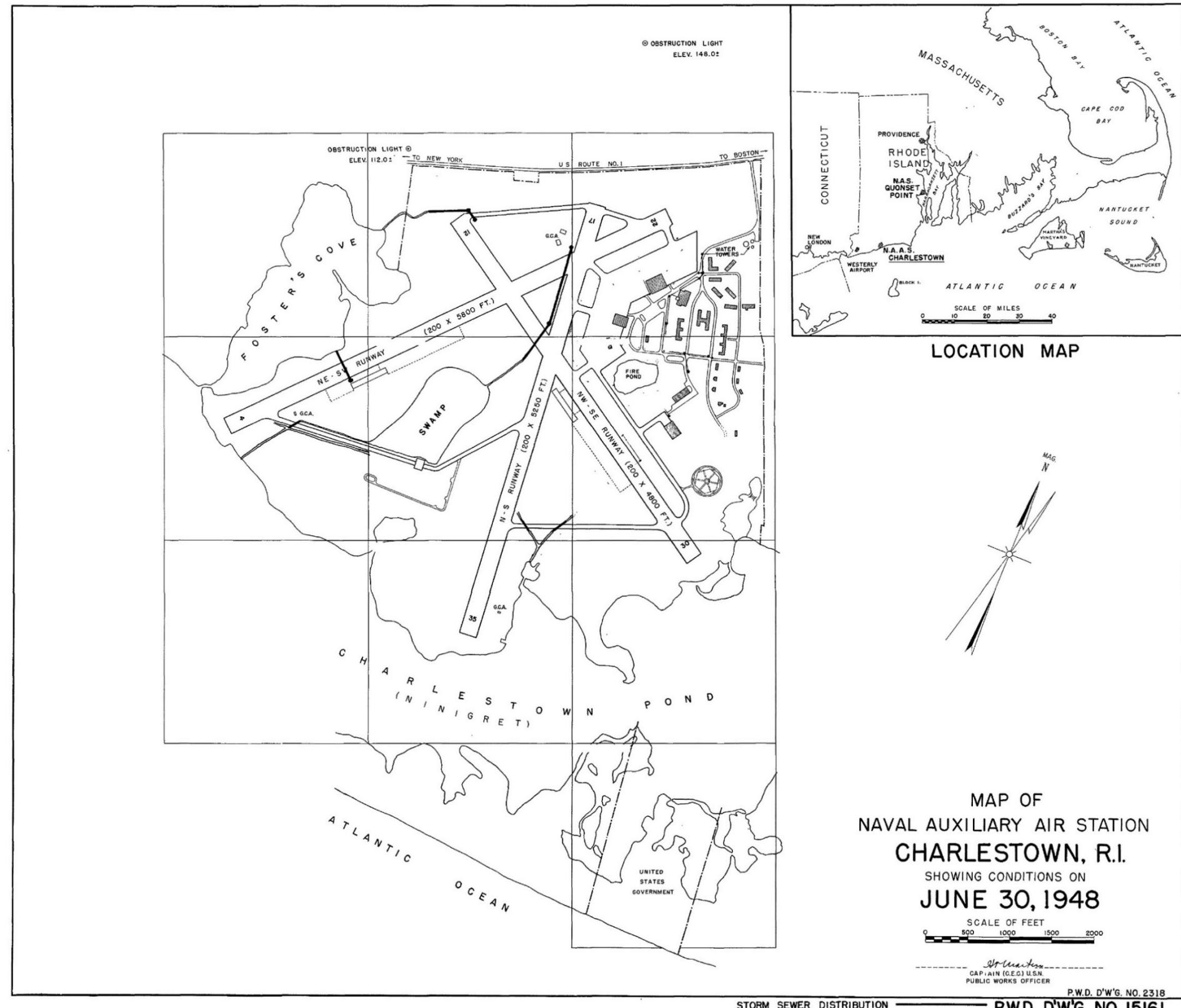
HISTORICAL MAP – 30 JUNE 1943 LAYOUT PLAN

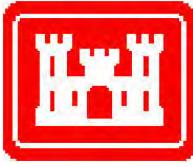


Source: DERP for FUDS - Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, Map L-8, 27 April 1999

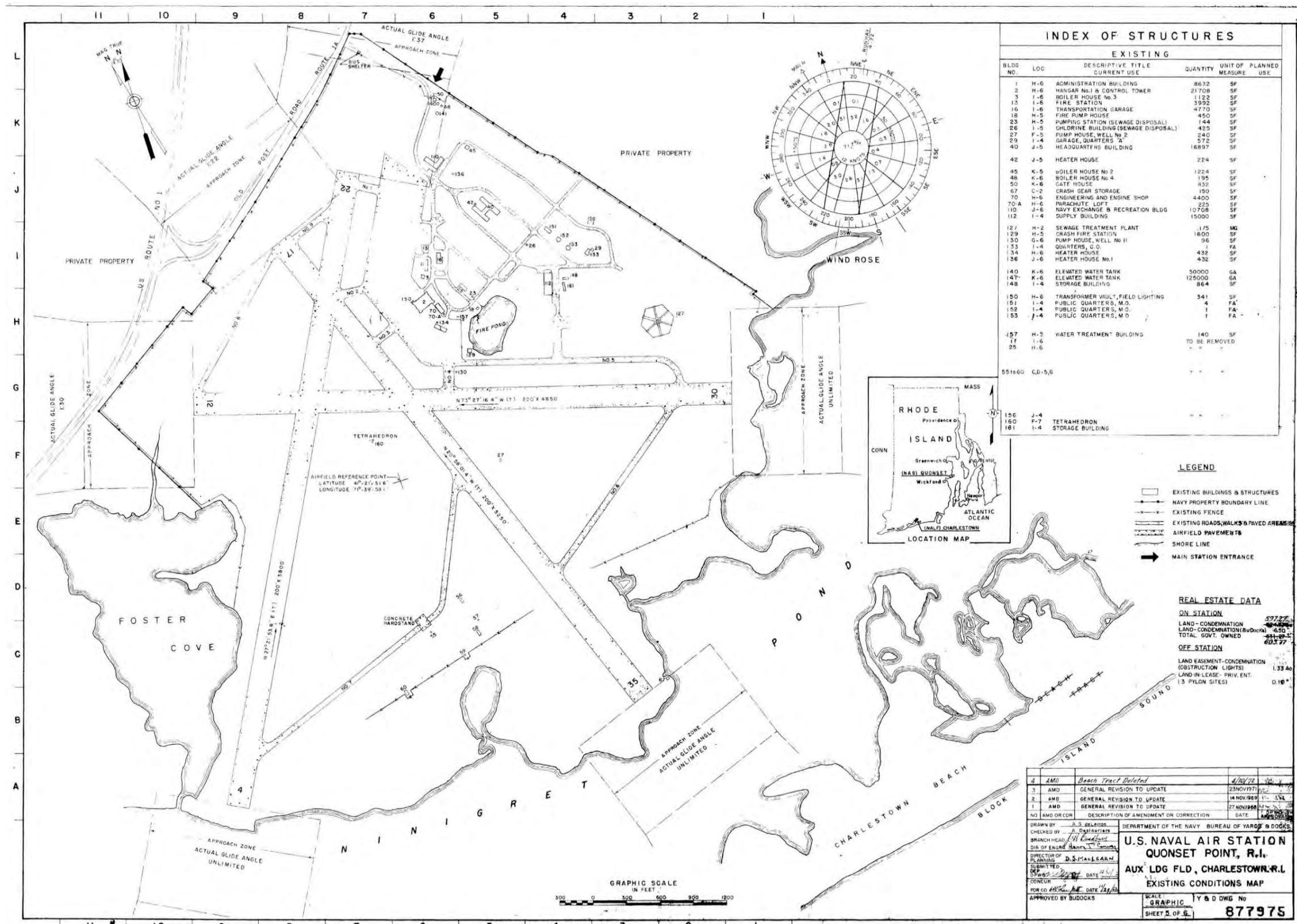


HISTORICAL MAP – 30 JUNE 1948 LAYOUT PLAN





HISTORICAL MAP – 10 APRIL 1972 REVISED LAYOUT PLAN



Source: Document No. D01RI000801_01.04_0007_p.pdf.

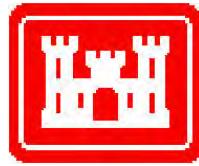


HISTORICAL PHOTO ANALYSIS

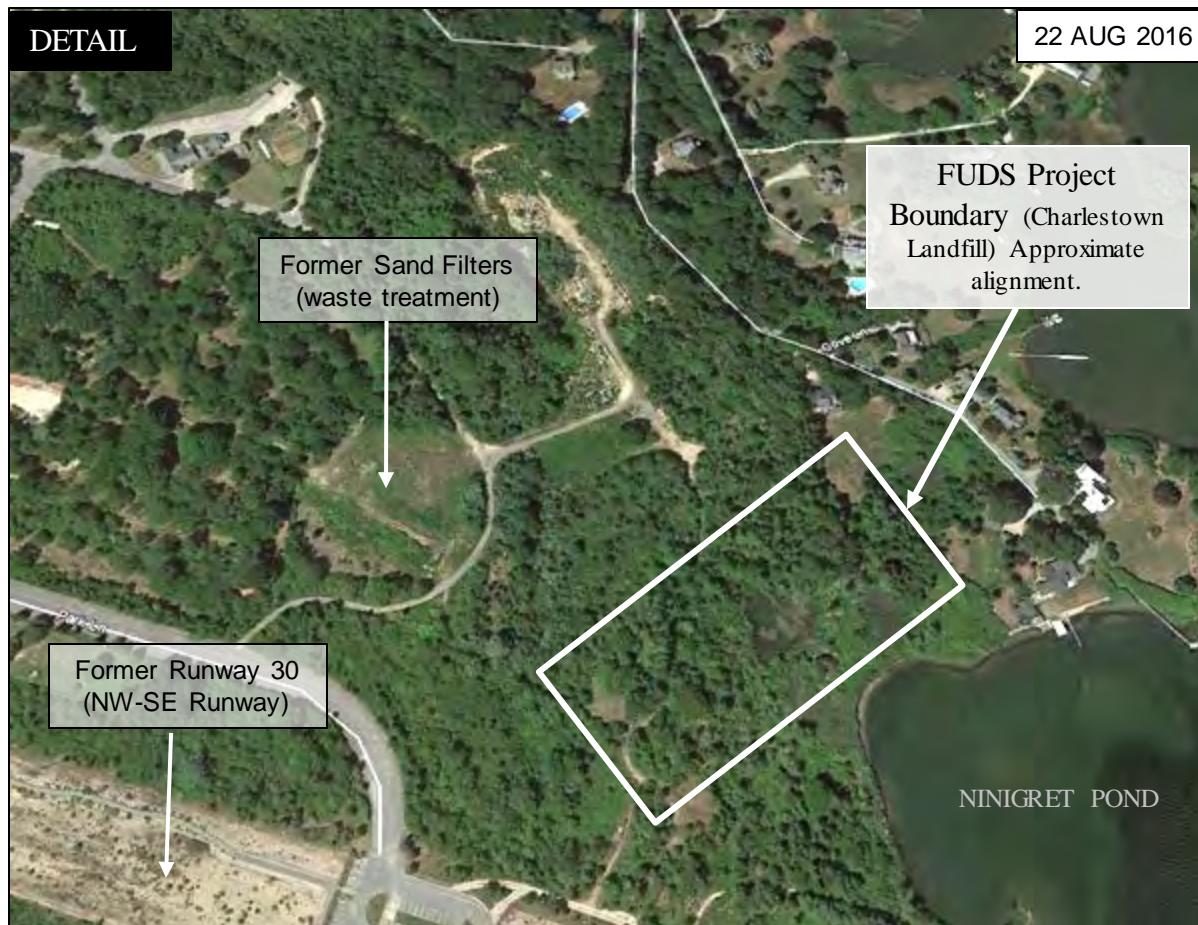
HTRW SITE NO. 1 / MRS 4 – CHARLESTOWN LANDFILL / DUMP SITE



CHARLESTOWN LANDFILL /
DUMP SITE



HTRW SITE NO. 1 / MRS 4: CNALF DUMP SITE (CHARLESTOWN LANDFILL)



2016 Photo Source: GoogleEarth Satellite Image

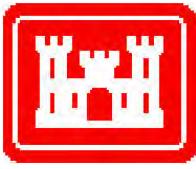


2016 Photo Source: NGA Hi-Resolution Satellite Image

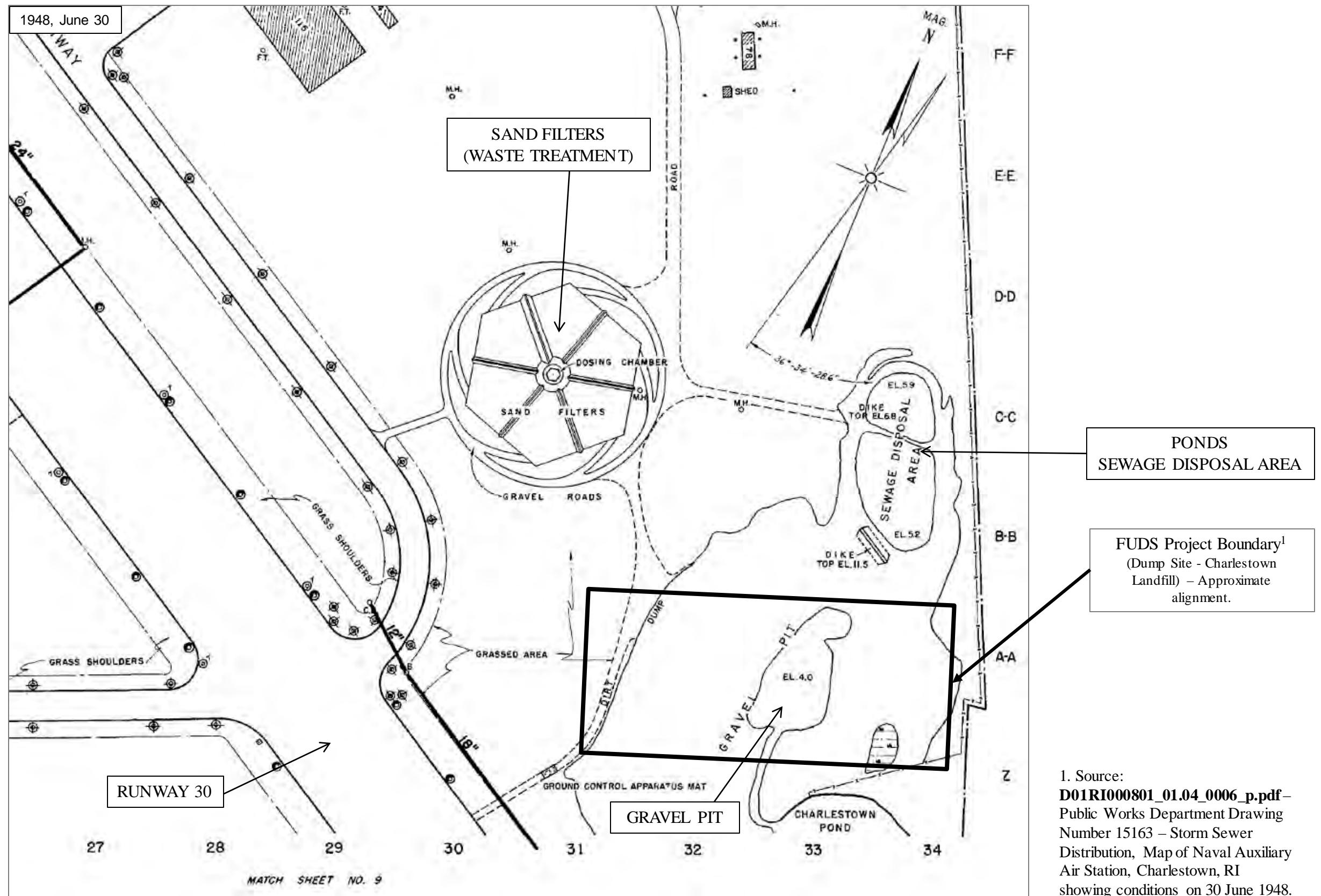
The former CNALF Dump Site also known as Charlestown Landfill is approximately four acres and located at the eastern end of the installation, currently used as local park and recreation area.

The Charlestown Landfill was utilized as a Navy trash dump from the 1940's until site closure in 1974. Historical photos of 1940s-1960s show visually prominent excavations in the area which was used for disposal and burial waste, military debris included airplane, vehicle parts, and inert practice bombs. In 1973 and 1977, the landfill was excavated in search of airplane parts by trustee of the Bradley Air Museum. There are unconfirmed reports of various airplane parts and oily water having been found during the excavation. No visual evidence of OE was found after an extensive search of this area.¹

1. Sources: a) D01RI000804_01.02_0002_a.pdf (Archives Search Report), b). D01RI000801_01.09_0002_a.pdf, and c) D01RI000801_01.05_0003_p.pdf.



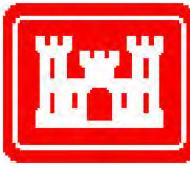
HTRW SITE NO. 1 / MRS 4: DUMP SITE (CHARLESTOWN LANDFILL)



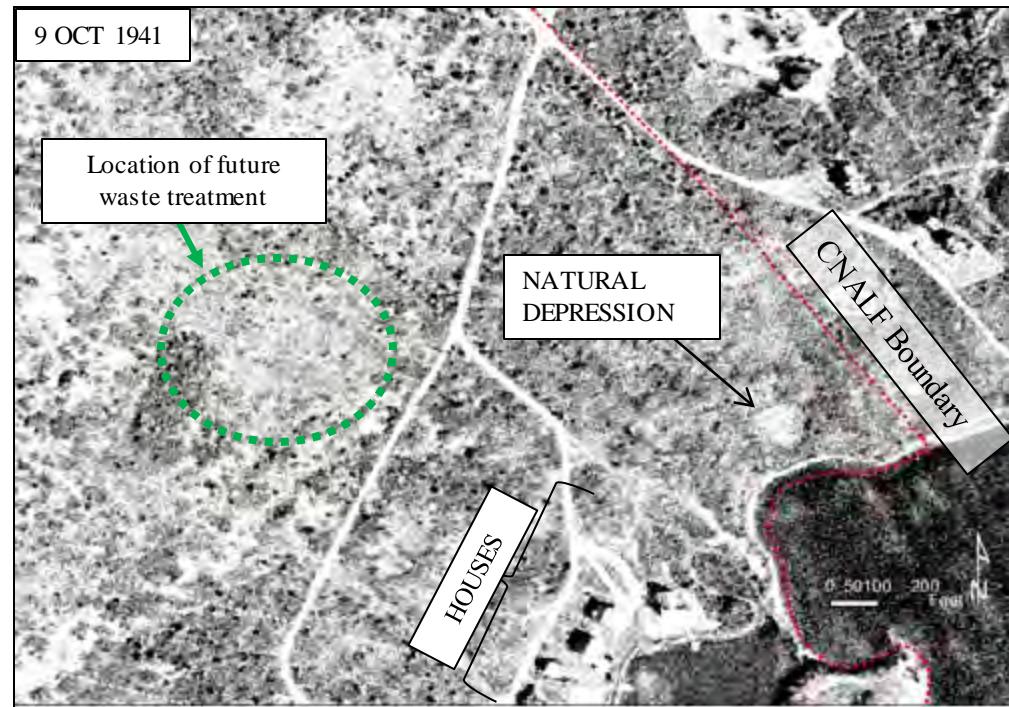
CNALF = Charlestown Naval Auxiliary
Landing Field
HTRW = Hazardous, Toxic, and
Radioactive Waste
MRS = Munitions Response Site

Map Source: D01RI000801_01.04_0006_p.pdf, Drw No. 15163

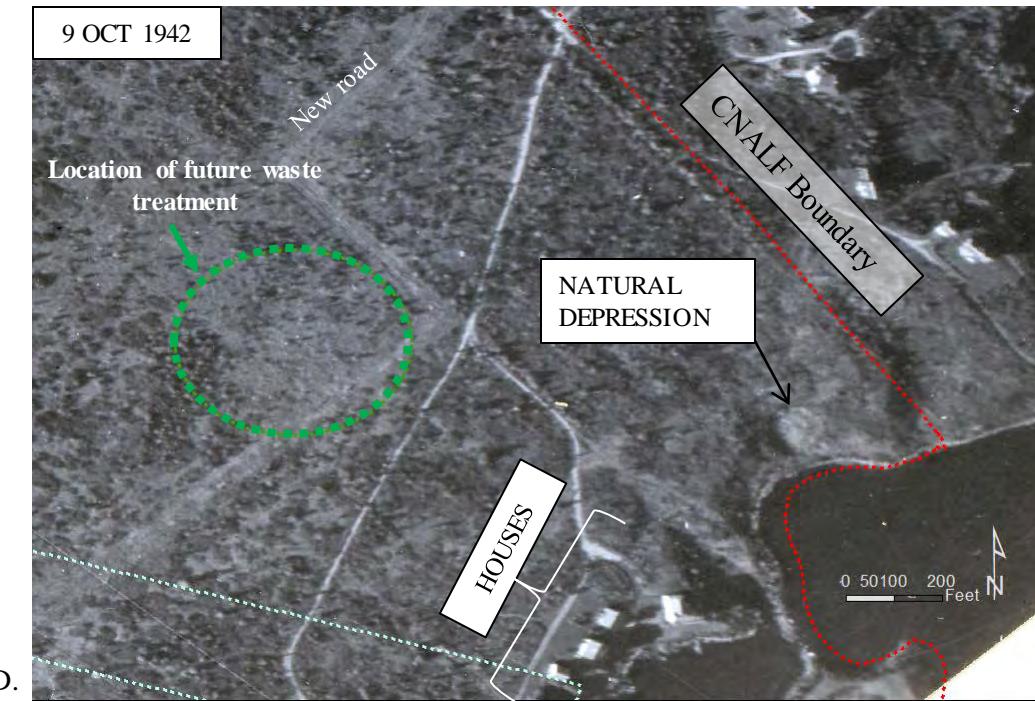
1. Source:
D01RI000801_01.04_0006_p.pdf –
Public Works Department Drawing
Number 15163 – Storm Sewer
Distribution, Map of Naval Auxiliary
Air Station, Charlestown, RI
showing conditions on 30 June 1948.



HTRW SITE NO. 1 \ MRS 4: CHARLESTOWN LANDFILL, 1941 – 1944

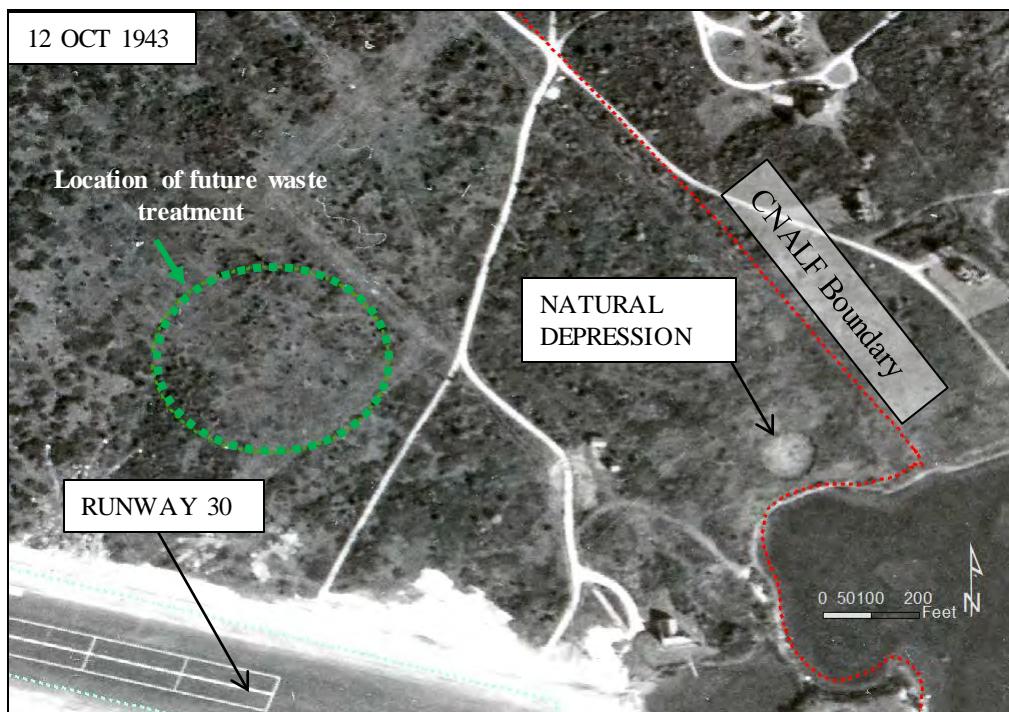


Source: U.S.
Geological Survey,
EarthExplorer

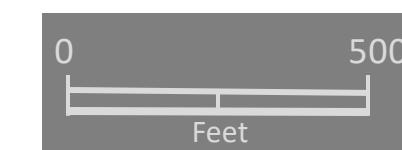


Source: National
Archives &
Records
Administration,
Archives II,
College Park, MD.

In October of 1941, the development of CNALF has not yet begun. A residential area along with roads, however, can be identified near Ninigret Pond on the 1941 aerial photography (Image source = USGS).

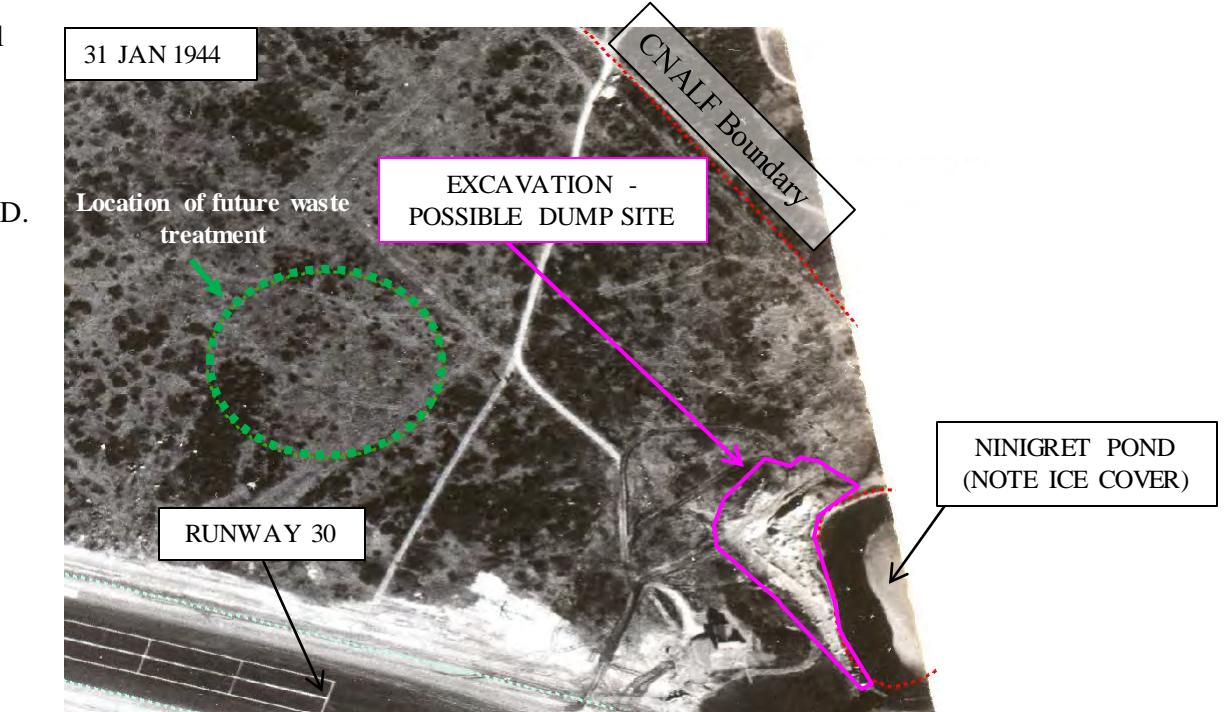


Source: National
Archives &
Records
Administration,
Archives II,
College Park, MD.

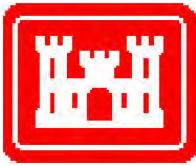


The NW-SE Runway was extended to the shore and becomes Runway 30 - first observed on this 1943 photo. Most of the houses in this area have been demolished (Image source = NARA).

CNALF = Charlestown Naval
Auxiliary Landing Field
HTRW = Hazardous, Toxic, and
Radioactive Waste
MRS = Munitions Response Site



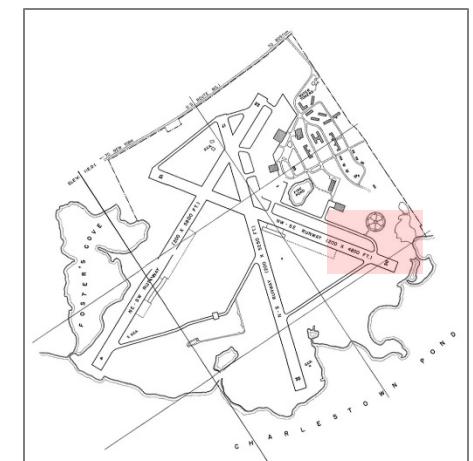
A new excavated area along with mounded soil (possibly a dump site) is observed along Ninigret Pond (Image source = NARA).



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL JANUARY 1944 VERTICAL VIEW



LOCATION DIAGRAM



31 January 1944



Source: National Archives & Records Administration, Archives II, College Park, MD.

Excavation

CNALF Boundary (approx. alignment)

HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site

1. Source: D01RI000806_08.18_0500_p.pdf
– Formerly Used Defense Sites Interim Risk Management Communication Assessment Summary, Naval Aux Landing Field, Inland Toxic Waste Dump & Dump Area, Washington County, Rhode Island, Site Map – Attachment A, U.S. Army Corps of Engineers, New England District, May 2016



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL OCTOBER 1944 OBLIQUE VIEW



OBLIQUE AERIAL VIEW, 11 OCTOBER 1944 – LOOKING SOUTH

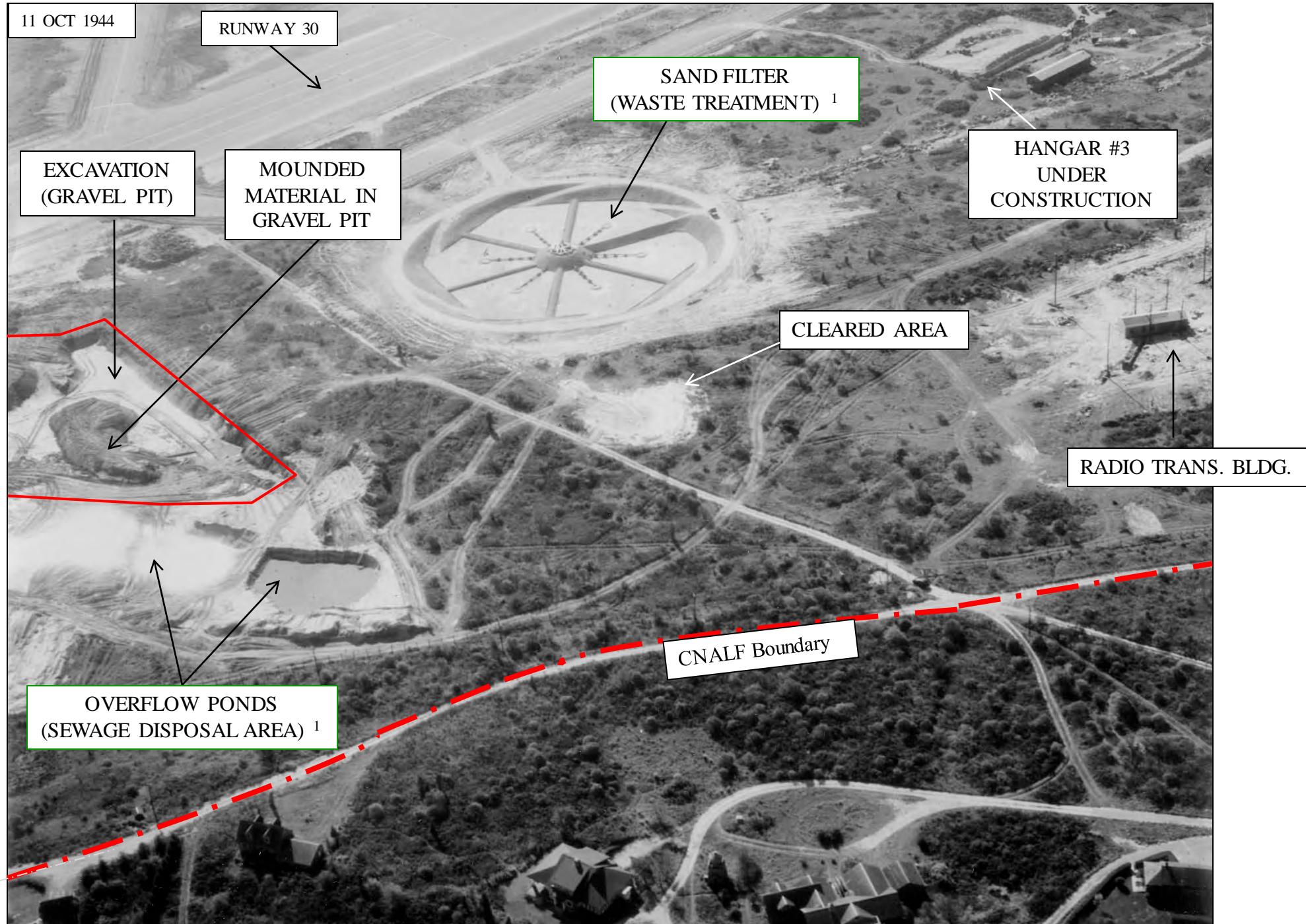


Photo Source: Larry Webster Collection

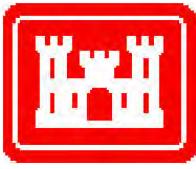
— Disturbed Ground

1. Source: D01RI000801_01.04_0007_p.pdf – Drawing No. 6.

CNALF = Charlestown Naval Auxiliary Landing Field

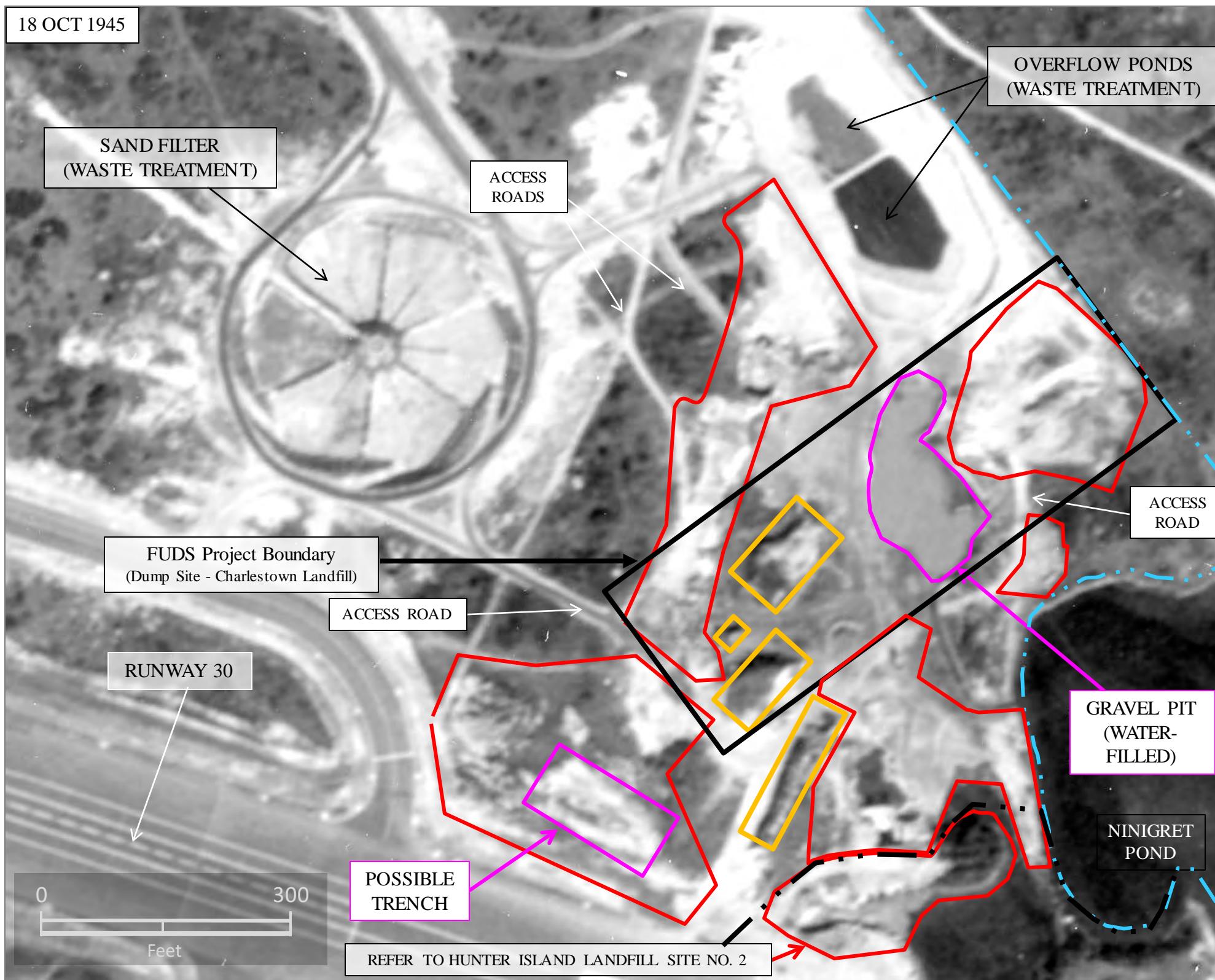
HTRW = Hazardous, Toxic, and Radioactive Waste

MRS = Munitions Response Site



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL

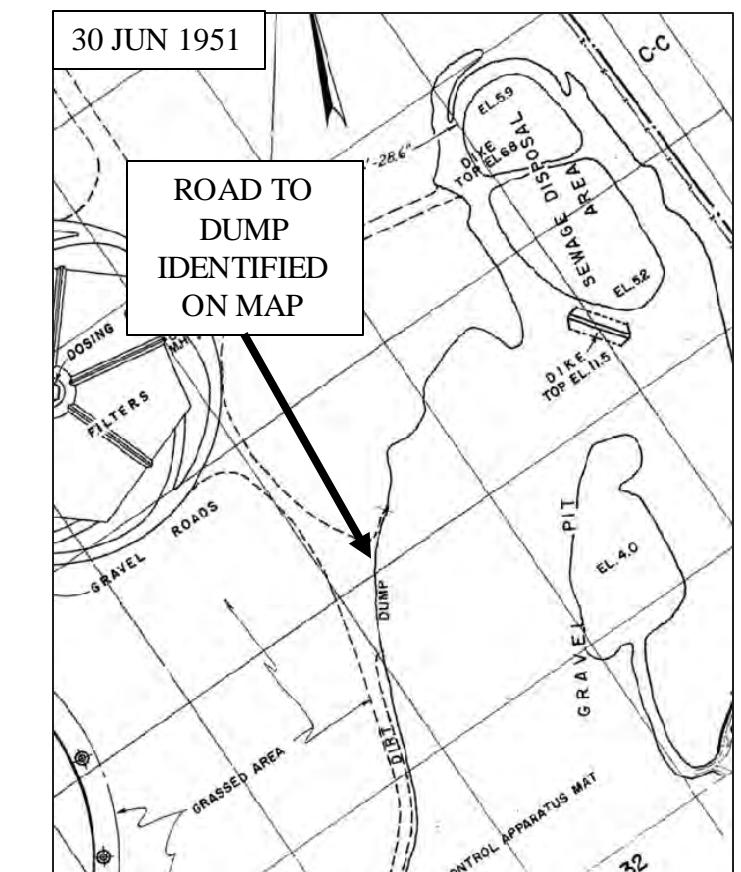
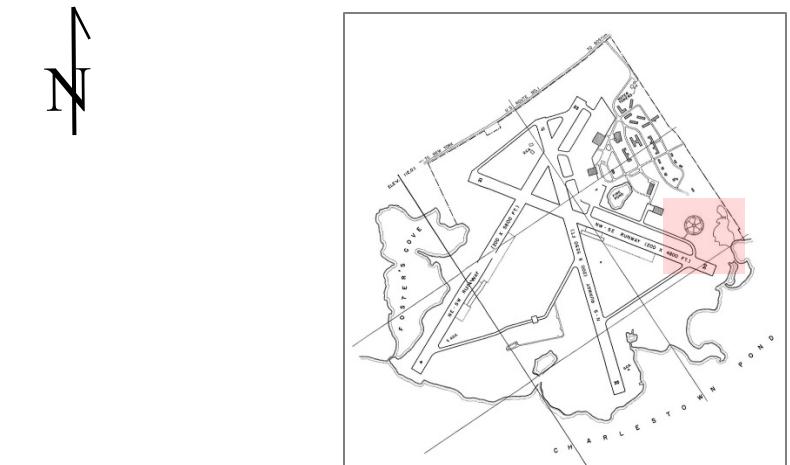
1945 VERTICAL VIEW



Source: National Archives & Records Administration, Archives II, College Park, MD.

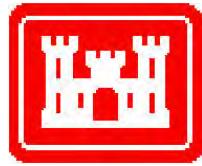
— - - CNALF Boundary (approx. alignment)

LOCATION DIAGRAM



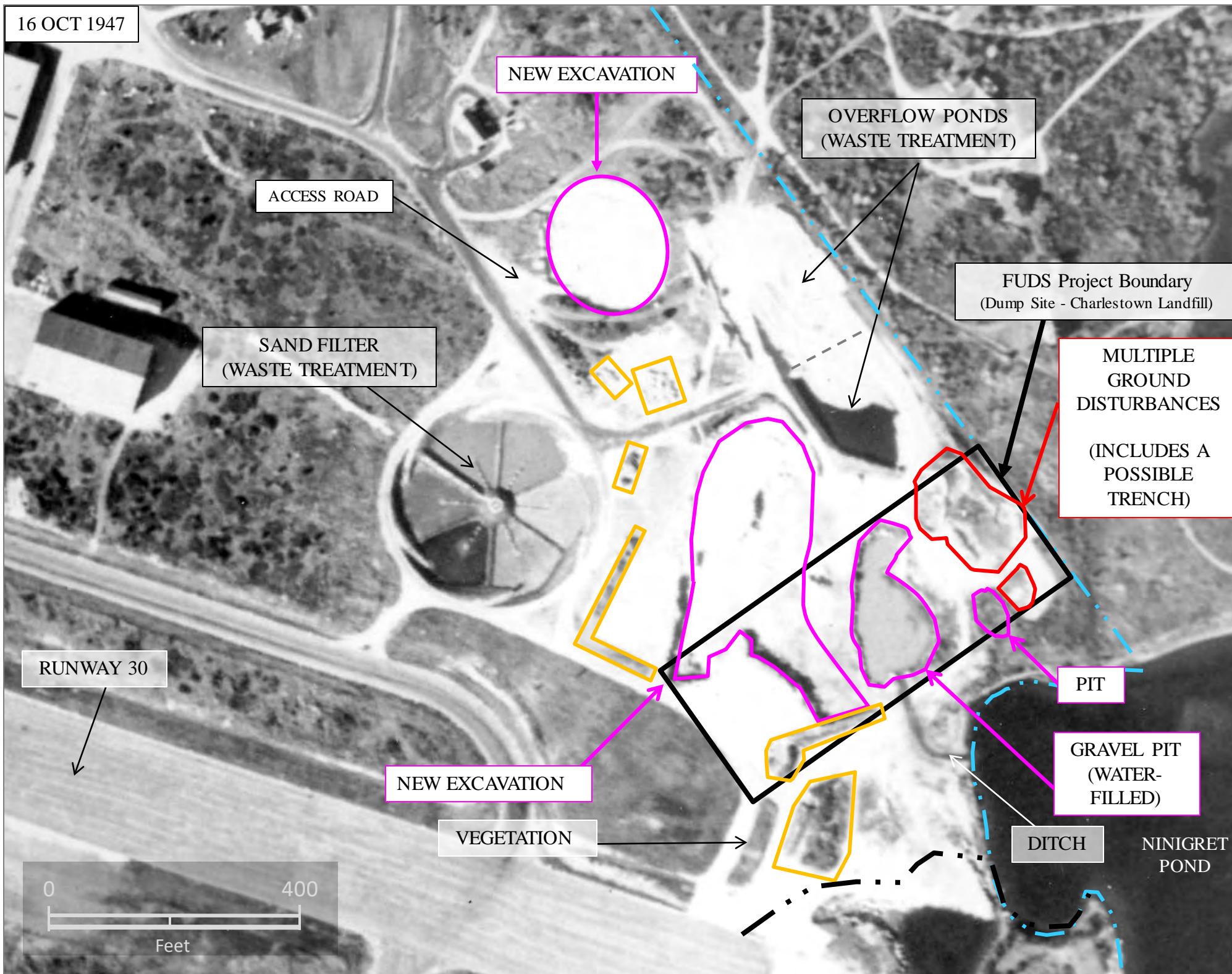
Map Source: 30 June 1951 map, Sheet 6, CNALF P.W.D. Drawing No. 2318.

CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL

1947 VERTICAL VIEW



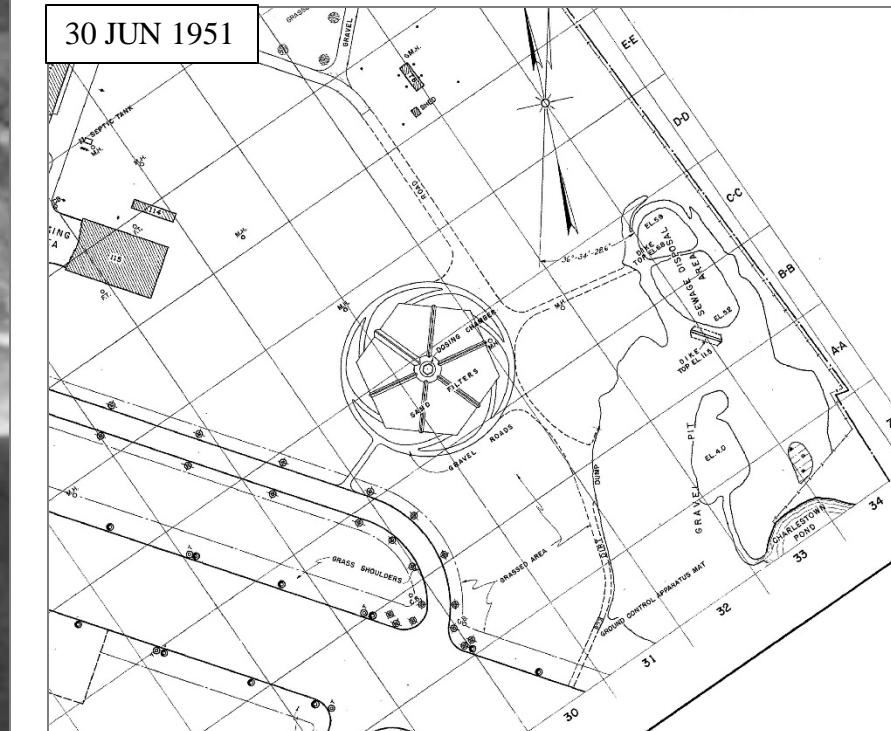
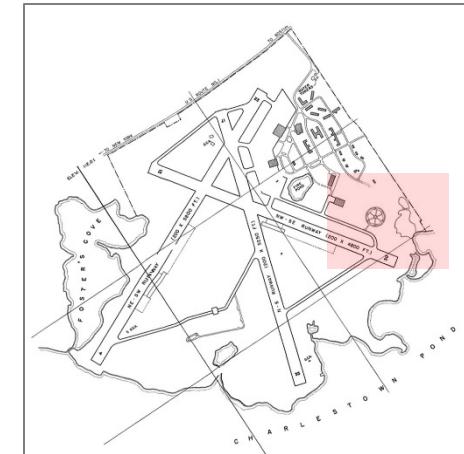
Source: U.S. Fish & Wildlife Service (USFWS).

— · · CNALF Boundary (approx. alignment)

— Disturbed Ground — Excavation — Mounded Material — · · Charlestown Landfill – Eastern Landfill demarcation (AGC proposed for this study)

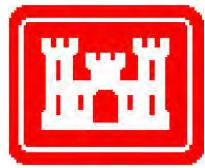


LOCATION DIAGRAM

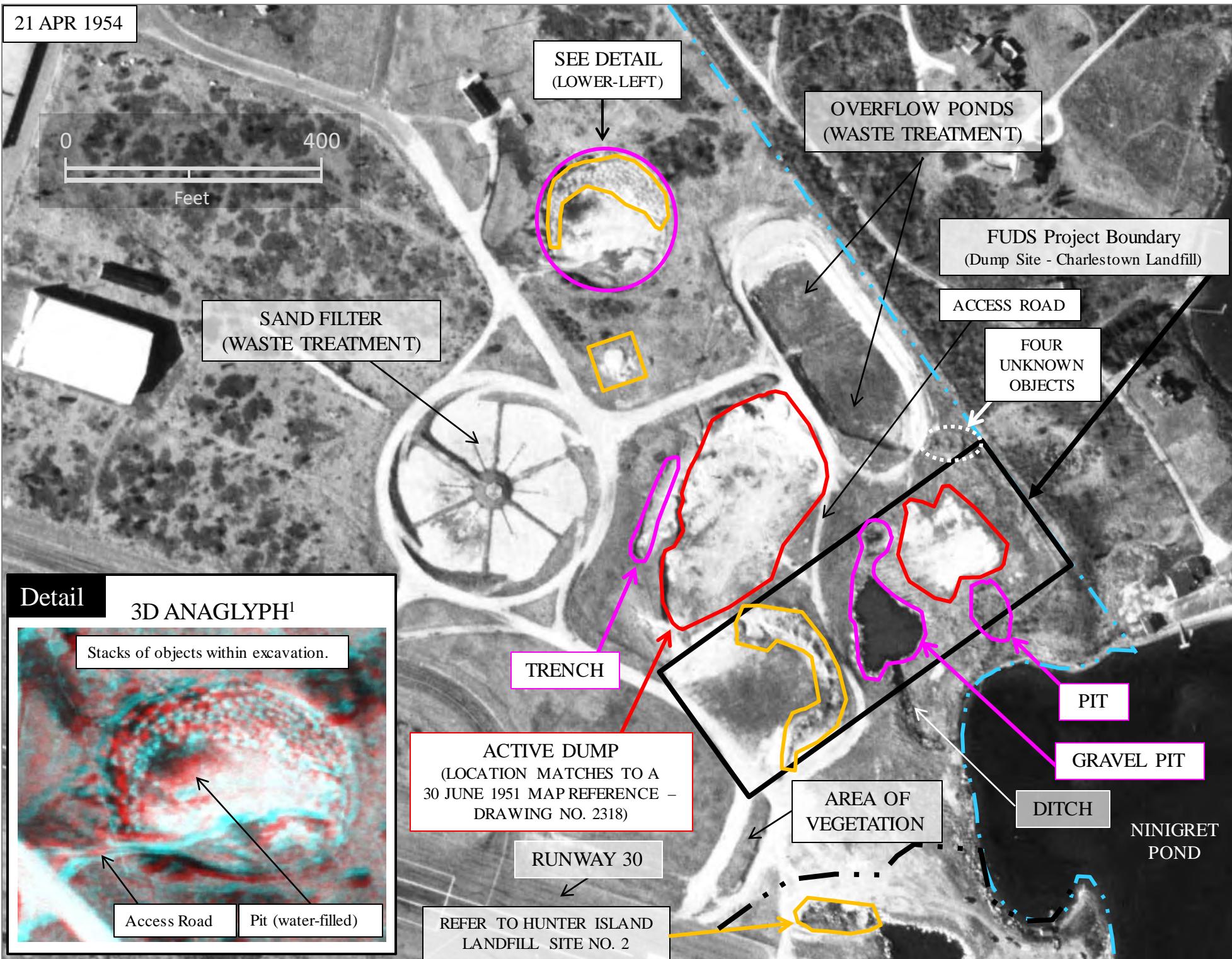


Map Source: 30 June 1951 map, Sheet 6, CNALF P.W.D.
Drawing No. 2318.

CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL 1954 VERTICAL VIEW



Source: National Oceanic and Atmospheric Administration (NOAA).

1. Stereo viewing requires the use of red-blue 3D glasses.

— Disturbed Ground

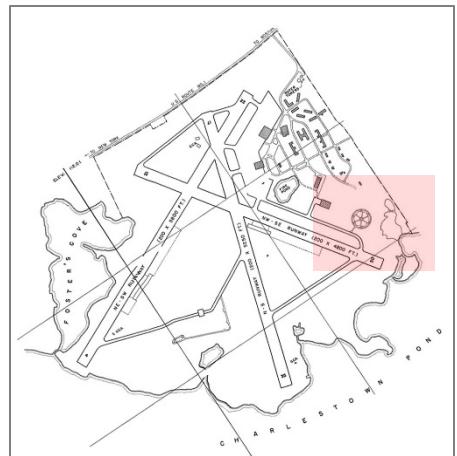
Excavation

— Mounded Material

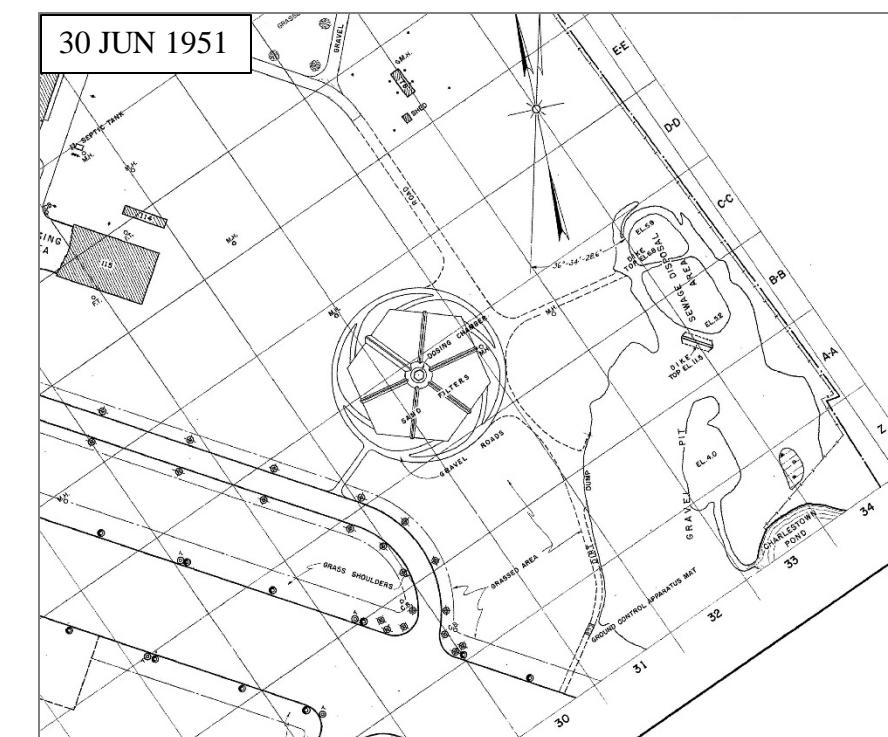
— · · · Charlestown Landfill – Eastern Landfill demarcation (AGC proposed for this study)

CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site

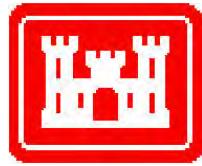
LOCATION DIAGRAM



On 1954 aerial photos, excavation and piles of mounded material are evident. Highly active landfill operations are observed over multiple locations.

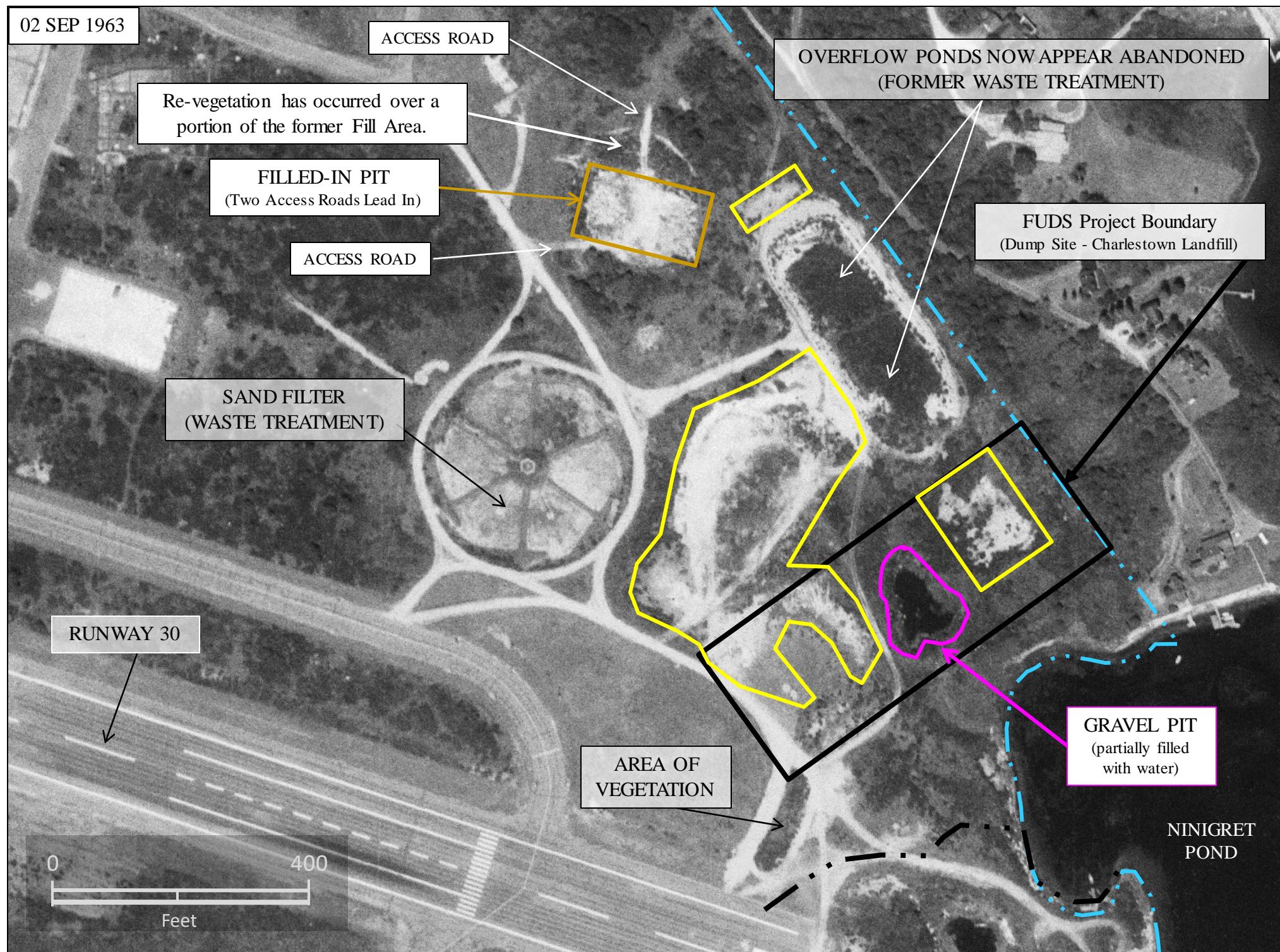


Map Source: 30 June 1951 map, Sheet 6, CNALFP.W.D.
Drawing No. 2318.



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL

1963 VERTICAL VIEW



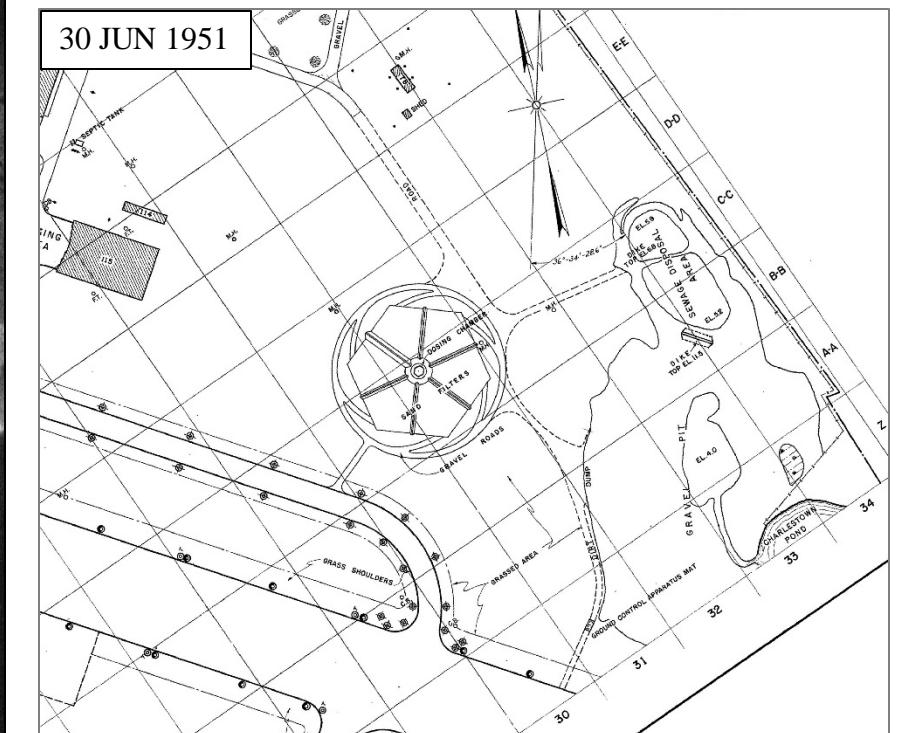
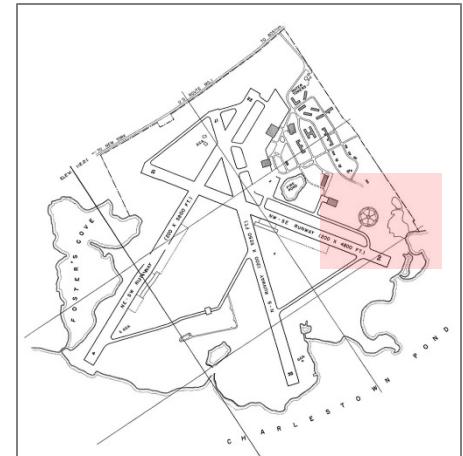
Source: U.S. Department of Agriculture, Farm Service Agency (FSA).

— · · · CNALF Boundary (approx. alignment)

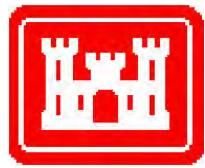
Excavation — Fill Area — Ground Scar(s) — · · · Charlestown Landfill – Eastern Landfill demarcation (AGC proposed for this study)



LOCATION DIAGRAM



CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL 1970 VERTICAL VIEW



1970 – CNALF Site Closure



Source: U.S. Geological Survey, EarthExplorer.

— · · — CNALF Former Boundary (approx. alignment)

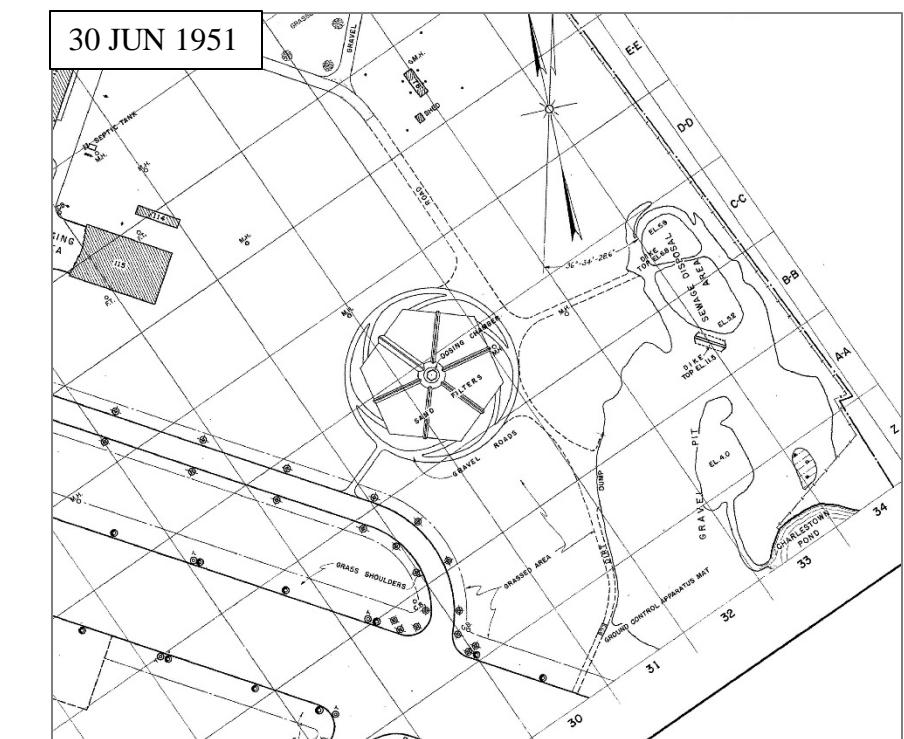
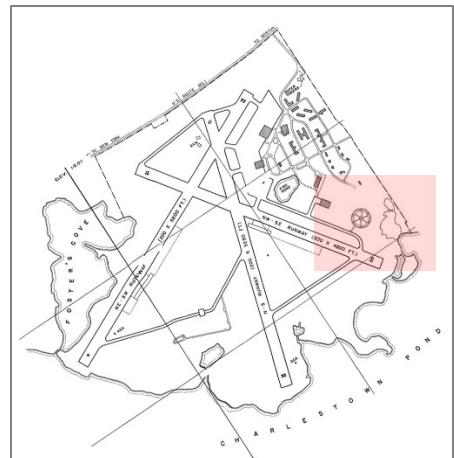
— Ground Scar(s)

— · · · Charlestown Landfill – Eastern Landfill demarcation (AGC proposed for this study)

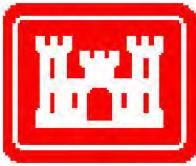
CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site



LOCATION DIAGRAM

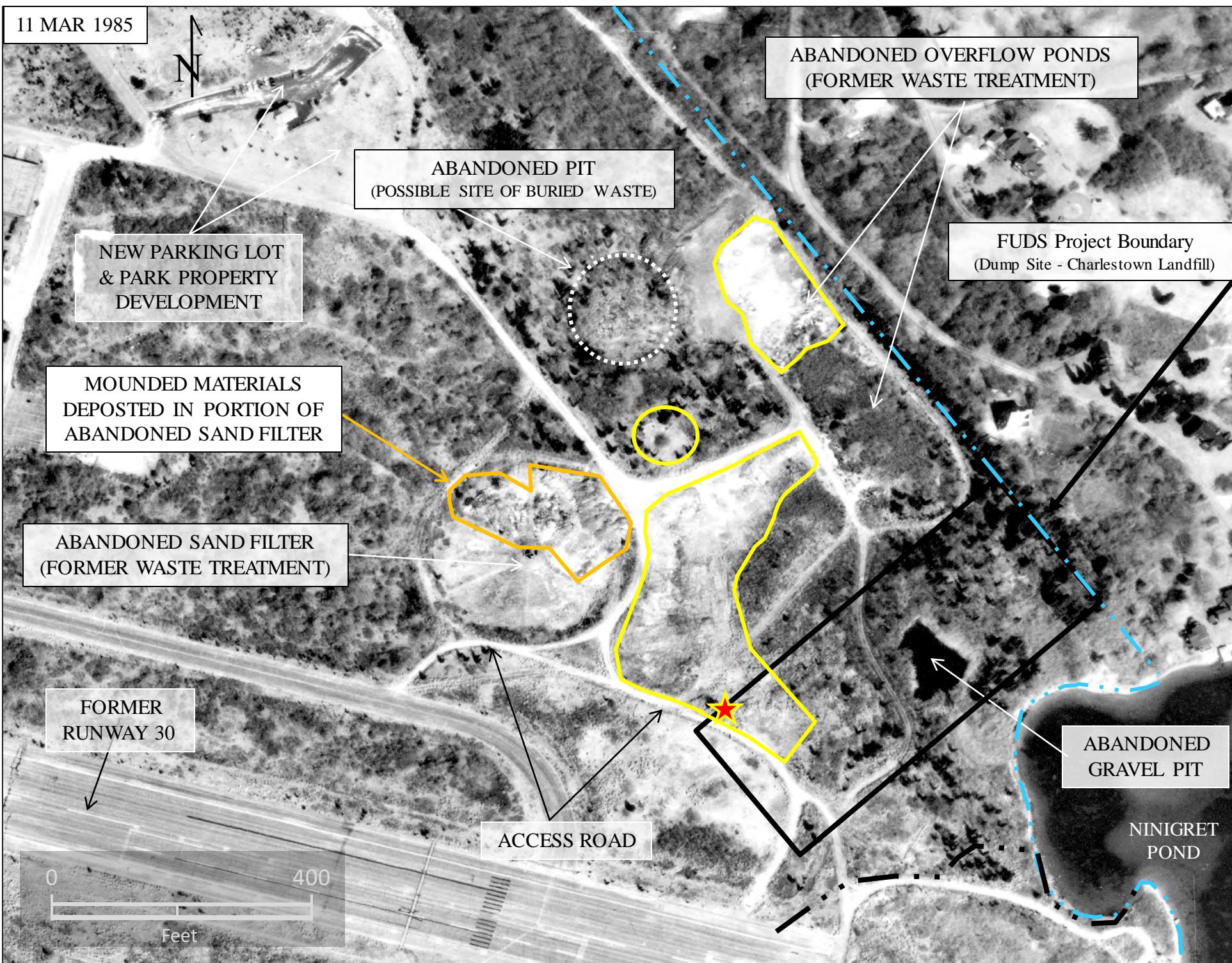


Map Source: 30 June 1951 map, Sheet 6, CNALF P.W.D.
Drawing No. 2318.



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL

1985 VERTICAL VIEW & 1977 GROUND PHOTO VIEW

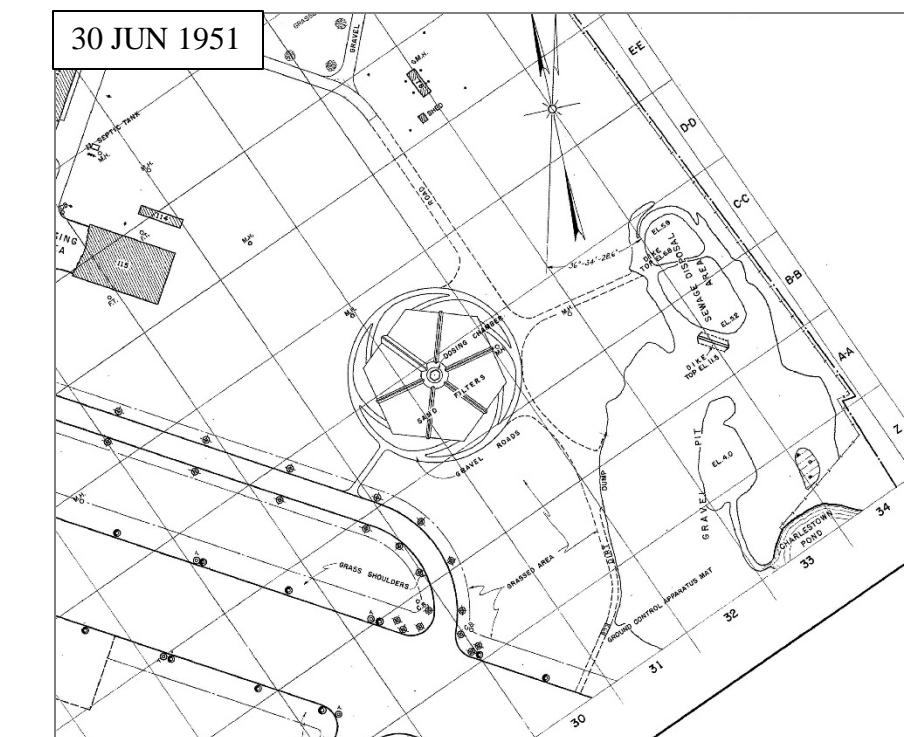
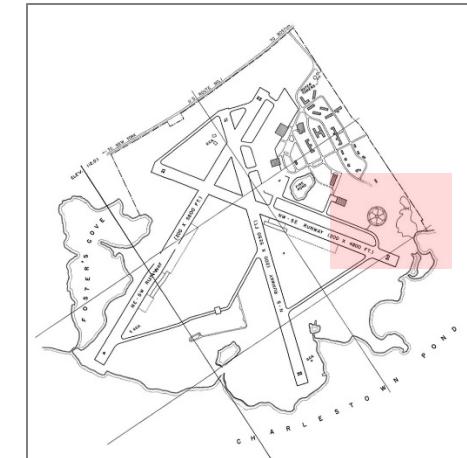


Source: U.S. Army Corps of Engineers, New England District.

★ 1977 recovery area of nine (9) buried aircraft. These aircraft were successfully removed from this location; Larry Webster (source).
— Charlestown Landfill – Eastern Landfill demarcation (AGC proposed for this study)

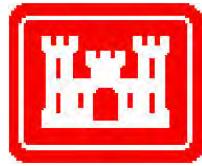


LOCATION DIAGRAM



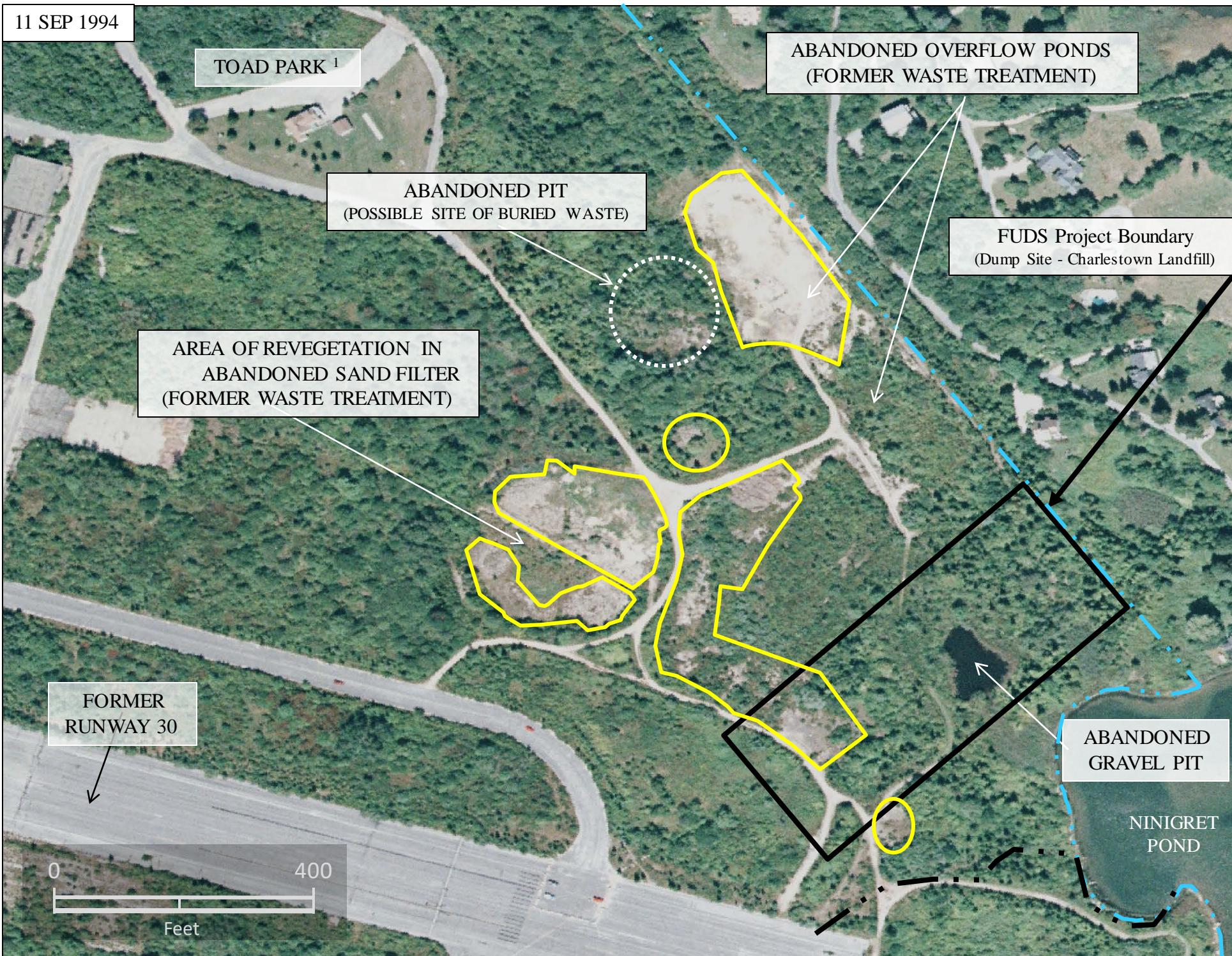
CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site

— CNALF Former Boundary (approx. alignment)
— Ground Scar(s)



HTRW SITE NO. 1 / MRS 4: CHARLESTOWN LANDFILL

1994 VERTICAL VIEW



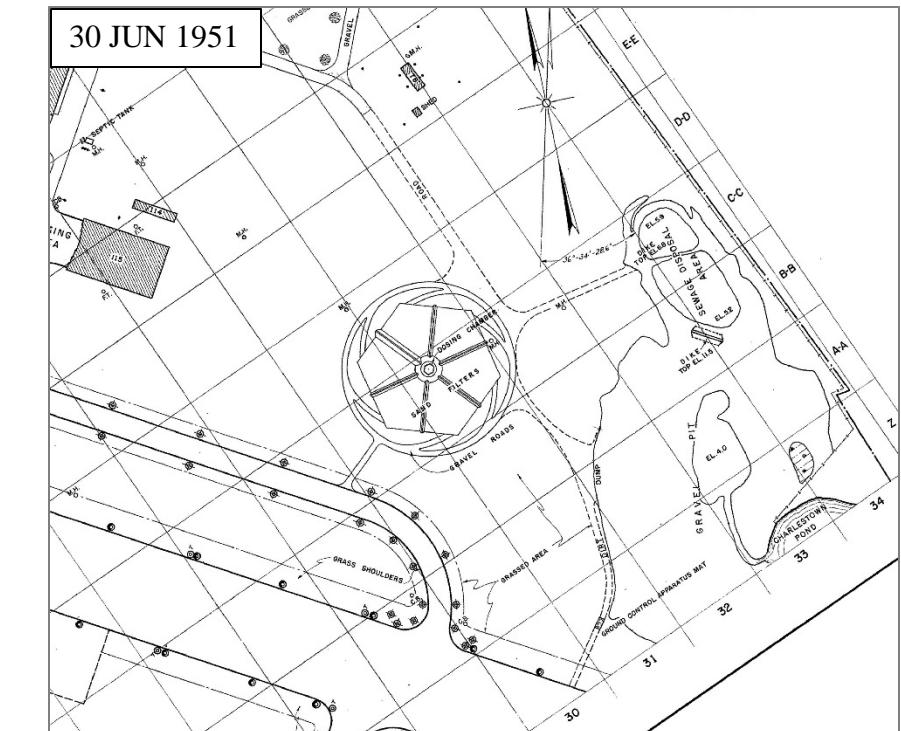
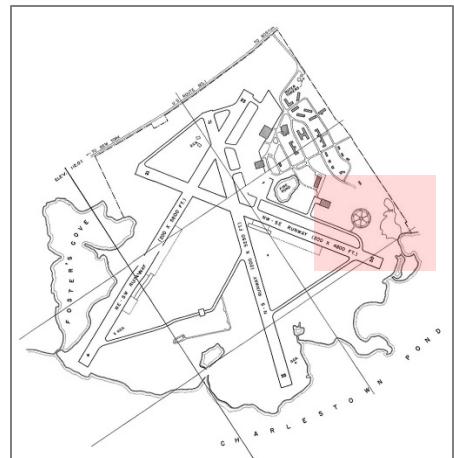
Source: National Oceanic and Atmospheric Administration (NOAA).

CNALF Former Boundary (approx. alignment)

Charlestown Landfill - Eastern Landfill demarcation (AGC proposed for this study)



LOCATION DIAGRAM

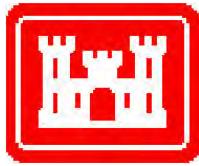


Map Source: 30 June 1951 map, Sheet 6, CNALF P.W.D.
Drawing No. 2318.

1. Ninigret Final Master Plan (graphic), Charlestown, Rhode Island, no date.

CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste

MRS = Military Response Site

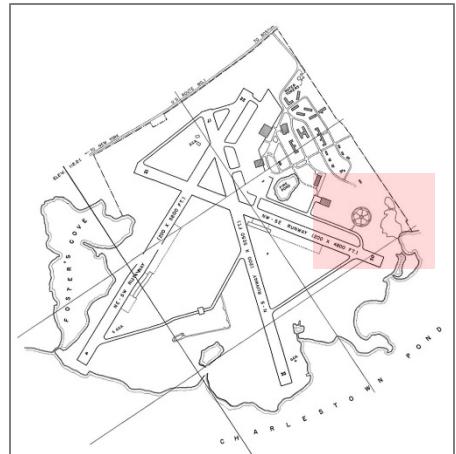


HTRW SITE NO. 1 / MRS 4 – CHARLESTOWN LANDFILL

2011 VERTICAL VIEW



LOCATION DIAGRAM

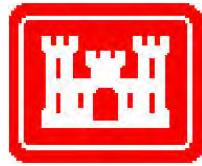


In 2011, outlines of the former Sand Filter and Overflow Ponds of the Sewage Treatment Facility are still visible. An abandoned Gravel Pit (originally viewed on 1945 aerial photography) is clearly identified on 2011 satellite imagery.

Disturbances to the soil caused by former CNALF (U.S. Navy) waste dump and/or landfill operations in the Charlestown Landfill and surrounding area, however, are no longer clearly visible in 2011 (as a result of the regrowth of scattered vegetative cover over the area).

1. Ninigret Final Master Plan, Charlestown, Rhode Island, April 2008 (see Appendix B of this report).

CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site



HTRW SITE NO. 1 / MRS 4 – CHARLESTOWN LANDFILL

2016 VERTICAL VIEW



Vertical view of 2016 (current view). Scattered vegetation appears over the former CNALF area.



Source: National Geospatial-Intelligence Agency (NGA).

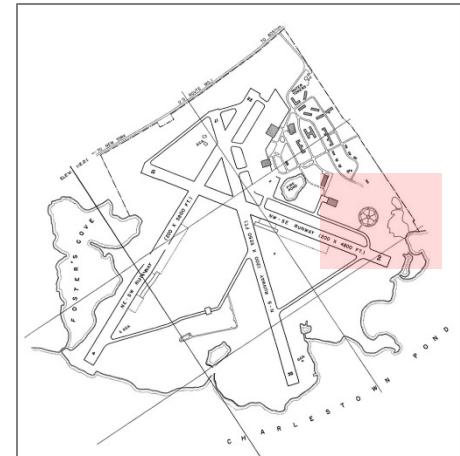
— Mounded Material

— · · CNALF Former Boundary (approx. alignment)

— · · Charlestown Landfill – Eastern Landfill demarcation (AGC proposed for this study)



LOCATION DIAGRAM



In 2016, outlines of the former Sand Filter and Overflow Ponds of the Sewage Treatment Facility are still visible. An abandoned Gravel Pit (originally viewed on 1945 aerial photography) can also be identified on 2016 satellite imagery.

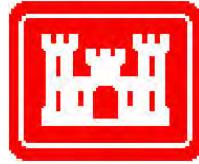
Disturbances to the soil caused by former CNALF (U.S. Navy) waste dump and/or landfill operations in the Charlestown Landfill and surrounding area, however, are no longer clearly visible in 2016 (as a result of the regrowth of vegetative cover over the area).

1. Ninigret Final Master Plan, Charlestown, Rhode Island, April 2008.

CNALF = Charlestown Naval Auxiliary Landing Field

HTRW = Hazardous, Toxic, & Radioactive Waste

MRS = Military Response Site



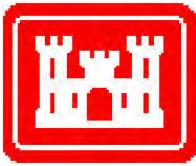
HISTORICAL PHOTO ANALYSIS



HTRW SITE NO. 2 / MRS 3 – EASTERN AREA LANDFILL / HUNTER ISLAND DUMP SITE

EASTERN AREA
LANDFILL/
HUNTER ISLAND
DUMP

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site



HTRW SITE NO. 2 / MRS 3 – EASTERN AREA LANDFILL / HUNTER ISLAND DUMP SITE



Source: National Geospatial-Intelligence Agency (NGA).

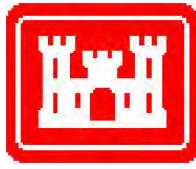


Source: National Geospatial-Intelligence Agency (NGA).

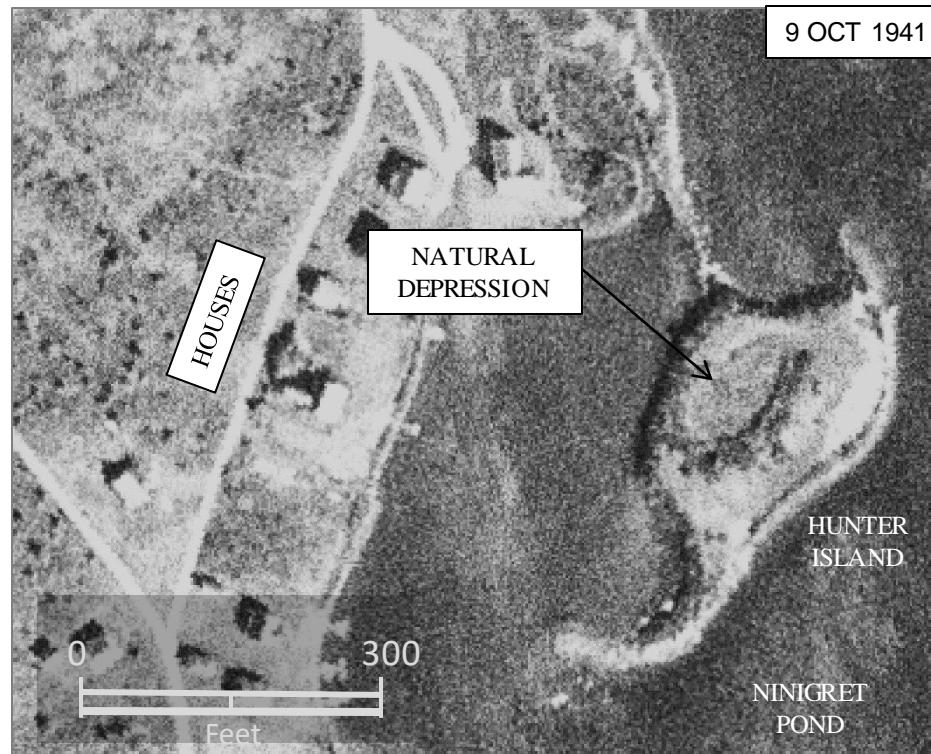
Hunter Island Dump Site, also known as Eastern Area Landfill, is approximately three acres and located at the end of former Runway 30. Historical photos of early 1940s show the site was an island and was then later filled and transformed into a peninsula in the late 1940s. The area was used for disposal of construction debris e.g concrete bricks and metal parts and a few steel practice bombs. Since training at CNALF was specialized in night fighter, crash accidents occurred often at the landing field. Hunter Island was known for being used for aircraft burial and dumping sites and has been mentioned as potential Hazardous Waste Site Hunter Island. Several personnel interviewed have heard stories circulating regarding belts of 20mm ammunition found here. Local law enforcement agencies and EOD units have no reports to substantiate these reports. Historical documentation has not been found which indicates this region of the Ninigret Park was ever used as an ammunition disposal area. No visual evidence of OE was found after an extensive search of this area.¹

1. Sources: a) D01RI000804_01.02_0002_a.pdf (Archives Search Report), b). D01RI000801_01.05_0003_p.pdf.

CNALF = Charlestown Naval Auxiliary Landing Field EOD = Explosives Ordnance Disposal HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site OE = Ordnance and Explosives



HTRW SITE NO. 2 / MRS 3: SELECTED IMAGES FROM 1941 – 1947



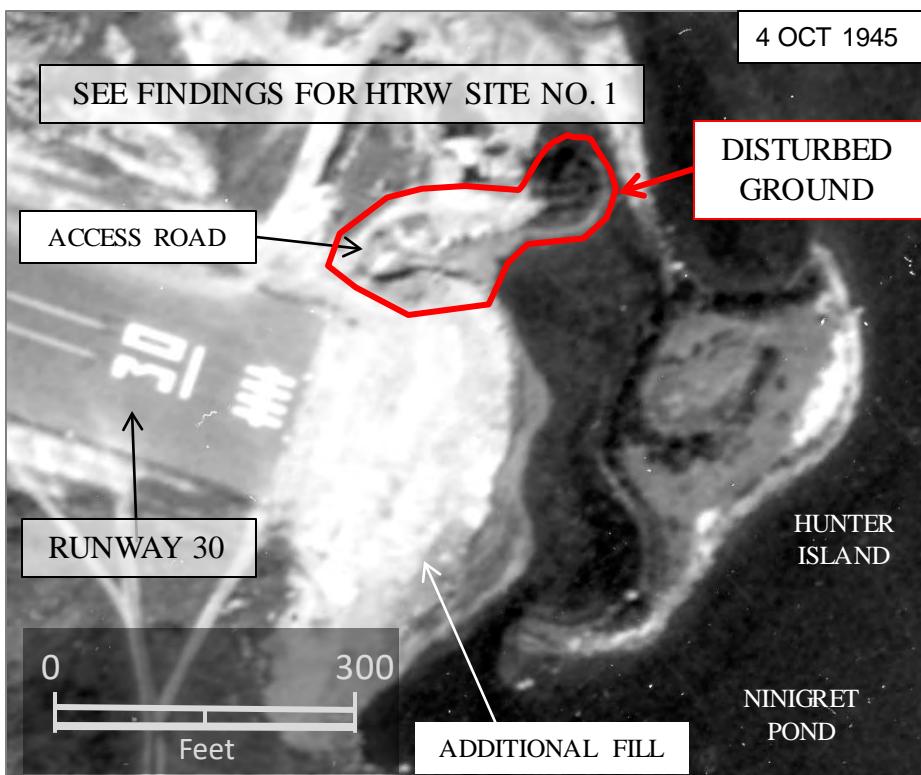
In October 1941, a few roads and houses along the shoreline of Ninigret Pond are evident. Construction of CNALF has not yet begun.

Source: U.S. Geological Survey, EarthExplorer.



By January 1944, CNALF is well-developed.

Source: National Archives & Records Administration, Archives II, College Park, MD.



By 1945, most of the houses in this area have been demolished.

Source: National Archives & Records Administration, Archives II, College Park, MD.



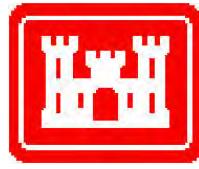
By October 1947, a new Fill Area has been created.

Source: U.S. Fish & Wildlife Service (USFWS).

CNALF = Charlestown Naval Auxiliary Landing Field

HTRW = Hazardous, Toxic, and Radioactive Waste

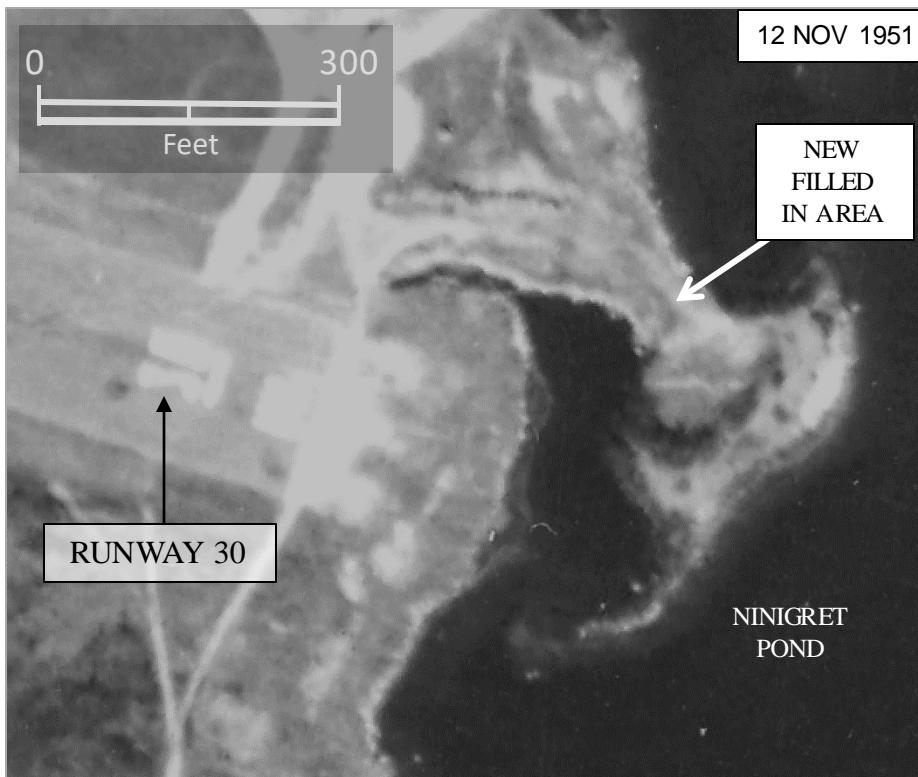
MRS = Munitions Response Site



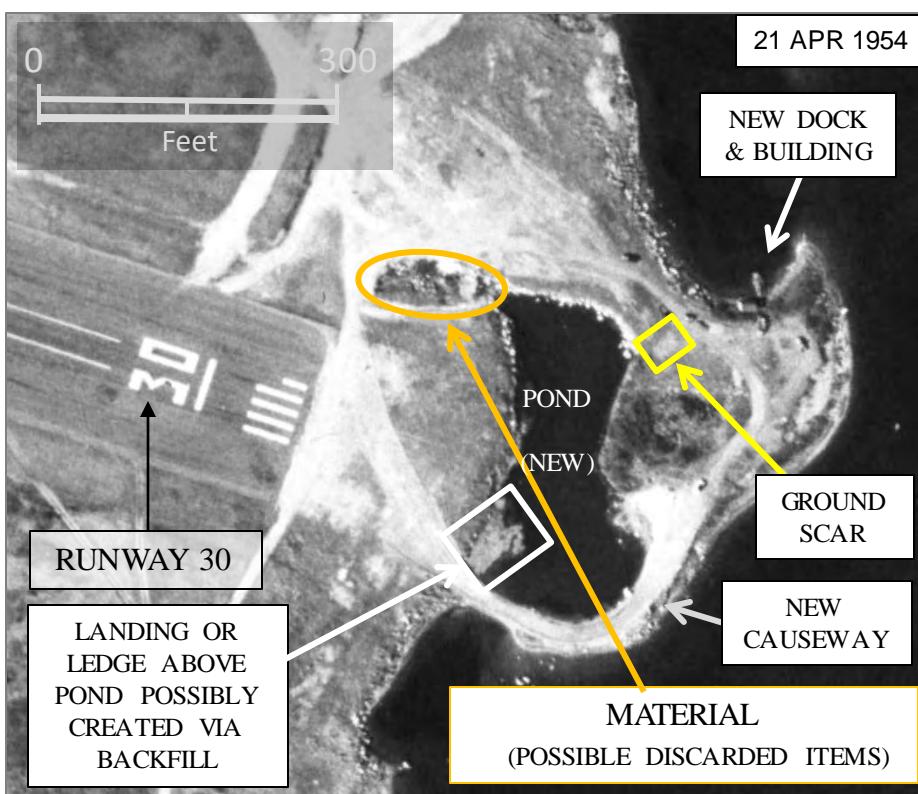
HTRW SITE NO. 2 / MRS 3: SELECTED IMAGES FROM 1951 – 1970



Source: Rhode Island Department Of Administration Planning Information Center.



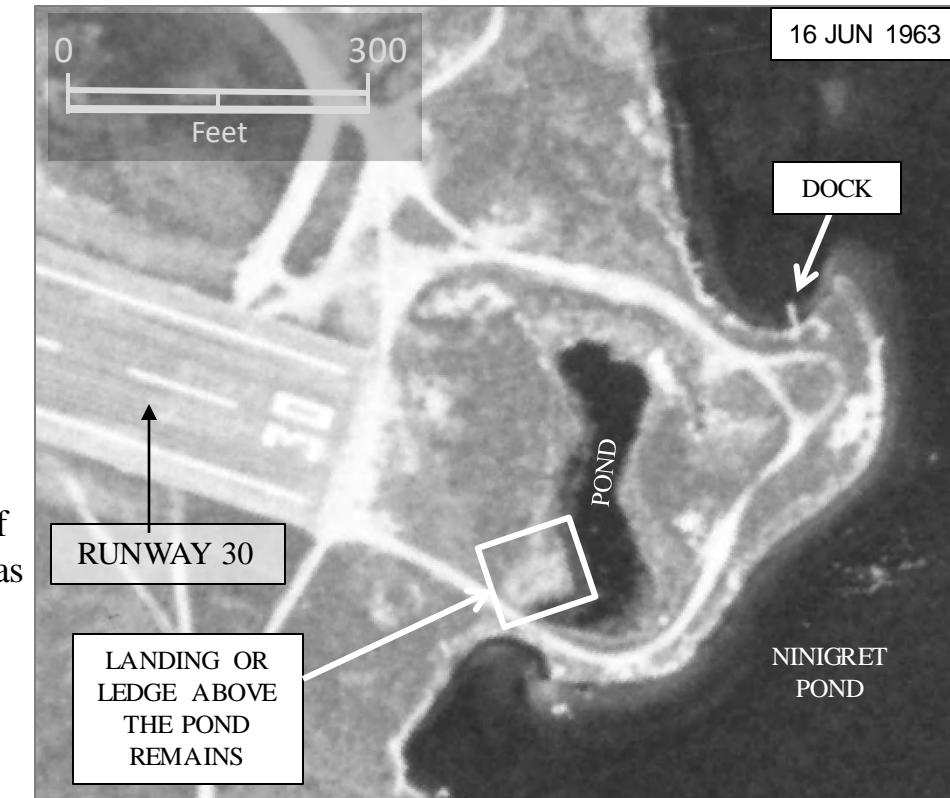
A new peninsula was constructed with fill to connect Hunter Island to the east side of CNALF.



A newly-constructed causeway linking the southern section of Hunter Island to the CNALF mainland property is clearly identified. In addition, unidentified material is observed in a location near the end of Runway 30.

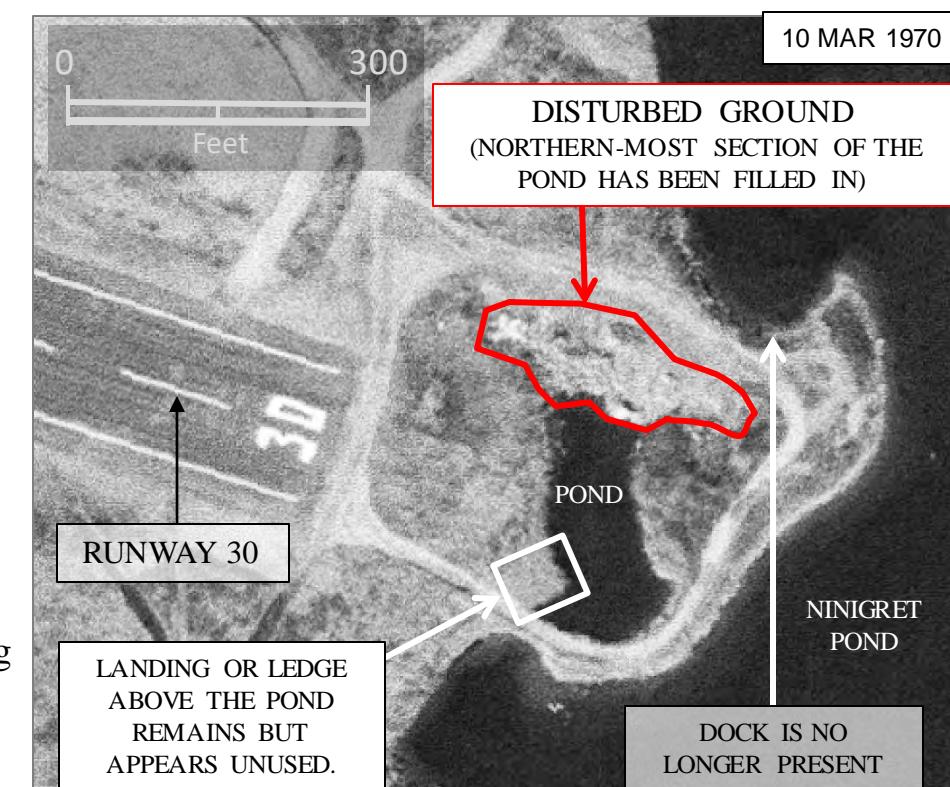
In March of 1970, an area of disturbed ground is identified just north of the small pond. This area of ground disturbance may be related to the recovery of aircraft parts which occurred in 1969. There is also a report that “building debris from old structures” was deposited here in 1969.¹

Source: National Oceanic and Atmospheric Administration (NOAA).



In June of 1963, the water level of the small pond has fallen.

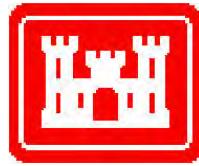
Source: U.S. Department of Agriculture – Farm Service Agency (FSA).



Source: U.S. Geological Survey, EarthExplorer.

1. Source: 29 October 1997 telephone conversation with Charlie Hebert, U.S. Fish & Wildlife Service, Ordnance and Explosives Archives Search Report, Former Naval Auxiliary Landing Field - Final, Charlestown, Rhode Island, 27 April 1999.

CNALF = Charlestown Naval Auxiliary Landing Field HTRW = Hazardous, Toxic, & Radioactive Waste
MRS = Military Response Site

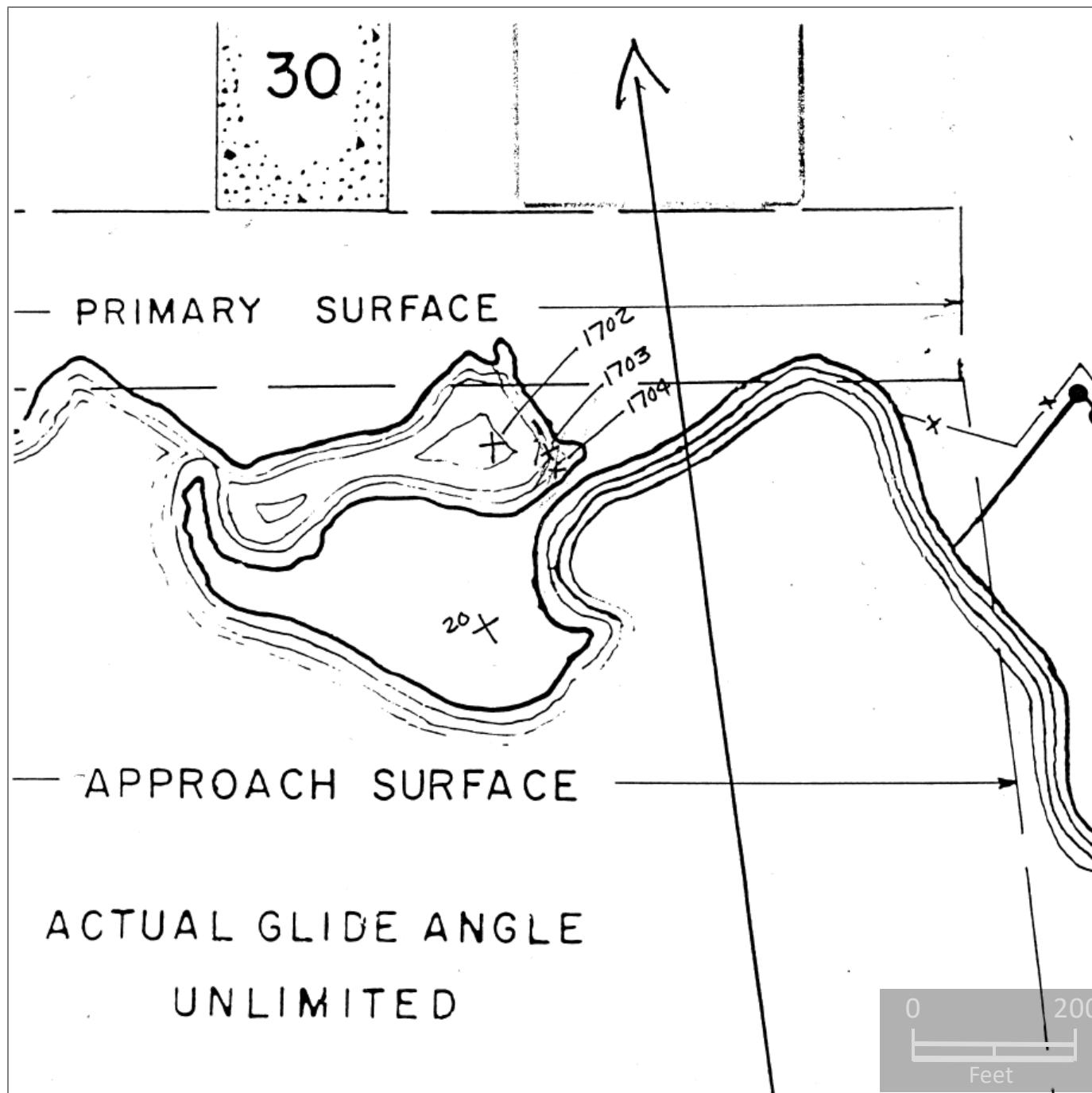


HTRW SITE NO. 2 / MRS 3: HISTORICAL DOCUMENTS – 1969



1969 ACCIDENT REPORT

1969 MAP ENCLOSURE SHOWING LOCATIONS OF BURIED AIRCRAFT



Source: Larry Webster Collection

Note: The numbering system (e.g. 1702) used in the 1969 Map Enclosure relates to a unique (internal) identification system of 'airplane wreckage' developed by Larry Webster and does not relate to any other known documentation.

ACCIDENT LIST NO.	20	DATE	TIME
WEATHER CONDITIONS _____			
AIRCRAFT TYPE <u>AD-2Q Skyraider</u>			
CREW:	NAME _____	ADDRESS _____	INJURIES _____
1.)	_____		
2.)	_____		
3.)	_____		
4.)	_____		
ACCIDENT LOCATION _____ _____			
ACCIDENT PARTICULARS _____ _____			
BASE _____		SQUADRON _____	
WITNESS _____ _____			
OTHER INFORMATION SOURCES _____ _____			
REMAINS PRESENT AT SITE <u>Entire aircraft found at Charlestown NALF in 6/69; had been used as fire hulk before being thrown in SE dump off Runway</u>			
REMAINS REMOVED FROM SITE <u>Rear fuse, and vertical fin, misc. parts of fuse, and wings; total 800 lbs.</u>			
REMAINS LEFT AT SITE <u>Main fuselage and inner wings</u>			
REMARKS _____			

“REMAINS PRESENT AT SITE *Entire aircraft found at Charlestown NALF IN 6/69: had been used as a fire hulk before being thrown in SE dump off runway.*

REMAINS REMOVED FROM SITE *Rear fuze, and vertical fin, misc. parts of fuze and wings; total 800 lbs.*

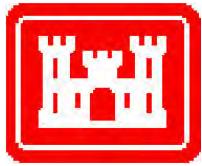
REMAINING LEFT AT SITE *Main fuselage and inner wings.”*

An Accident Report about Aircraft #20, circa 1969. Portions of the AD-2Q Skyraider were salvaged, but the main fuselage (used in Fire-fighting Training) was left buried at the Hunter Island location.

An Accident Report about Aircraft #20, circa 1969. Portions of the AD-2Q Skyraider were salvaged, but the main fuselage (used in Fire-fighting Training) was left buried at the Hunter Island location.

REMAINS REMOVED FROM SITE Rear fuze, and vertical fin, misc. parts of fuze and wings; total 800 lbs.

REMAINING LEFT AT SITE Main fuselage and inner wings.”



HTRW SITE NO. 2 / MRS 3: HUNTER ISLAND DUMP SITE

1969 MAP & 1970 AERIAL DATA

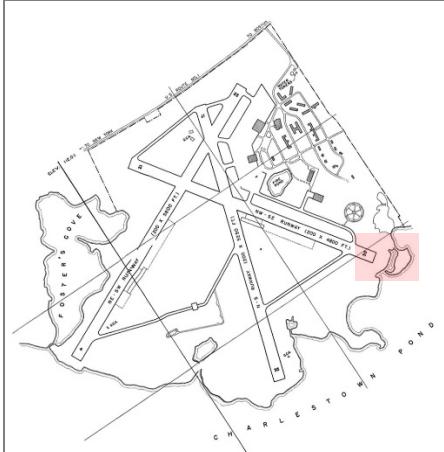


1969 Map Enclosure Draped on March 1970 Aerial Photography



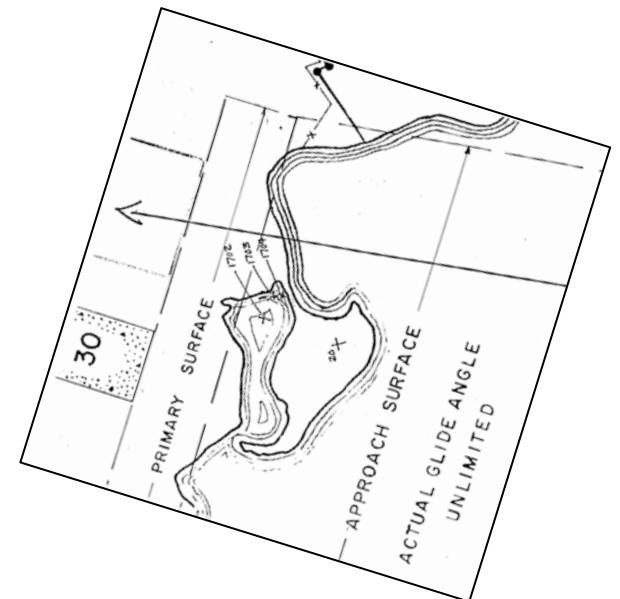
In March of 1970, an area of disturbed ground is identified immediately north of the small pond - likely related to the recovery of aircraft parts of four buried aircraft and the 1969 dumping of building debris.^{1,2}

LOCATION DIAGRAM



Note: The numbering system (e.g. 1702) used in the 1969 Map Enclosure (below and left) relates to a unique (internal) identification system of 'airplane wreckage' developed by Larry Webster and does not relate to any other known documentation.

Original 1969 Map Enclosure to Accident Report¹ - rotated (North up)



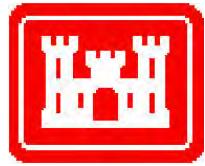
Map Source: Larry Webster Collection

Sources: Larry Webster Collection (1969 map enclosure), and U.S. Geological Survey (10 March 1970 Aerial Photography).

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site

1. Source: 29 October 1997 telephone conversation with Charlie Hebert, U.S. Fish & Wildlife Service, Ordnance and Explosives Archives Search Report, Former Naval Auxiliary Landing Field - Final, Charlestown, Rhode Island, 27 April 1999.

2. Sources: 1969 Accident Report (textual and map data) – Larry Webster Collection, Charlestown, RI.



HTRW SITE NO. 2 / MRS 3: HUNTER ISLAND DUMP SITE

1969 MAP & 2016 IMAGERY



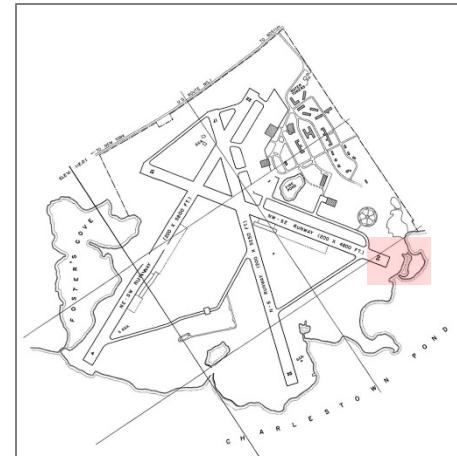
1969 Map Enclosure Draped on 2016 Imagery



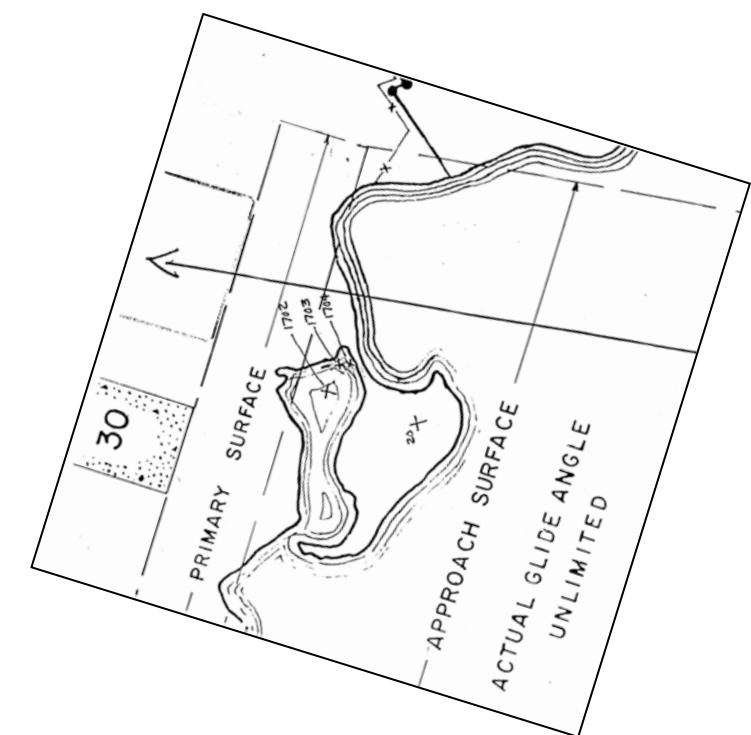
Sources: Larry Webster Collection (1969 map enclosure), and National Geospatial-Intelligence Agency (02 February 2016 Satellite Image).

Four airplane fuselages that were once used as 'burn pits' for fire training (at HTRW Site No. 3 along Runway 30) were transported to the Hunter Island area for disposal. Although the disposal action date is not known, the time period should match somewhat to the disestablishment of the fire-training burn pit area.¹

LOCATION DIAGRAM



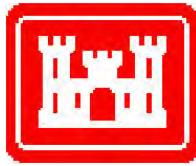
Original 1969 Map Enclosure to Accident Report¹ - rotated (North up)



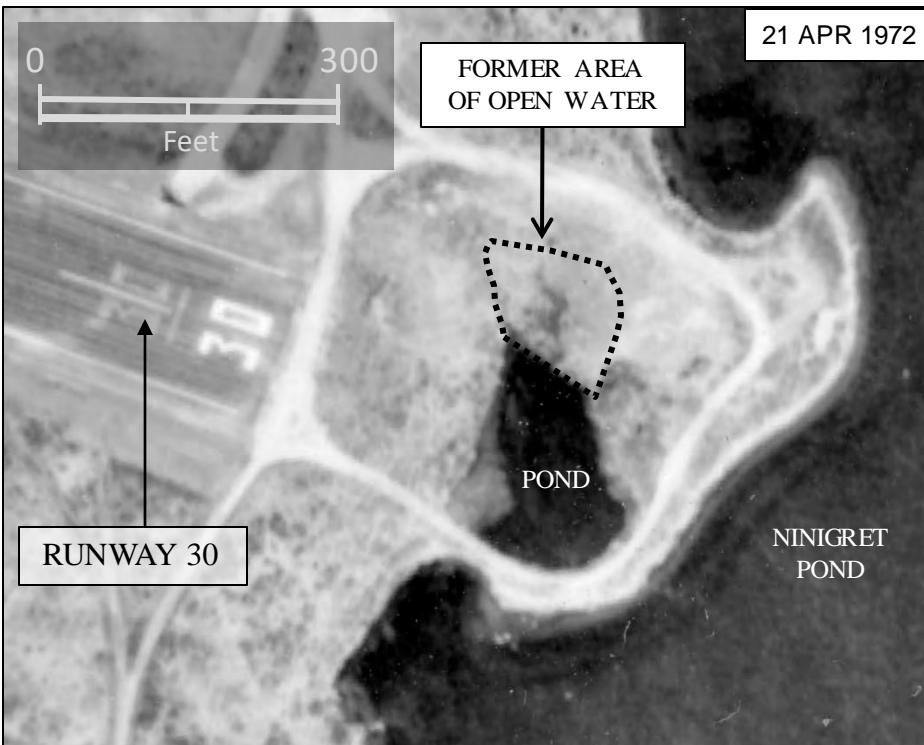
Map Source: Larry Webster Collection

1. Source: 1969 Accident Report (data sheets) and enclosed undated map; Larry Webster Collection.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site



HTRW SITE NO. 2 / MRS 3: SELECTED IMAGES FROM 1972 – 2016



The northern section of the small pond has been filled in to a greater extent since last observed on March 1970 aerial photography.



Source: Sky Research, Inc. (courtesy U.S. Army Corps of Engineers, New England District).



Low-lying vegetation now covers much of the Hunter Island Dump Site Area.



Source: National Geospatial-Intelligence Agency (NGA).

Source: Rhode Island Department Of Administration Planning Information Center

HTRW = Hazardous, Toxic, and Radioactive Waste

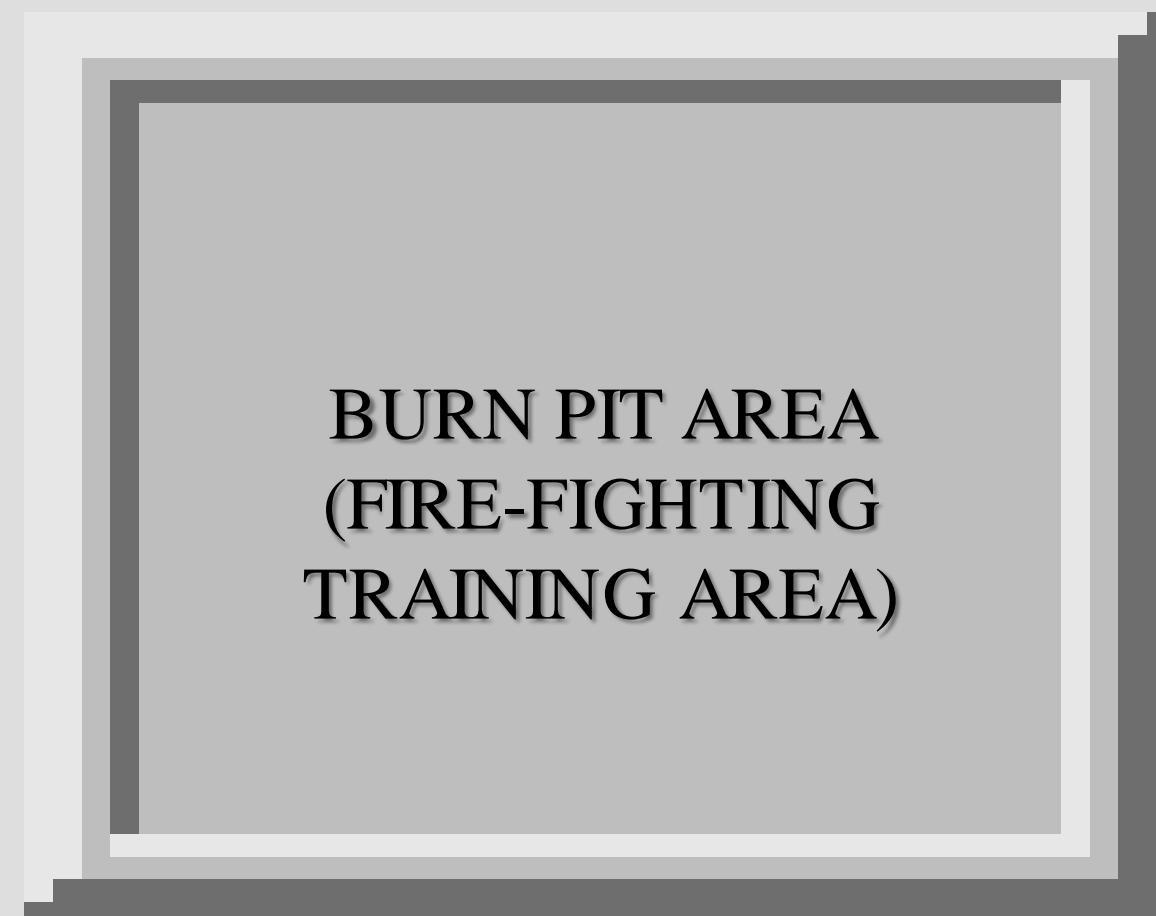
MRS = Munitions Response Site



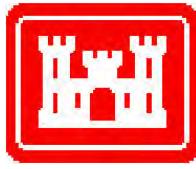
HISTORICAL PHOTO ANALYSIS – HTRW SITE NO. 3



Special Note: AGC has determined, through inspection of historical aerial photography, that the use of the term “Burn Pit Area” is a misnomer in describing the fire-fighting area formerly located along Runway 30. No evidence (photographic, map, or in textual data) was located to suggest the existence of below-ground fire pits at CNALF located adjacent to Runway 30.



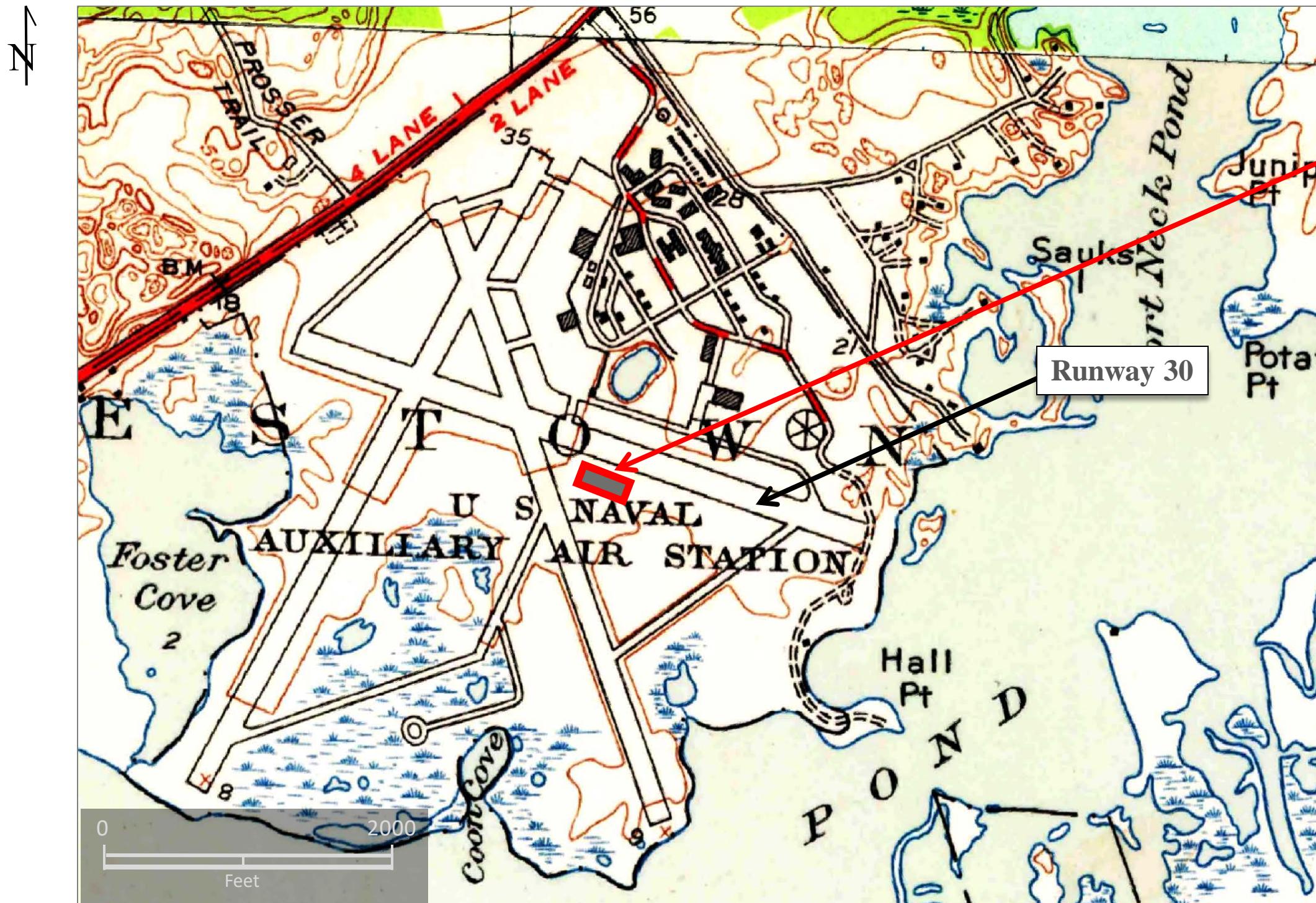
CNALF = Charlestown Naval Auxiliary Landing Field HTRW = Hazardous, Toxic, & Radioactive Waste



HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Fire-fighting training area adjacent to Runway 30.

Exercises in fire and rescue training focused on the scenario of an aircraft crash.¹

Multiple discarded aircraft fuselages were utilized as above-ground containers for flammable liquids. These mock-ups were filled with jet fuel or other combustible liquid and then ignited.²

A commonly-used name of this fire-fighting training location at CNALF is HTRW Site 3: Burn Pit.

1) Source: Engineering Report on Contamination Evaluation at the Former Naval Auxiliary Landing Field, Charlestown, Rhode Island, Prepared for the U.S. Army Corps of Engineers, Huntsville Division, Ecology & Environment, Inc., March 1987.

2) Source: Phase II: Remedial Investigation Report – Final, Former Naval Auxiliary Land Field, Charlestown, Rhode Island, Prepared for U.S. Army Corps of Engineers, Omaha District, URS Consultants, Inc., September 1996.

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

CNALF = Charlestown Naval Auxiliary Landing Field HTRW = Hazardous, Toxic, & Radioactive Waste

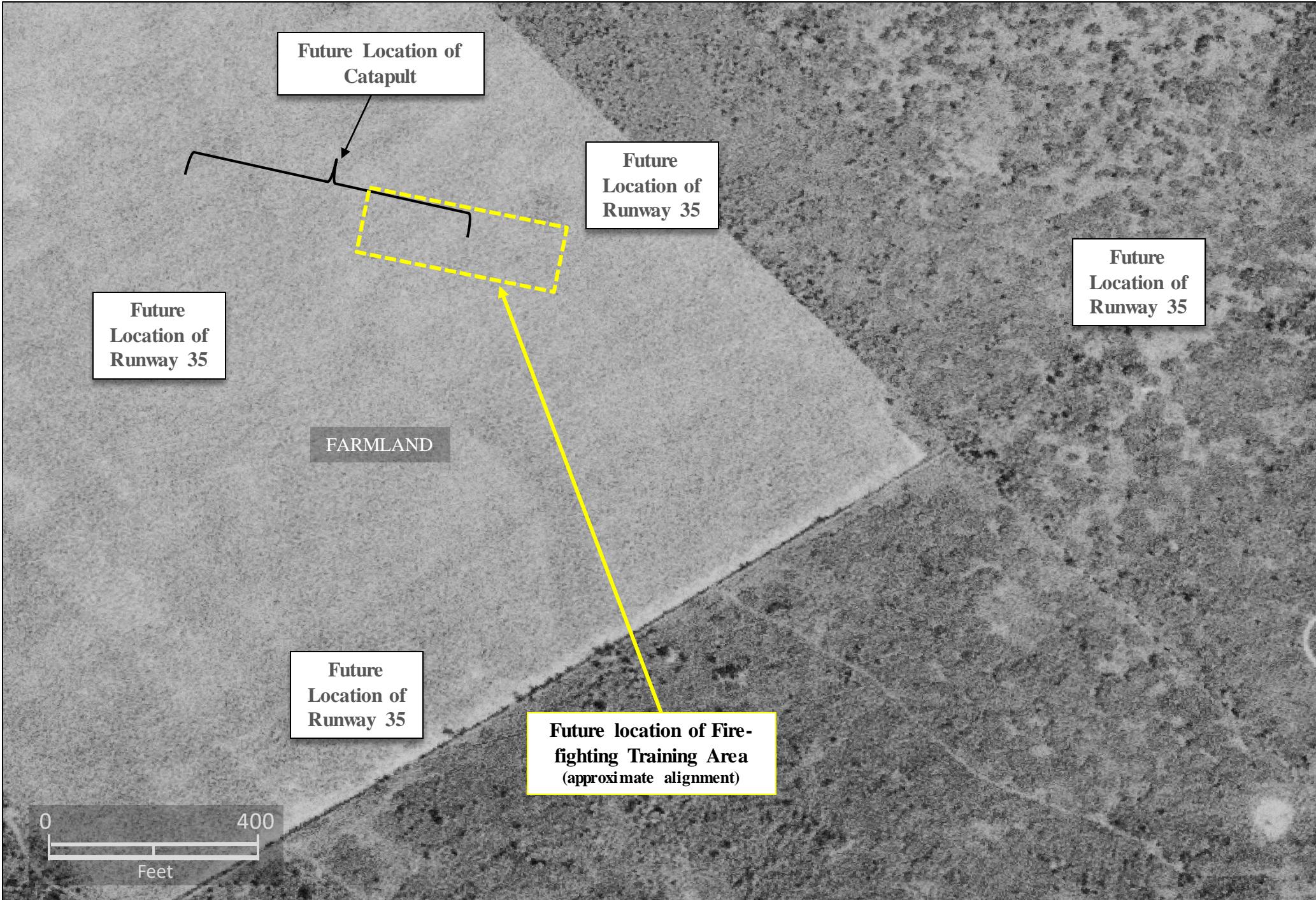


HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1941 PRE-DEVELOPMENT VIEW



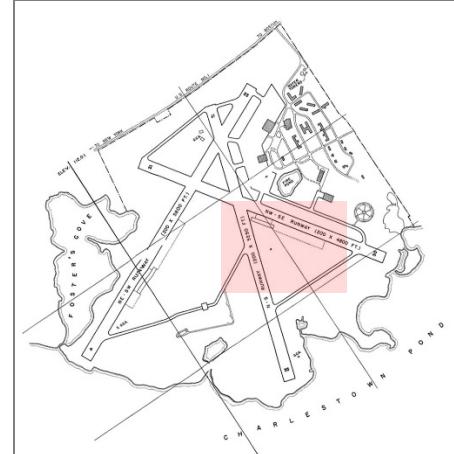
09 October 1941

N



Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



HTRW = Hazardous, Toxic, & Radioactive Waste

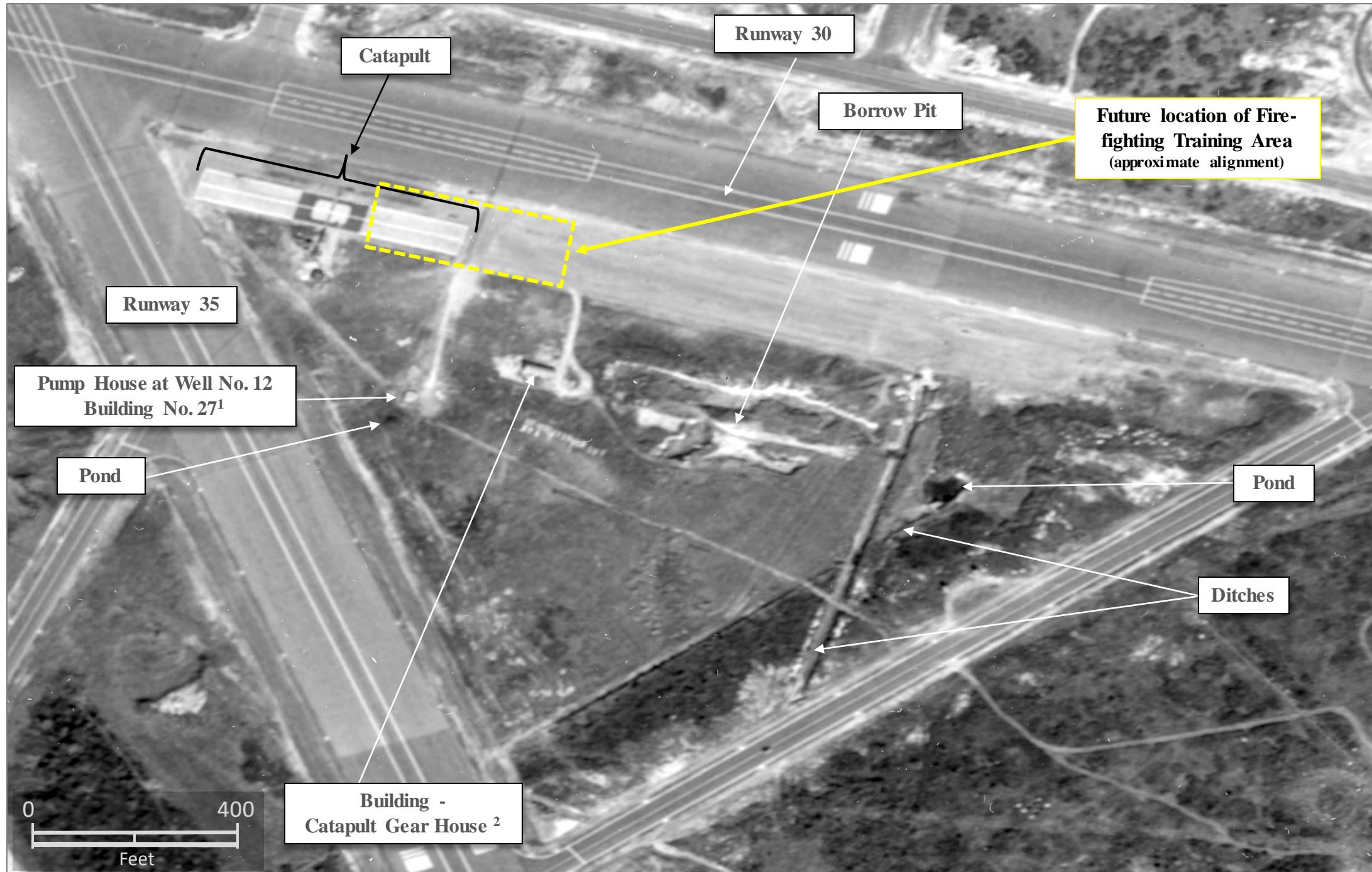


HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1945 PRE-DEVELOPMENT VIEW

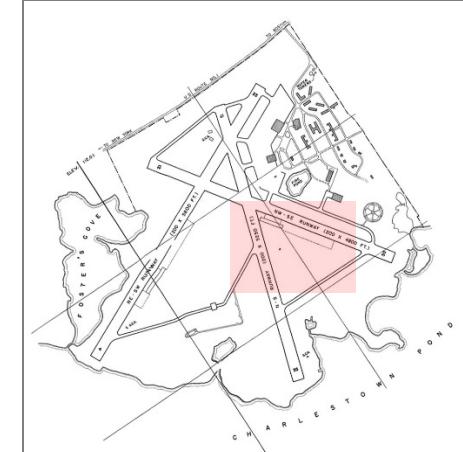


18 October 1945

N



LOCATION DIAGRAM



Source: National Archives & Records Administration, Archives II, College Park, MD.

HTRW = Hazardous, Toxic, & Radioactive Waste

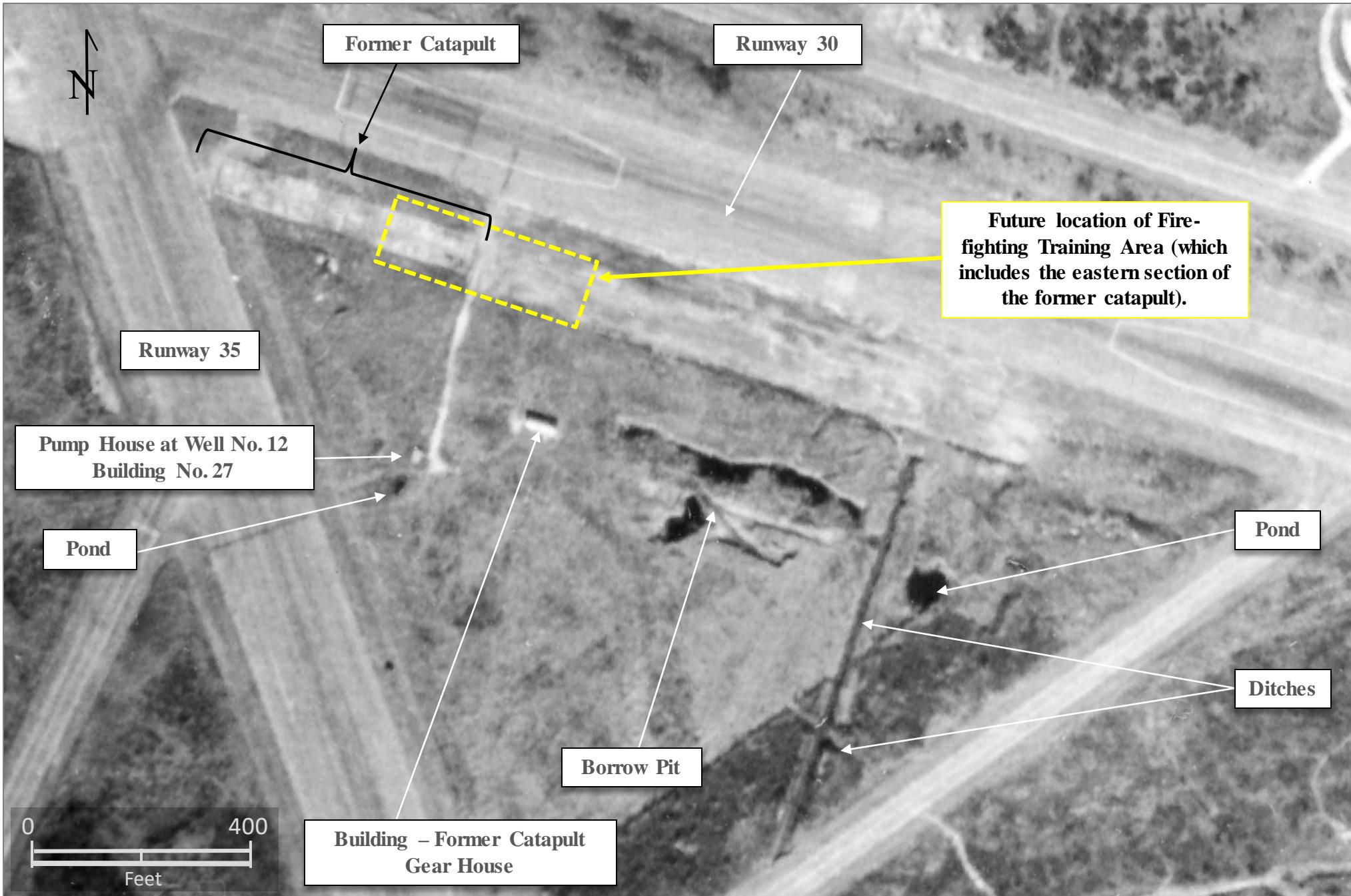
1. Source: NAS Quonset Point, R.I., Public Works Department, N.A.A.S. Charlestown, R.I., G.C.A. Installation Runways – Power & Communication Layout – Electrical, Oct 2, 1947.
2. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 6.



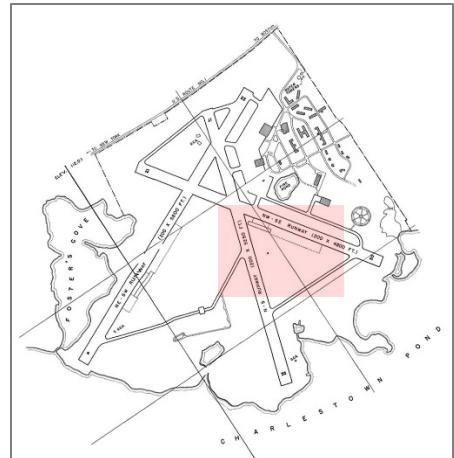
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1951 PRE-DEVELOPMENT VIEW



12 November 1951



LOCATION DIAGRAM



Source: Rhode Island Department Of Administration Planning Information Center

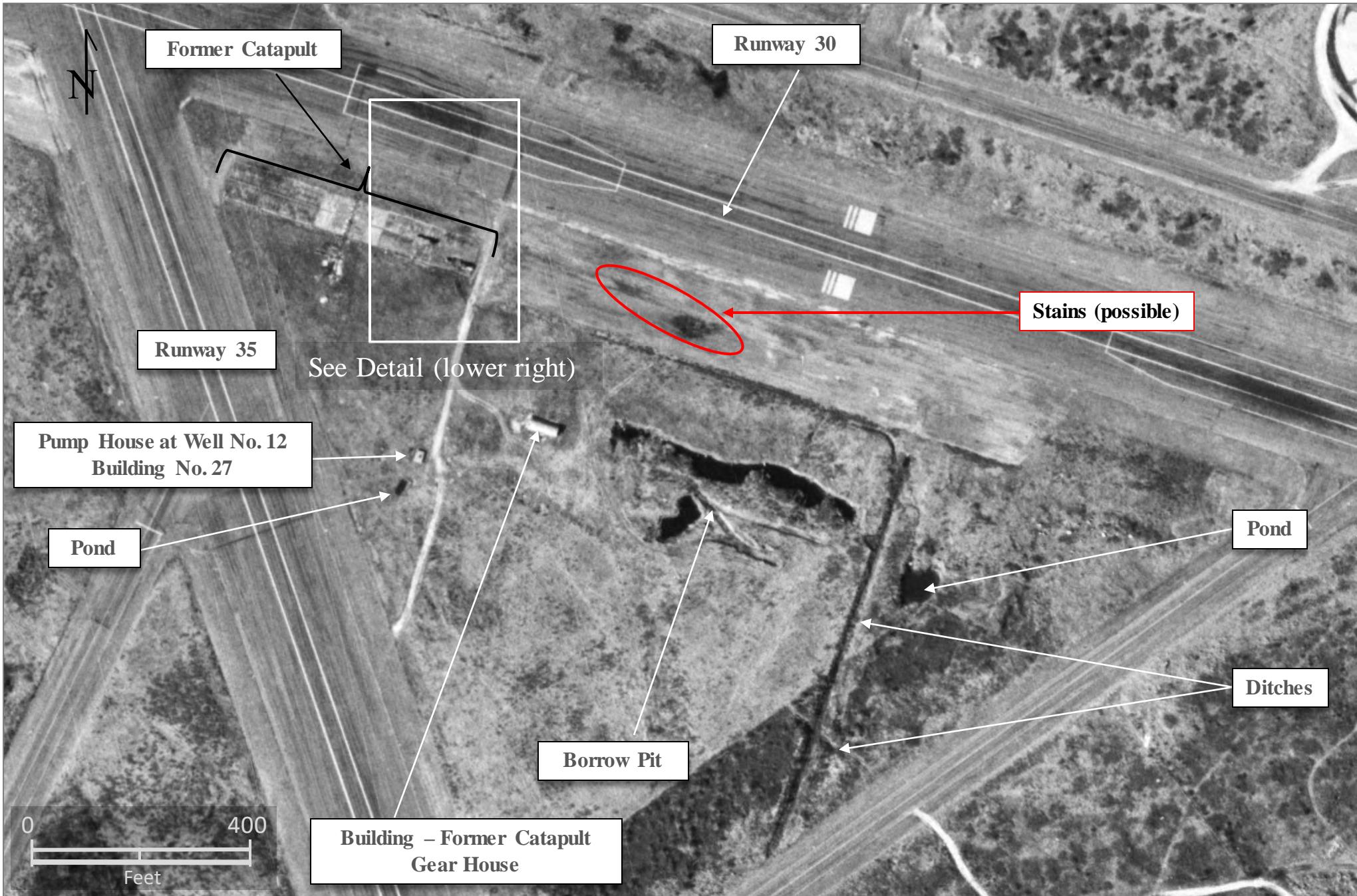
HTRW = Hazardous, Toxic, & Radioactive Waste



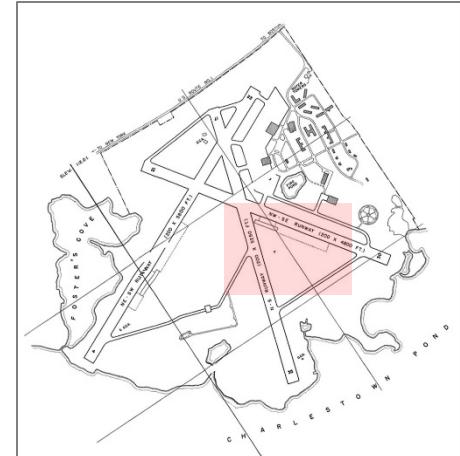
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1954 VERTICAL VIEW



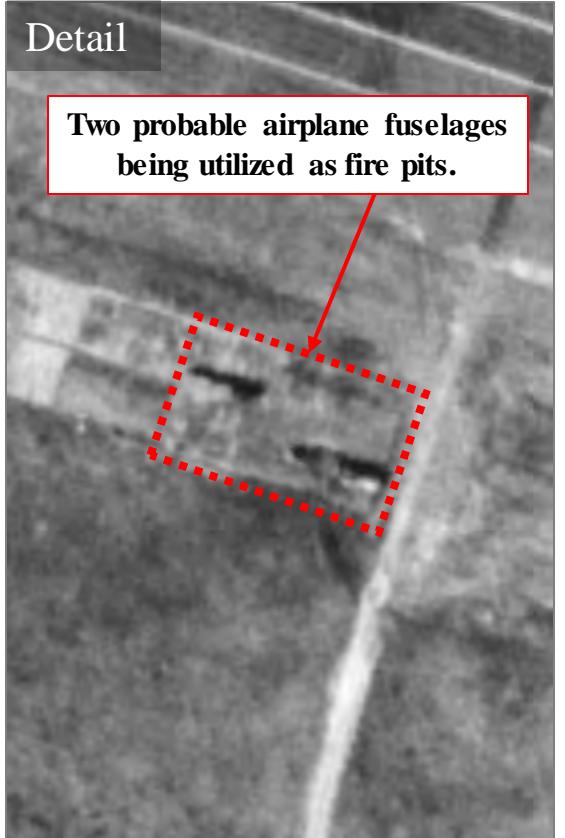
21 April 1954



LOCATION DIAGRAM



Detail



Source: National Oceanic and Atmospheric Administration (NOAA)

HTRW = Hazardous, Toxic, & Radioactive Waste



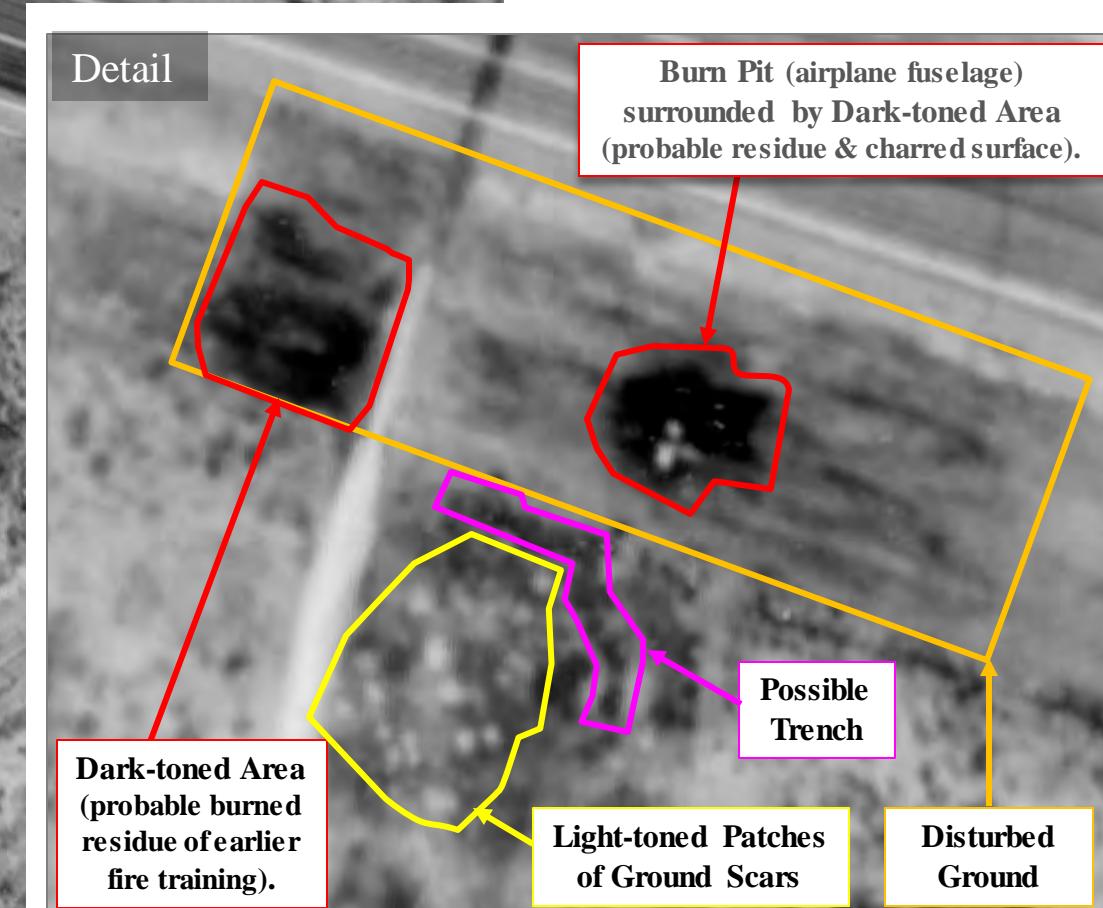
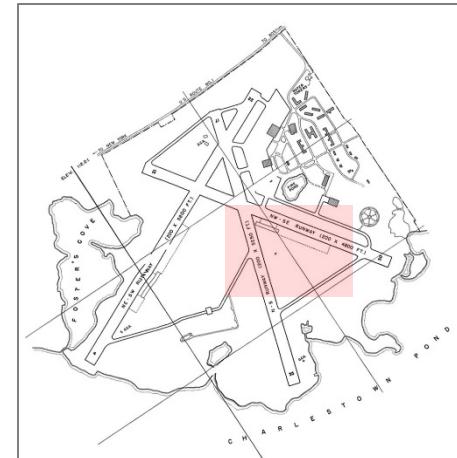
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1962 VERTICAL VIEW



04 April 1962



LOCATION DIAGRAM

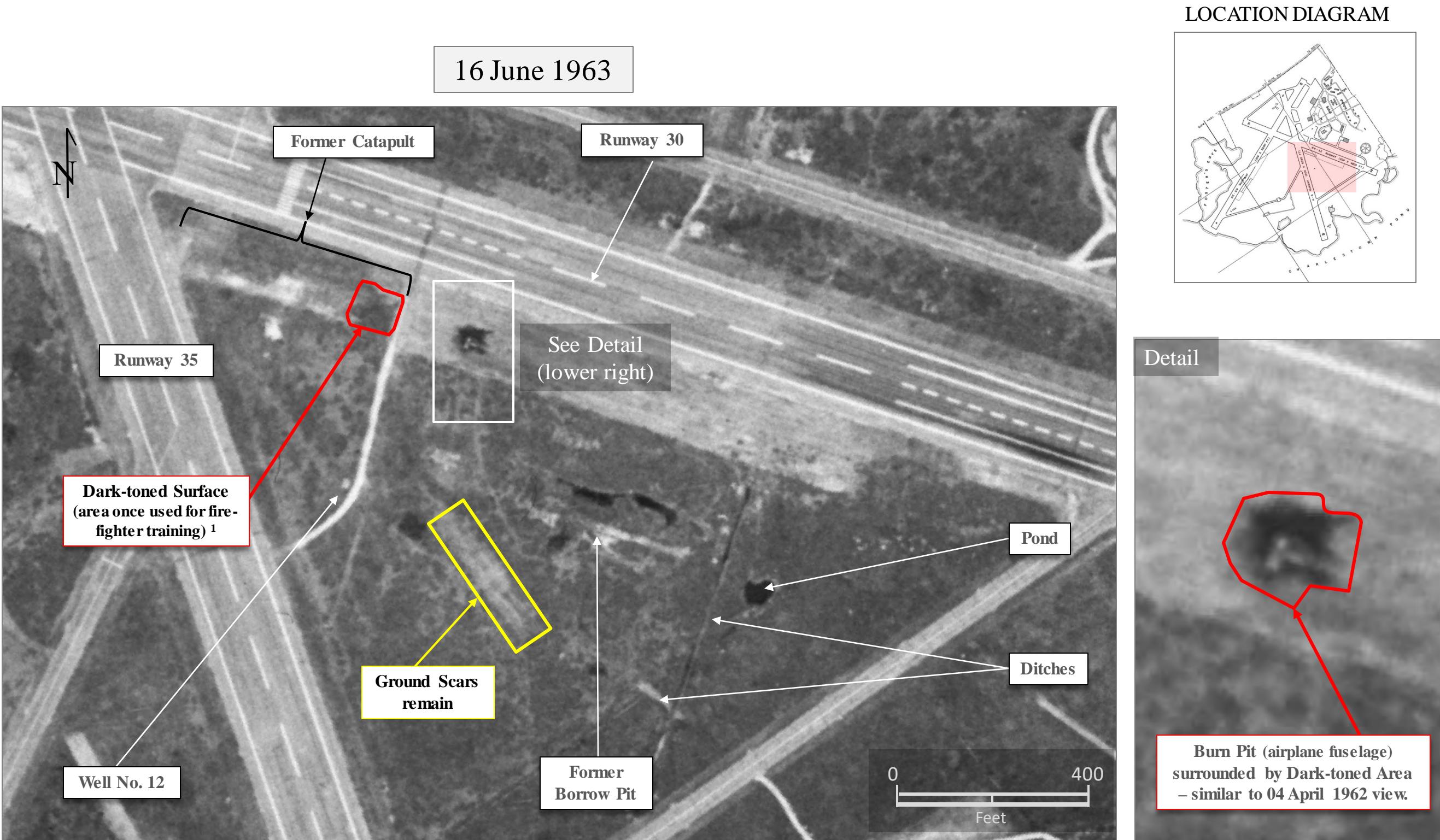


Source: Rhode Island Department Of Administration Planning Information Center

HTRW = Hazardous, Toxic, & Radioactive Waste



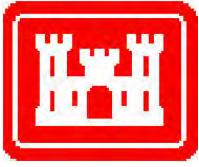
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1963 VERTICAL VIEW



Source: U.S. Department of Agriculture, Farm Service Agency (FSA).

1. Source: AGC Statement of Work (SOW); Figure 1: HTRW Sites at the Charlestown (RI) Naval Auxiliary Landing Field; U.S. Army Corps of Engineers – New England District.

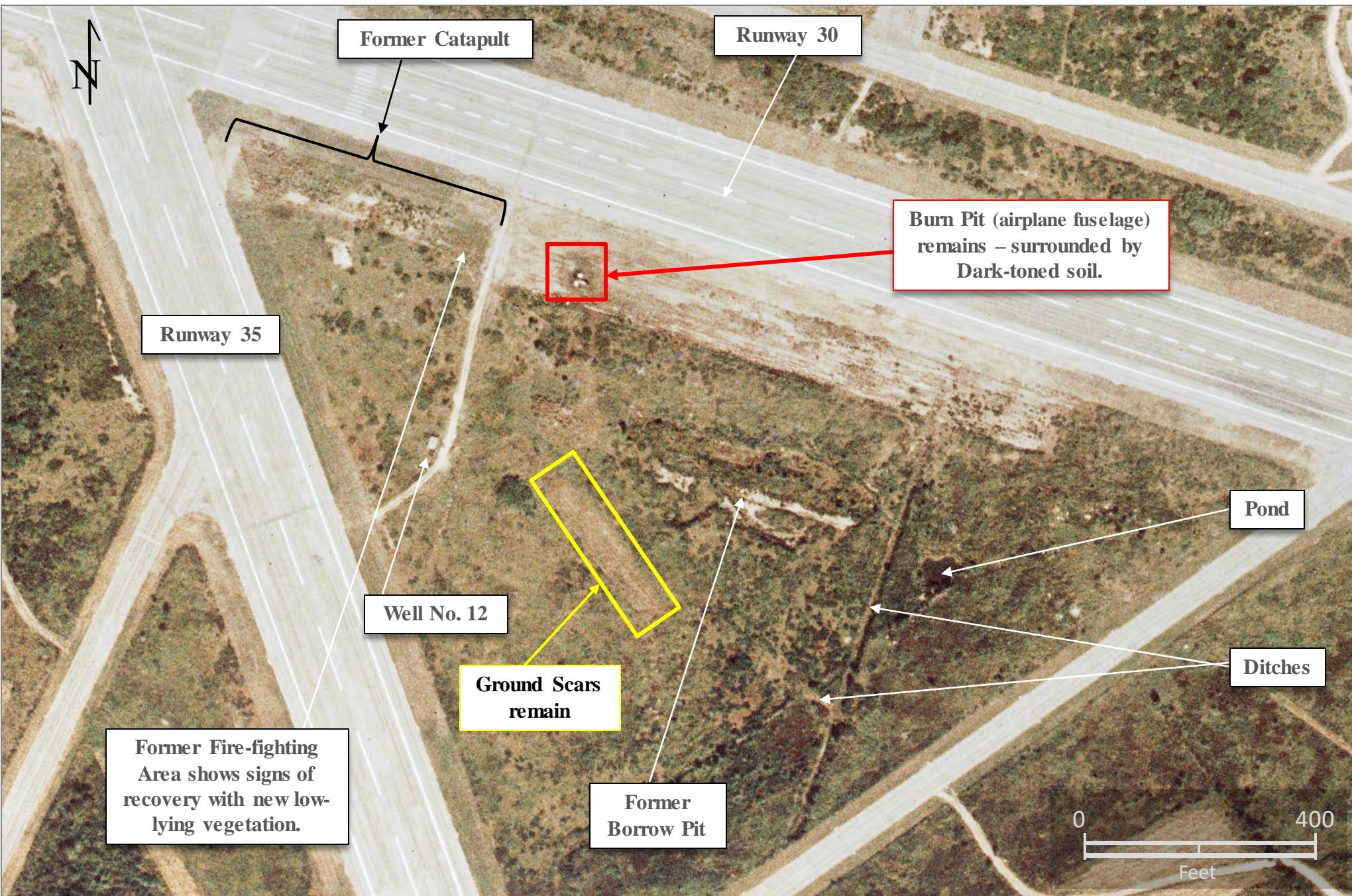
HTRW = Hazardous, Toxic, & Radioactive Waste
NAE = U.S. Army Corps of Engineers, New England District



HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1965 VERTICAL VIEW



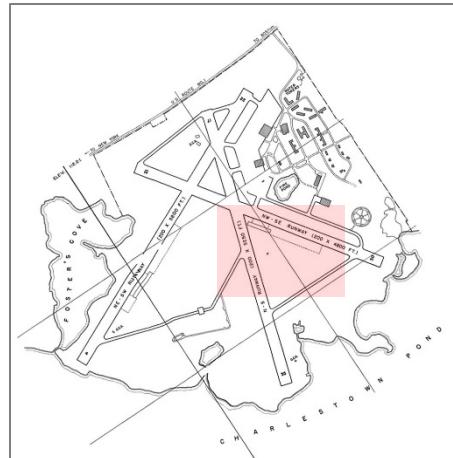
27 September 1965



Source: National Oceanic and Atmospheric Administration (NOAA)

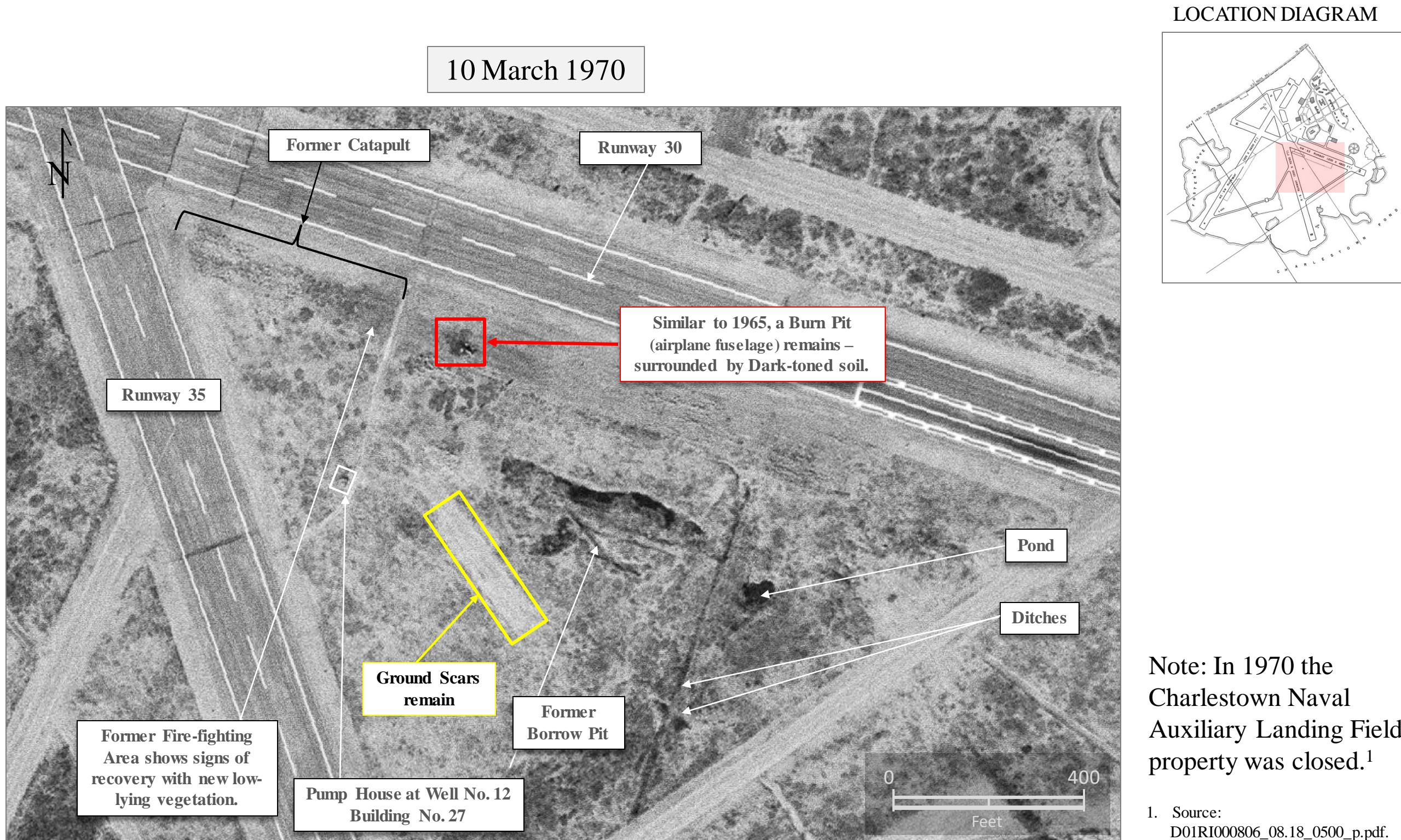
HTRW = Hazardous, Toxic, & Radioactive Waste

LOCATION DIAGRAM





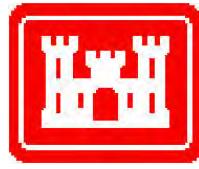
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1970 VERTICAL VIEW



Source: U.S. Geological Survey, EarthExplorer.

HTRW = Hazardous, Toxic, & Radioactive Waste

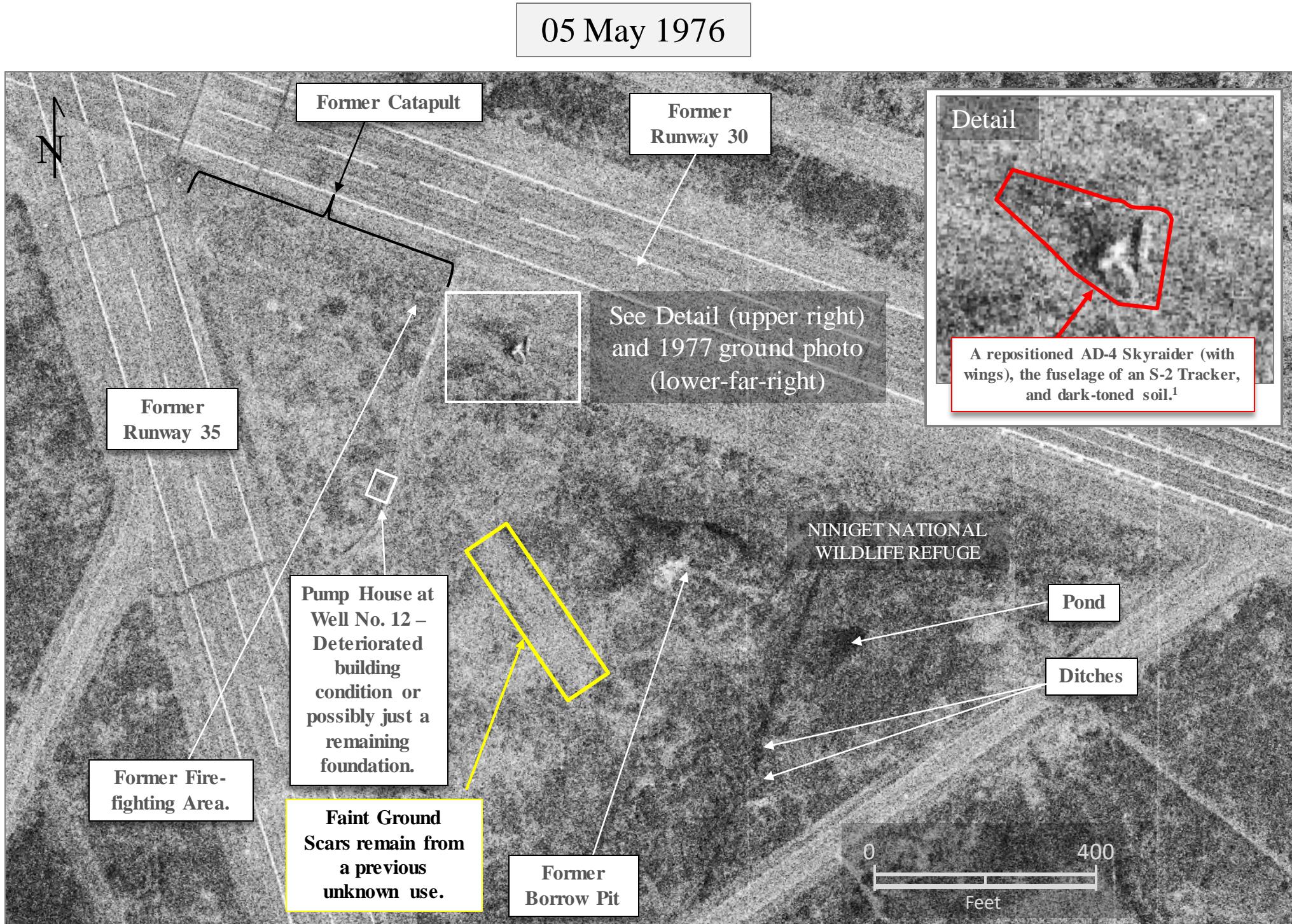
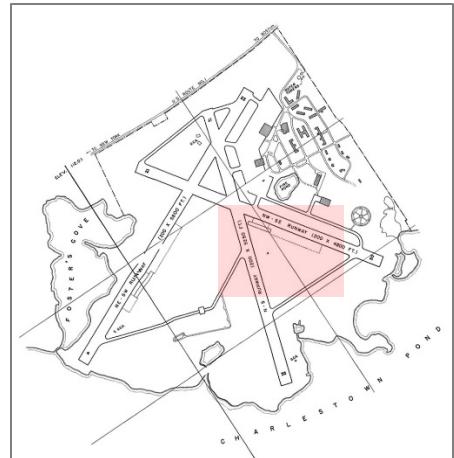
1. Source:
D01RI000806_08.18_0500_p.pdf.



HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1976 VERTICAL VIEW AND 1977 GROUND VIEW



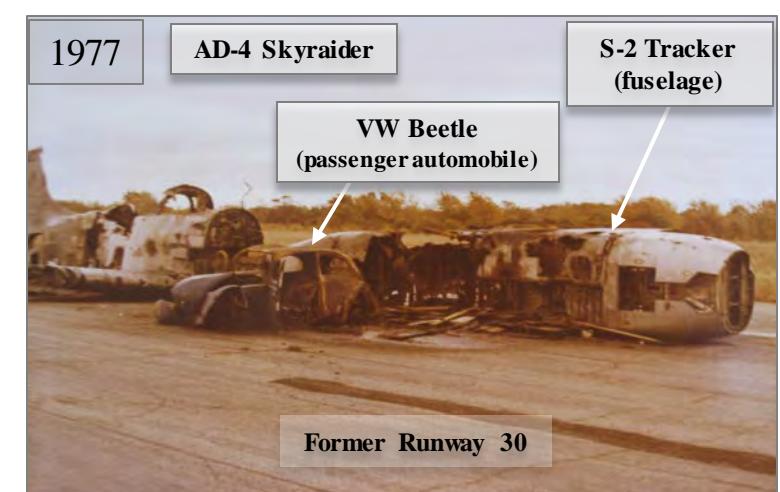
LOCATION DIAGRAM



Source: U.S. Department of Agriculture (USDA)

1. Source (aircraft descriptions):
Larry Webster Archives.
2. Sources:
D01RI000801_03.10_0020_a.pdf and
D01RI000801_03.10_0020_a.pdf.

HTRW = Hazardous, Toxic, & Radioactive Waste



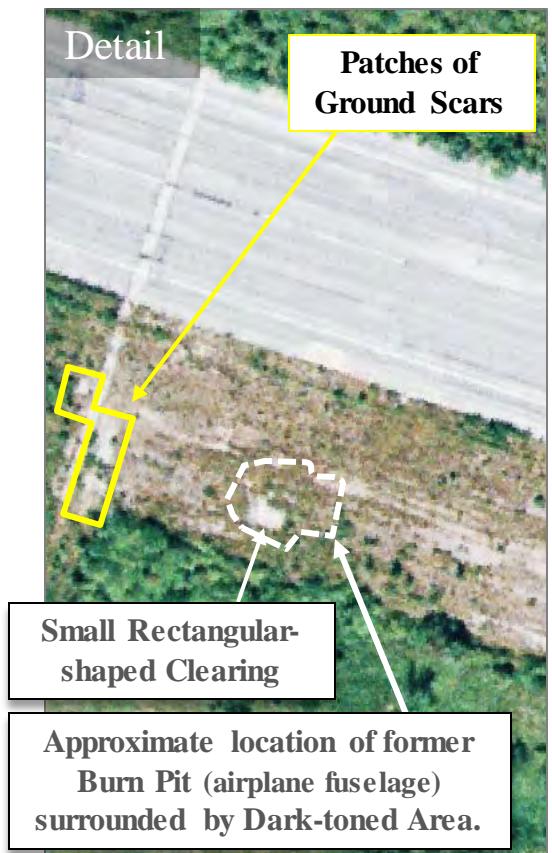
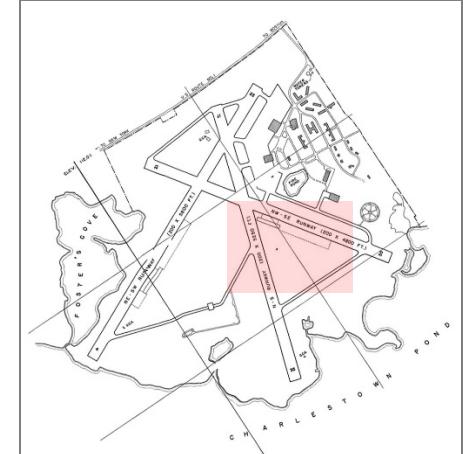
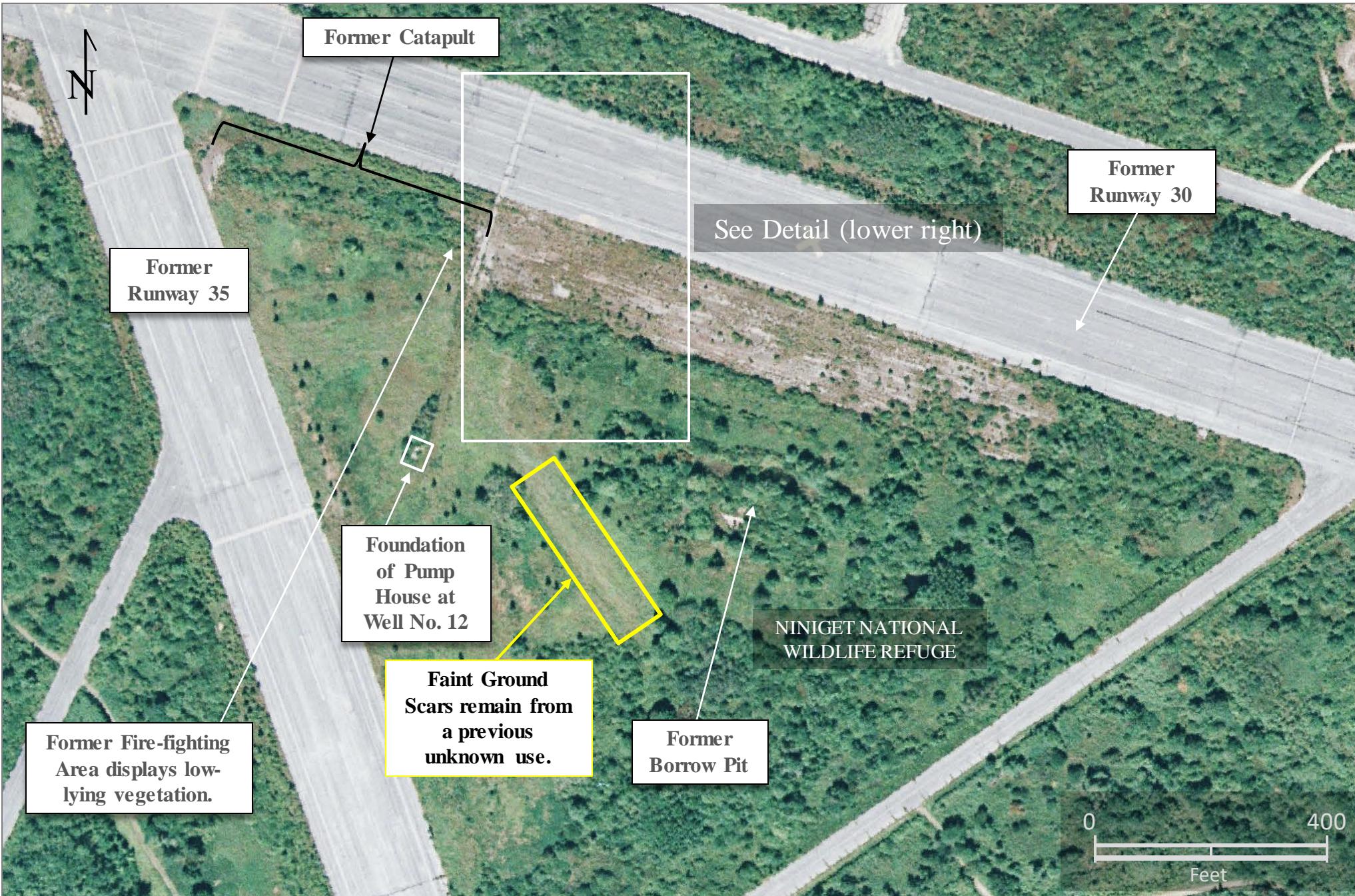
Source: Larry Webster Photo Album Collection
(courtesy of NAE). Aircraft identified via Larry Webster Archives.



HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 1994 VERTICAL VIEW

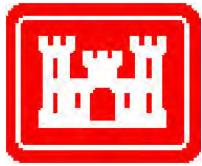


LOCATION DIAGRAM



Source: National Oceanic and Atmospheric Administration (NOAA).

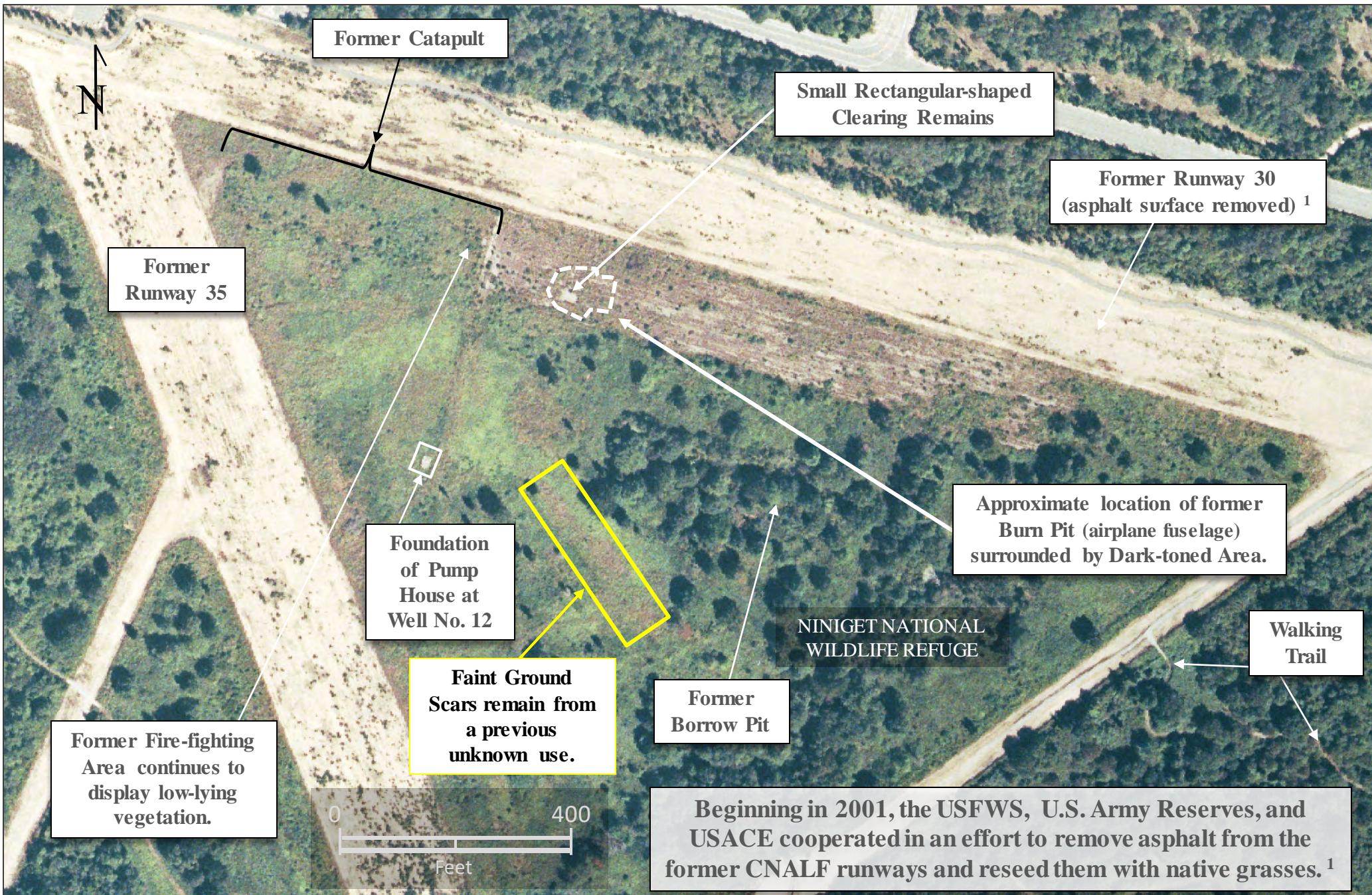
HTRW = Hazardous, Toxic, & Radioactive Waste



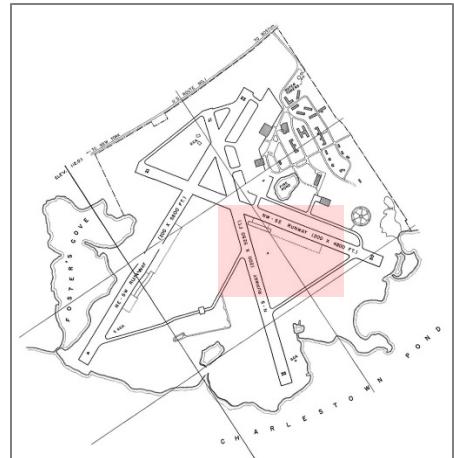
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 2005 VERTICAL VIEW



06 September 2005



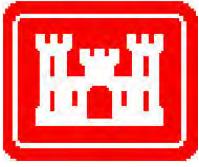
LOCATION DIAGRAM



1) Source: Proceedings of the 12th Biennial Coastal Zone Conference, Cleveland, OH, July 15-19, 2001.

Source: National Oceanic and Atmospheric Administration (NOAA).

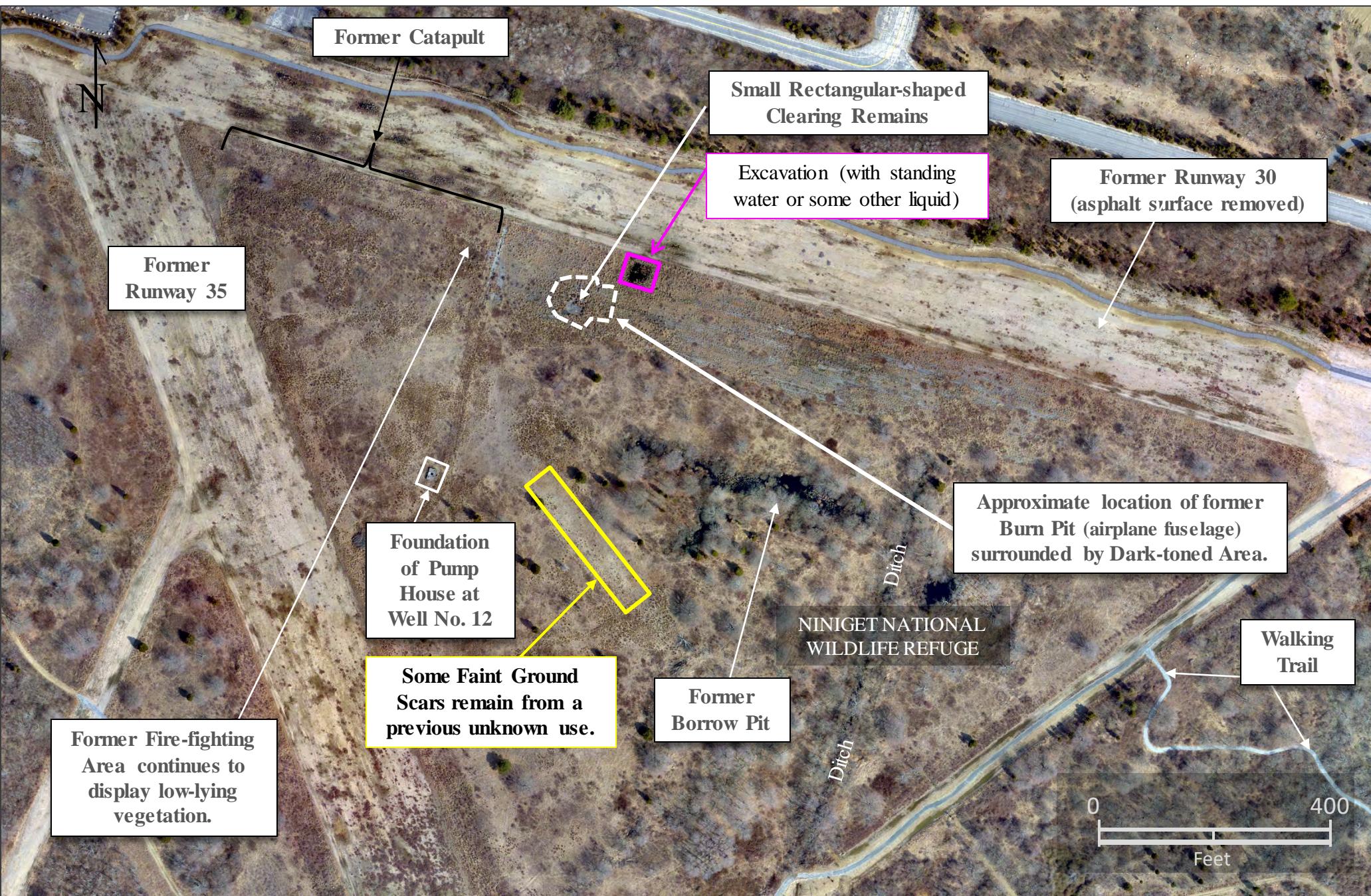
HTRW = Hazardous, Toxic, & Radioactive Waste



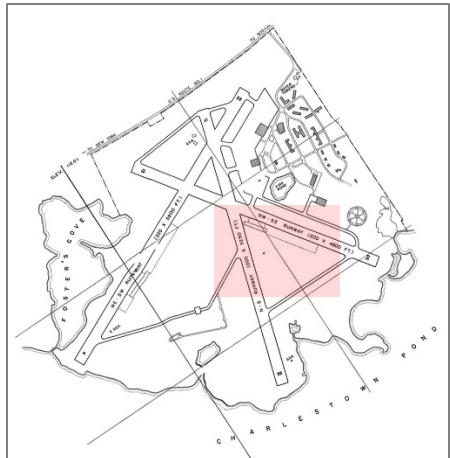
HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 2007 VERTICAL VIEW



April 2007

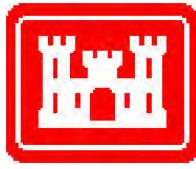


LOCATION DIAGRAM



Source: Sky Research, Inc.; courtesy of the U.S. Army Corps of Engineers, New England District

HTRW = Hazardous, Toxic, & Radioactive Waste



HTRW SITE NO. 3 – BURN PIT AREA (FIRE-FIGHTING TRAINING AREA) 2016 VERTICAL VIEW

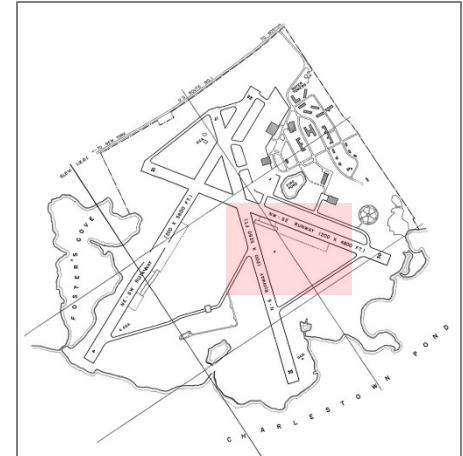


02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

LOCATION DIAGRAM



In a 2016 aerial view of the Ninigret National Wildlife Refuge, no prominent remains of the former Fire-fighting Training Area at CNALF are visible.

1) Source: Conservation Strategy for the New England Cottontail, Stephen Fuller, Ph.D, et. Al., approved 20 November 2012.

CNALF = Charlestown Naval Auxiliary Landing Field HTRW = Hazardous, Toxic, & Radioactive Waste USACE = U.S. Army Corps of Engineers USFWS = U.S. Fish & Wildlife Service



HISTORICAL PHOTO ANALYSIS

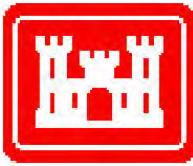
HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL / INLAND TOXIC WASTE DUMP



Ninigret Wildlife Refuge Landfill

FINDINGS THROUGH PHOTOGRAPHIC ANALYSIS – HTRW SITE 4 / MRS 2

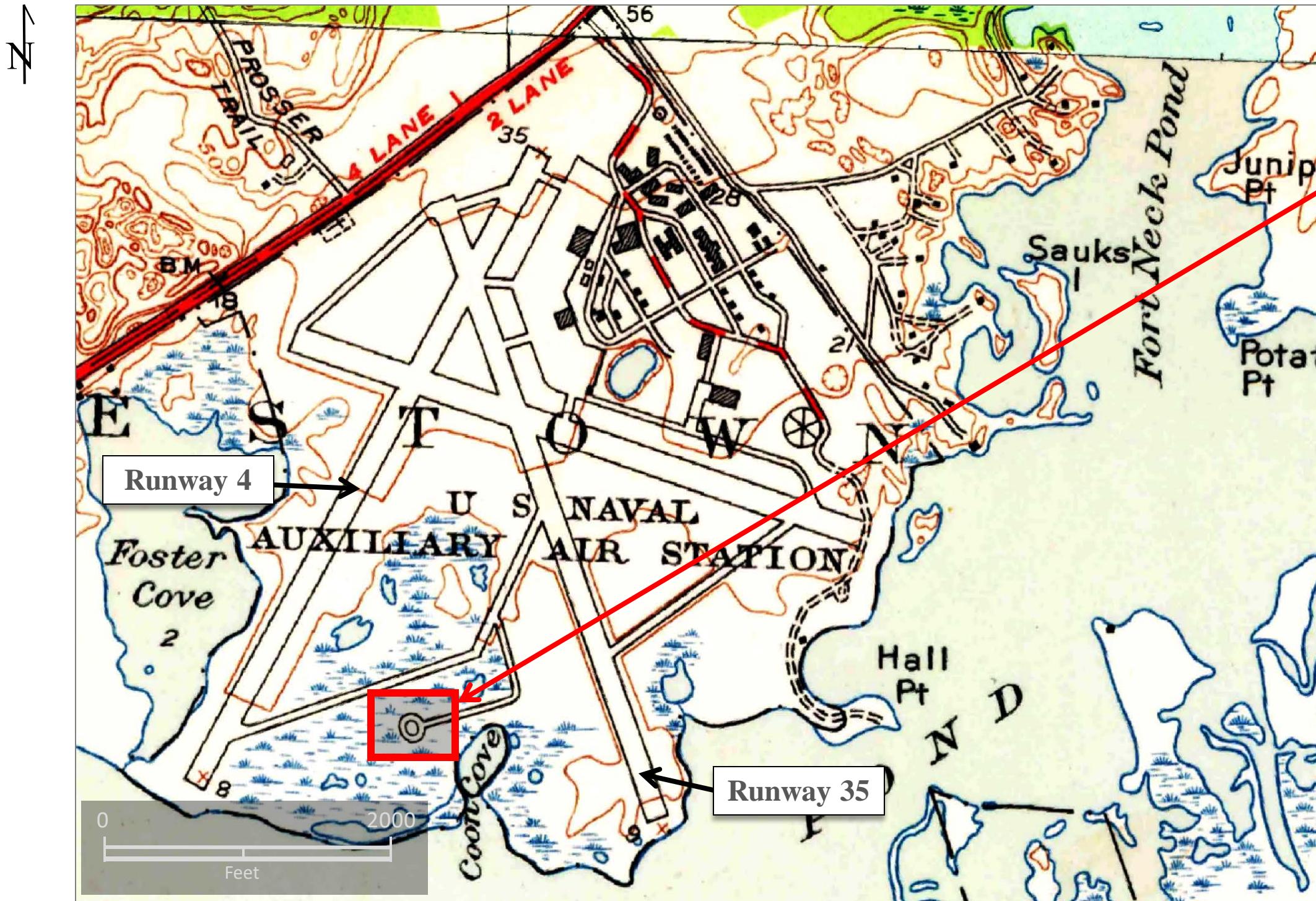
HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site



HTRW SITE NO. 4 / MRS 2 AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

A landfill located in the vicinity of the former High Explosive Storage Magazine (Building No. 60).¹

A commonly-used name of this site at CNALF is HTRW Site 4 - Ninigret Wildlife Refuge Landfill.

This site is also known as the MRS 2 - Inland Toxic Waste Dump.²

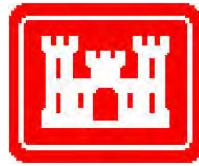
1) Source: U.S. Navy layout plan (map), Q.N.Q.S. – N.A.A.S. Charlestown, R.I., Sheet No. 5; Conditions as of 30 June 1951; D01RI000801_01.04_0007_p.pdf.

2) Source: Site Inspection Report for Naval Auxiliary Landing Field; Prepared by Alion Science and Technology, Durham, NC, for the U.S. Army Corps of Engineers, August 2008; D01RI000806_01.09_0500_a.pdf.

CNALF = Charlestown Naval Auxiliary Landing Field

HTRW = Hazardous, Toxic, and Radioactive Waste

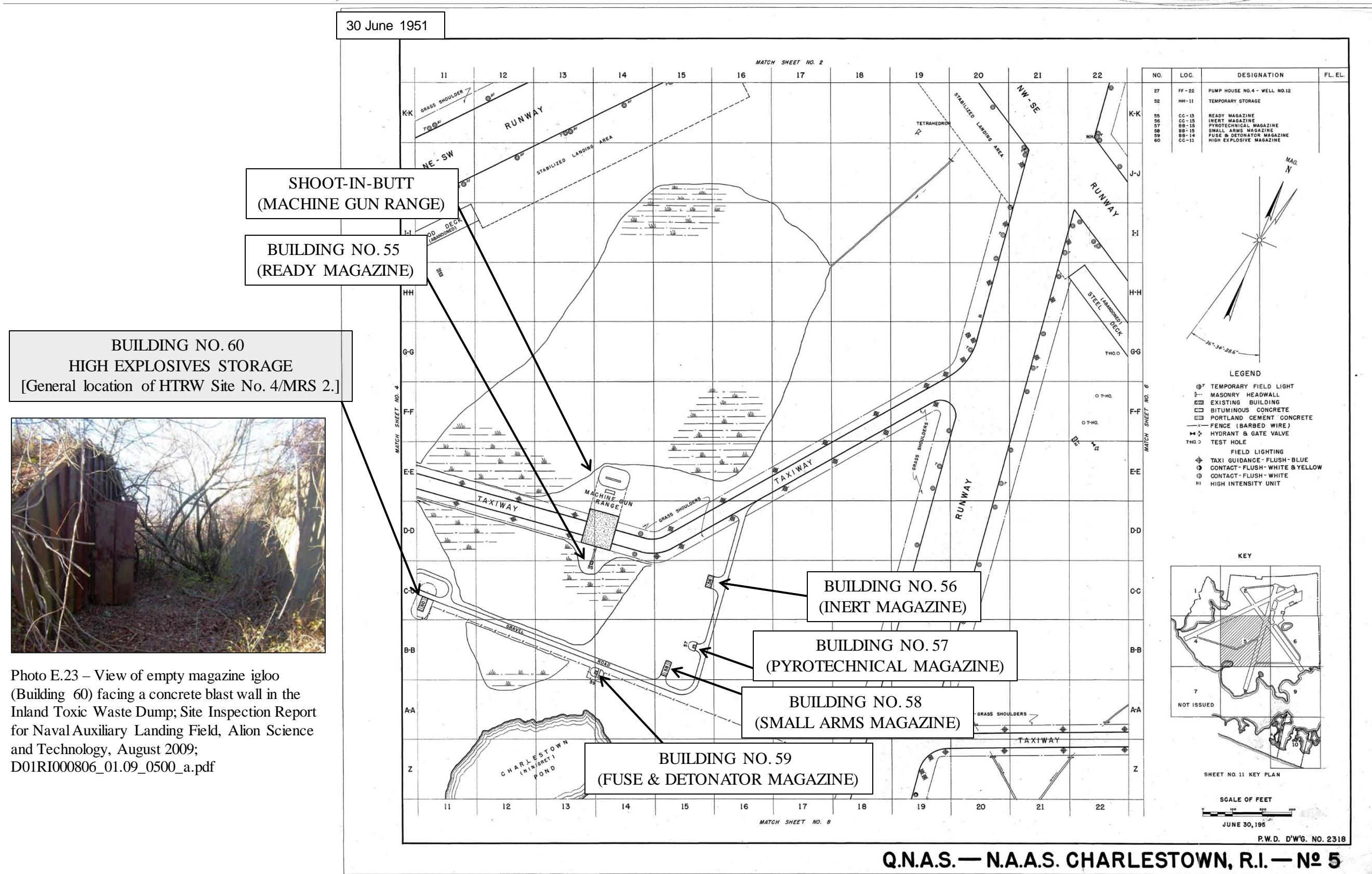
MRS = Munitions Response Site



MAGAZINE AREA – N.A.A.S. CHARLESTOWN, R.I.



30 June 195

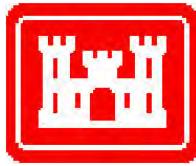


HTRW = Hazardous, Toxic, and Radioactive Waste

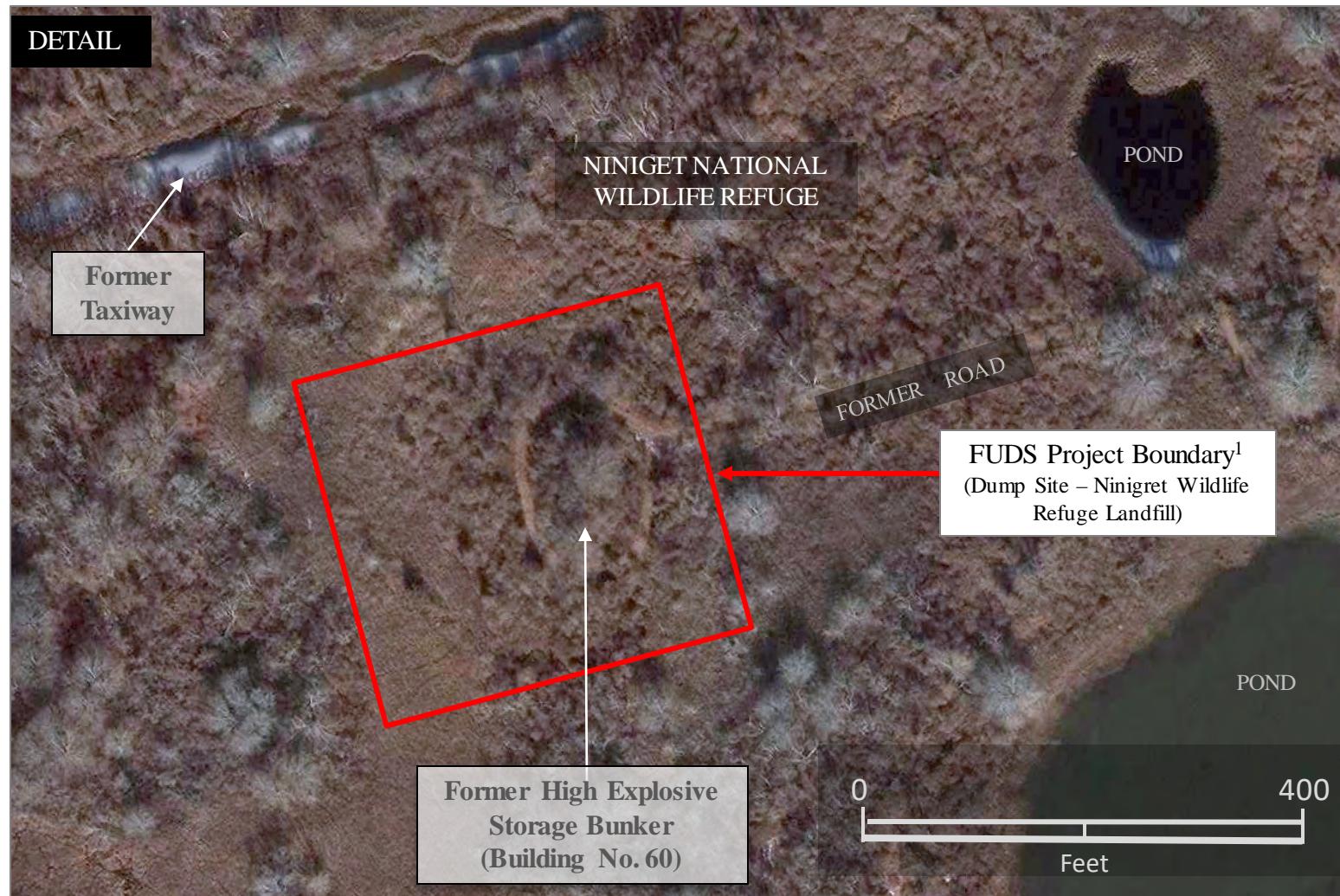
MRS = Munitions Response Site

FINAL REPORT AUGUST 2018

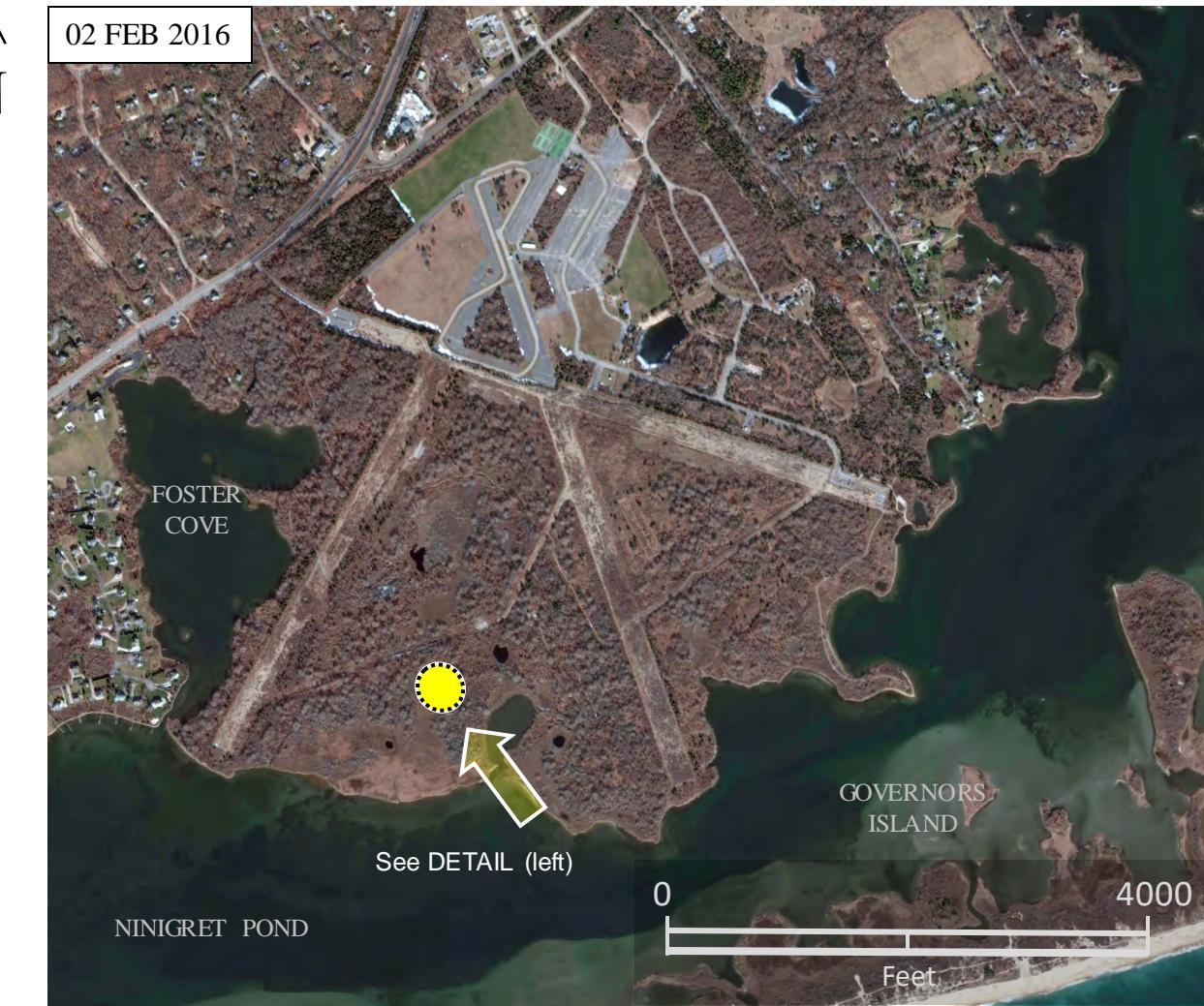
Source:- Public Works
Department Drawing Number
318 -Map of Q.N.A.S. -
N.A.S. Charlestown, R.I.
No 5 showing conditions on
30 June 1951.



HTRW SITE NO. 4 / MRS 2 – DESCRIPTION & INTRODUCTION



Source: National Geospatial-Intelligence Agency (NGA).

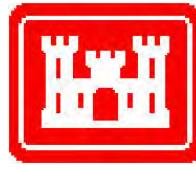


Source: National Geospatial-Intelligence Agency (NGA).

The HTRW Site 4 - Ninigret Wildlife Refuge Landfill, also known as the MRS 2 - Inland Toxic Waste Dump, is located in the former explosives storage area of CNALF. This site was used as a disposal area. From the 1940s to the 1970s, the U.S. Navy used this location as a trash dump. Munitions associated with this dump include small to medium caliber ammunition and practice bombs with spotting charges.¹ Remedial Investigations from 1996 and 1997 report that the site contains “a heterogeneous mixture of brown sand and gravel mixed with landfill materials, including trash, appliances, tires, cans, bottles, and other miscellaneous debris (to include thirty-five 55-gallon drums in varying states of deterioration).”²

1. Source: D01RI000806_08.18_0500_p.pdf (Formerly Used Defense Sites Interim Risk Management Communication Assessment Summary, Naval Aux Landing Field, Inland Toxic Waste Dump & Dump Area, Washington County, Rhode Island, Prepared by the U.S. Army Corps of Engineers, New England District, May 2016).

2. Source: D01RI000806_01.09_0500_a.pdf (Site Inspection Report for Naval Auxiliary Landing Field, Prepared by Alion Science and Technology, Durham, NC, for the U.S. Army Corps of Engineers, August 2008).



HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1941 PRE-DEVELOPMENT VIEW



09 October 1941

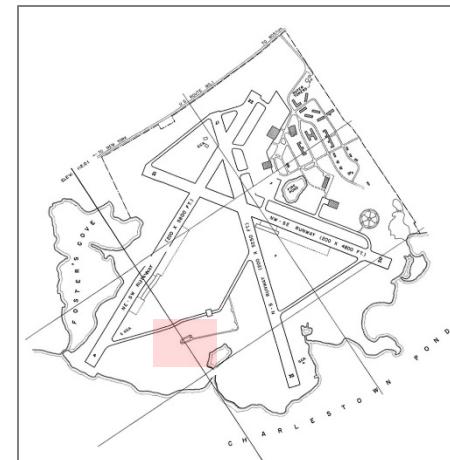


Source: U.S. Geological Survey, EarthExplorer.

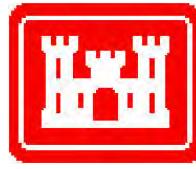
1. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site

LOCATION DIAGRAM



This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.



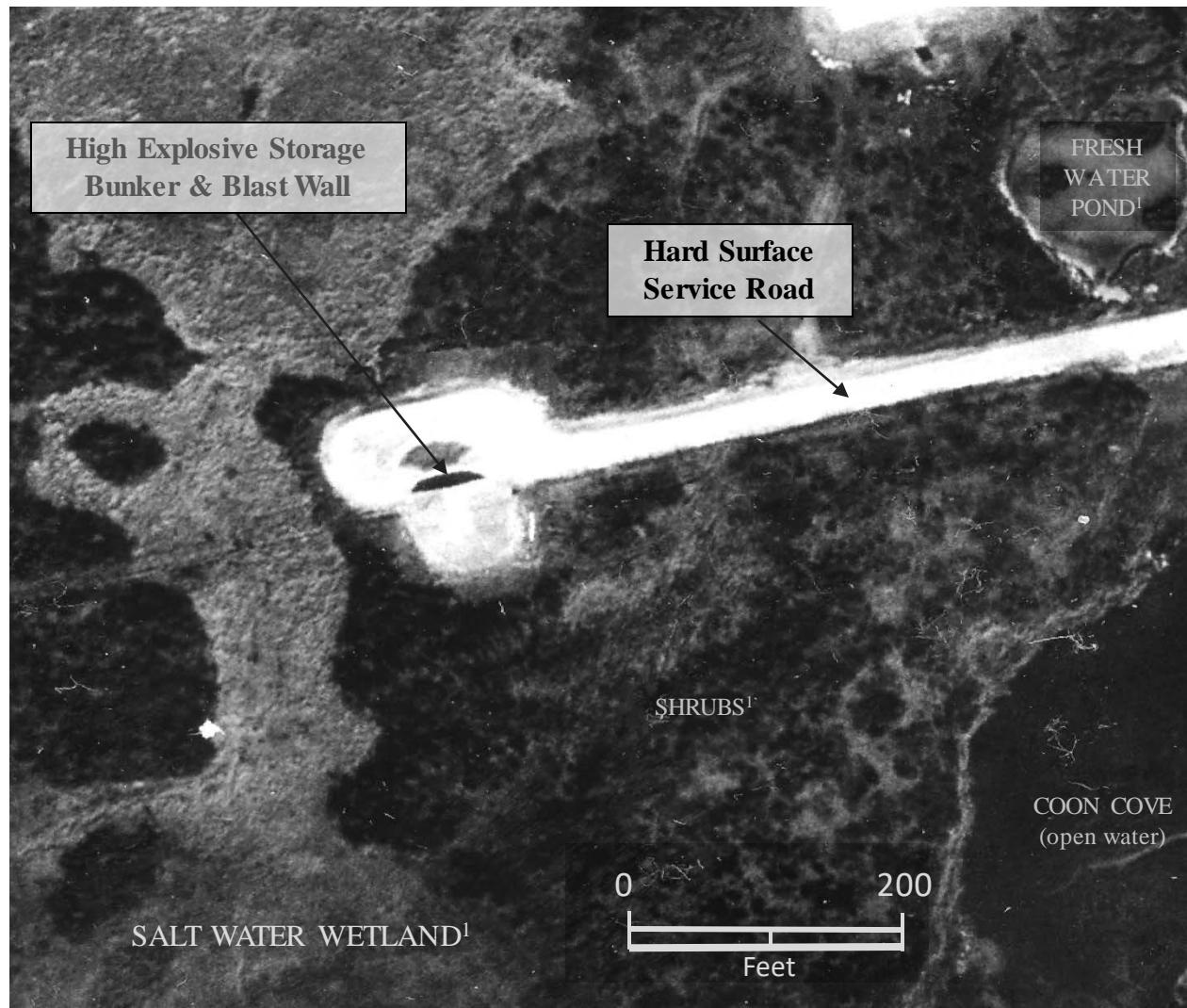
HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1944 & 1954 PRE-DEVELOPMENT VIEWS



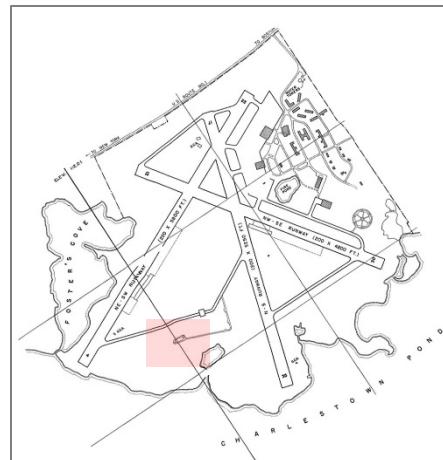
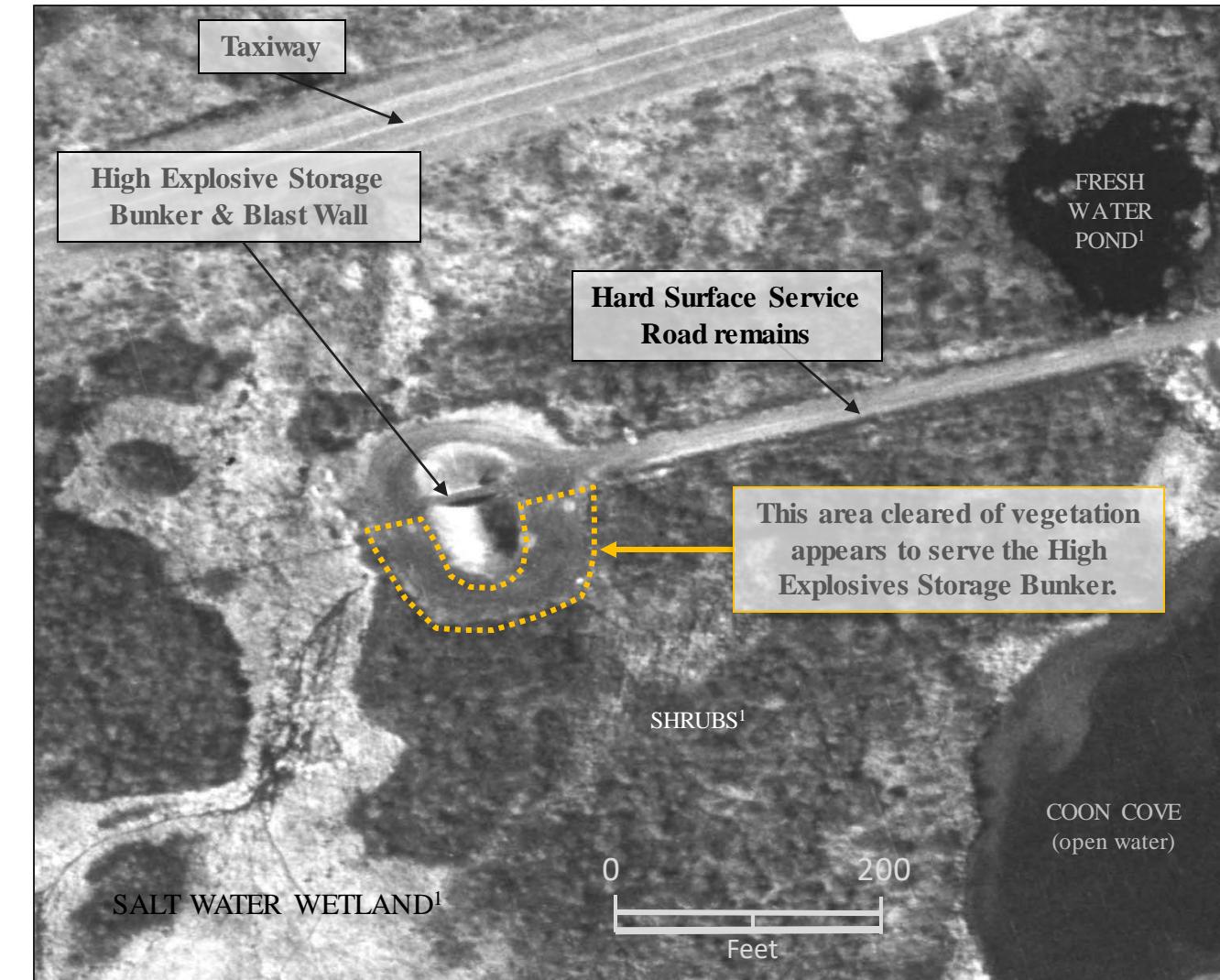
LOCATION DIAGRAM

In 1944 and 1954 black & white aerial views, there is no visual evidence of a landfill or dump located in the vicinity of the High Explosive Storage Magazine.

31 January 1944



21 April 1954

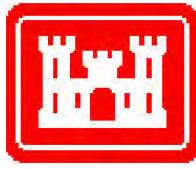


This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: National Archives & Records Administration, Archives II, College Park, MD.

Source: National Oceanic and Atmospheric Administration (NOAA)

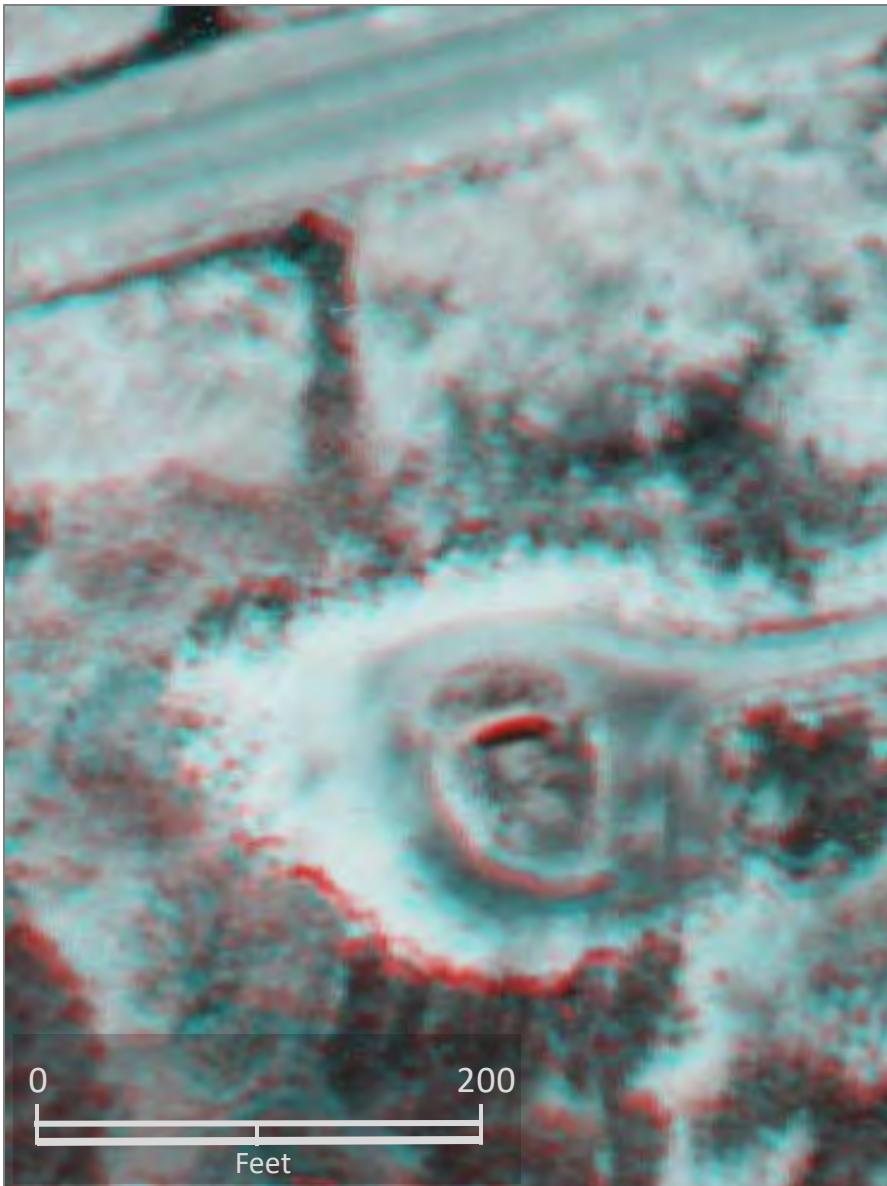
1. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.



HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1962 VERTICAL VIEW



3D ANAGLYPH – CLOSE-UP¹

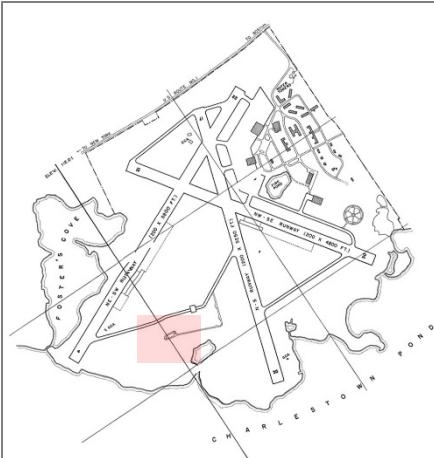


04 April 1962

BLACK & WHITE VERTICAL



LOCATION DIAGRAM



In an April 1962 aerial view, there is clear visual evidence of a fill area located in the vicinity of the High Explosive Storage Magazine.

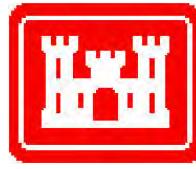
This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: Rhode Island Department Of Administration Planning Information Center

1. Stereo viewing requires the use of red-blue 3D glasses.

2. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site



HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1965 VERTICAL VIEW

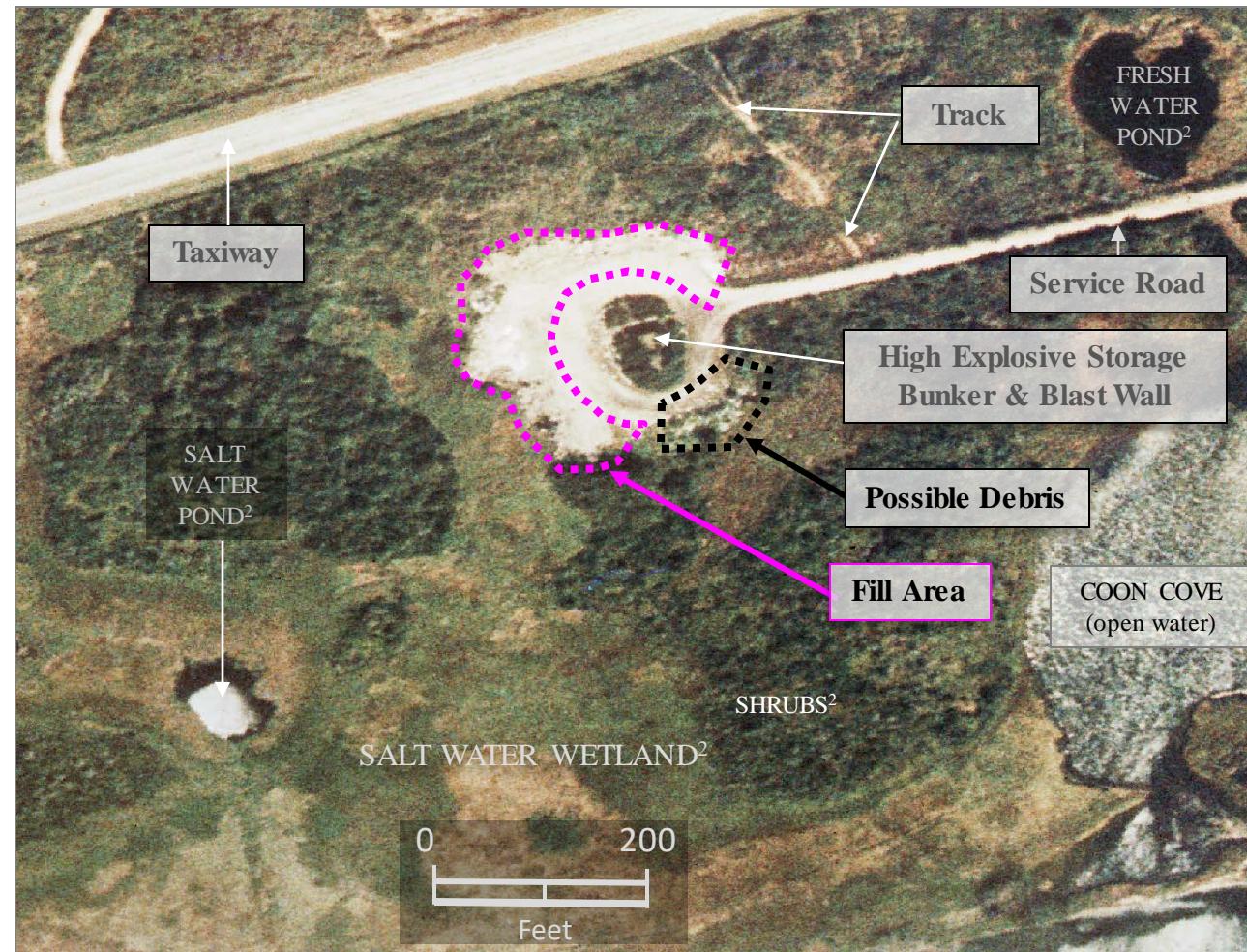


27 September 1965

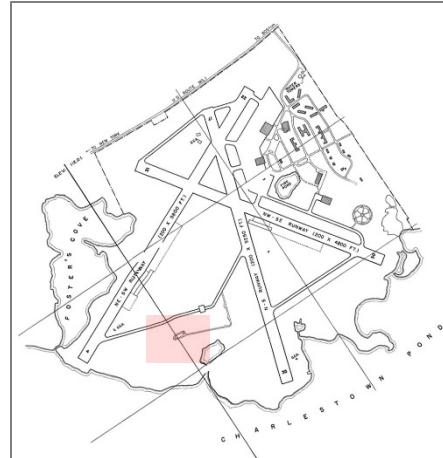
3D ANAGLYPH – CLOSE-UP¹



NATURAL COLOR VERTICAL



LOCATION DIAGRAM



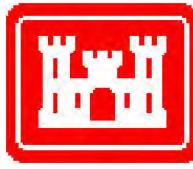
In a September 1965 aerial view, there remains clear visual evidence of a fill area located in the vicinity of the High Explosive Storage Magazine (which has expanded since last observed in April 1962). Possible Debris is identified just southeast of the High Explosives Storage Bunker.

This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: National Oceanic and Atmospheric Administration (NOAA)

1. Stereo viewing requires the use of red-blue 3D glasses.

2. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

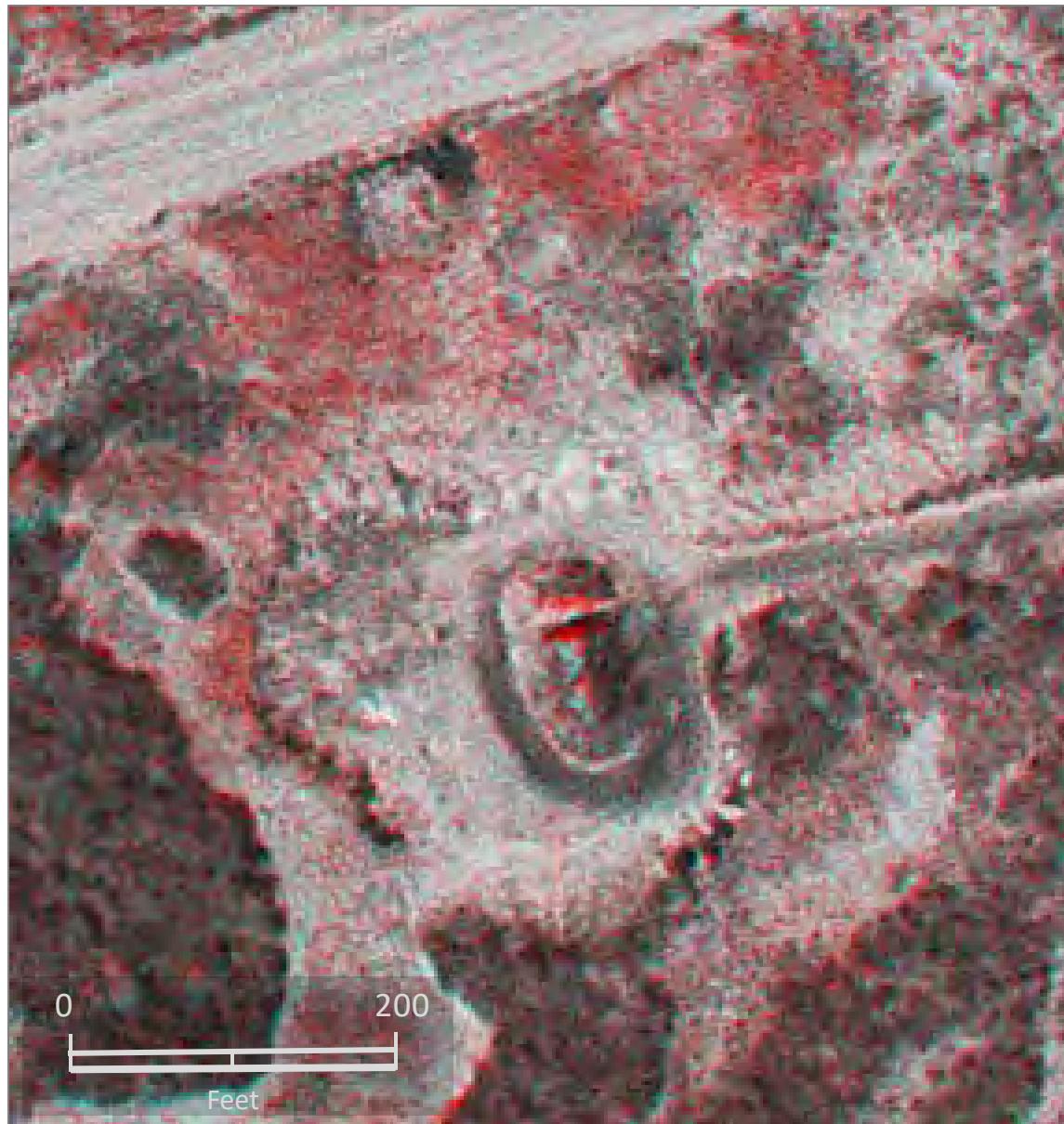


HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1970 VERTICAL VIEW

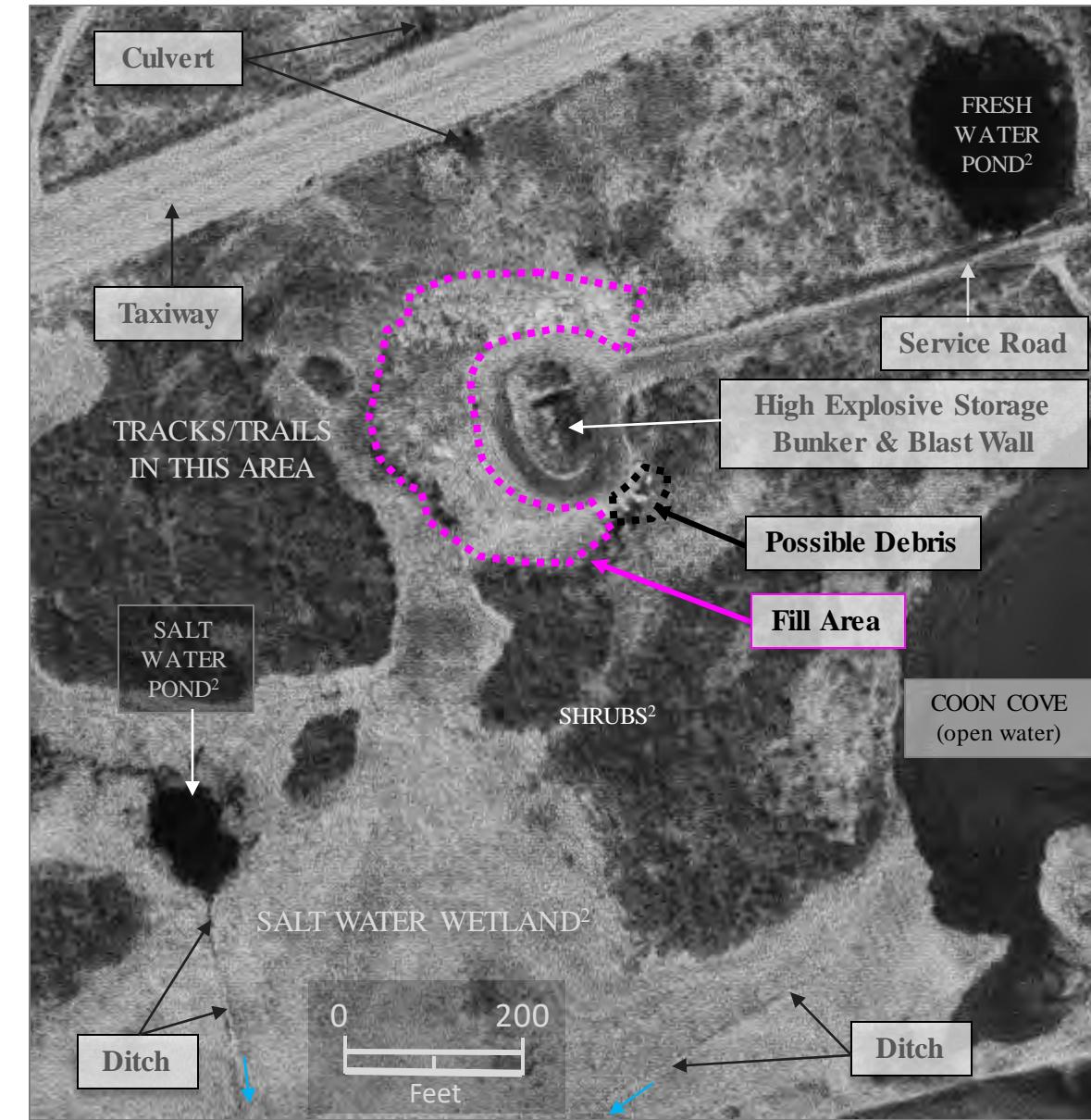


10 March 1970

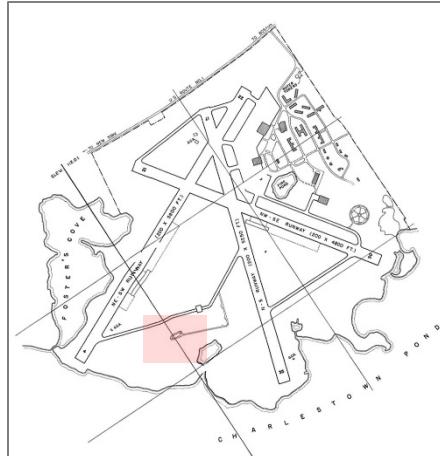
3D ANAGLYPH – CLOSE-UP¹



BLACK & WHITE VERTICAL



LOCATION DIAGRAM



In a March 1970 aerial view, there remains clear visual evidence of a fill area located in the vicinity of the High Explosive Storage Magazine (similar in appearance to it's last observance in September 1965).

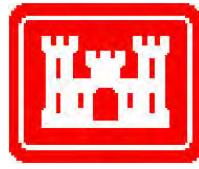
This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: U.S. Geological Survey, EarthExplorer.

1. Stereo viewing requires the use of red-blue 3D glasses.

2. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site

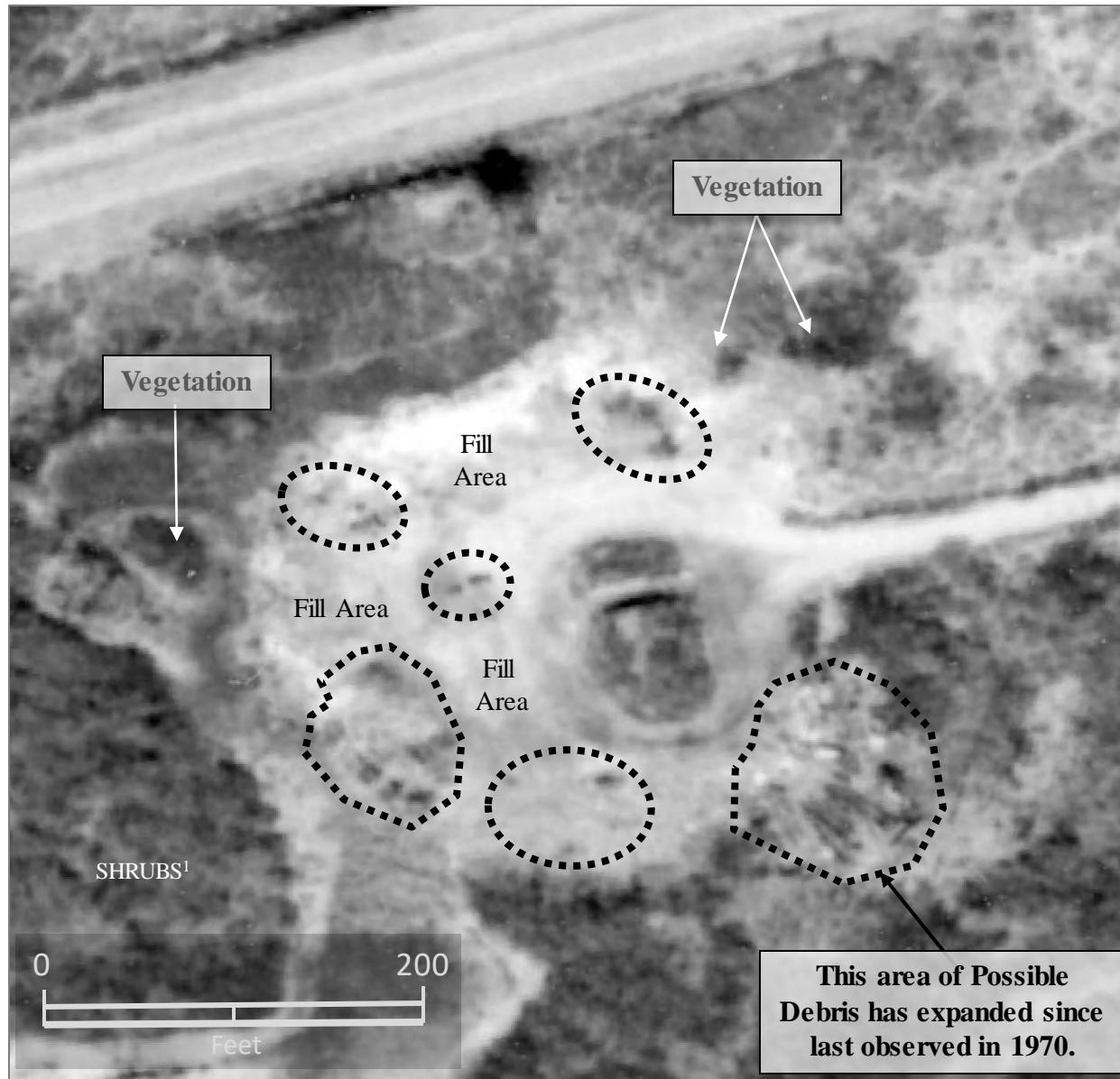


HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1972 VERTICAL VIEW

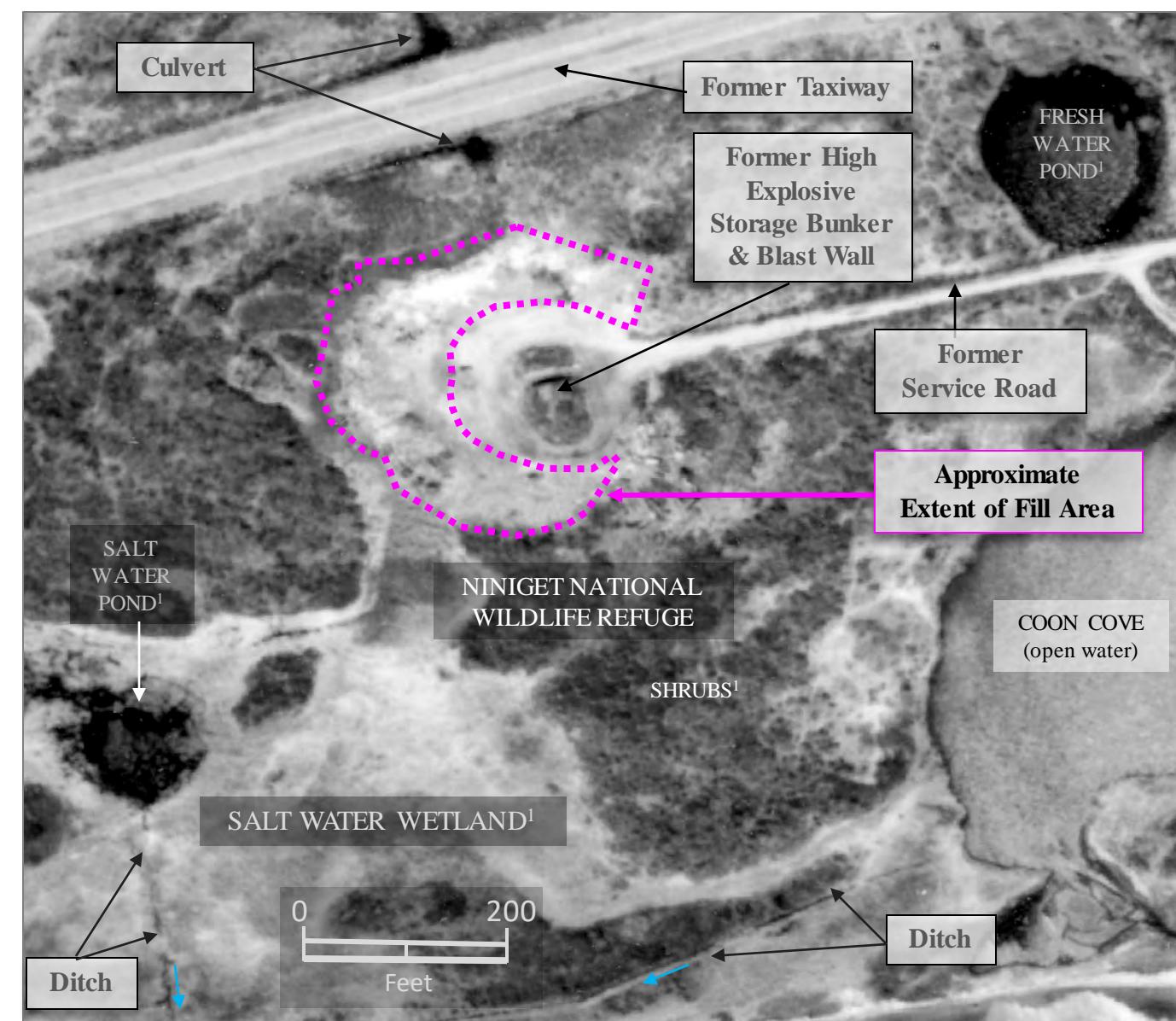


21 April 1972

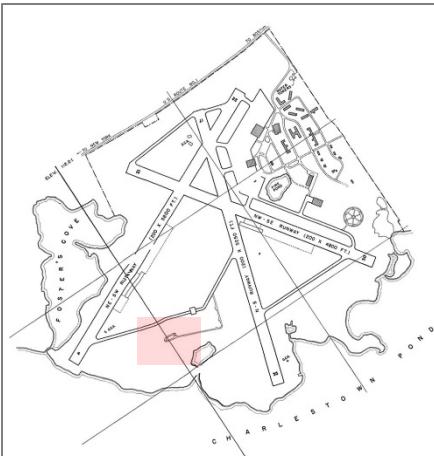
CLOSE-UP VIEW



BLACK & WHITE VERTICAL



LOCATION DIAGRAM



In an April 1972 vertical view, possible piles of debris are observed (located within the Fill Area) at the Ninigret Wildlife Refuge Landfill/Dump.

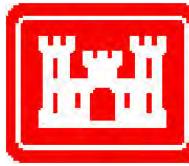
This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: Rhode Island Department Of Administration Planning Information Center

..... = Possible Debris

1. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munitions Response Site

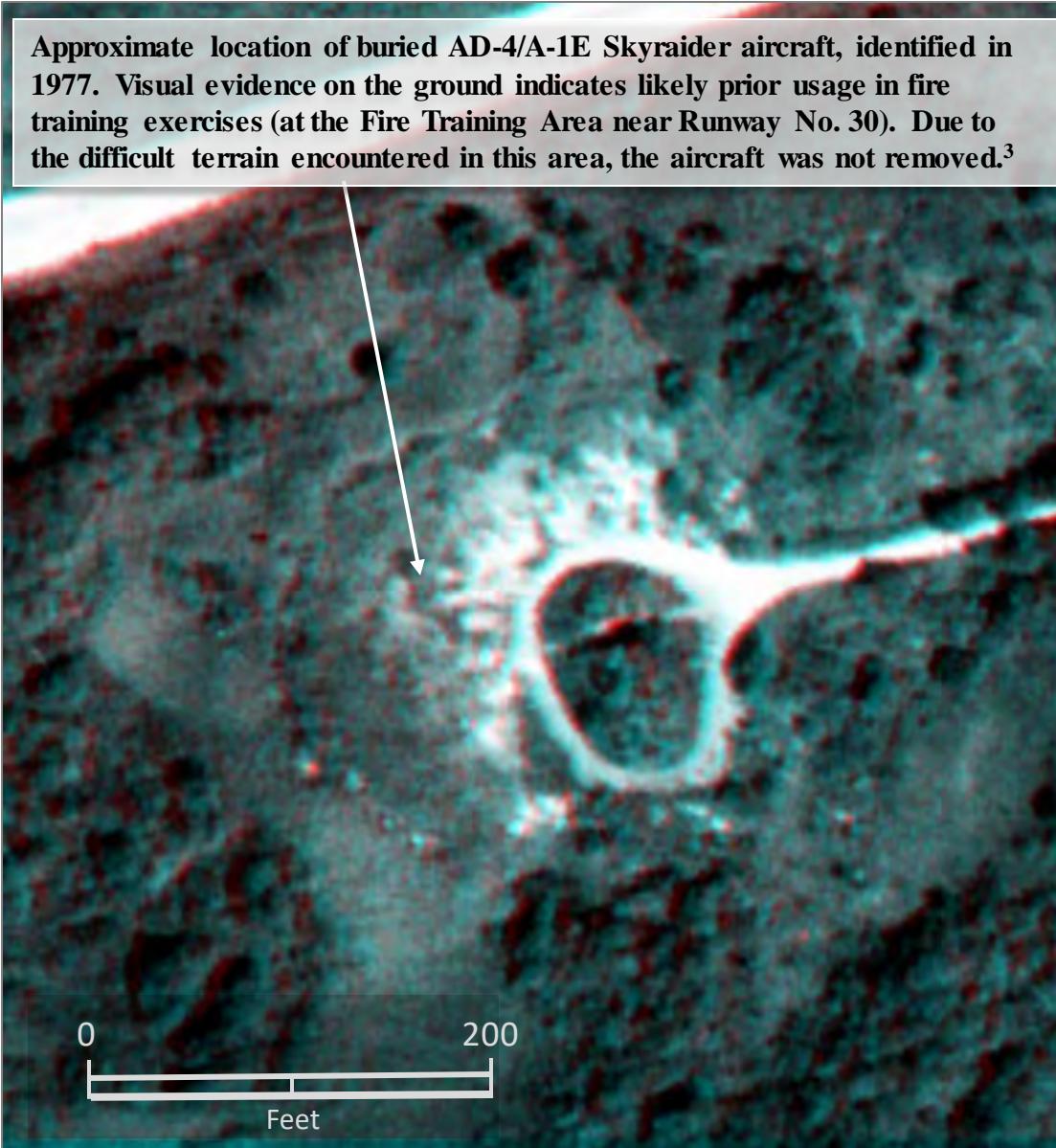


HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1979 VERTICAL VIEW



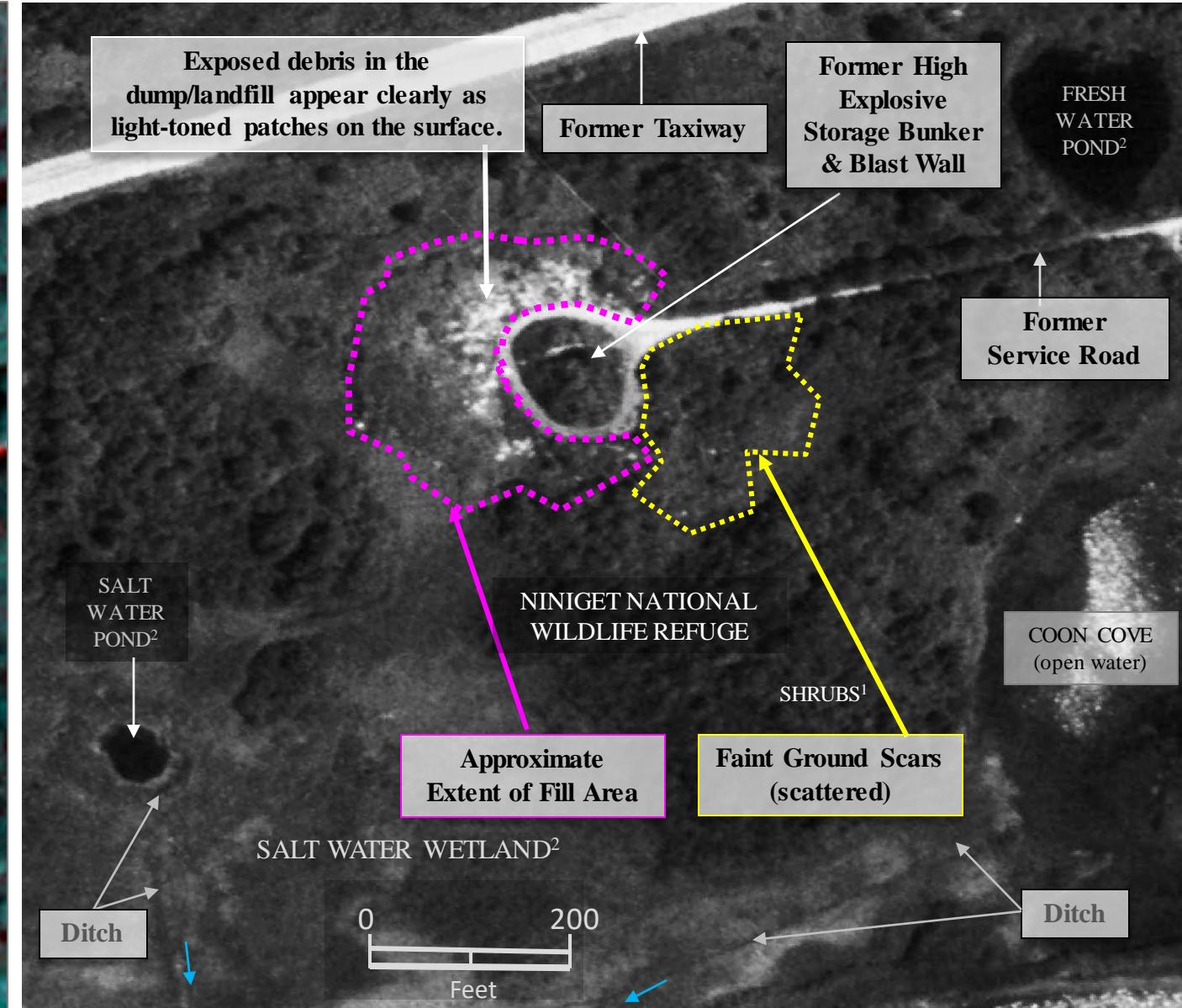
07 August 1979

3D ANAGLYPH – CLOSE-UP¹



Approximate location of buried AD-4/A-1E Skyraider aircraft, identified in 1977. Visual evidence on the ground indicates likely prior usage in fire training exercises (at the Fire Training Area near Runway No. 30). Due to the difficult terrain encountered in this area, the aircraft was not removed.³

BLACK & WHITE VERTICAL



Source: National Oceanic and Atmospheric Administration (NOAA).

1. Stereo viewing requires the use of red-blue 3D glasses.

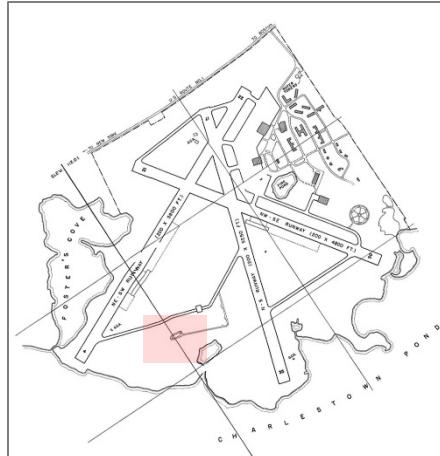
2. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

3. Information supplied by Larry Webster in July 2018.

HTRW = Hazardous, Toxic, and Radioactive Waste

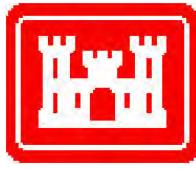
MRS = Munitions Response Site

LOCATION DIAGRAM



In an August 1979 vertical view, it is observed that the fill area surrounding the former high explosives storage bunker is now vegetated. There are clear indications of debris in the landfill/dump (indicated by light-toned patches of ground).

This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

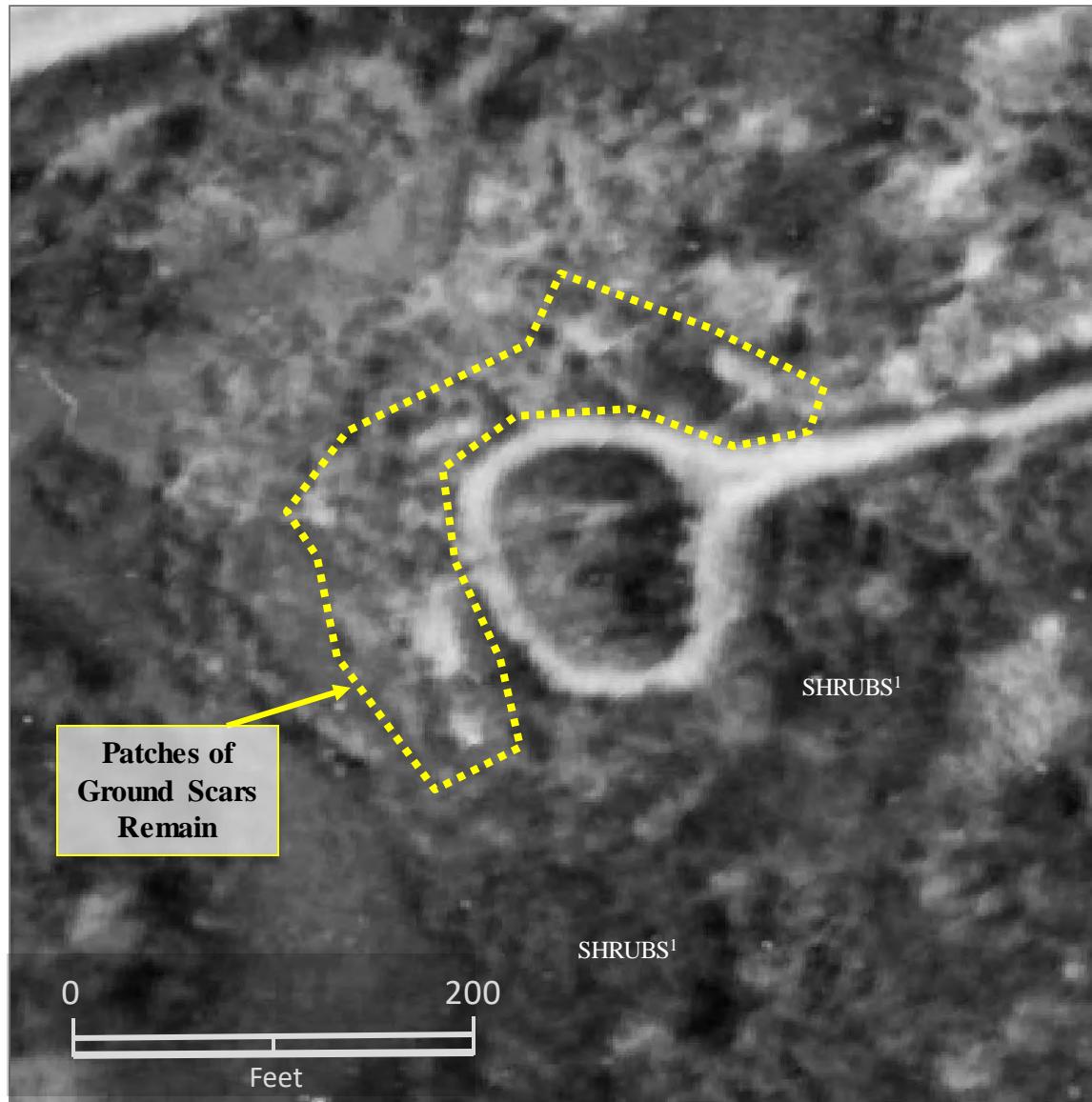


HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 1988 VERTICAL VIEW



13 April 1988

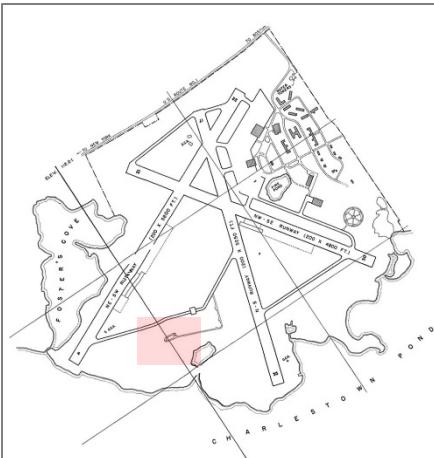
CLOSE-UP VIEW



BLACK & WHITE VERTICAL



LOCATION DIAGRAM

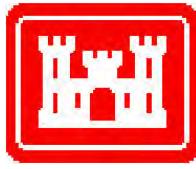


In an April 1988 vertical view, patches of light-toned ground scars remain at the landfill/dump.

This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: Rhode Island Department Of Administration Planning Information Center

1. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.



HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 2007 VERTICAL VIEW

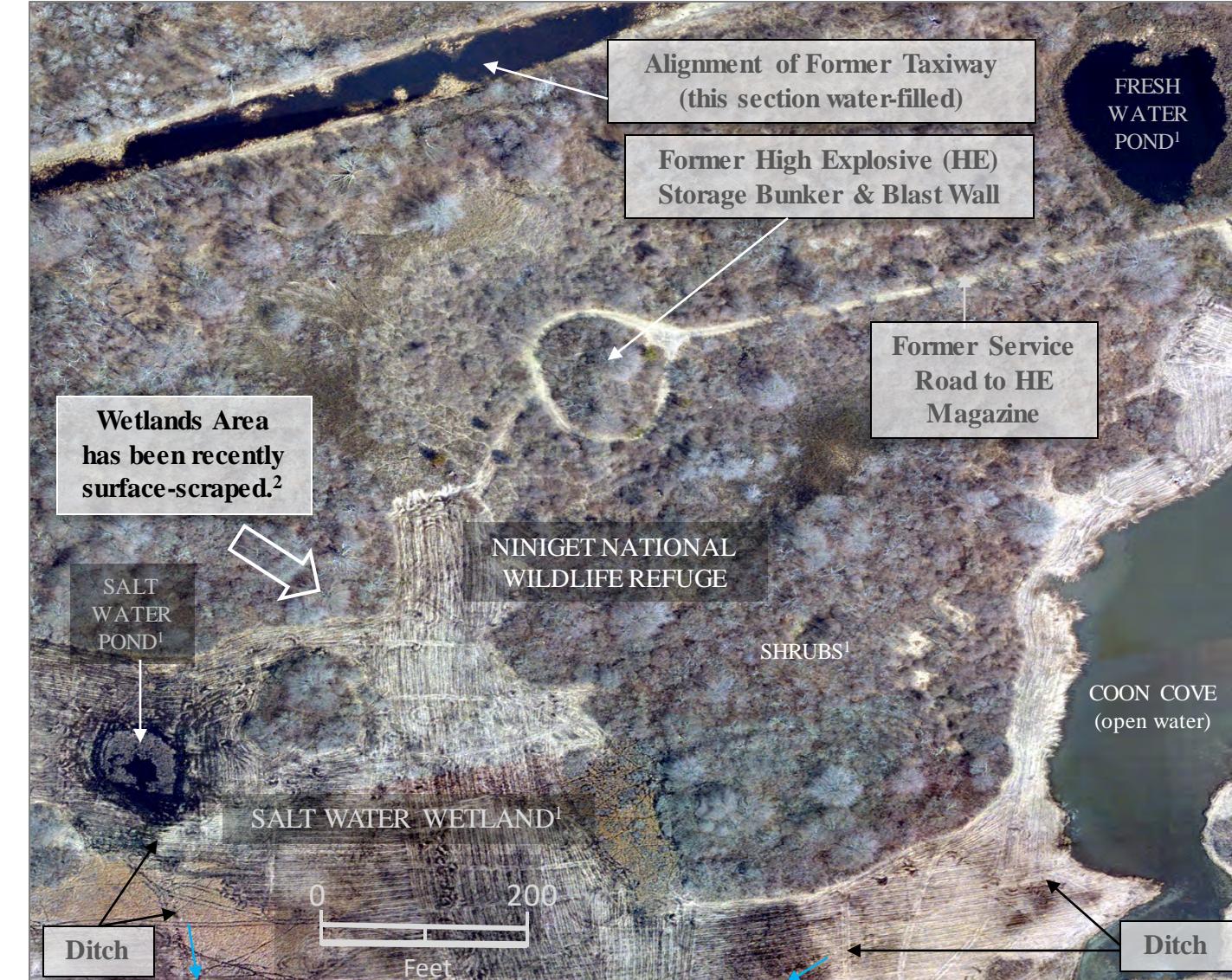


April 2007

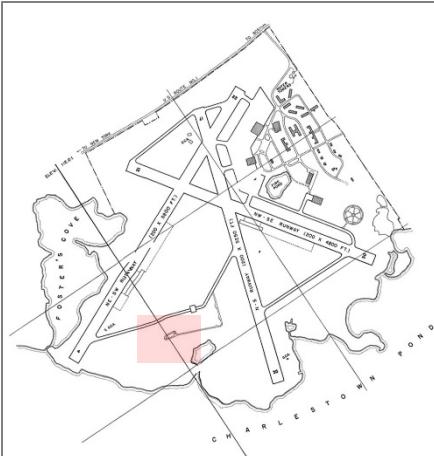
CLOSE-UP VIEW



NATURAL COLOR VERTICAL



LOCATION DIAGRAM



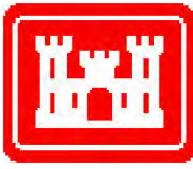
In an April 2007 vertical view, it is noted that former landfill/dump area is covered with vegetation. A major portion of the salt water wetland area surface has been recently worked, presumably with mechanized equipment.

This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

Source: Sky Research, Inc. (courtesy U.S. Army Corps of Engineers, New England District).

1. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

2. Surface-land changes to the salt water wetlands may relate to habitat restoration activities by the U.S. Fish & Wildlife Service: Chapter 4, 'Strategies', Ninigret National Wildlife Refuge Comprehensive Conservation Plan, May 2002.

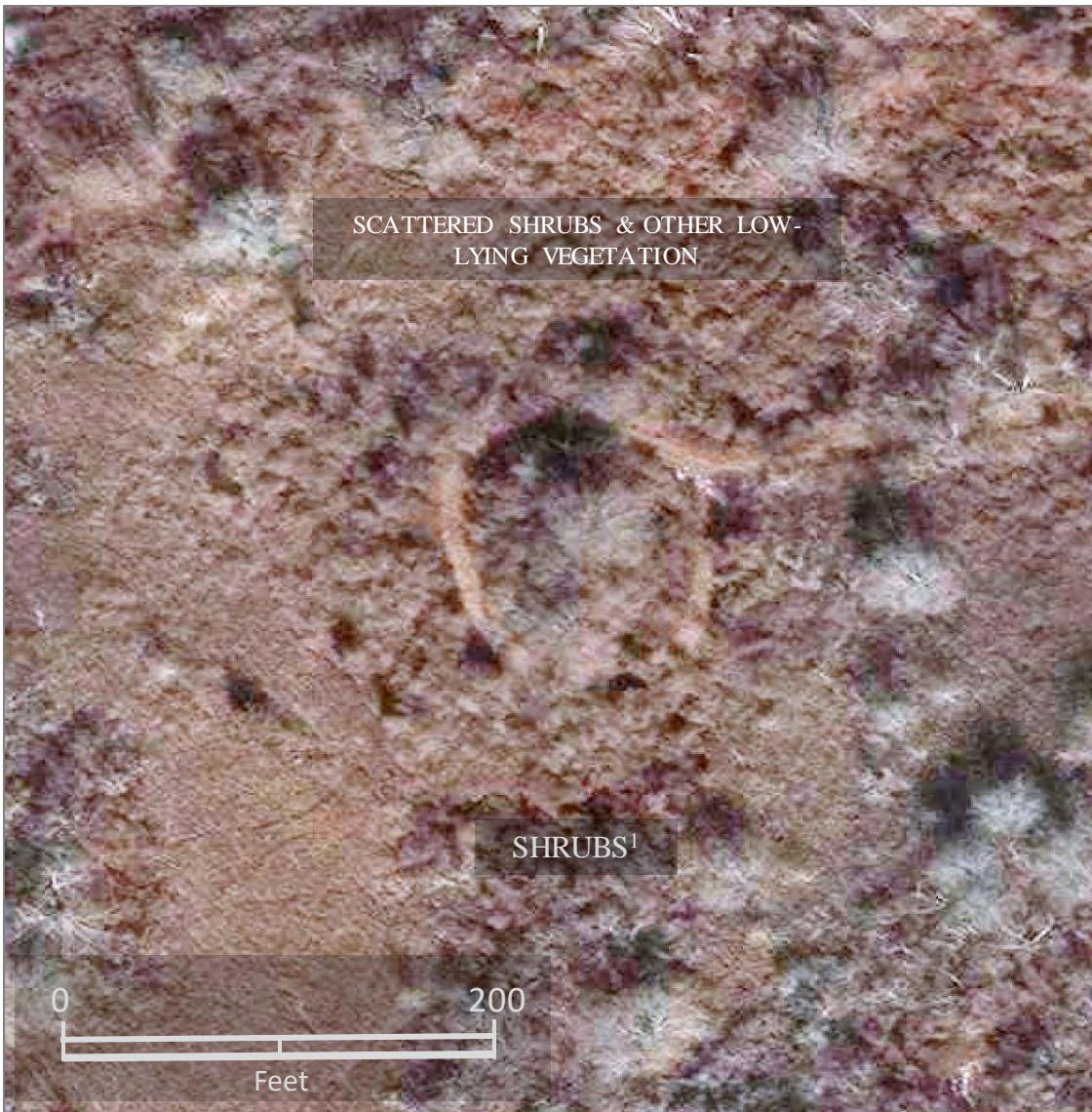


HTRW SITE NO. 4 / MRS 2 – NINIGRET WILDLIFE REFUGE LANDFILL & INLAND TOXIC WASTE DUMP – 2016 VERTICAL VIEW



02 February 2016

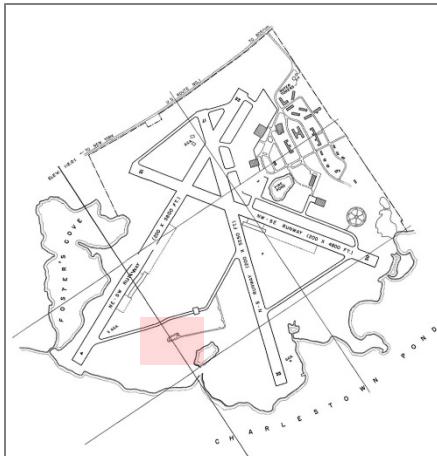
CLOSE-UP VIEW



NATURAL COLOR VERTICAL



LOCATION DIAGRAM



A February 2016 vertical view shows near-current conditions of the Ninigret Wildlife Refuge in the vicinity of the former landfill/dump - located in the vicinity of the former CNALF High Explosives (HE) Bunker.

This site is identified as HTRW Site 4 – Ninigret Wildlife Refuge Landfill and MRS 2 – Inland Toxic Waste Dump.

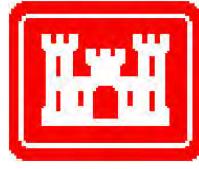
Source: National Geospatial-Intelligence Agency (NGA).

1. Source: Volume 1 Draft Environmental Impact Statement, Naval Auxiliary Landing Field Charlestown Rhode Island, General Services Administration (GSA), Region I, Post Office and Courthouse, MA, Exhibit I-A-29 (Vegetation) & Exhibit I-A-33 (Visual Character), 1977; courtesy Northwestern University Library, Evanston, IL.

CNALF = Charlestown Naval Auxiliary Landing Field

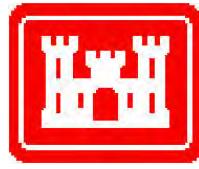
HTRW = Hazardous, Toxic, and Radioactive Waste

MRS = Munitions Response Site



Underground Aviation Gasoline Storage Tanks – Taxiway No. 3 Location

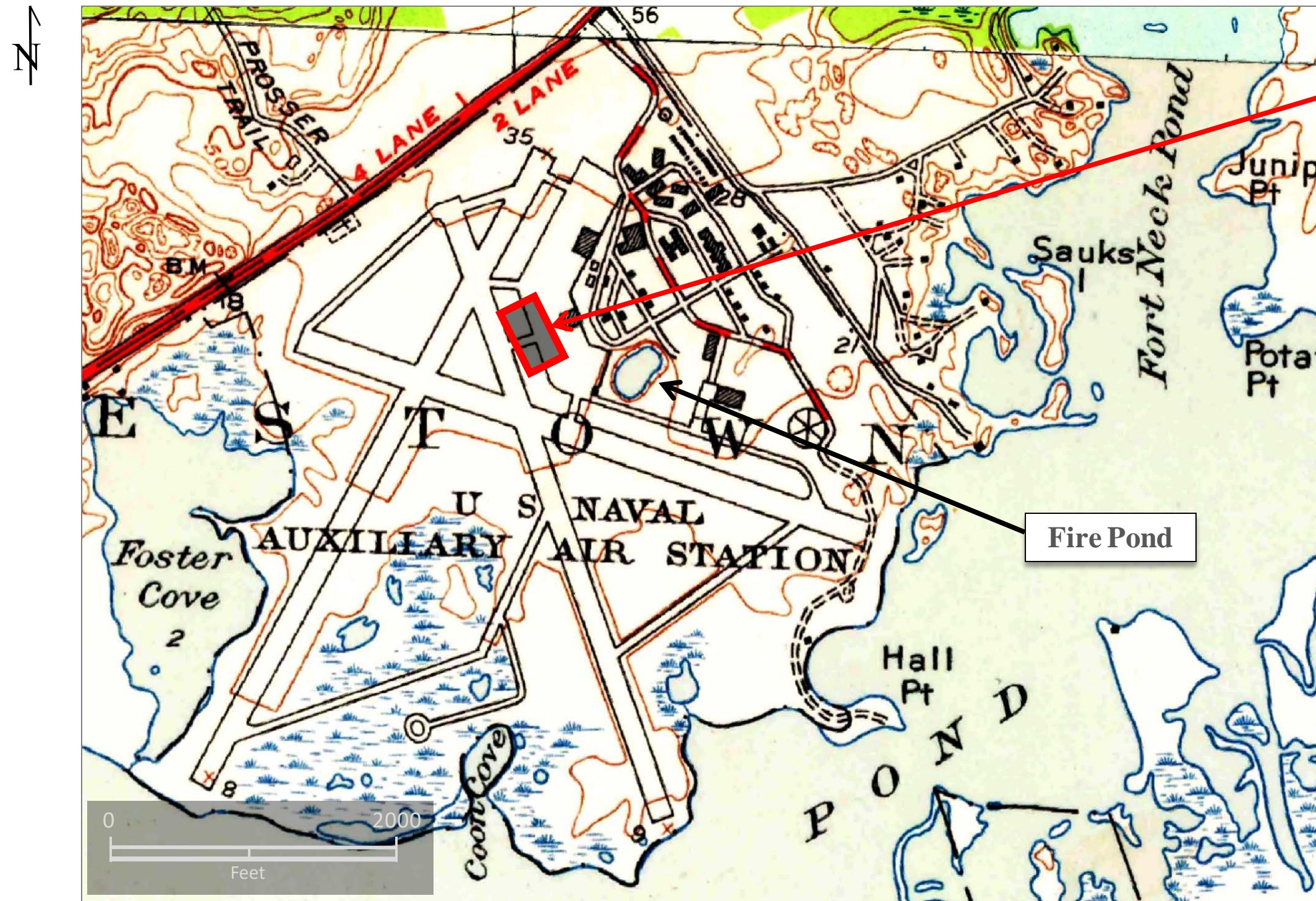
AVGAS = Aviation Gasoline USTs = Underground Storage Tanks



INITIAL LOCATION OF UNDERGROUND AVIATION GASOLINE STORAGE AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Underground Aviation Gasoline Storage Tanks adjacent to Taxiway No. 3.

In the Spring of 1945 these underground storage tanks were unearthed and moved to a new AvGas Storage Area located just north of the Fire Pond ¹

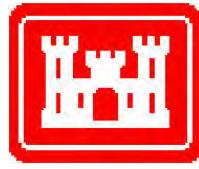
The move to relocate the AvGas USTs is documented on a 1943 map source.²

1) Source: Vertical aerial photo dated 26 March 1945; National Archives & Records Administration, Still Pictures Branch, Record Group 80 (U.S. Navy), Photo No. 394576.

2) Source: Continuation of Facility Map, Public works Department, Naval Auxiliary Air Facility, dated 30 June 1943 – Appendix L of CNALF Archives Search Report dated 27 April 1999.

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS)

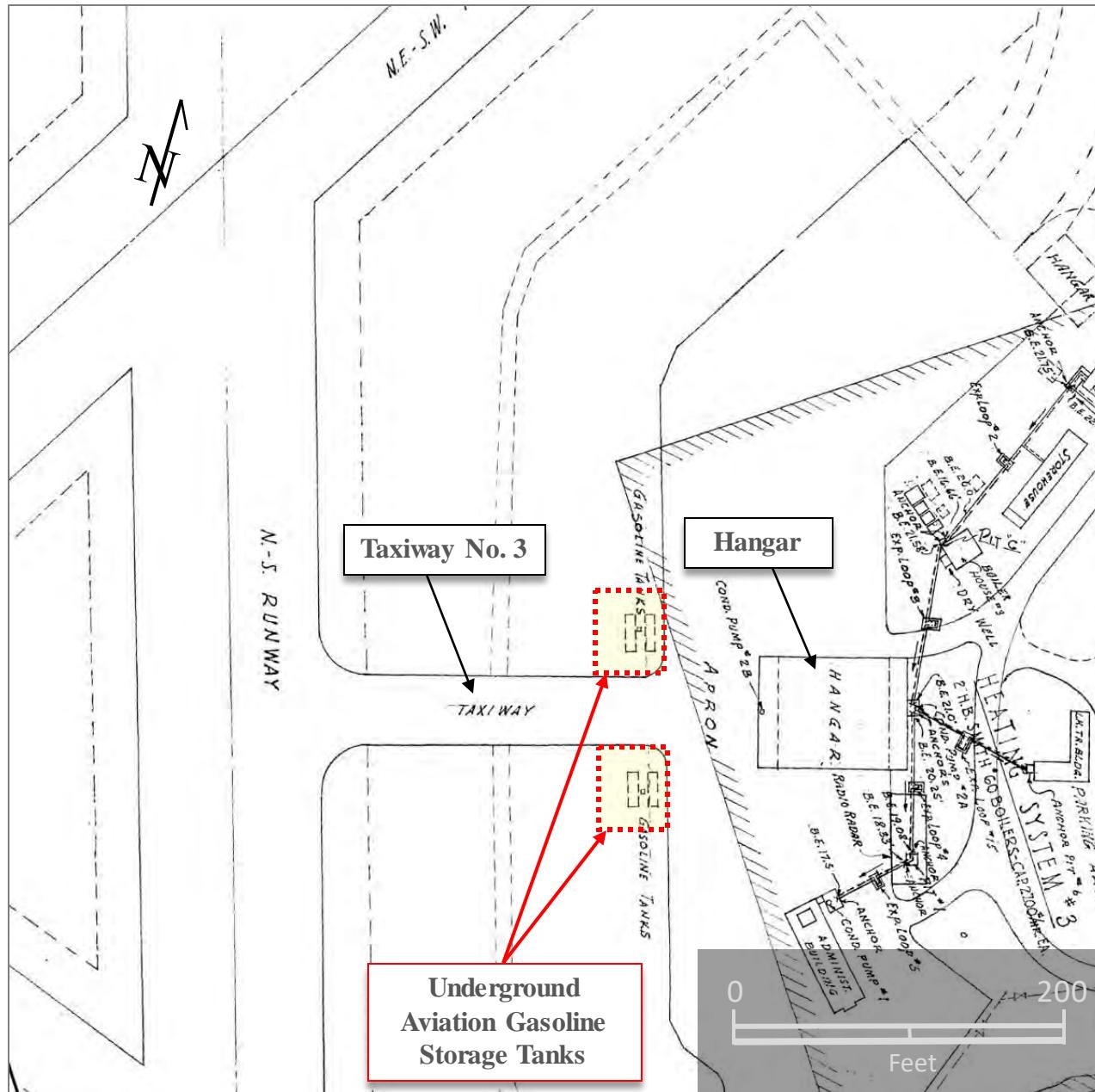
AvGas = Aviation Gasoline Storage UST = underground storage tank



1943 MAP DATA – UNDERGROUND AVIATION GAS STORAGE AREA INITIAL LOCATION



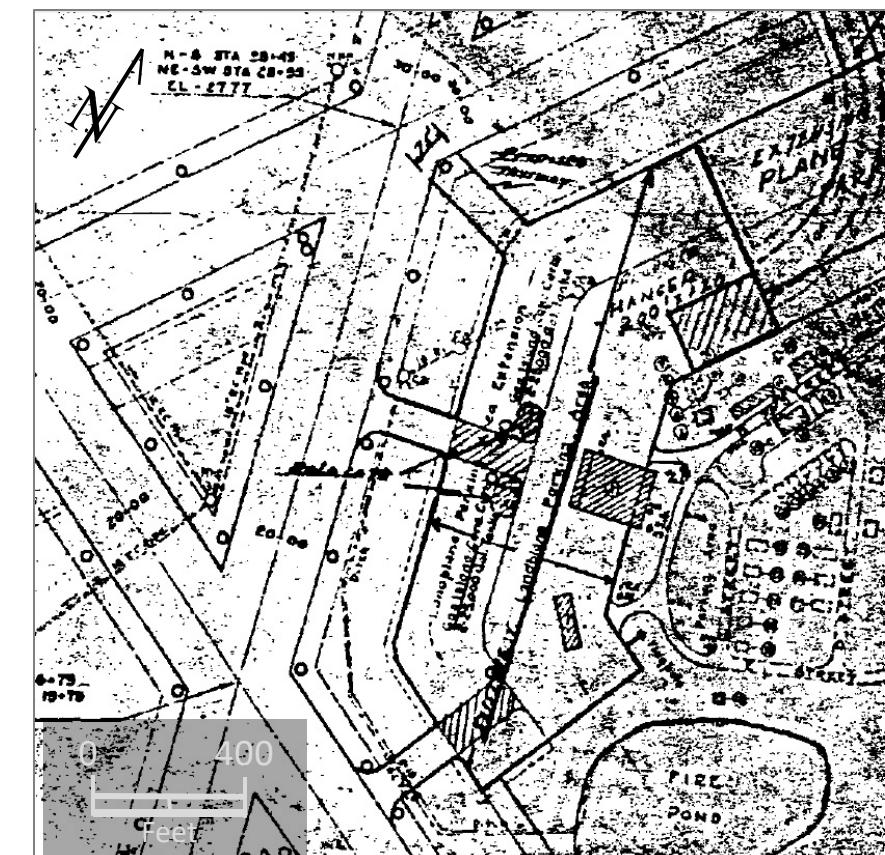
OCTOBER 1943 MAP DATA



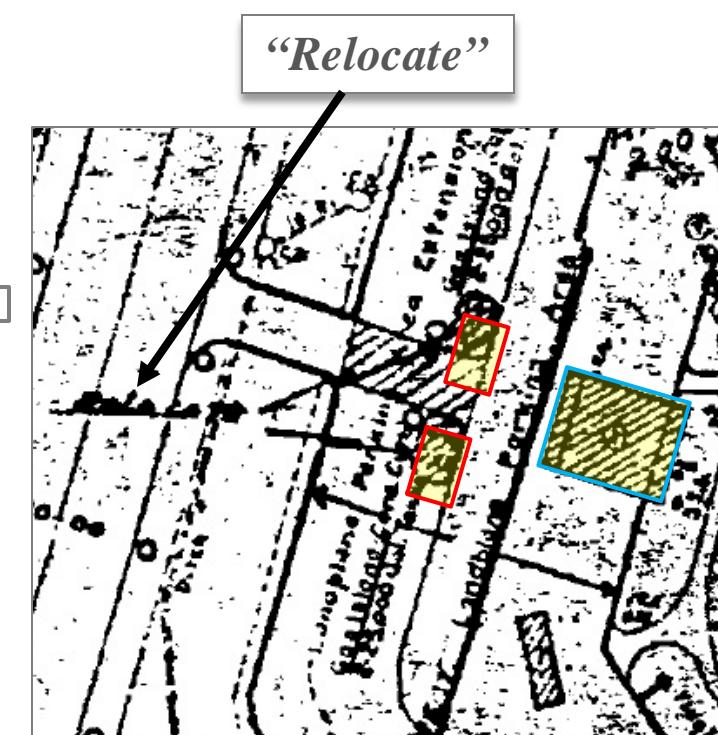
Map Source: 22 October 1943, Naval Air Station, Quonset Point, R.I., Public Works Department
Outlying Fields Charlestown R.I., Heating Systems & Steam Loads – Mechanical.

AvGas underground storage tanks located adjacent to a runway taxiway in 1943 are eventually relocated to a site just north of the Fire Pond (see June 1943 map information below).

JUNE 1943 MAP DATA



Map Source: 30 June 1943 map, CNALF Archives Search Report,
27 April 1999.



- = 25,000 gallon AvGas USTs along taxiway referenced 30 June 1943
- = aircraft hangar

AvGas = Aviation Gasoline Storage



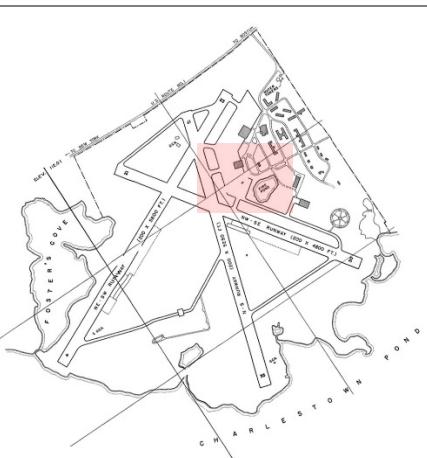
AVGAS USTs ADJACENT TO TAXIWAY NO. 3

1943 VERTICAL VIEWS



In early 1943, the Charlestown Naval Auxiliary Landing Field is observed to be under construction. The runways, apron, taxiways, utilities, and buildings are in the process of being planned and constructed. Two rectangular-shaped excavations along a proposed taxiway indicate the location of underground aviation gasoline tank storage (see 23 January 1943 – below).

LOCATION DIAGRAM



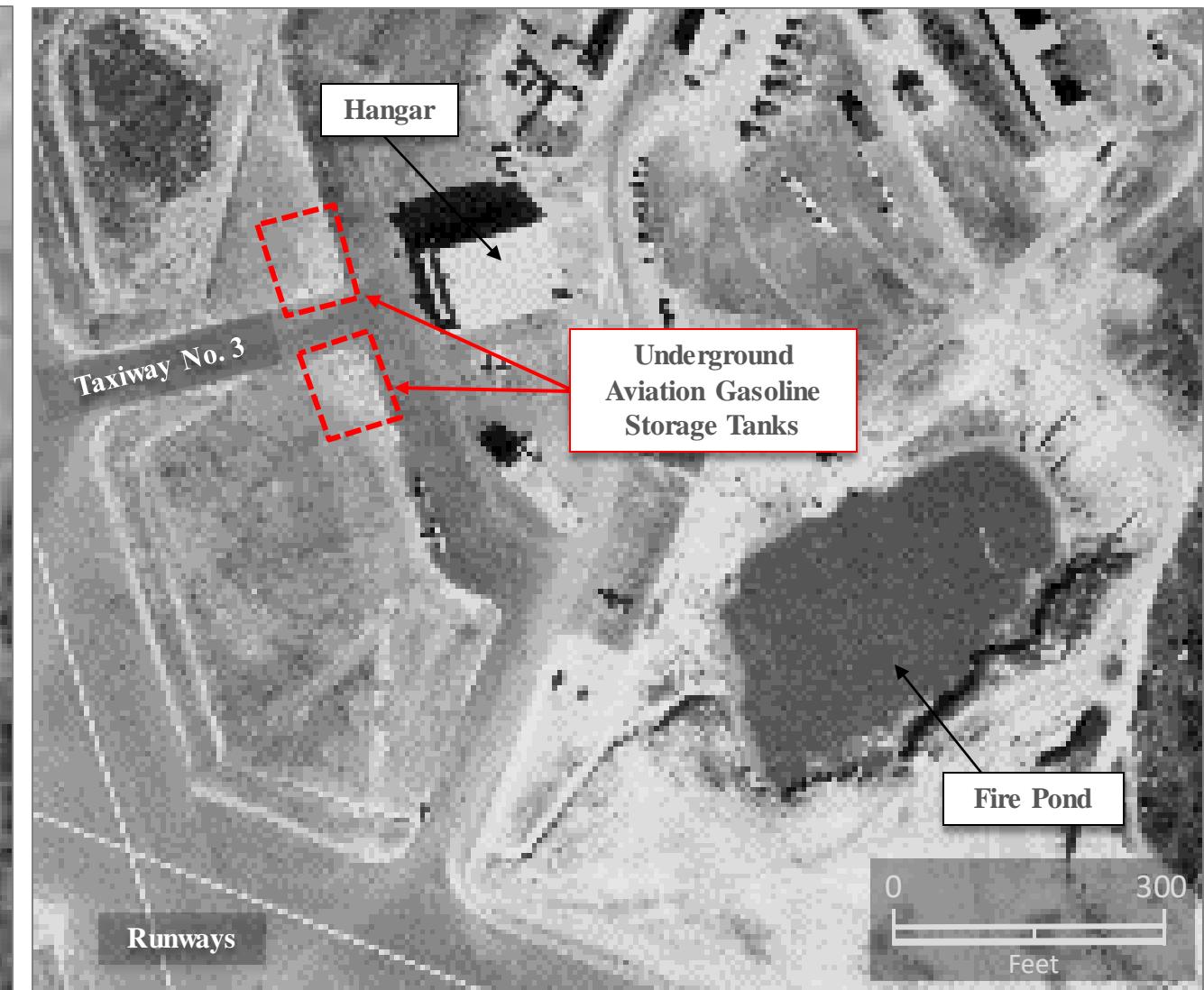
23 January 1943



12 October 1943



Source: National Archives & Records Administration, Archives II, College Park, MD.



Source: National Archives & Records Administration, Archives II, College Park, MD.

AvGas = Aviation Gasoline Storage U/C = under construction USTs = underground storage tanks

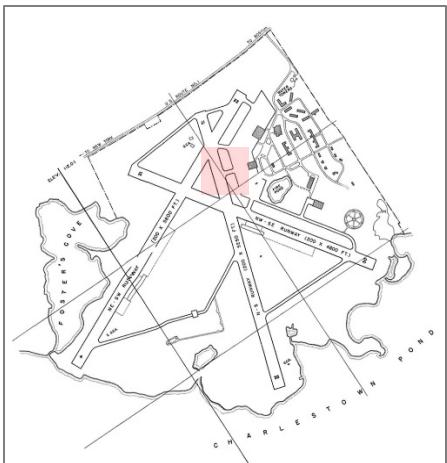


AVGAS USTs ADJACENT TO TAXIWAY NO. 3

DECEMBER 1943 OBLIQUE VIEWS



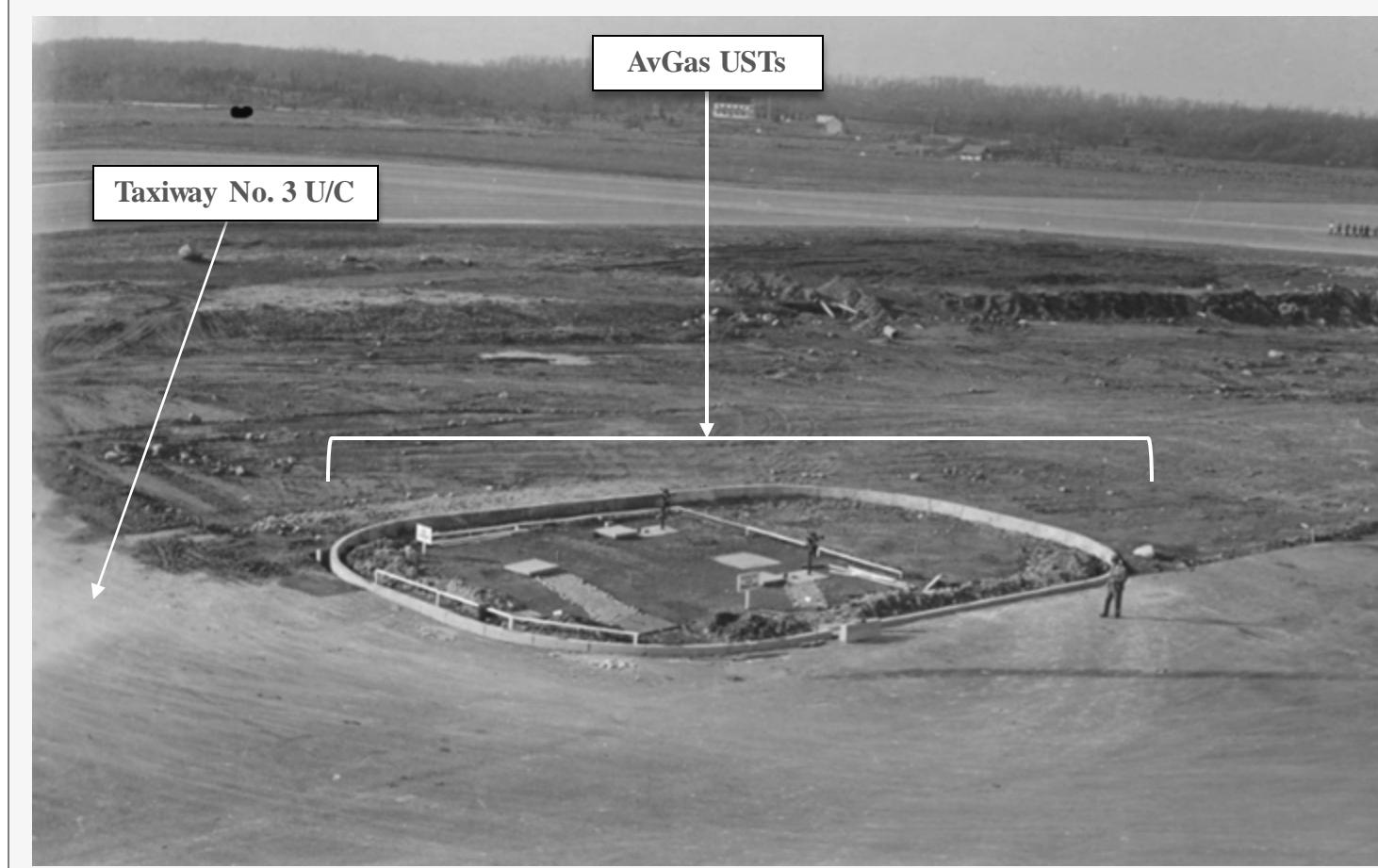
LOCATION DIAGRAM



Close-up detailed views of the aviation gasoline storage area – north and south UST locations (along Taxiway No. 3).

08 December 1943

UST aviation gasoline storage north of taxiway.



UST aviation gasoline storage south of taxiway.



Source: Quonset Development Corporation (QDC).

AvGas = Aviation Gasoline Storage U/C = under construction USTs = underground storage tanks



AVGAS USTs ADJACENT TO TAXIWAY NO. 3

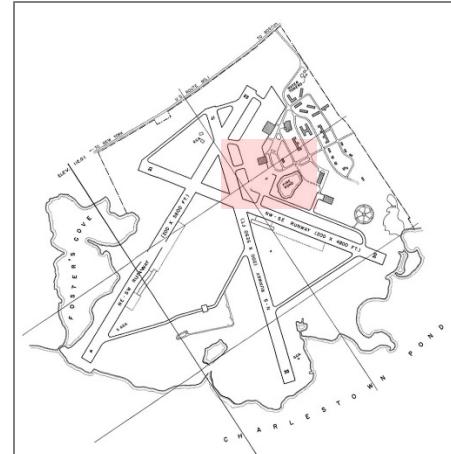
1945 VERTICAL VIEWS



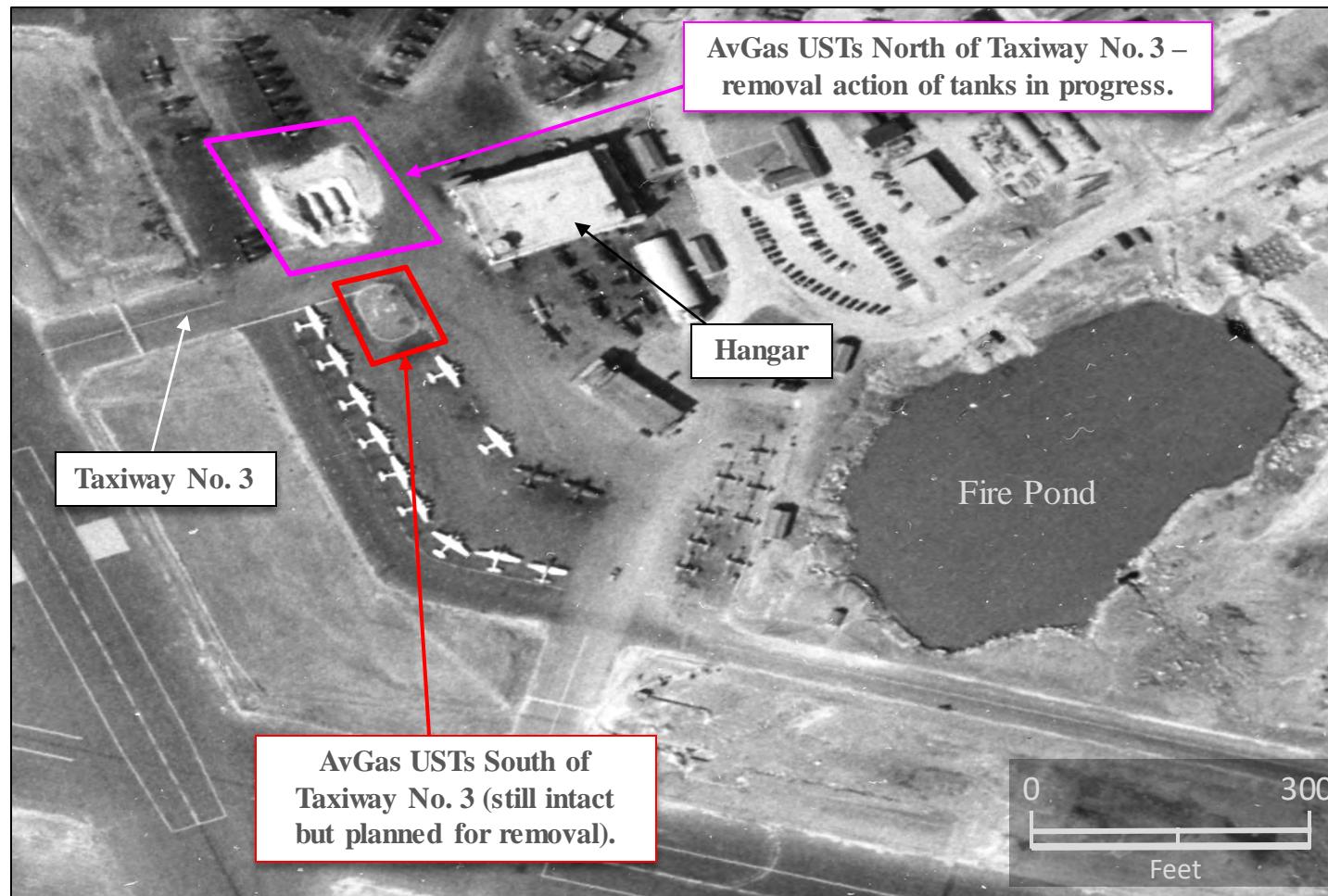
In the Spring of 1945, the AvGas Underground Storage Tank (UST) area north of Taxiway No. 3 is in the process of being excavated (see 26 March 1945 – below). Both AvGas UST sites along Taxiway No. 3 are eventually removed. In October of 1945, there is visual evidence that the two UST areas are backfilled and paved over. All of the AvGas tanks, formerly located along Taxiway No. 3 are moved to a new AvGas UST located northeast of the Fire Pond.¹

1) Refer to HTRW Site No. 8 Section of this report: Underground Aviation Storage Tanks - Fire Pond Area.

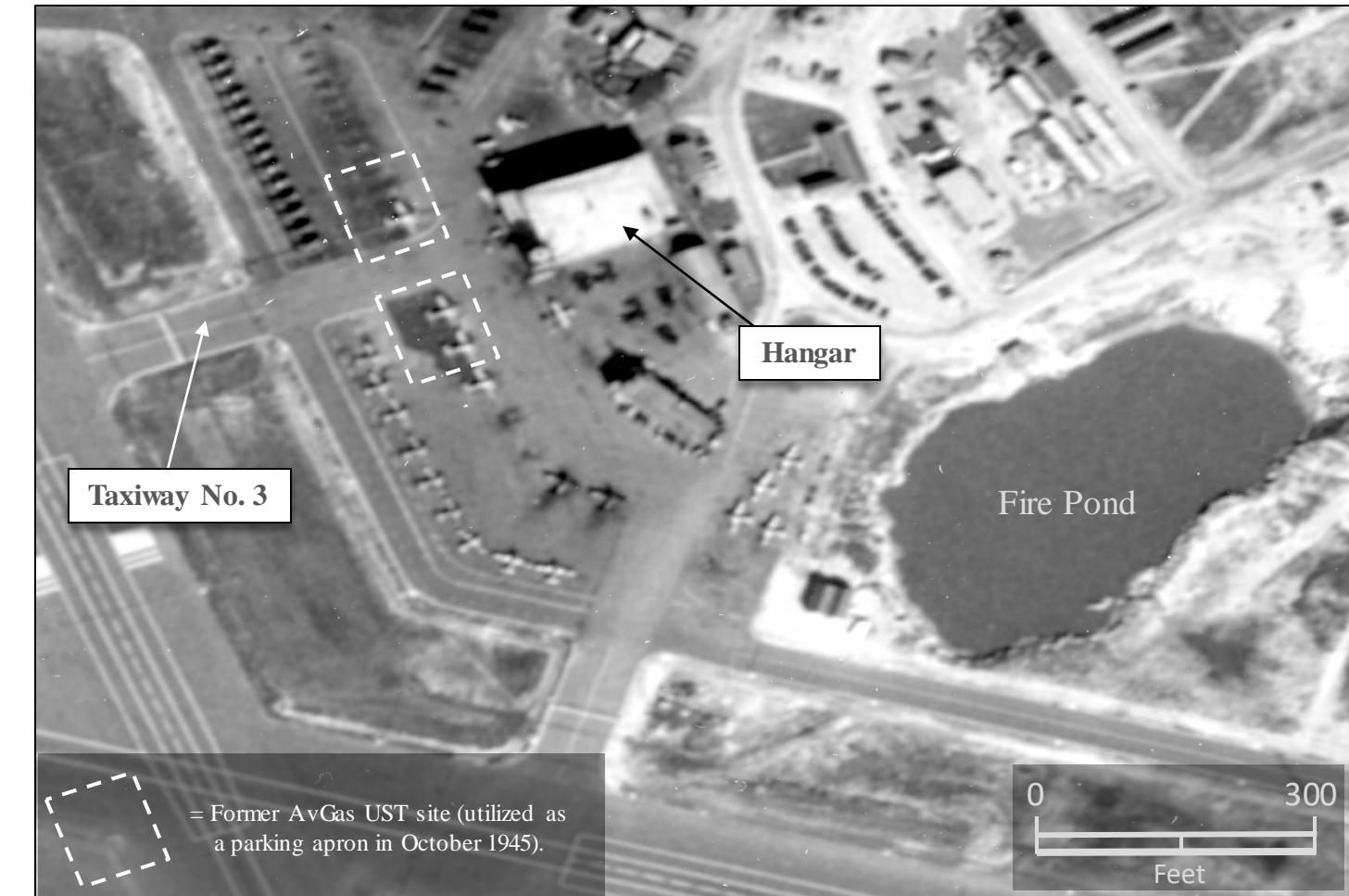
LOCATION DIAGRAM



26 March 1945

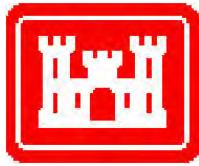


18 October 1945



Source: National Archives & Records Administration, Archives II, College Park, MD.

AvGas = Aviation Gasoline Storage USTs = underground storage tanks



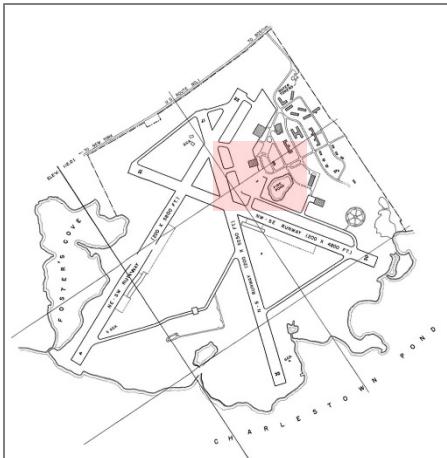
AVGAS USTs ADJACENT TO TAXIWAY NO. 3

1970 & 2016 VERTICAL VIEWS

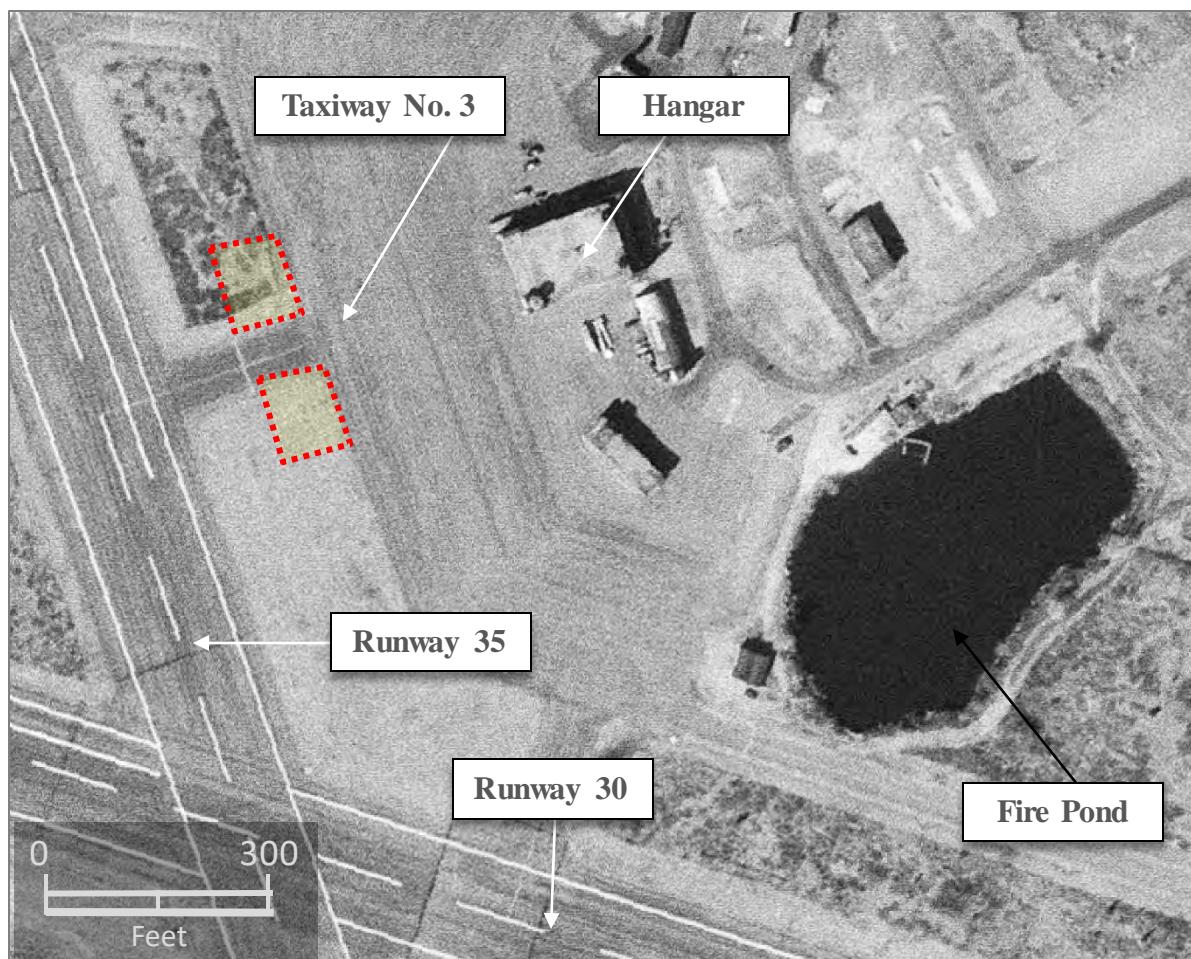


Vertical views of 1970 (CNALF site closure) and 2016 (representing near-current conditions) over the former AvGas UST area, which operated from a two locations along Taxiway No. 3 between 1942 to 1944, are shown below.

LOCATION DIAGRAM

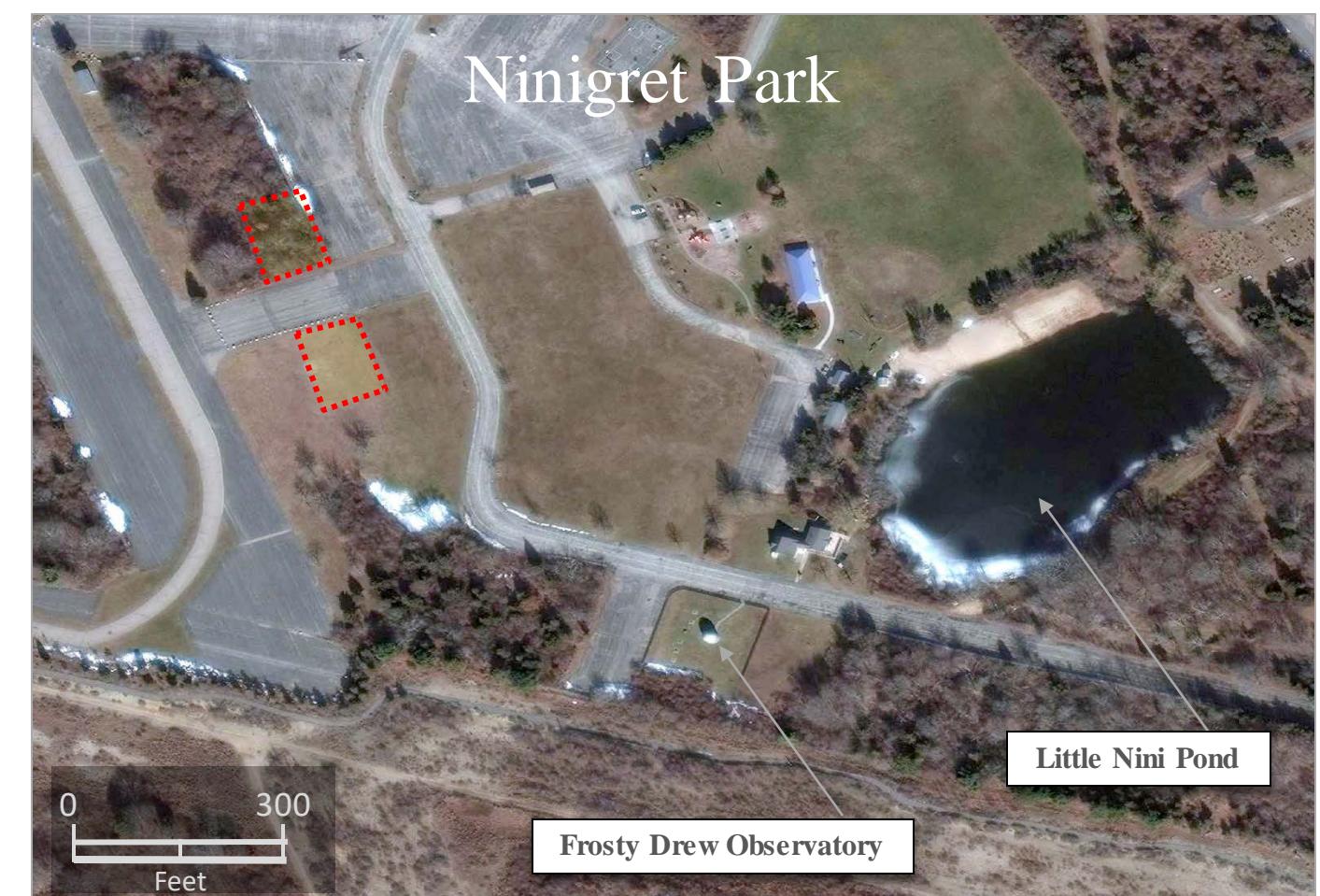


10 March 1970



Source: U.S. Geological Survey, EarthExplorer.

02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).



former location
of AvGas USTs

AvGas = Aviation Gasoline Storage CNALF = Charlestown Naval Auxiliary Landing Field USTs = underground storage tanks



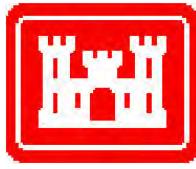
HISTORICAL PHOTO ANALYSIS – HTRW SITE NO. 8

PHOTOGRAPHIC ANALYSIS, SECTION ONE – AREA OF INTEREST NO. 1



Underground
Aviation Gasoline
Storage Tanks –
Fire Pond Area

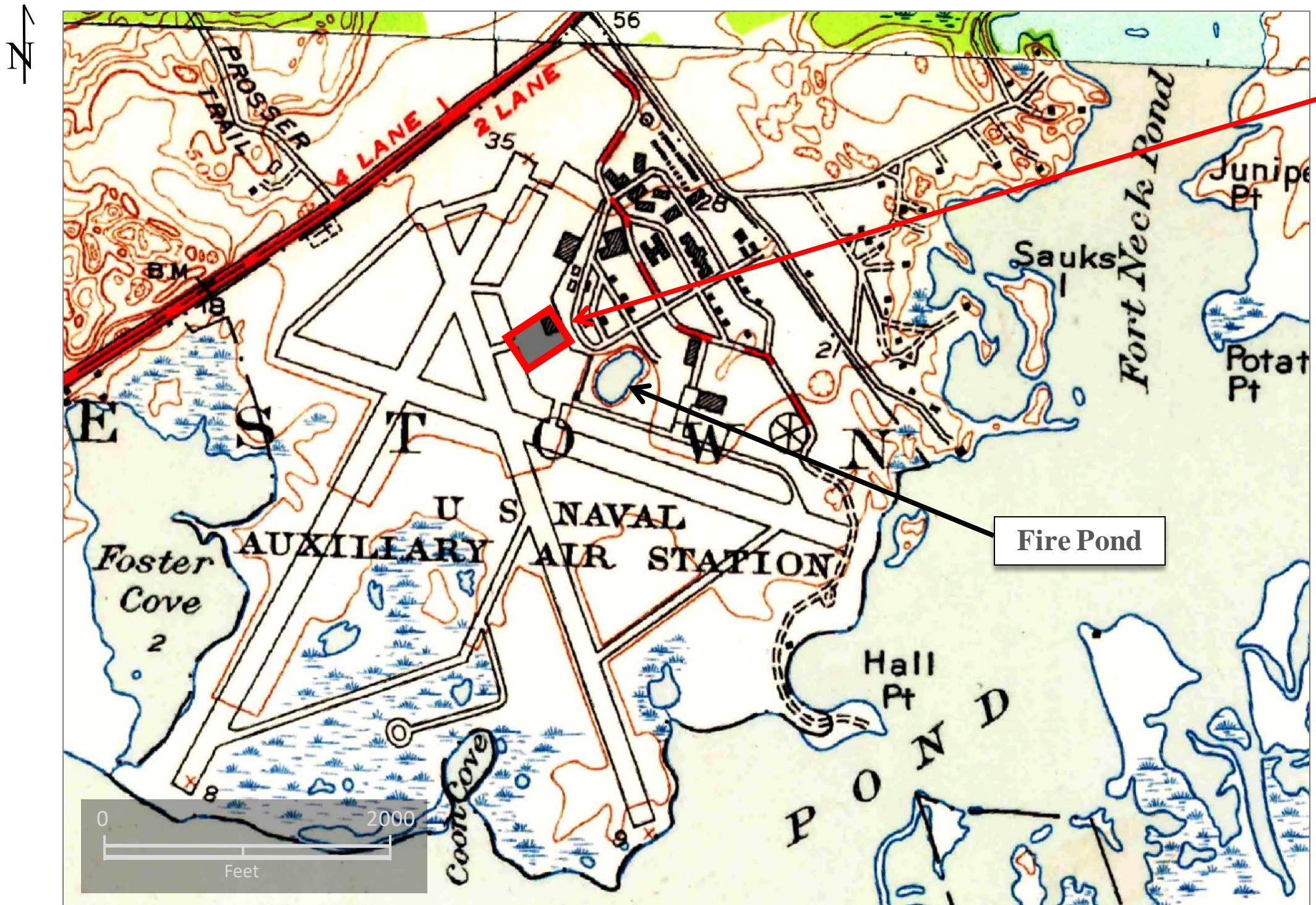
HTRW = Hazardous, Toxic, & Radioactive



LOCATION OF HTRW SITE NO. 8 – TANK FARM AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Underground Aviation
Gasoline Storage Tanks
adjacent to Fire Pond near
E Street.

In the Spring of 1945,
underground AvGas storage
tanks were moved here from a
location along Taxiway No. 3.¹

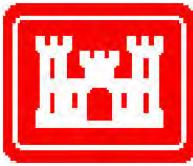
The intended move to relocate
the AvGas USTs is
documented on a 1943 map
source.²

1) Source: Vertical aerial photo dated 26
March 1945; National Archives &
Records Administration, Still Pictures
Branch, Record Group 80 (U.S. Navy),
Photo No. 394576.

2) Source: Continuation of Facility Map,
Public works Department, Naval
Auxiliary Air Facility, dated 30 June
1943 – Appendix L of CNALF Archives
Search Report dated 27 April 1999.

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

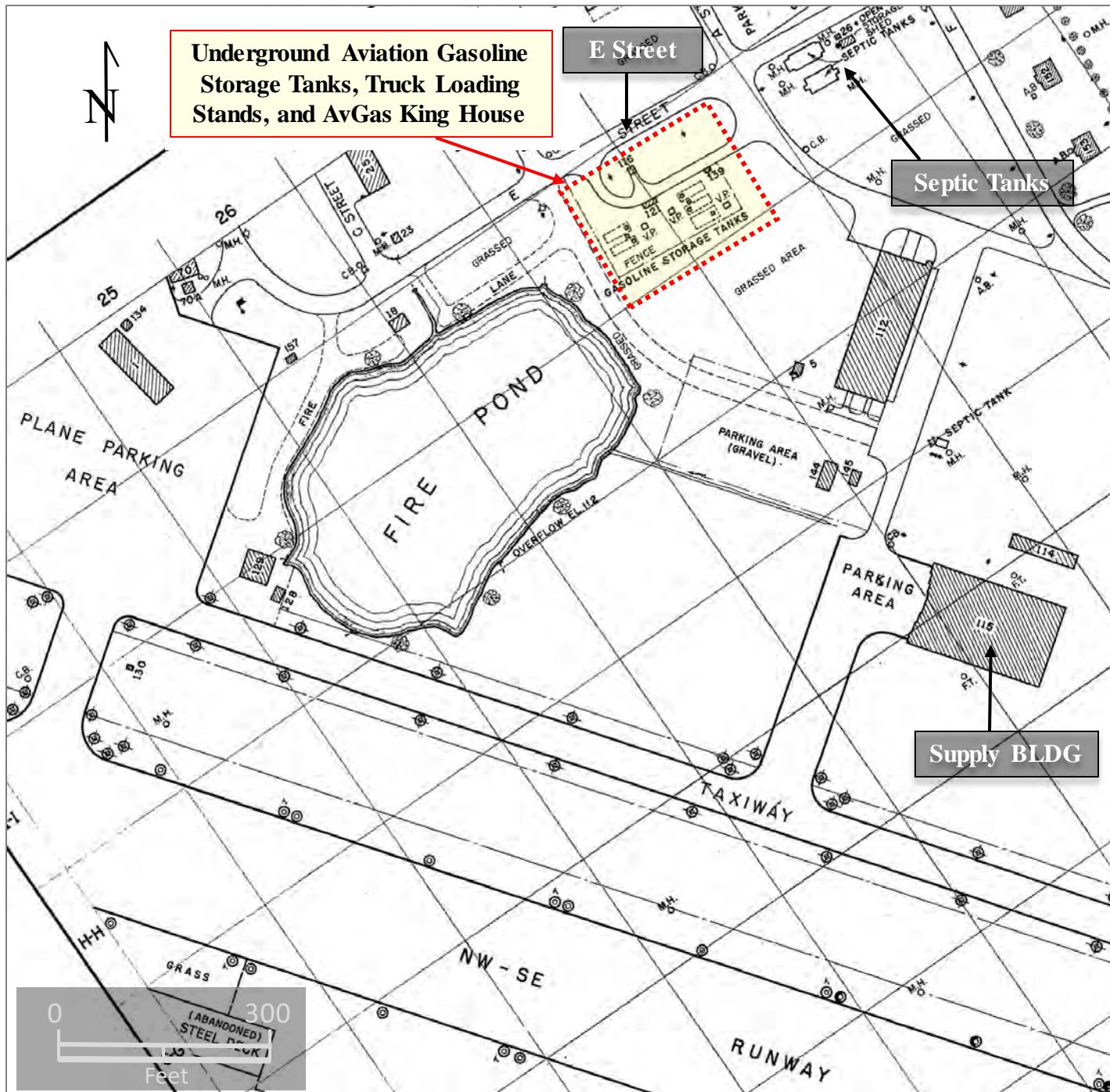
AvGas = Aviation Gasoline Storage CNALF = Charlestown Naval Auxiliary Landing Field HTRW = Hazardous, Toxic, & Radioactive Waste USTs = Underground Storage Tanks



1951 MAP DATA – HTRW SITE NO. 8 – TANK FARM



30 JUNE 1951 MAP DATA

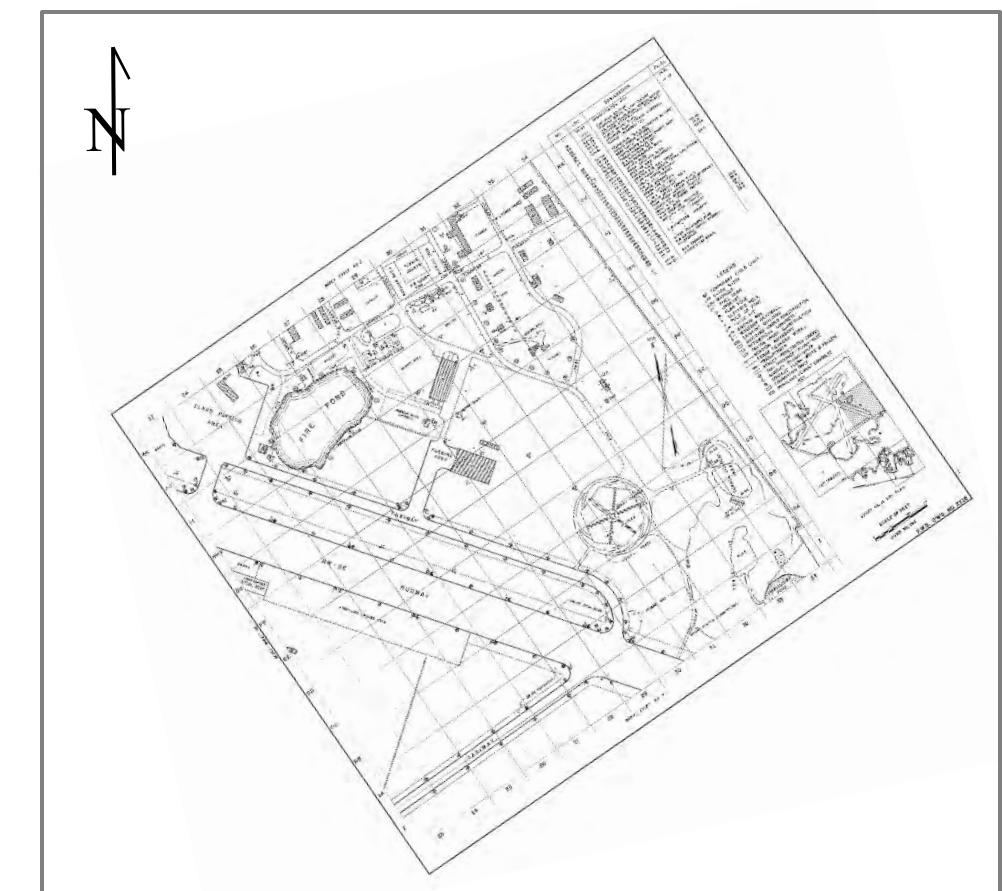
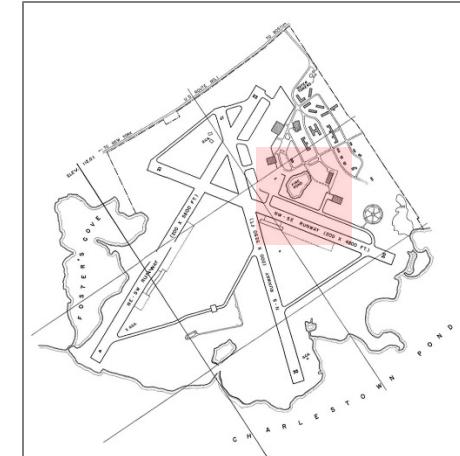


Map Source: 30 June 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I. – (Sheet) No. 6, Drawing No. 2318, Public Works Dept.

The previous AvGas underground storage tank area was located adjacent to Taxiway No. 3. These USTs (2,500 gallons each), installed in 1942, were unearthed and relocated to this site around March 1945.¹

1) Source: Vertical aerial photo dated 26 March 1945; National Archives & Records Administration, Still Pictures Branch, Record Group 80 (U.S. Navy), Photo No. 394576.

LOCATION DIAGRAM



Map Source: 30 June 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I. – (Sheet) No. 6, Drawing No. 2318, Public Works Dept.

AvGas = Aviation Gasoline Storage HTRW = Hazardous, Toxic, & Radioactive Waste USTs = Underground Storage Tanks



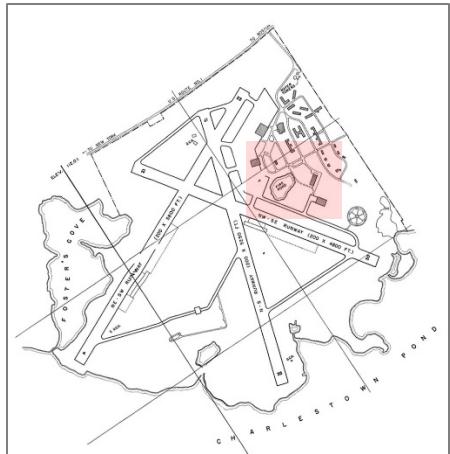
HTRW SITE NO. 8 – TANK FARM

1943 PRE-DEVELOPMENT VIEWS



In early 1943, the Charlestown Naval Auxiliary Landing Field is observed to be under construction. The runways, apron, taxiways, utilities, and buildings are in the process of being planned and constructed. By October of the same year, major changes are observed on aerial photography, however, the UST AvGas Tank Farm near the Fire Pond had not yet been built (see below - right).

LOCATION DIAGRAM



23 January 1943



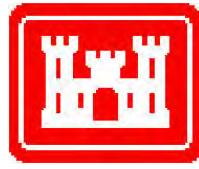
Source: National Archives & Records Administration, Archives II, College Park, MD.

12 October 1943



Source: National Archives & Records Administration, Archives II, College Park, MD.

AvGas = Aviation Gasoline Storage U/C = under construction UST = Underground Storage Tank



HTRW SITE NO. 8 – TANK FARM

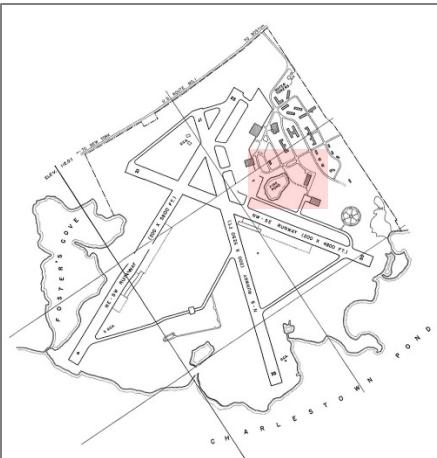
AERIAL VIEW & LAYOUT PLAN – 1951 MAP & VERTICAL VIEW



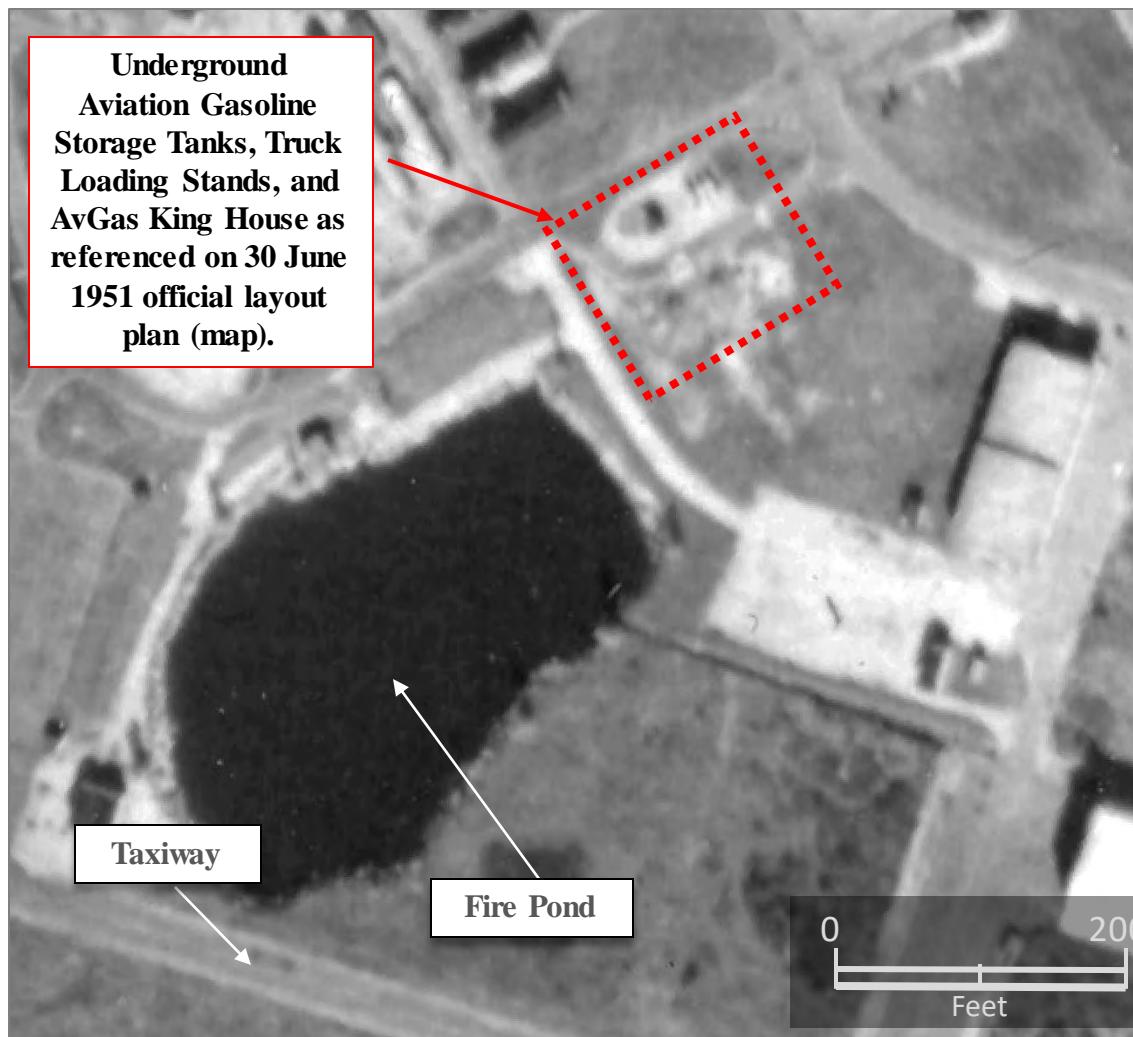
In 1951 all USTs and supporting infrastructure, such as valve pits and the AvGas King House, are in place at the AvGas Tank Farm. Earlier in 1945, USTs were unearthed at the Taxiway No. 3 location and moved to this underground AvGas storage facility.¹

1) Source: Vertical aerial photo dated 26 March 1945; National Archives & Records Administration, Still Pictures Branch, Record Group 80 (U.S. Navy), Photo No. 394576.

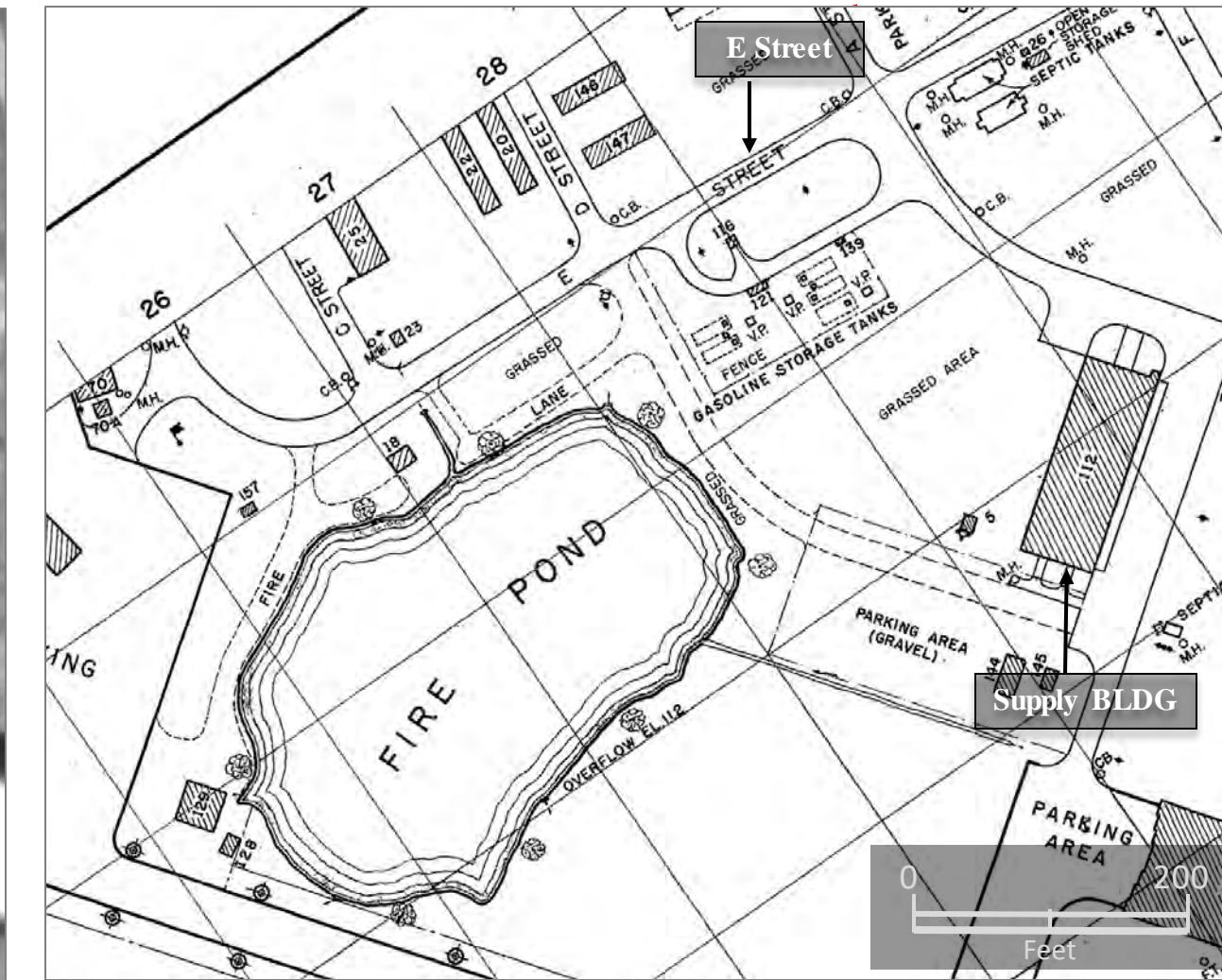
LOCATION DIAGRAM



12 November 1951



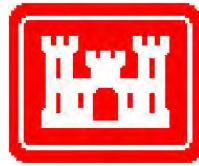
30 June 1951



Source: Rhode Island Department Of Administration Planning Information Center

Map Source: 30 June 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I. – (Sheet) No. 6, Drawing No. 2318, Public Works Dept.

AvGas = Aviation Gasoline Storage HTRW = Hazardous, Toxic, & Radioactive Waste USTs = Underground Storage Tanks



HTRW SITE NO. 8 – TANK FARM

AERIAL VIEW & LAYOUT PLAN – 1970, 1985, & 1988 VERTICAL VIEWS

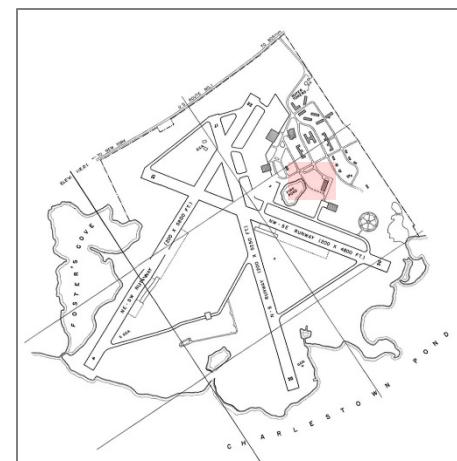


In 1970 the Charlestown Naval Auxiliary Landing Field was officially closed. The AvGas UST Tank Farm laid dormant until October 1986, when the underground tanks and contaminated soil were removed from this site.

Below are views from 1970 (the year of installation closure), 1985 (showing conditions just prior to UST & soil removal), and 1988 (conditions following environmental remediation at the site by the U.S. Army Corps of Engineers).



LOCATION DIAGRAM

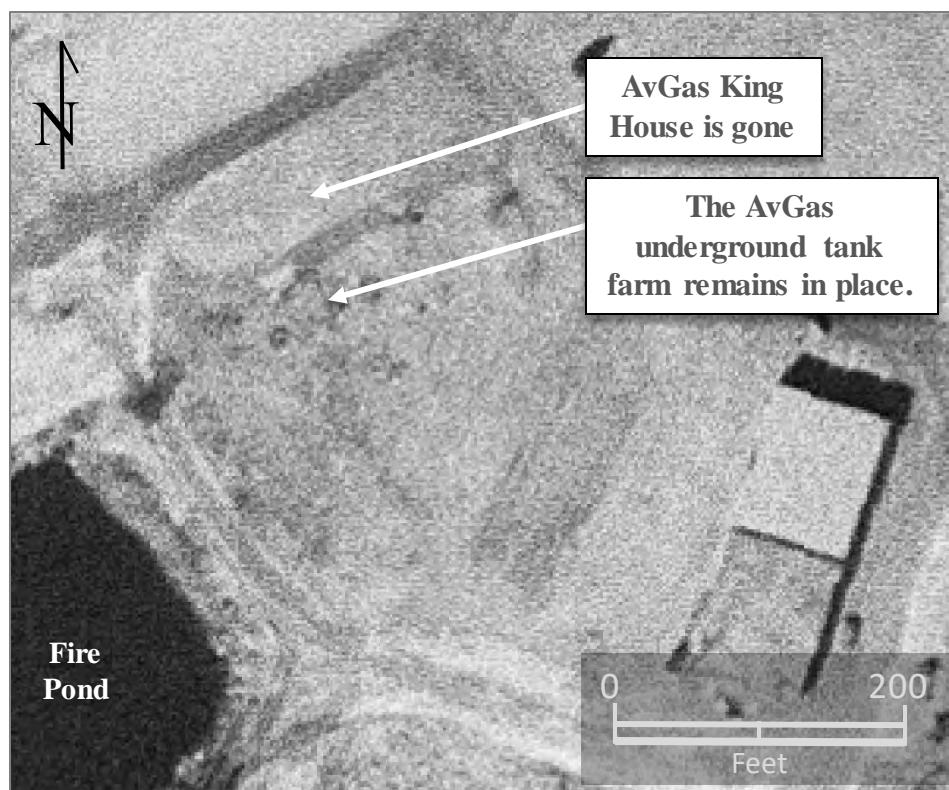


Source: Providence Journal-Bulletin, October 1986.

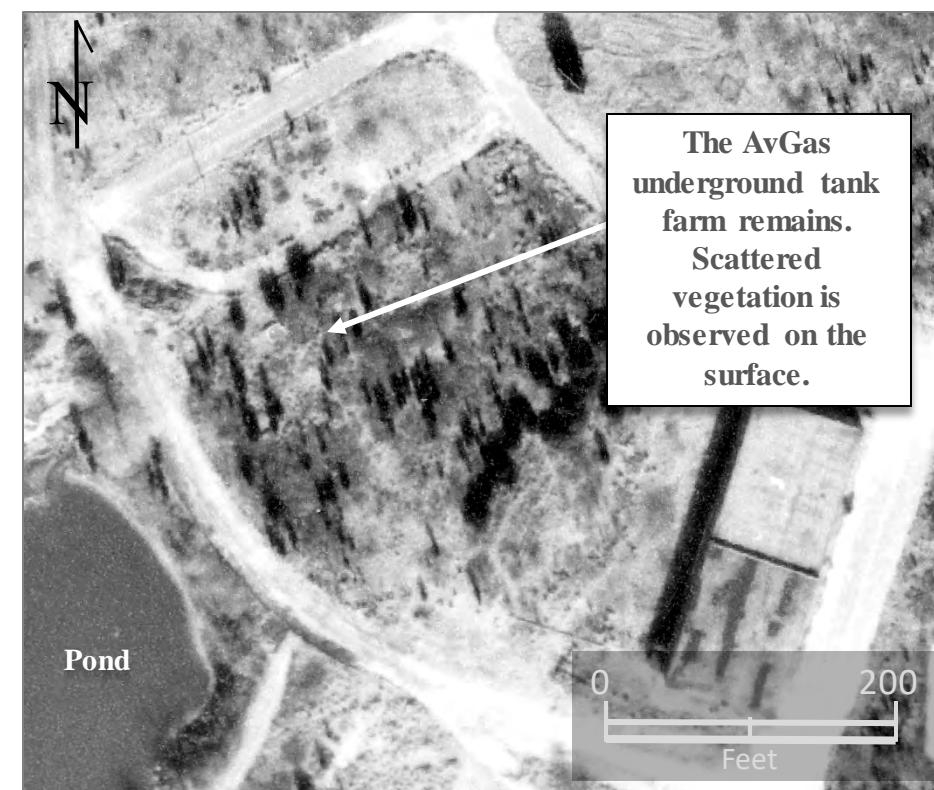
10 March 1970

11 March 1985

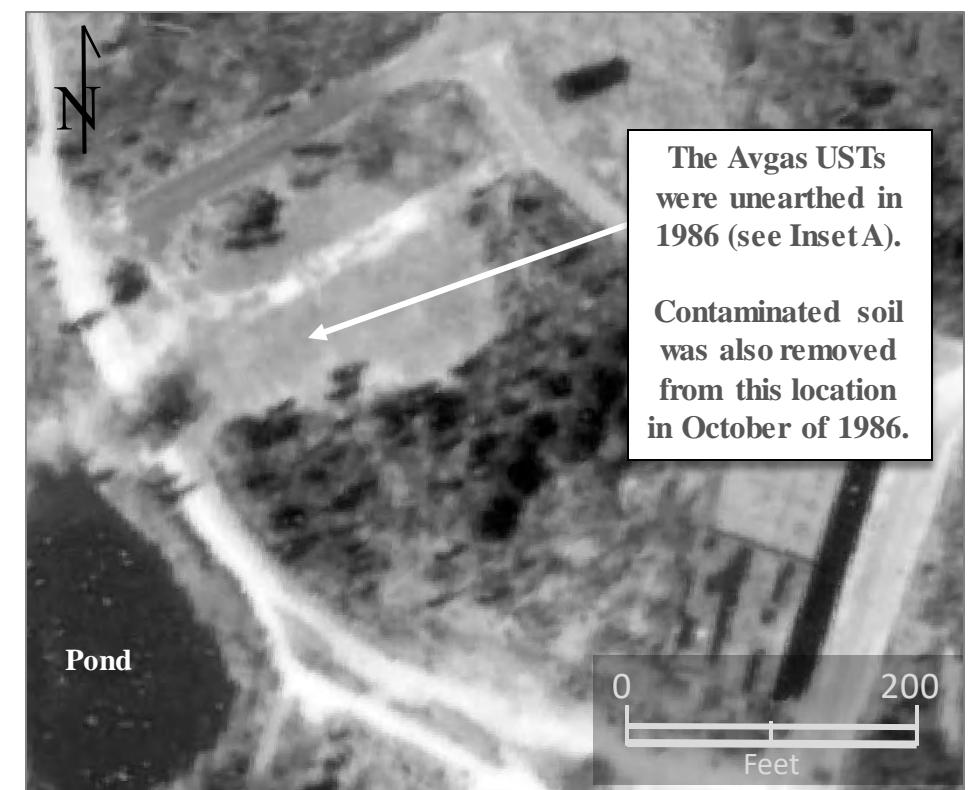
13 April 1988



Source: U.S. Geological Survey, EarthExplorer.



Source: U.S. Army Corps of Engineers, New England District.



Source: Rhode Island Department Of Administration Planning Information Center

AvGas = Aviation Gasoline Storage

HTRW = Hazardous, Toxic, & Radioactive Waste

USTs = Underground Storage Tanks



HTRW SITE NO. 8 – TANK FARM

1994 VERTICAL VIEW

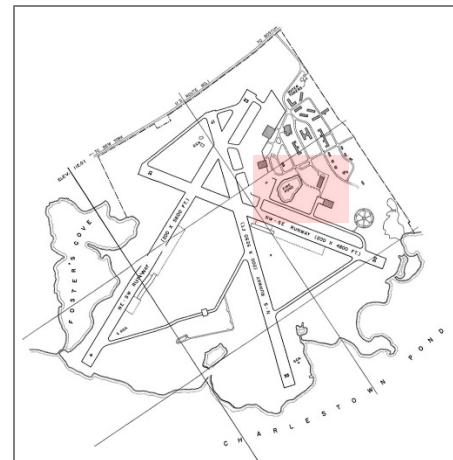


11 September 1994



Source: National Oceanic & Atmospheric Administration

LOCATION DIAGRAM



Follow on studies and remediation of HTRW Site No. 8 (post-1998 USTs removal):

USACE Omaha District performed a Phase I Remedial Investigation in 1991 & 1992 (IT Corp. Phase I Report, October 1993).

Source: History of NALF Investigations, no date;
D01RI000801_01.05_0003_p.pdf

AvGas = Aviation Gasoline
CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
USTs = Underground Storage Tanks

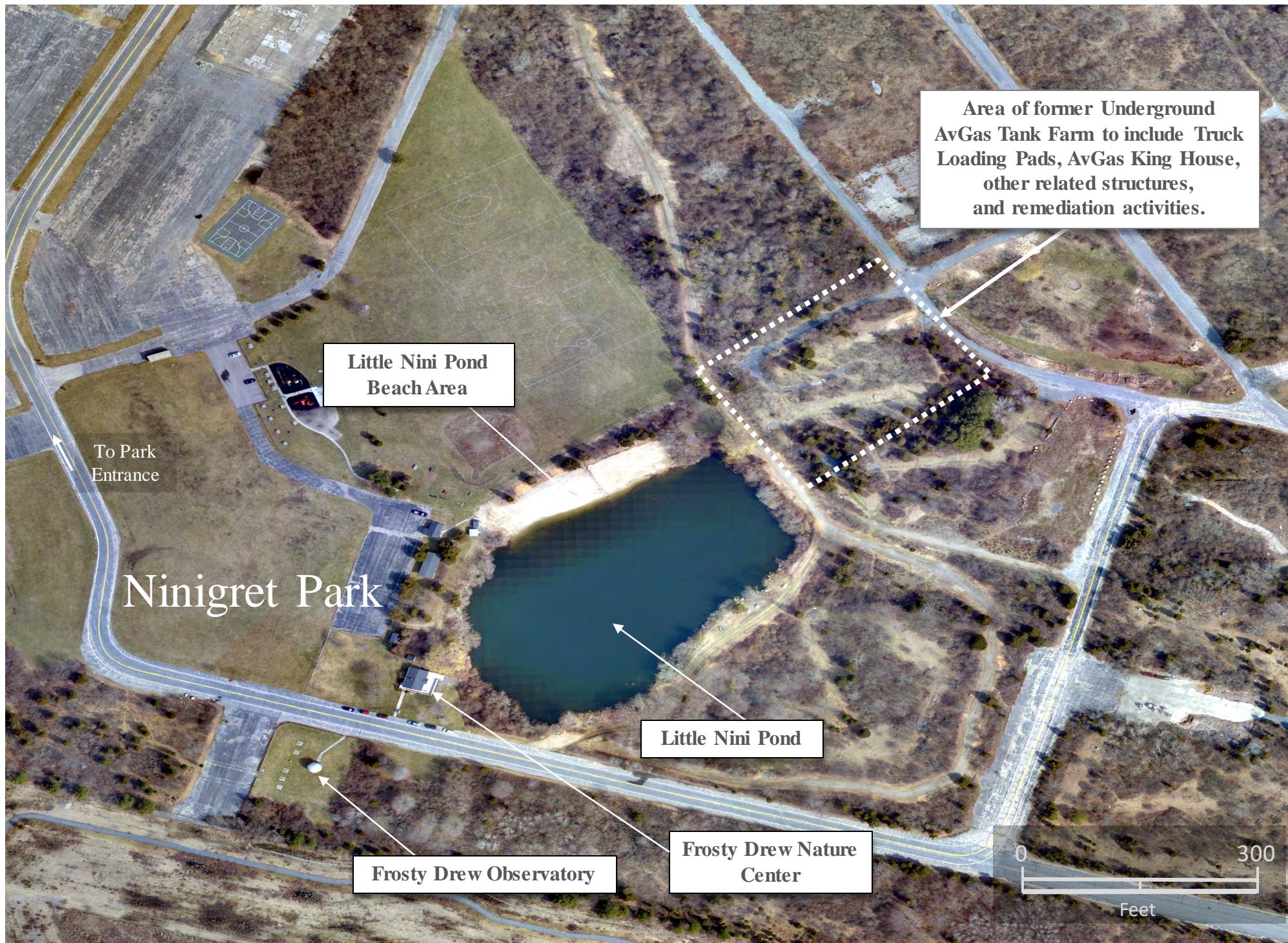


HTRW SITE NO. 8 – TANK FARM

2007 VERTICAL VIEW

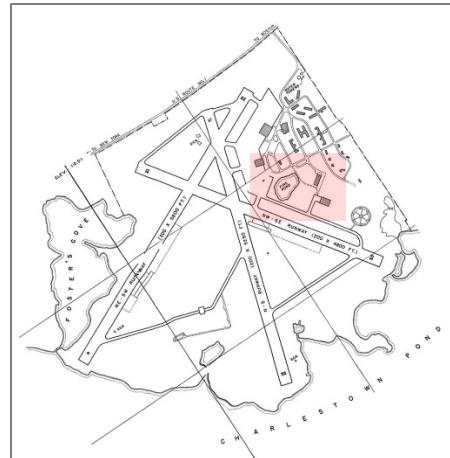


April 2007



Source: Sky Research, Inc.; courtesy of the U.S. Army Corps of Engineers, New England District

LOCATION DIAGRAM



Follow on studies and remediation of HTRW Site No. 8 (post-1998 USTs removal):

USACE Omaha District performed a Phase I Remedial Investigation in 1991 & 1992 (IT Corp. Phase I Report, October 1993).

Investigation by USACE New England District include: a) Phase II Engineering of Contamination at Site 8 in 1998 (Weston, 2001) and b) Remedial Investigation Feasibility Study at Site 8 in 2005/2006 (ENSR, 2006).

Source: History of NALF Investigations, no date; D01RI000801_01.05_0003_p.pdf

AvGas = Aviation Gasoline
CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
USTs = Underground Storage Tanks



HTRW SITE NO. 8 – TANK FARM

2016 VERTICAL VIEW

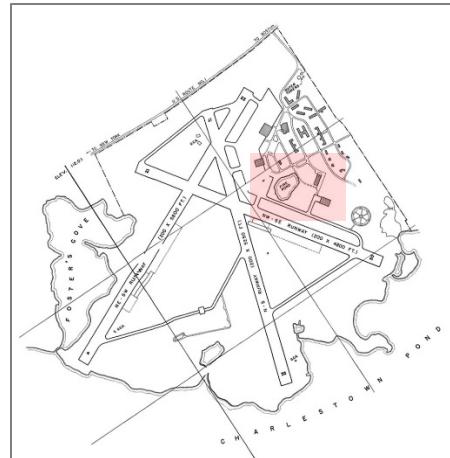


02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

LOCATION DIAGRAM



Follow on studies and remediation of HTRW Site No. 8 (post-1998 USTs removal):

USACE Omaha District performed a Phase I Remedial Investigation in 1991 & 1992 (IT Corp. Phase I Report, October 1993).

Investigation by USACE New England District include: a) Phase II Engineering of Contamination at Site 8 in 1998 (Weston, 2001) and b) Remedial Investigation Feasibility Study at Site 8 in 2005/2006 (ENSR, 2006).

Source: History of NALF Investigations, no date; D01RI000801_01.05_0003_p.pdf

AvGas = Aviation Gasoline
CNALF = Charlestown Naval Auxiliary Landing Field
HTRW = Hazardous, Toxic, & Radioactive Waste
USTs = Underground Storage Tanks



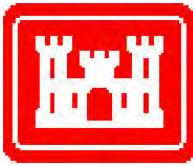
HISTORICAL PHOTO ANALYSIS – MRS 5

PHOTOGRAPHIC ANALYSIS , SECTION ONE – AREA OF INTEREST NO. 1



Shoot-In-Butt – Aviation Machine Gun Range

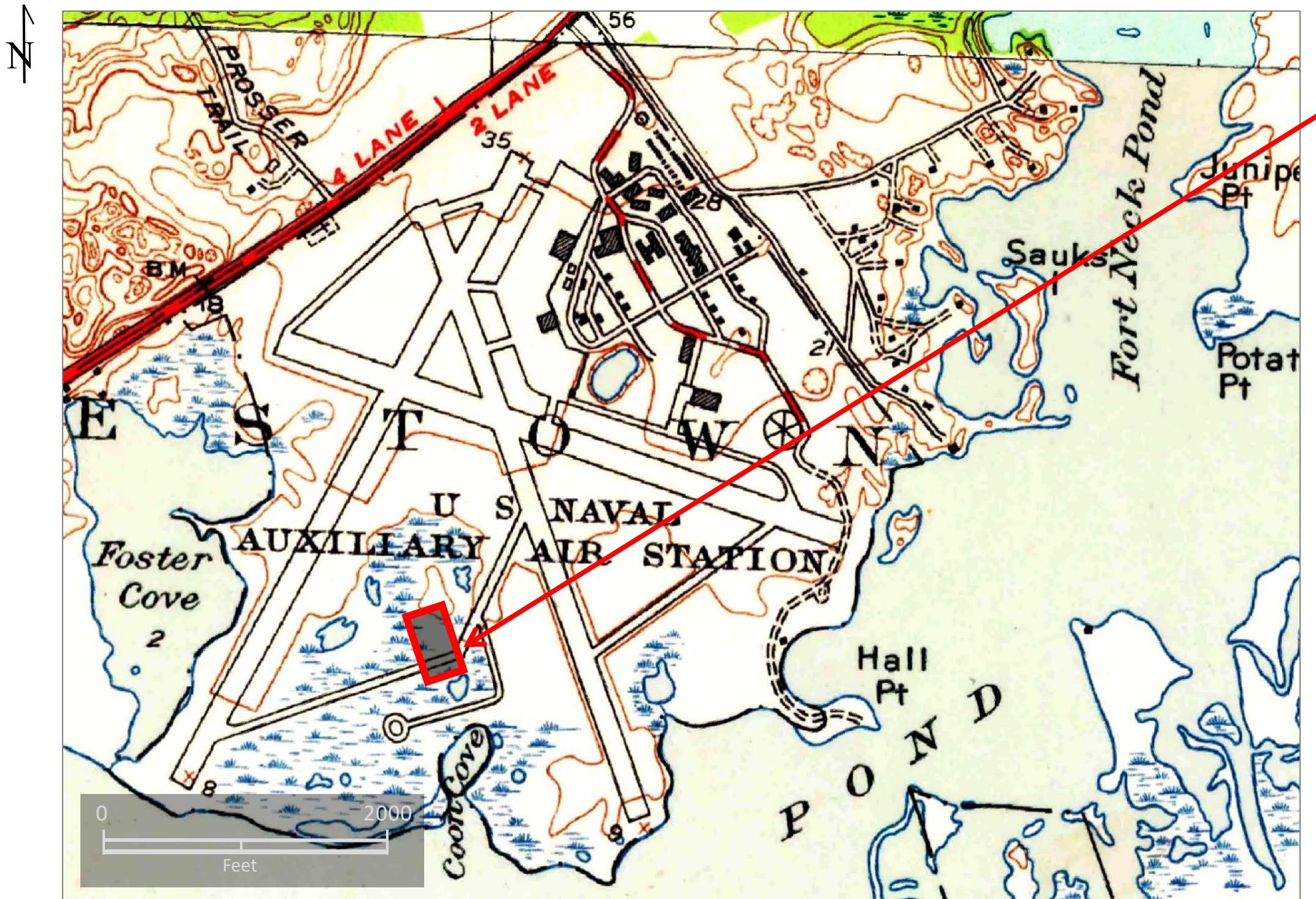
MRS = Military Response Site



LOCATION OF MRS 5 – SHOOT-IN-BUTT AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Location of Shoot-In-Butt
(range backstop) - MRS 5 &
aircraft hardstand: Aviation
Machine Gun Range^{1,2,3}

1) Source: Conditions on 30 June 1951,
Q.N.A.S. – N.A.A.S. Charlestown, RI, Public
Works Department (P.W.D.) Map Sheet No. 5,
D01RI000801_01.04_0007_p.pdf.

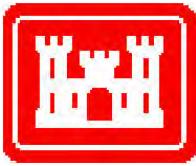
2) Source: CNALF Archives Search
Report dated 27 April 1999.

3) Source: Site Inspection Report for
Naval Auxiliary Landing Field – Final,
Prepared by Alion Science and
Technology, Durham, NC,
D01RI000806_01.09_0500_a.pdf.

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

CNALF = Charlestown Naval Auxiliary Landing Field

MRS = Military Response Site



1951 MAP DATA – MRS 5 – SHOOT-IN-BUTT



30 JUNE 1951 MAP DATA

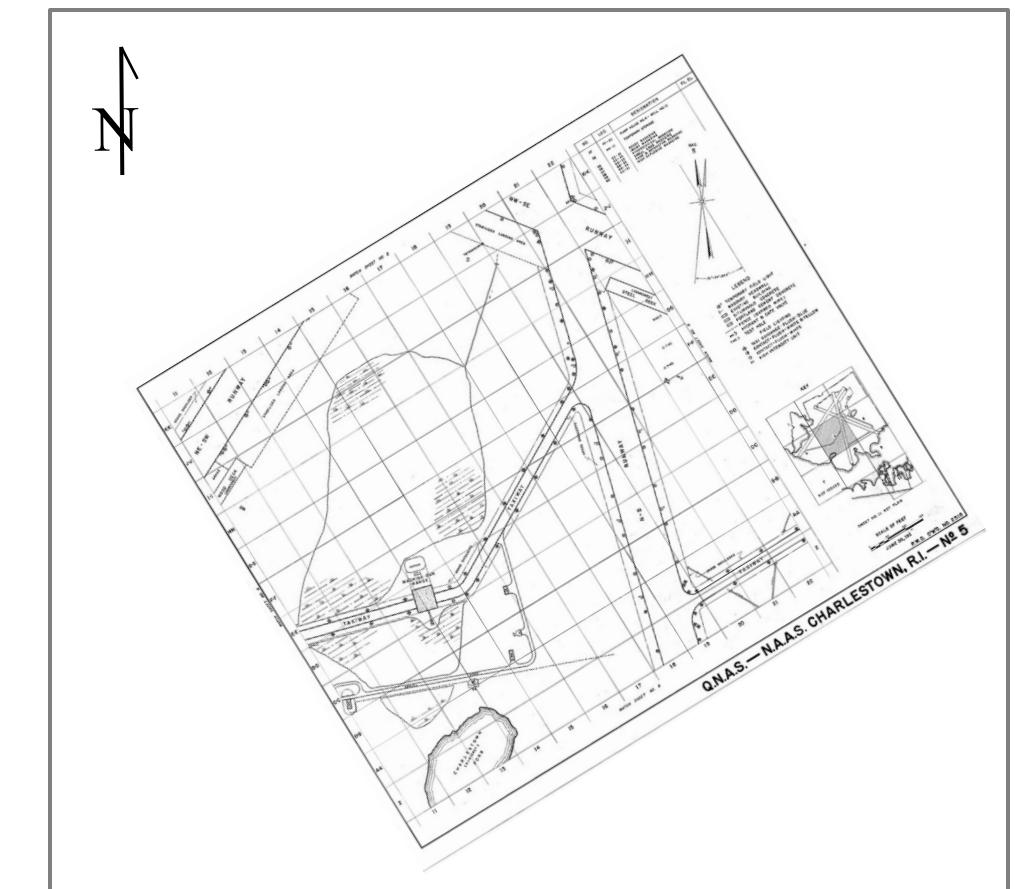
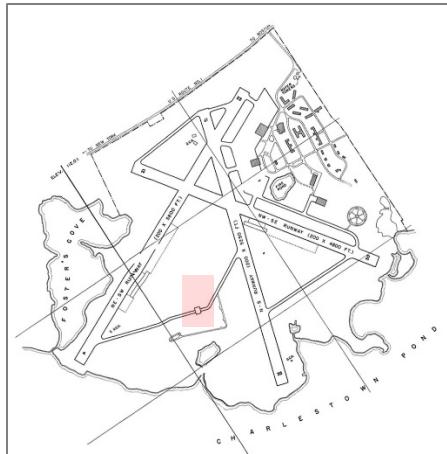


The aviation machine gun range dates back to 1943. In the fourth quarter of 1943, construction of the range appears to be nearly complete.^{1,2}

1) Source: Vertical aerial photo dated 12 October 1943; National Archives & Records Administration, Still Pictures Branch, Record Group 80 (U.S. Navy), Photo No. 394555.

2) Source: Ground photo dated 26 November 1943; Photo Number 6429-1; U.S.N. Aux. Air Field, Charlestown, R.I., Machine Gun test range, Quonset Development Corporation, R.I.

LOCATION DIAGRAM



Map Source: 30 June 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I. – (Sheet) No. 5, Drawing No. 2318, U.S.N. Public Works Department.

Map Source: 30 June 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I. – (Sheet) No. 5, Drawing No. 2318, U.S.N. Public Works Dept.

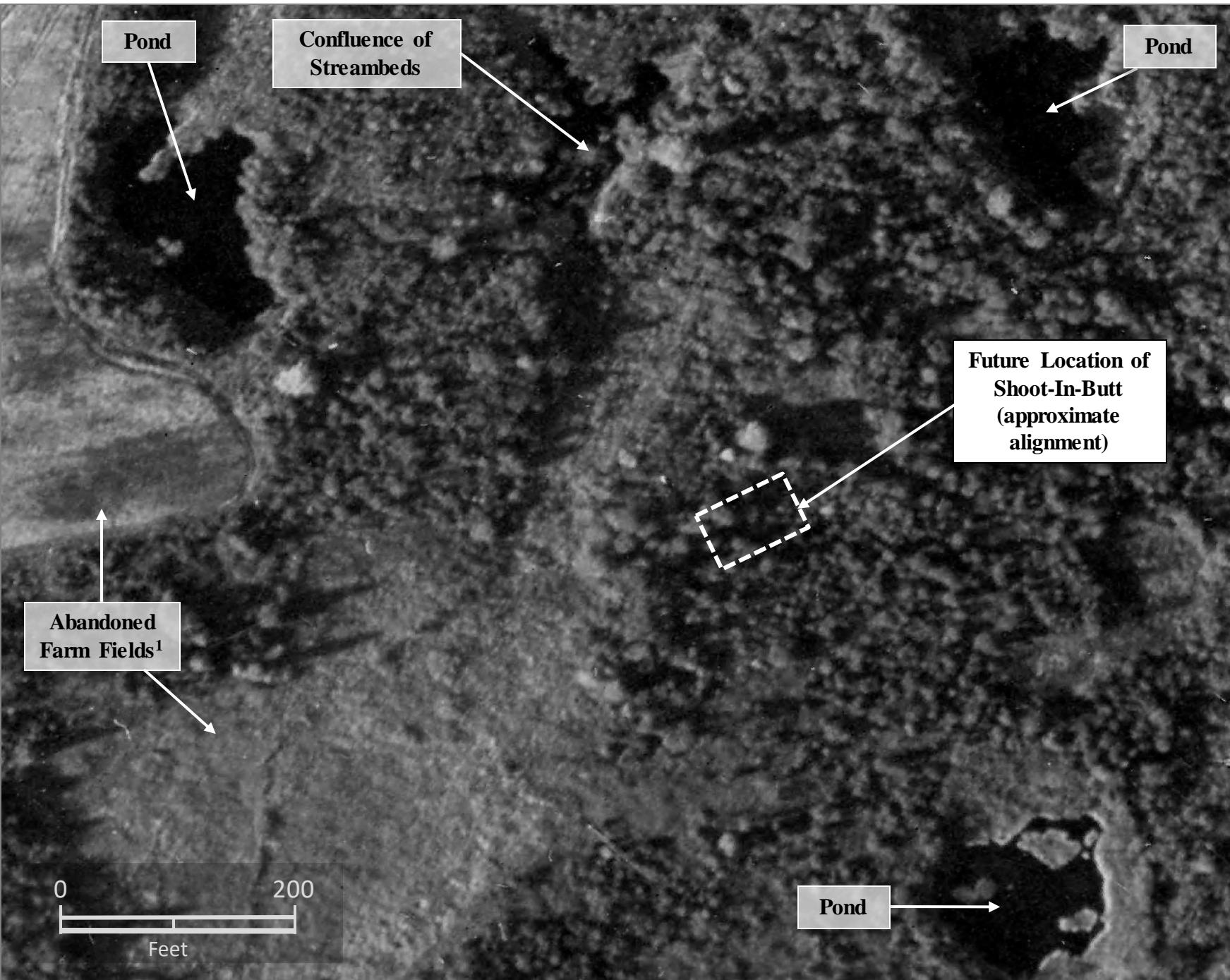
MRS = Military Response Site



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1942 PRE-DEVELOPMENT VIEW



09 October 1942



Source: National Archives & Records Administration, Archives II, College Park, MD.

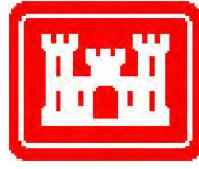
1) These farm fields date back to the previous private landowner (observed on 1941 aerial photos).

MRS = Military Response Site

LOCATION DIAGRAM



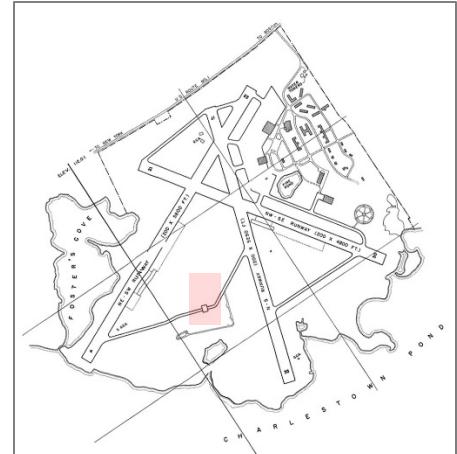
Construction of an aviation machine gun test range along with taxiway access has not yet begun.



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) NOVEMBER 1943 GROUND VIEWS



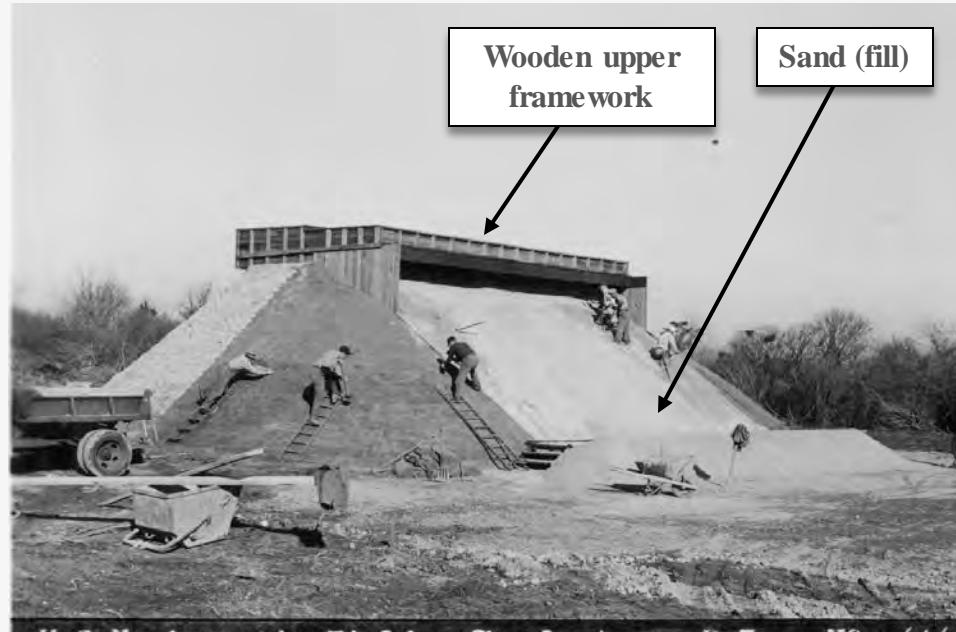
LOCATION DIAGRAM



Ground photos of the aviation machine gun test range and taxiway (under construction).

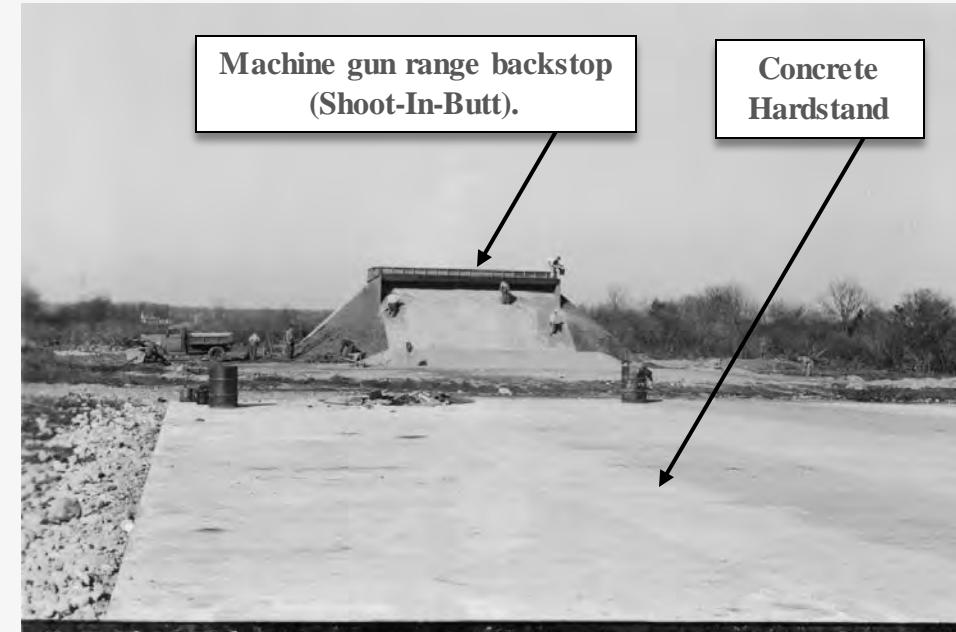
26 November 1943

Shoot-In-Butt – close-up view.



U.S.N. Aux. Air Field Charlestown, R.I. NOy-6469
Machine Gun test range
E. Turgeon Co. 26 Nov. 1943 6469-1

Shoot-In-Butt & hardstand.



U.S.N. Aux. Air Field Charlestown, R.I. NOy-6469
Machine Gun test range and concrete apron.
E. Turgeon Co. 26 Nov. 1943 6469-2

Taxiway to machine gun range.



U.S.N. Aux. Air Field Charlestown, R.I. NOy-6469
Taxiway to Machine gun test range, looking east.
E. Turgeon Co. 26 Nov. 1943 6469-3

Source: Quonset Development Corporation (QDC).

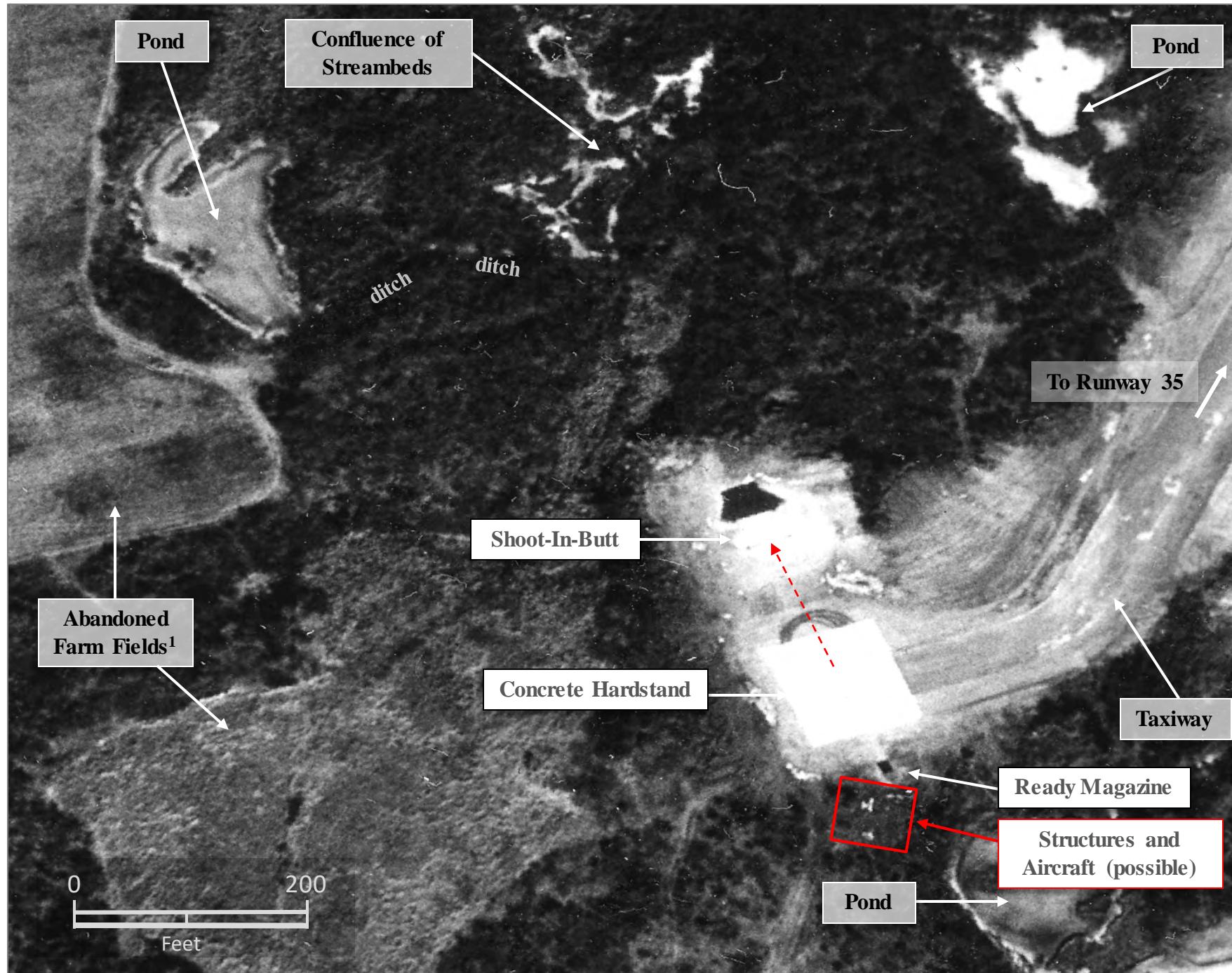
MRS = Military Response Site



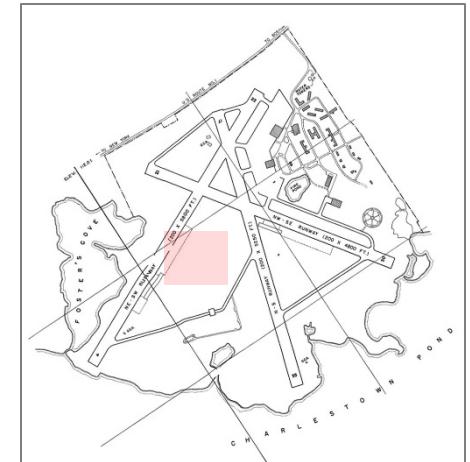
MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1944 VERTICAL VIEW



31 January 1944



LOCATION DIAGRAM



Note that the taxiway in January 1944 terminates at the concrete hardstand of the aviation machine gun range. In March 1945, the taxiway is extended and connects Runway 35 to Runway 4 (see next page).

Source: National Archives & Records Administration, Archives II, College Park, MD.

1) These farm fields date back to the previous private landowner (observed on 1941 aerial photos).

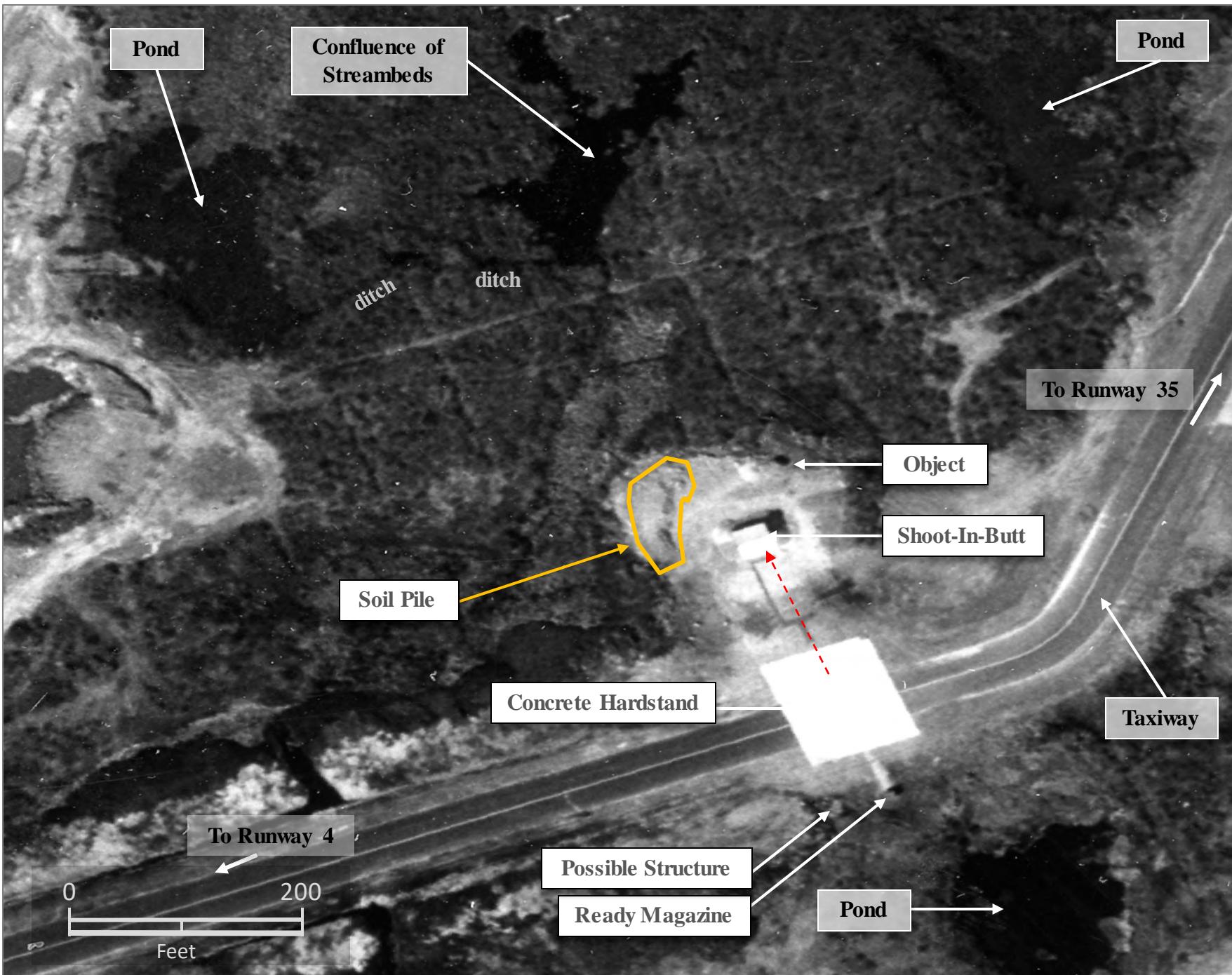
MRS = Military Response Site



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1945 VERTICAL VIEW



26 March 1945



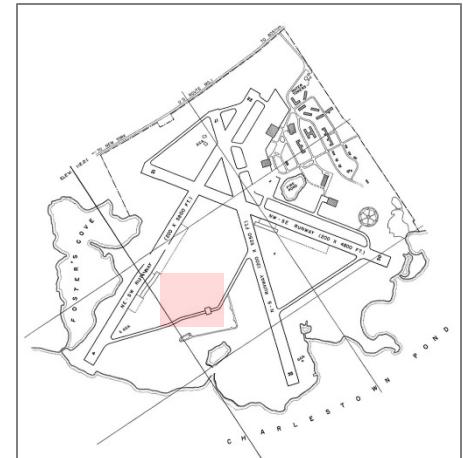
Source: National Archives & Records Administration, Archives II, College Park, MD.

— Mounded Material

MRS = Military Response Site

FINAL REPORT AUGUST 2018

LOCATION DIAGRAM



Note that the taxiway in March 1945 no longer terminates at the concrete hardstand of the aviation machine gun range, but continues on and connects Runway 35 to Runway 4.

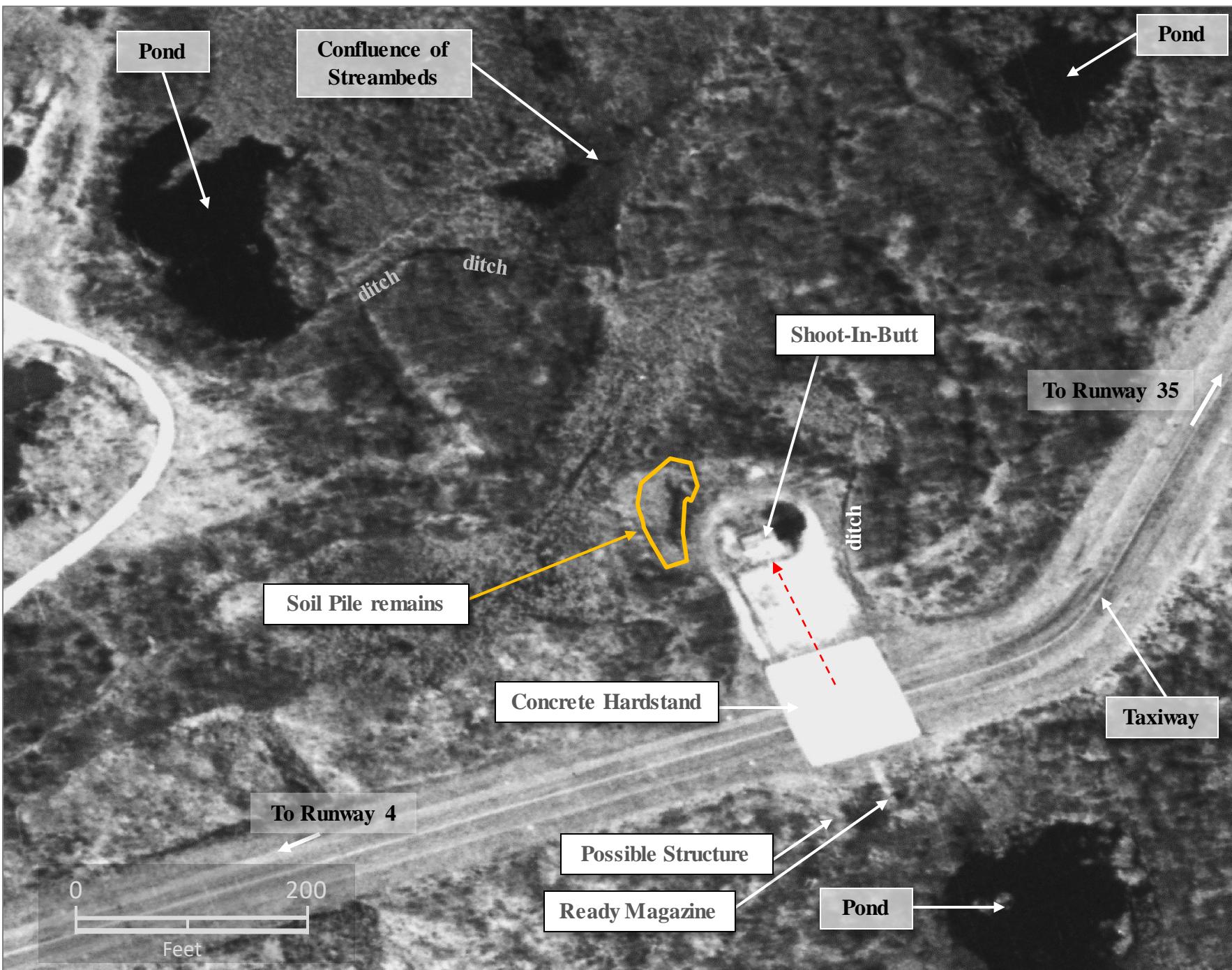
— Direction of fire from aircraft.



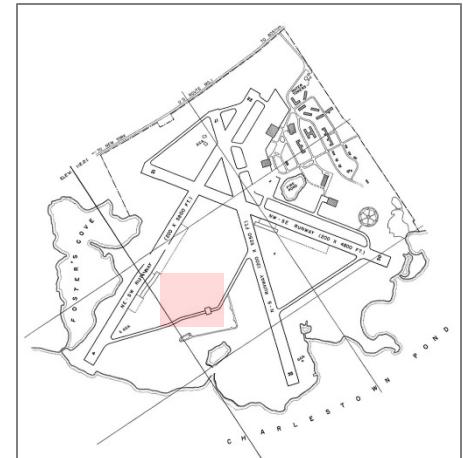
MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1954 VERTICAL VIEW



21 April 1954



LOCATION DIAGRAM



No major changes to the Aviation Machine Gun Test Range identified on April 1954 aerial photography.

Source: National Oceanic & Atmospheric Administration

— Mounded Material

MRS = Military Response Site

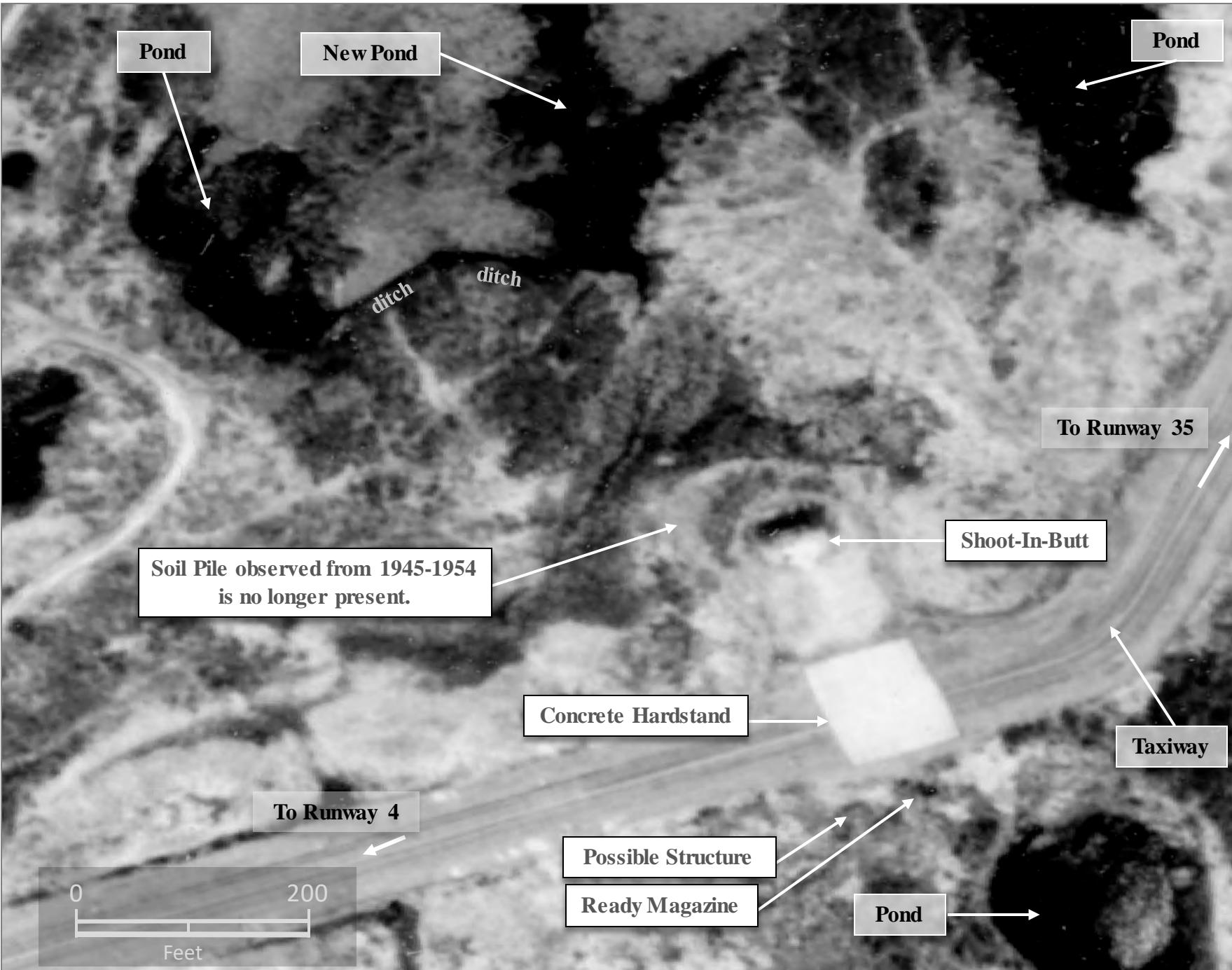
FINAL REPORT AUGUST 2018



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1962 VERTICAL VIEW

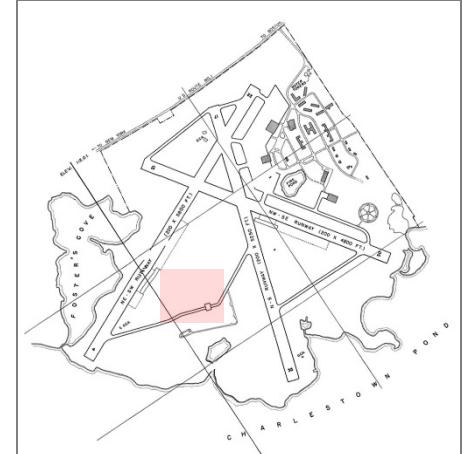


04 April 1962



Source: Rhode Island Department Of Administration Planning Information Center

LOCATION DIAGRAM



In April 1962 the Aviation Machine Gun Test Range does not appear to be active. The ground cover surrounding the shoot-in-butt does not appear to be well-maintained. Additionally, shadows cast from the top of the shoot-in-butt seem to indicate vegetation has been allowed to grow (indicating abandoned use of this range).

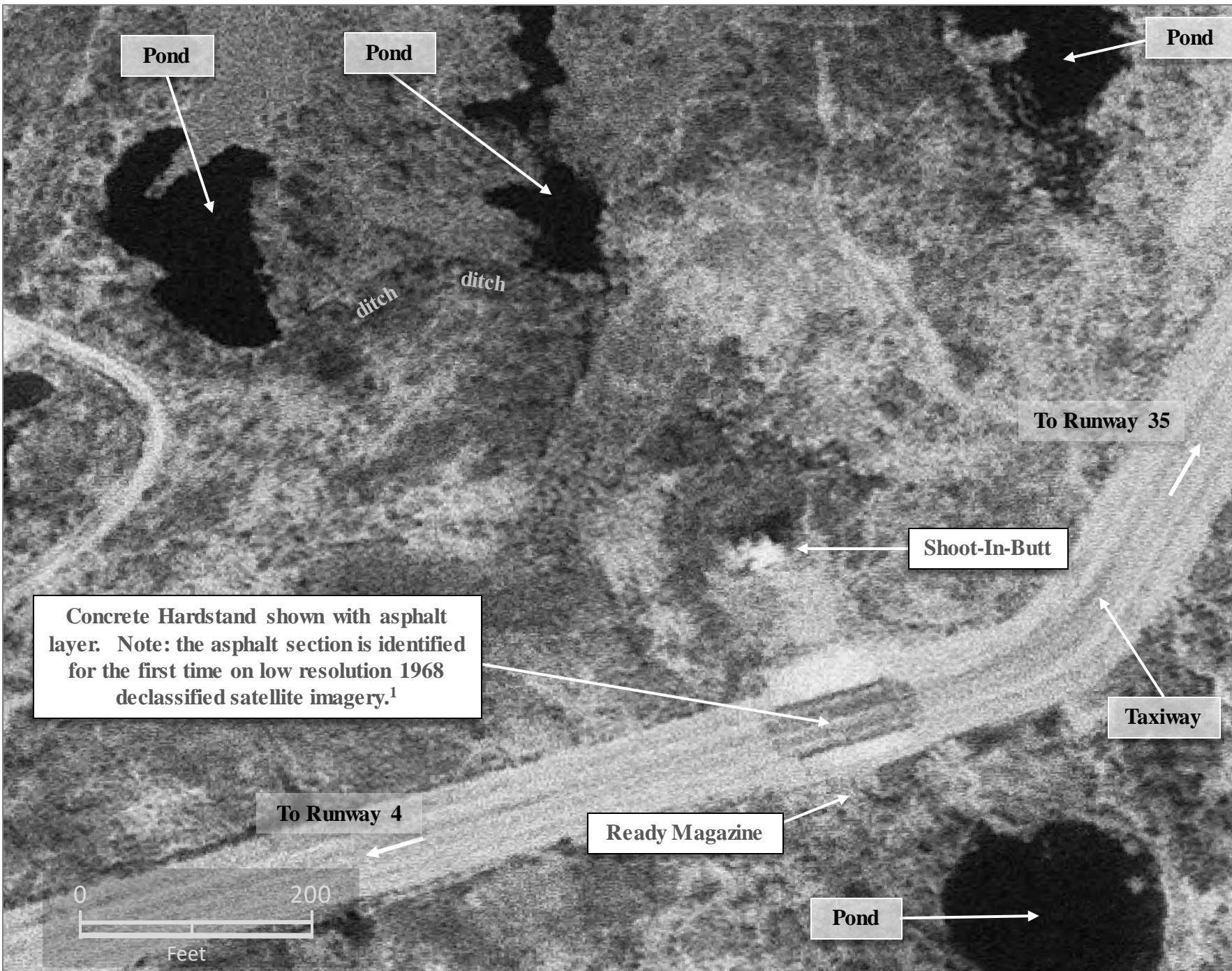
MRS = Military Response Site



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1970 VERTICAL VIEW



10 March 1970



Source: U.S. Geological Survey, EarthExplorer.

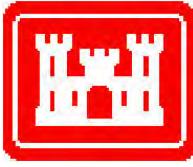
1) Source: Declassified CORONA satellite imagery; 15 August 1968.

MRS = Military Response Site

LOCATION DIAGRAM



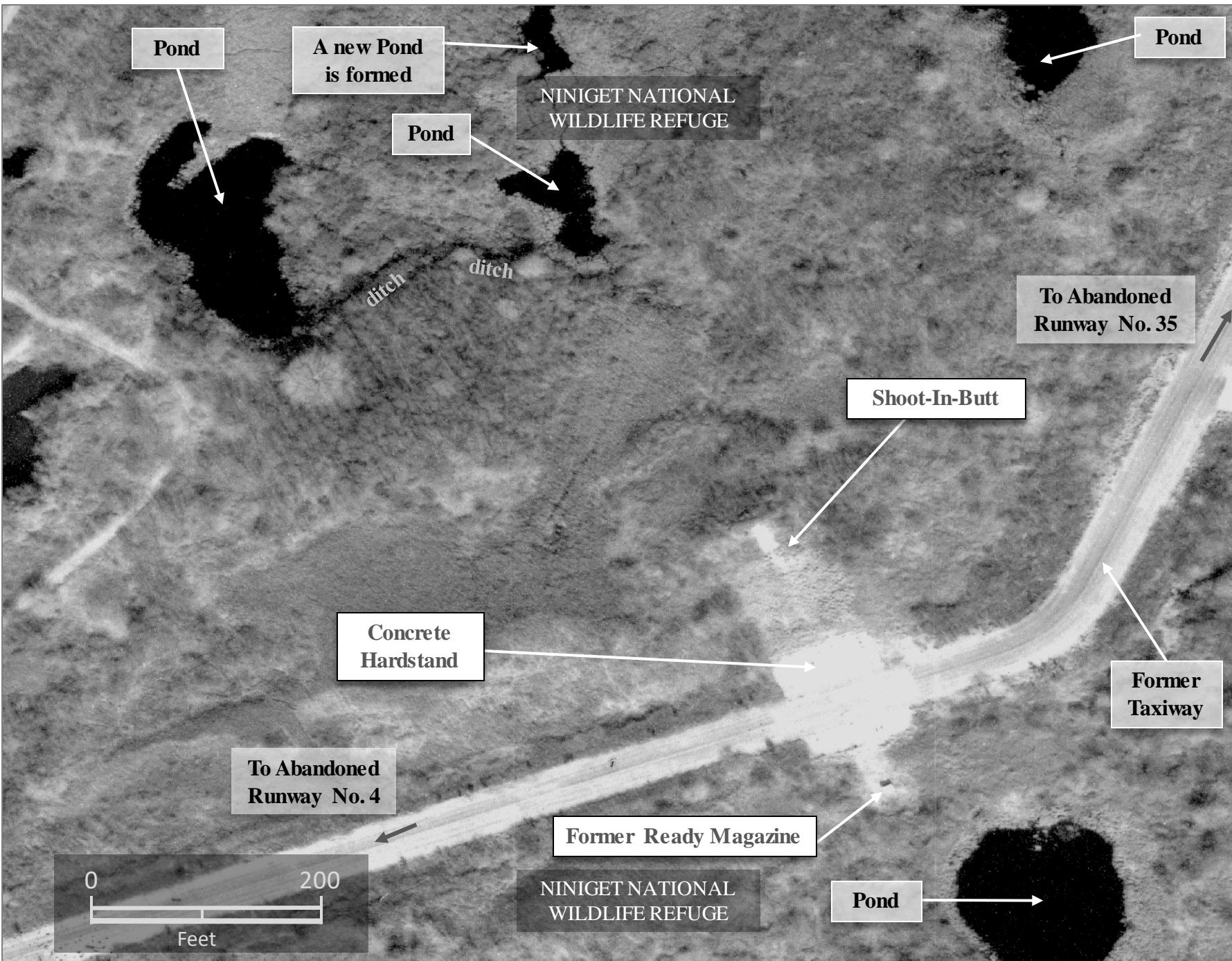
No major changes to the Shoot-in-Butt area of the Aviation Machine Gun Test Range are identified on March 1970 aerial photography.



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1985 VERTICAL VIEW



11 March 1985

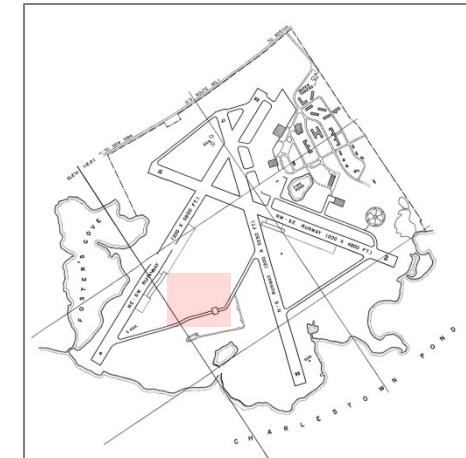


Source: U.S. Army Corps of Engineers, New England District.

1) Source: Declassified CORONA satellite imagery; 15 August 1968.

MRS = Military Response Site

LOCATION DIAGRAM



Special note: It is shown on 1985 aerial photography (see left) that the Shoot-in-Butt has been reduced in size. The once-familiar mound (which constituted the machine gun range backstop) no longer appears to be present.

The change to the appearance of the Shoot-In-Butt (range backstop) may be attributed to the removal of sand destined as roadbed fill for the construction of a new West Entrance to the Ninigret National Wildlife Refuge.¹

1) Source: Site Inspection Report for Naval Auxiliary Landing Field – Final, Prepared by Alion Science and Technology for the U.S. Army Corps of Engineers Engineering and Support Center, Huntsville and the Baltimore District, August 2008; D01RI000806_01.09_0500_a.pdf



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 1994 VERTICAL VIEW

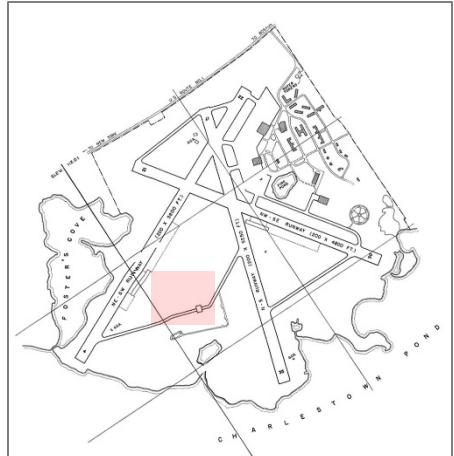


11 September 1994



Source: National Oceanic & Atmospheric Administration

LOCATION DIAGRAM



In 1994, the area of the Aviation Machine Gun Test Range is overgrown with trees and shrubs.

1. The Ready Magazine was located by a field investigative team in 1999 - D01RI000804_01.02_0002_a.pdf (Archives Search Report),.

MRS = Military Response Site



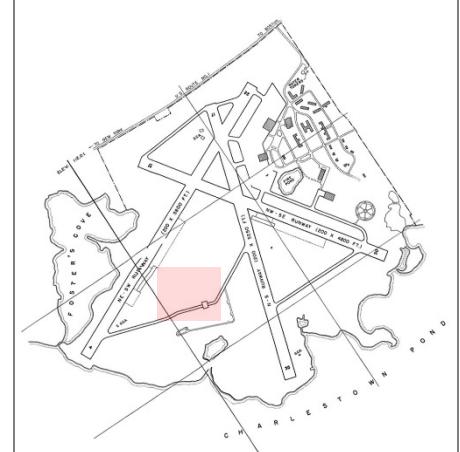
MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 2007 VERTICAL VIEW



April 2007



LOCATION DIAGRAM



In 2007, the area of the Aviation Machine Gun Test Range continues to be overgrown with trees and shrubs.

Source: Sky Research, Inc.; courtesy of the U.S. Army Corps of Engineers, New England District

MRS = Military Response Site



MRS 5 – SHOOT-IN-BUTT (BACKSTOP TO AVIATION MACHINE GUN TEST RANGE) 2016 VERTICAL VIEW



02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

LOCATION DIAGRAM



A current aerial view of the abandoned Aviation Machine Gun Test Range area.

Note: Much of the sand from the machine gun range backstop was reportedly removed and used as a fill for a road alignment (comprising 2 acres of the western entrance road which services Ninigret Park, The Town of Charlestown).¹ For additional details, refer to the next section of this report entitled “MRS 1 - Fill from Shoot-in-Butt”.

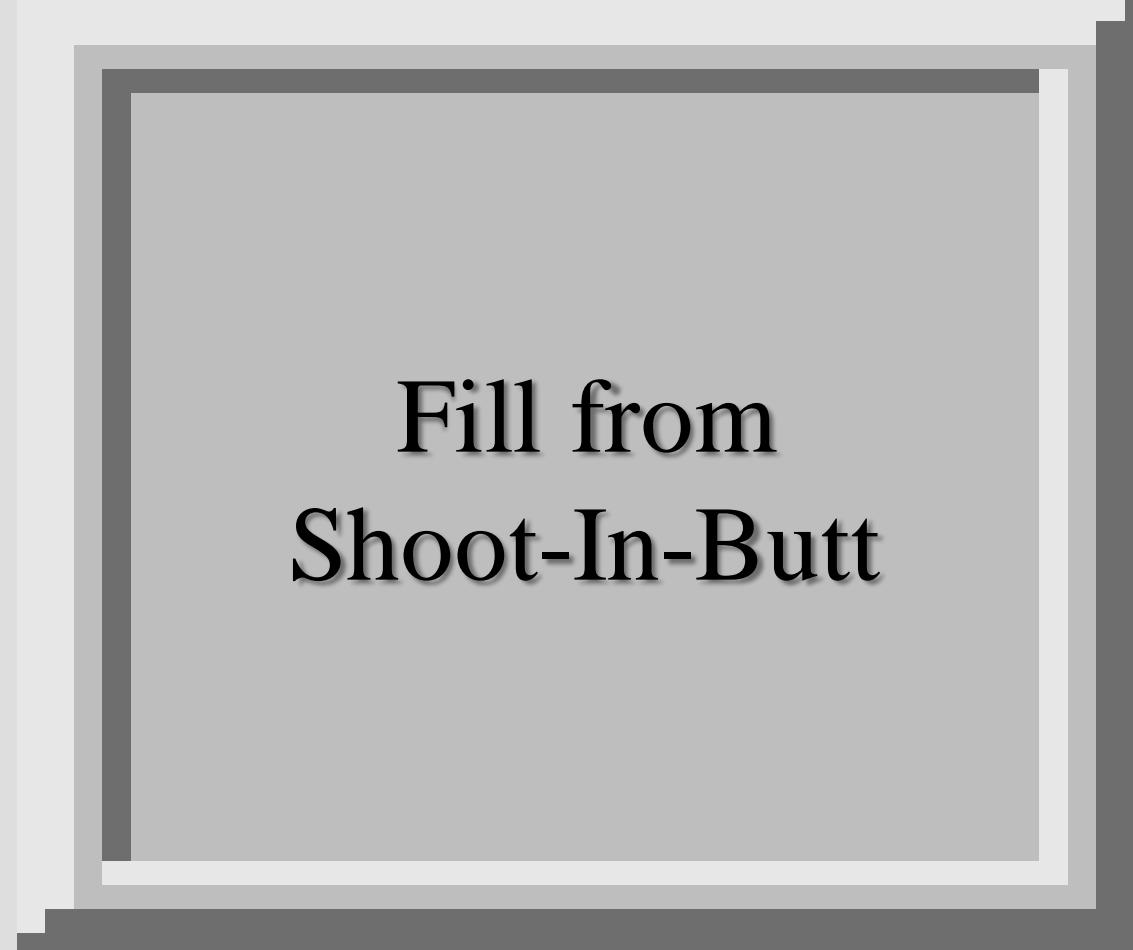
1) Source: Site Inspection Report for Naval Auxiliary Landing Field – Final, Prepared by Alion Science and Technology for the U.S. Army Corps of Engineers Engineering and Support Center, Huntsville and the Baltimore District, August 2008; D01RI000806_01.09_0500_a.pdf

MRS = Military Response Site



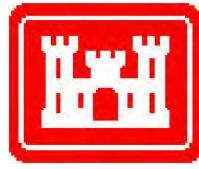
HISTORICAL PHOTO ANALYSIS – MRS 1

PHOTOGRAPHIC ANALYSIS , SECTION ONE – AREA OF INTEREST NO. 1



Fill from
Shoot-In-Butt

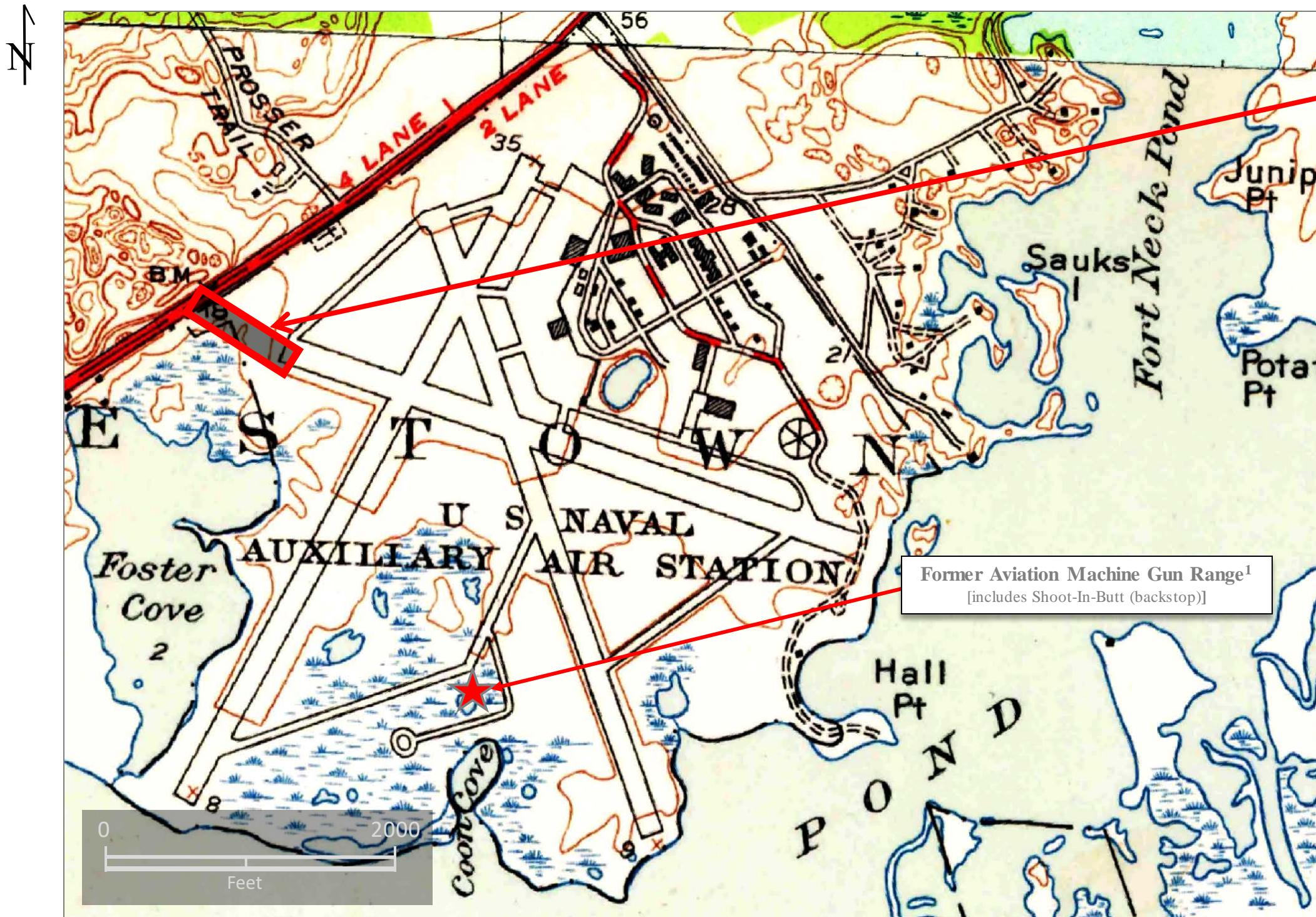
MRS = Military Response Site



LOCATION OF MRS 1 – FILL FROM SHOOT-IN-BUTT AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Location of MRS 1 - Fill from the Shoot-In-Butt of a closed-down Aviation Machine Gun Range

Former Aviation Machine Gun Range¹
[includes Shoot-In-Butt (backstop)]

1) Source: Site Inspection Report for Naval Auxiliary Landing Field – Final, Prepared by Alion Science and Technology, Durham, NC, D01RI000806_01.09_0500_a.pdf.

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

MRS = Military Response Site

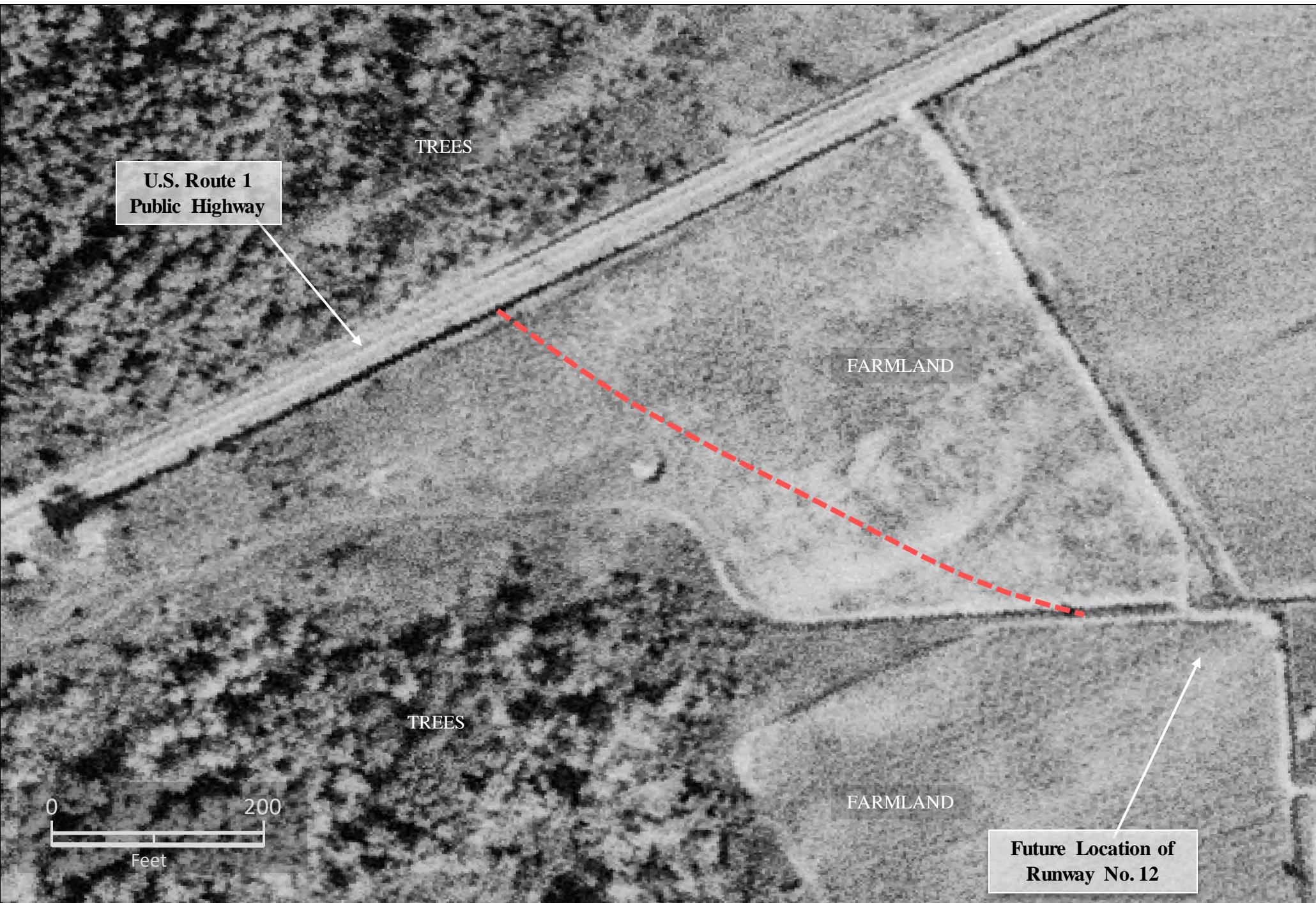
FINAL REPORT AUGUST 2018



MRS 1 – FILL FROM SHOOT-IN-BUTT 1941 PRE-DEVELOPMENT VIEW



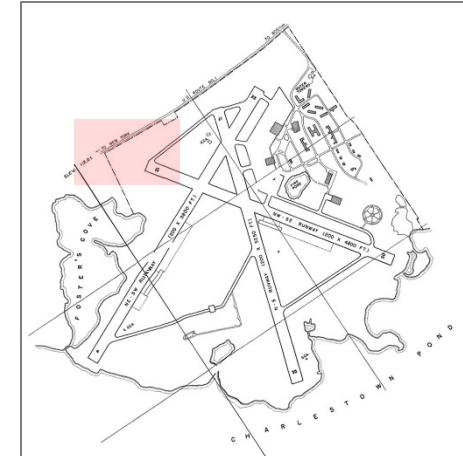
09 October 1941



Source: U.S. Geological Survey, EarthExplorer.

MRS = Military Response Site

LOCATION DIAGRAM



An October 1941 pre-development view of the MRS 1 site.

The general area is dominated by farmland and woodland vegetation.

Acquisition of land by the U.S. Navy has not yet occurred.

Future West Entrance to Ninigret Park, circa 1985 (approximate alignment).



MRS 1 – FILL FROM SHOOT-IN-BUTT

1962 PRE-DEVELOPMENT VIEW

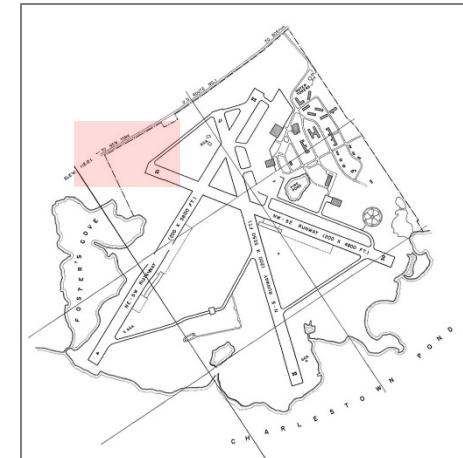


04 April 1962



Source: Rhode Island Department Of Administration Planning Information Center

LOCATION DIAGRAM



In April 1962, the U.S. Navy Auxiliary Landing Field at Charlestown is active.

Construction of a new West Entrance into Ninigret National Wildlife Refuge (see left), utilizing fill from the Shoot-In-Butt¹, will not begin until years after base closure – occurring sometime in the mid-1980s.

1) Source: Site Inspection Report for Naval Auxiliary Landing Field – Final, Prepared by Alion Science and Technology, Durham, NC, D01RI000806_01.09_0500_a.pdf.

Future West Entrance to Ninigret Park, circa 1985 (approximate alignment).

MRS = Military Response Site

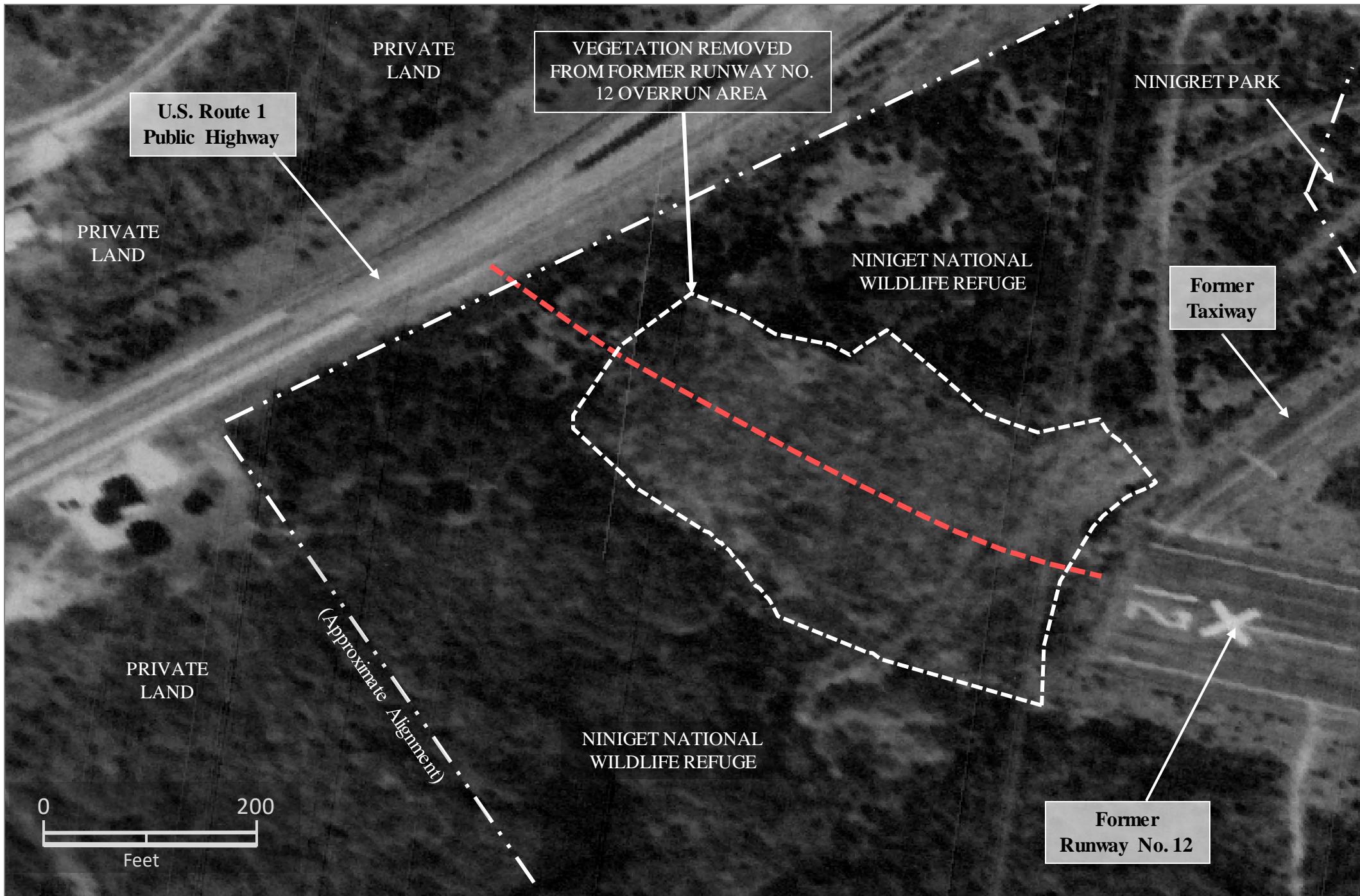


MRS 1 – FILL FROM SHOOT-IN-BUTT

1981 PRE-DEVELOPMENT VIEW

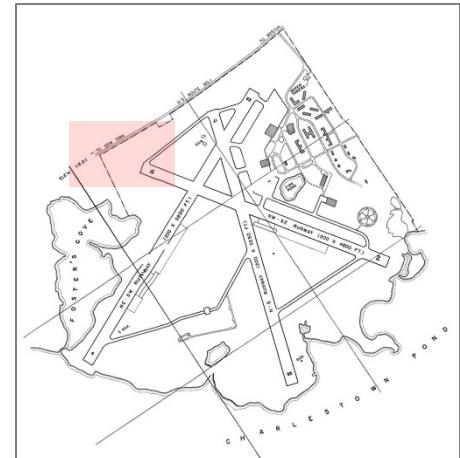


22 April 1981



Source: Rhode Island Department Of Administration Planning Information Center

LOCATION DIAGRAM



In April 1981, a section of the property of the former U.S. Navy Auxiliary Landing Field at Charlestown (see left) is now occupied by the Ninigret National Wildlife Refuge.

Construction of a new West Entrance to the refuge has not yet begun.

Future West Entrance to Ninigret Park, circa 1985 (approximate alignment).

MRS = Military Response Site



MRS 1 – FILL FROM SHOOT-IN-BUTT

1985 VERTICAL VIEW



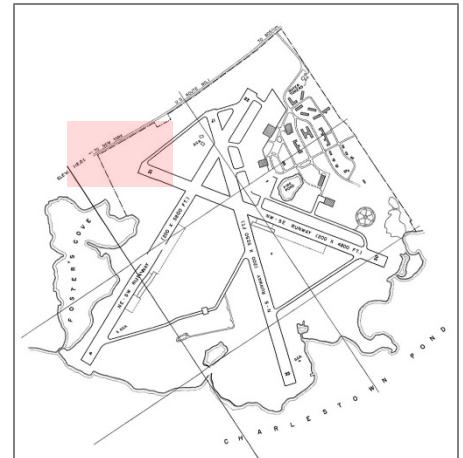
11 March 1985



Source: Rhode Island Department Of Administration Planning Information Center

1) Final Site Inspection Report for Naval Auxiliary Landing Field, DERP FUDS D01R000804, Prepared by Alion Science and Technology for U.S. Army Engineering and Support Center, Huntsville, and U.S. Army Corps of Engineers, Baltimore District, D01RI000806_01.09_0500_a.pdf, August 2008.

LOCATION DIAGRAM



In March 1985, a section of the property of the former U.S. Navy Auxiliary Landing Field at Charlestown (see left) is occupied by the Ninigret National Wildlife Refuge.

Construction of a new West Entrance to Ninigret National Wildlife Refuge is shown completed on aerial photography dated 11 March 1985.

MRS = Military Response Site

SCL+PG = Soil-covered land with planted grass.



MRS 1 – FILL FROM SHOOT-IN-BUTT

1988 VERTICAL VIEW



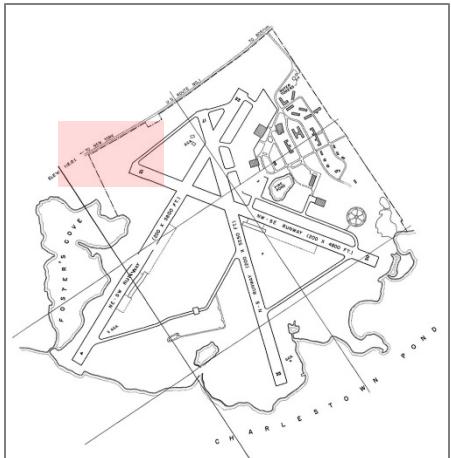
13 April 1988



Source: Rhode Island Department Of Administration Planning Information Center

1) Final Site Inspection Report for Naval Auxiliary Landing Field, DERP FUDS D01R000804, Prepared by Alion Science and Technology for U.S. Army Engineering and Support Center, Huntsville, and U.S. Army Corps of Engineers, Baltimore District, D01RI000806_01.09_0500_a.pdf, August 2008.

LOCATION DIAGRAM



In April 1988, a section of the property of the former U.S. Navy Auxiliary Landing Field at Charlestown (see left) is occupied by the Ninigret National Wildlife Refuge.

Other than a narrower grass-covered buffer along the West Entrance drive, no major land use changes are identified in this area since 1985.

MRS = Military Response Site

SCL+PG = Soil-covered land with planted grass.



MRS 1 – FILL FROM SHOOT-IN-BUTT

1994 VERTICAL VIEW



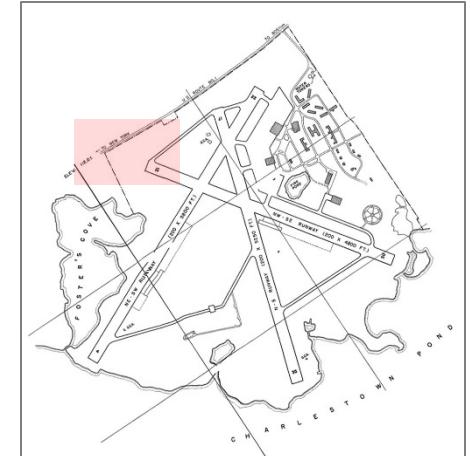
11 September 1994



Source: National Oceanic & Atmospheric Administration

1) Final Site Inspection Report for Naval Auxiliary Landing Field, DERP FUDS D01R000804, Prepared by Alion Science and Technology for U.S. Army Engineering and Support Center, Huntsville, and U.S. Army Corps of Engineers, Baltimore District, D01RI000806_01.09_0500_a.pdf, August 2008.

LOCATION DIAGRAM

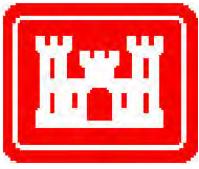


In September 1994, a section of the property of the former U.S. Navy Auxiliary Landing Field at Charlestown (see left) is occupied by the Ninigret National Wildlife Refuge.

No major land use changes are identified in this area since 1988.

MRS = Military Response Site

SCL+PG = Soil-covered land with planted grass.



MRS 1 – FILL FROM SHOOT-IN-BUTT

2016 VERTICAL VIEW



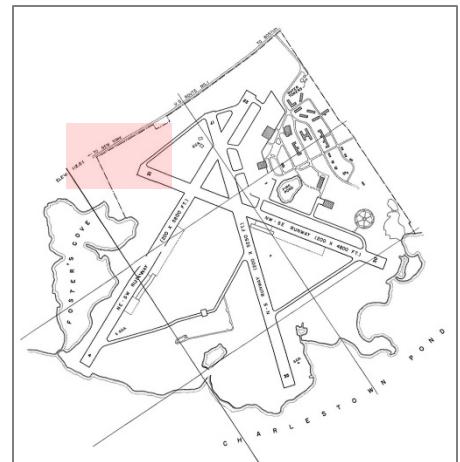
02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

1) Final Site Inspection Report for Naval Auxiliary Landing Field, DERP FUDS D01R000804, Prepared by Alion Science and Technology for U.S. Army Engineering and Support Center, Huntsville, and U.S. Army Corps of Engineers, Baltimore District, D01RI000806_01.09_0500_a.pdf, August 2008.

LOCATION DIAGRAM



A current aerial view of the West Entrance to the Ninigret National Wildlife Refuge.

Asphalt removal of Runway No. 12 and a taxiway has already occurred. A new parking area is also identified on the current imagery.

Note: For details of the actual aviation machine gun range (which is the reported source of the added fill for the West Entrance Road), refer to the previous section of this report entitled “MRS 5 - Shoot-in-Butt”.

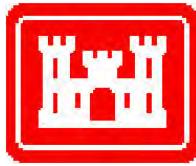
MRS = Military Response Site



HISTORICAL PHOTO ANALYSIS – MRS 7



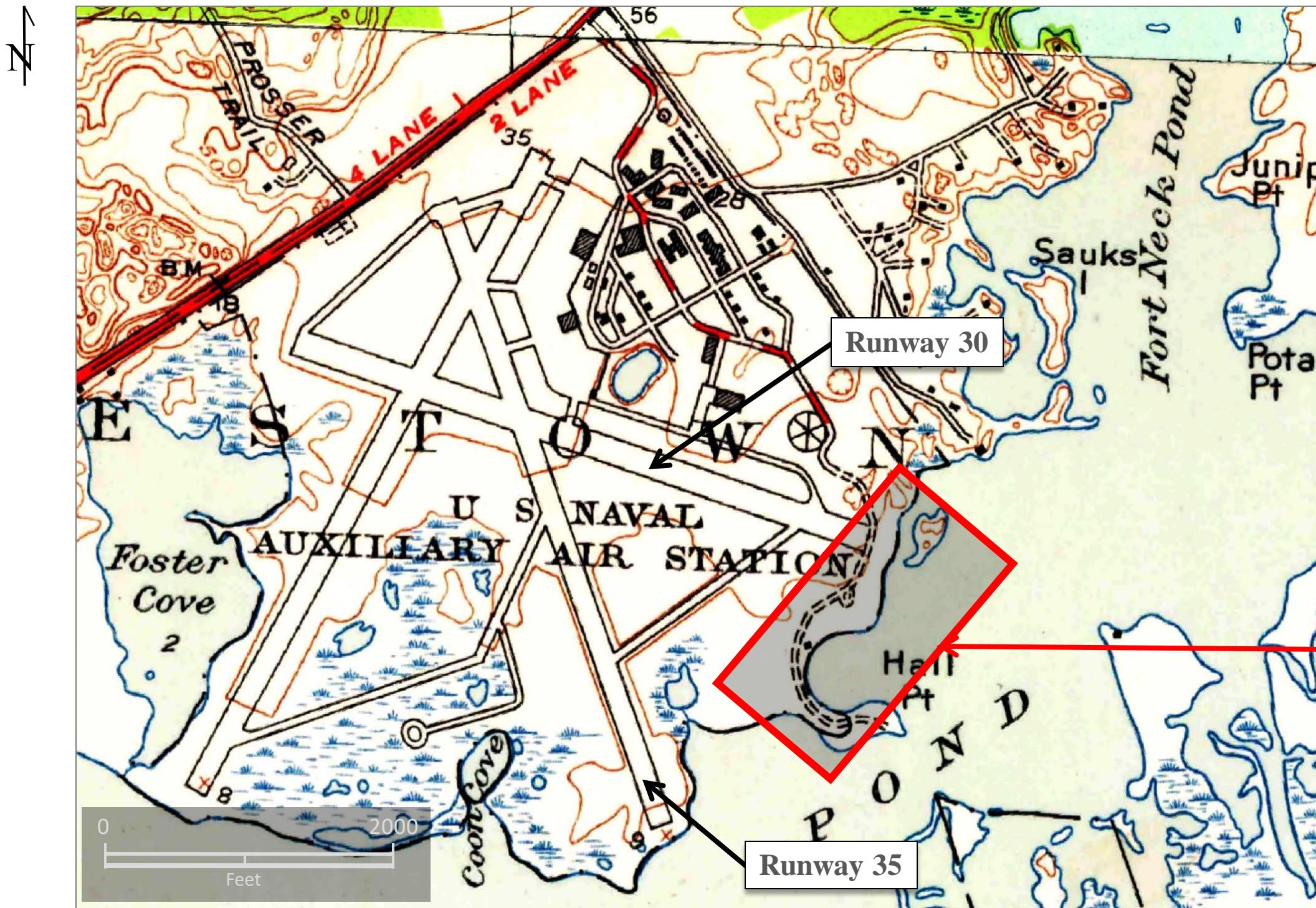
MRS = Military Response Site



MRS 7 – RANGE COMPLEX NO. 1 AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

MRS = Munitions Response Site

1) Source: Charlestown Naval Auxiliary Landing Field, Charlestown, RI Overview & Site 8 Long Term Monitoring Results & Project Completion, Document No. D01RI000801_03.12_0504_p.pdf.

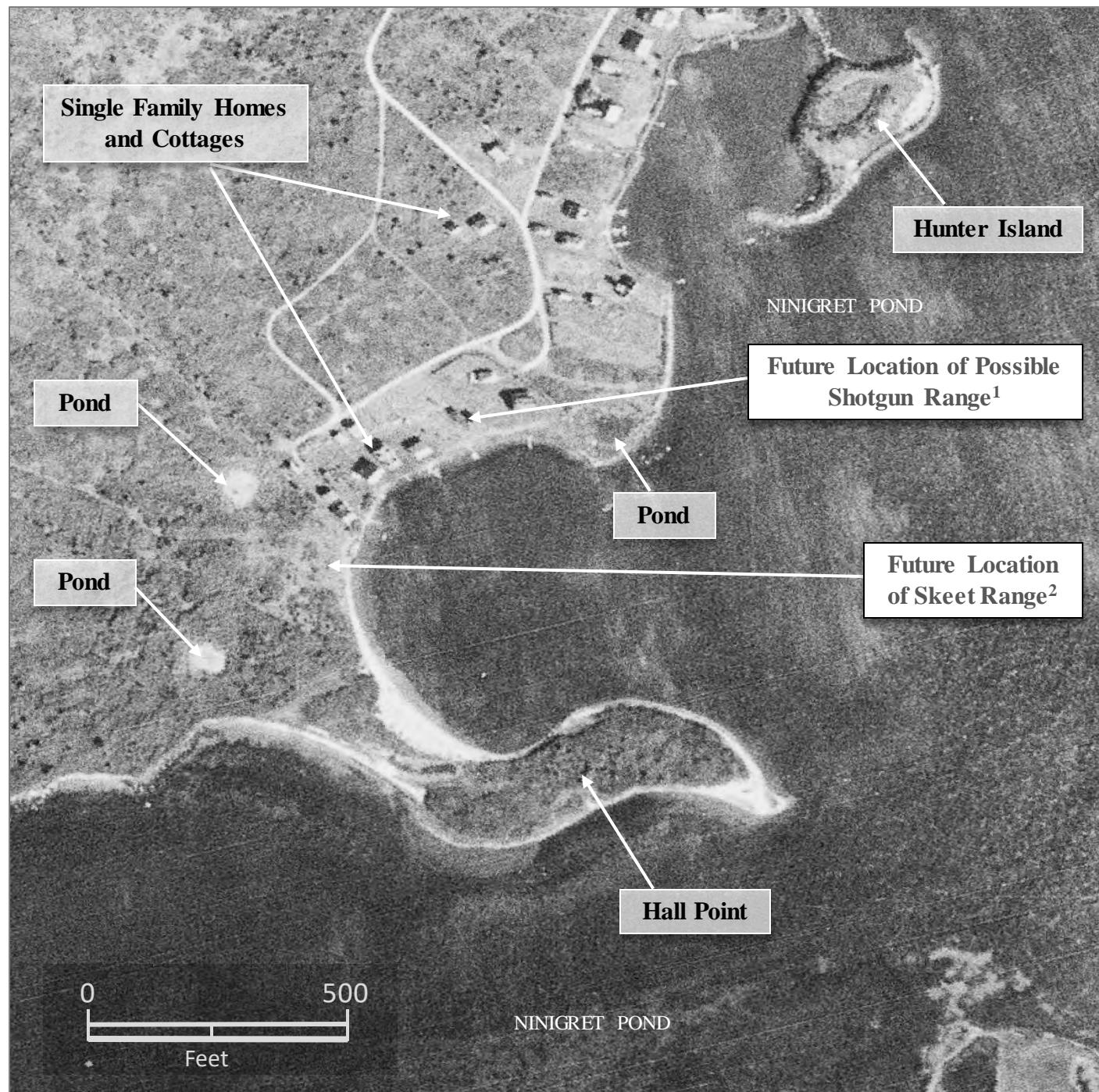


MRS 7 – RANGE COMPLEX NO. 1

1941 PRE-DEVELOPMENT VIEW

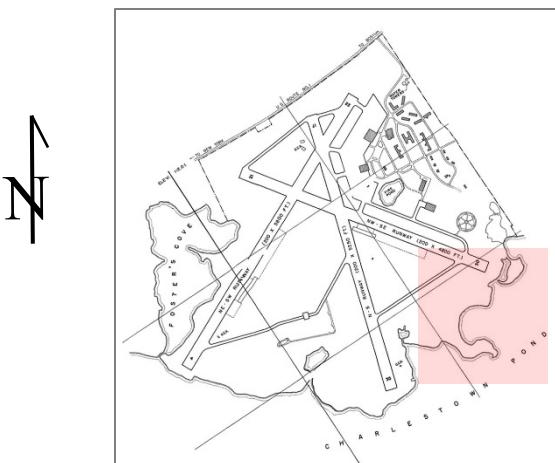


09 October 1941



Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



In October of 1941, construction of the Naval Auxiliary Landing Field at Charlestown, RI has not yet begun.

1. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

2. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

MRS = Military Response Site

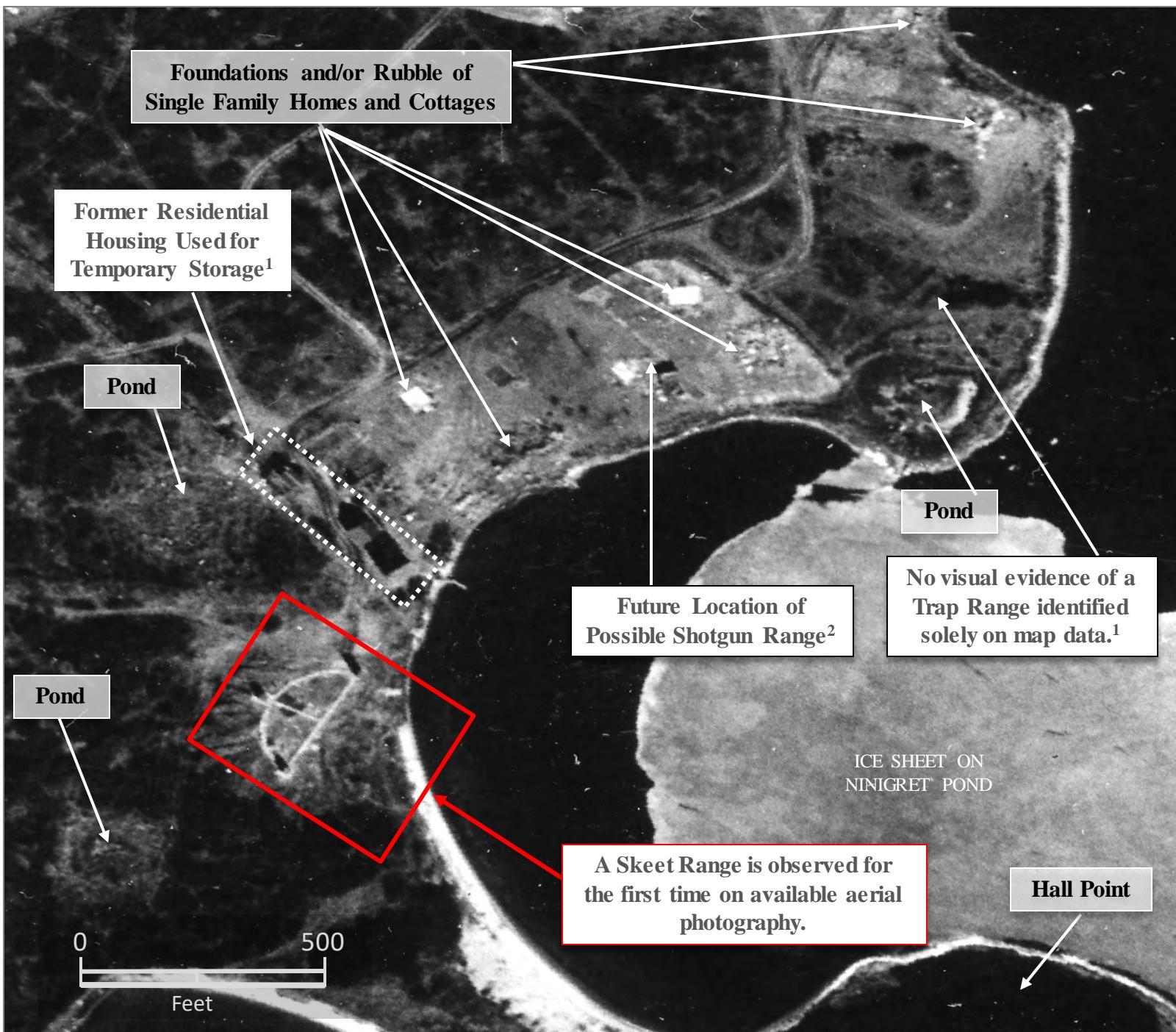


MRS 7 – RANGE COMPLEX NO. 1

1944 VERTICAL VIEW

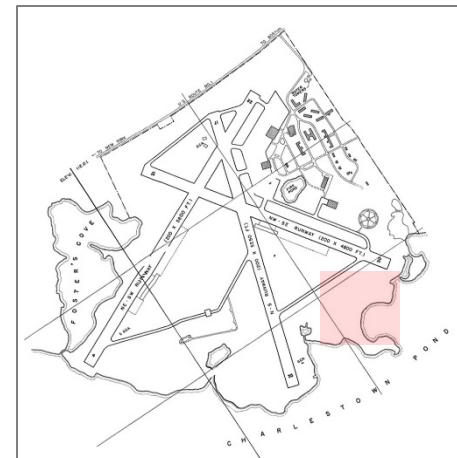


31 January 1944



Source: National Archives & Records Administration, Archives II, College Park, MD.

LOCATION DIAGRAM



A Skeet Range is identified at CNALF and is referenced on a U.S. Navy layout plan.¹

1. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

2. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

CNALF = Charlestown Naval Auxiliary Landing Field
MRS = Military Response Site

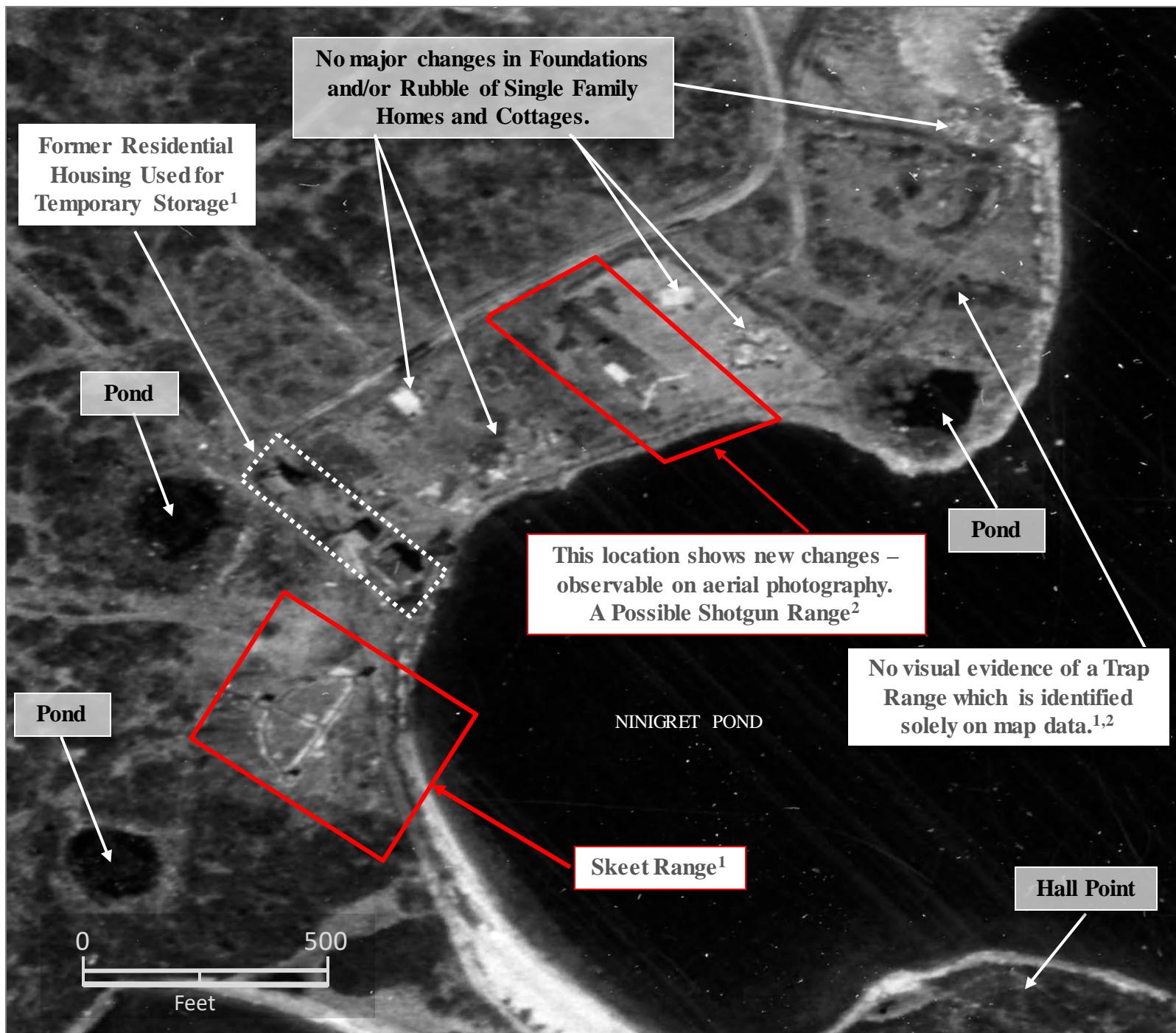


MRS 7 – RANGE COMPLEX NO. 1

1945 VERTICAL VIEW

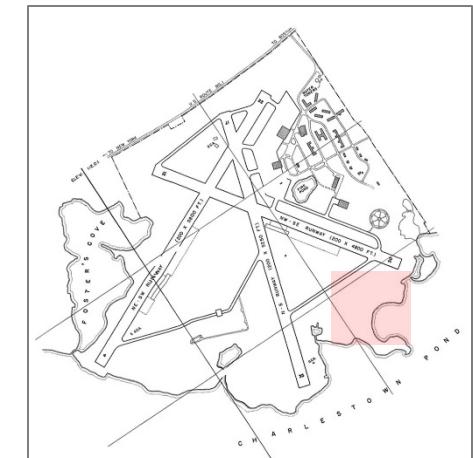


26 March 1945



Source: National Archives & Records Administration, Archives II, College Park, MD.

LOCATION DIAGRAM



A Skeet Range and Possible Shotgun Range, identified on 1945 aerial photography, are referenced on U.S. Navy layout plans.^{1,2}

1. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

2. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

MRS = Military Response Site

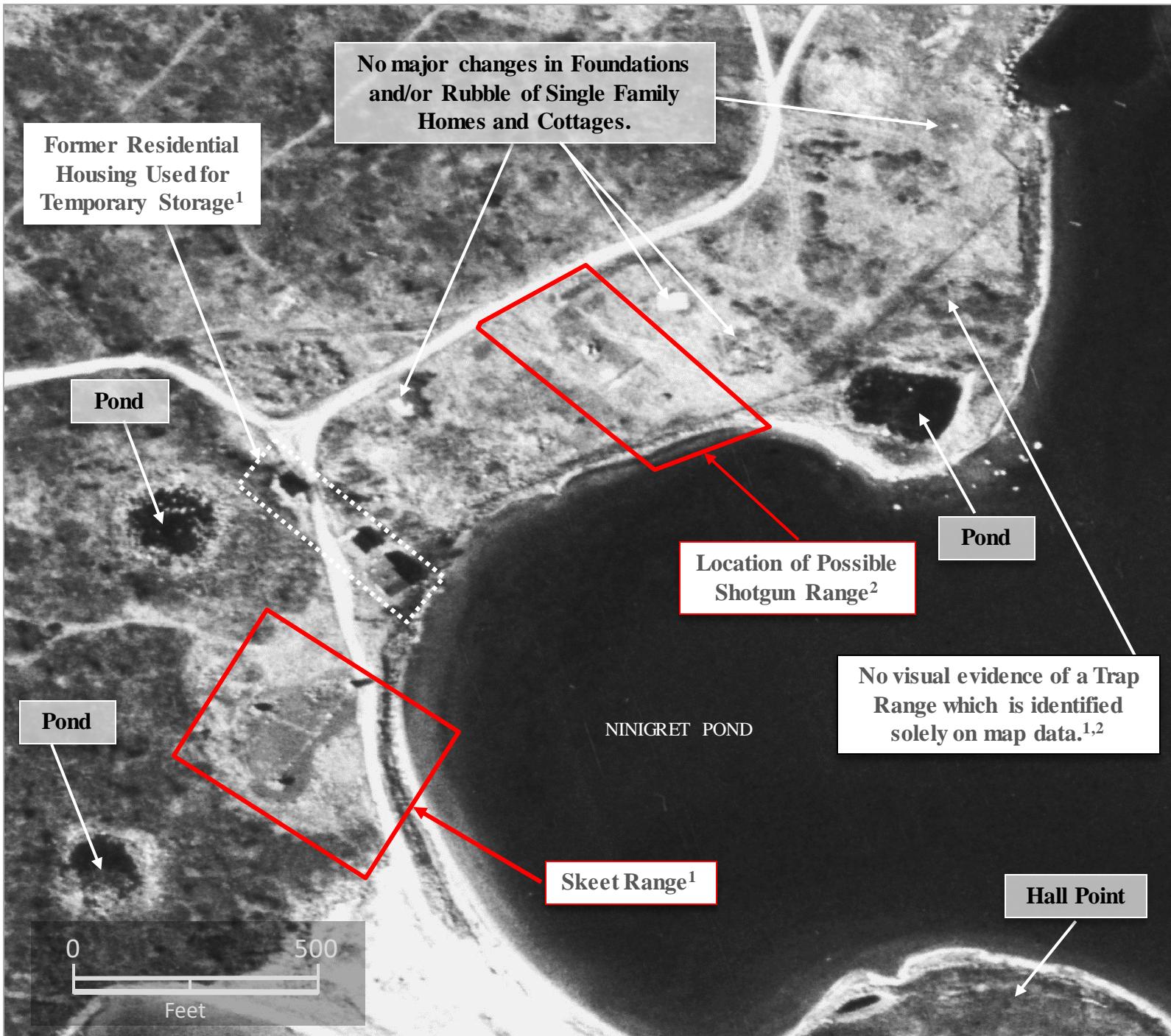


MRS 7 – RANGE COMPLEX NO. 1

1954 VERTICAL VIEW

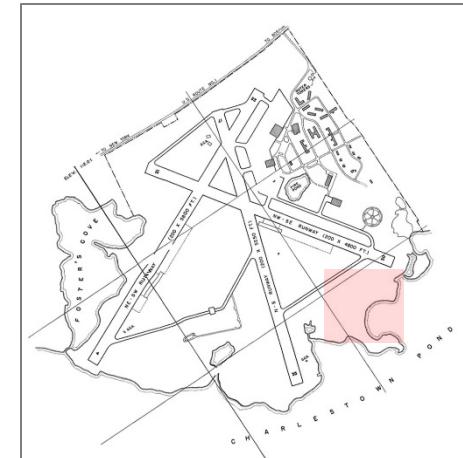


21 April 1954



Source: National Oceanic and Atmospheric Administration (NOAA)

LOCATION DIAGRAM



A Skeet Range and Possible Shotgun Range, identified on 1954 aerial photography, are referenced on U.S. Navy layout plans.^{1,2}

1. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

2. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

MRS = Military Response Site

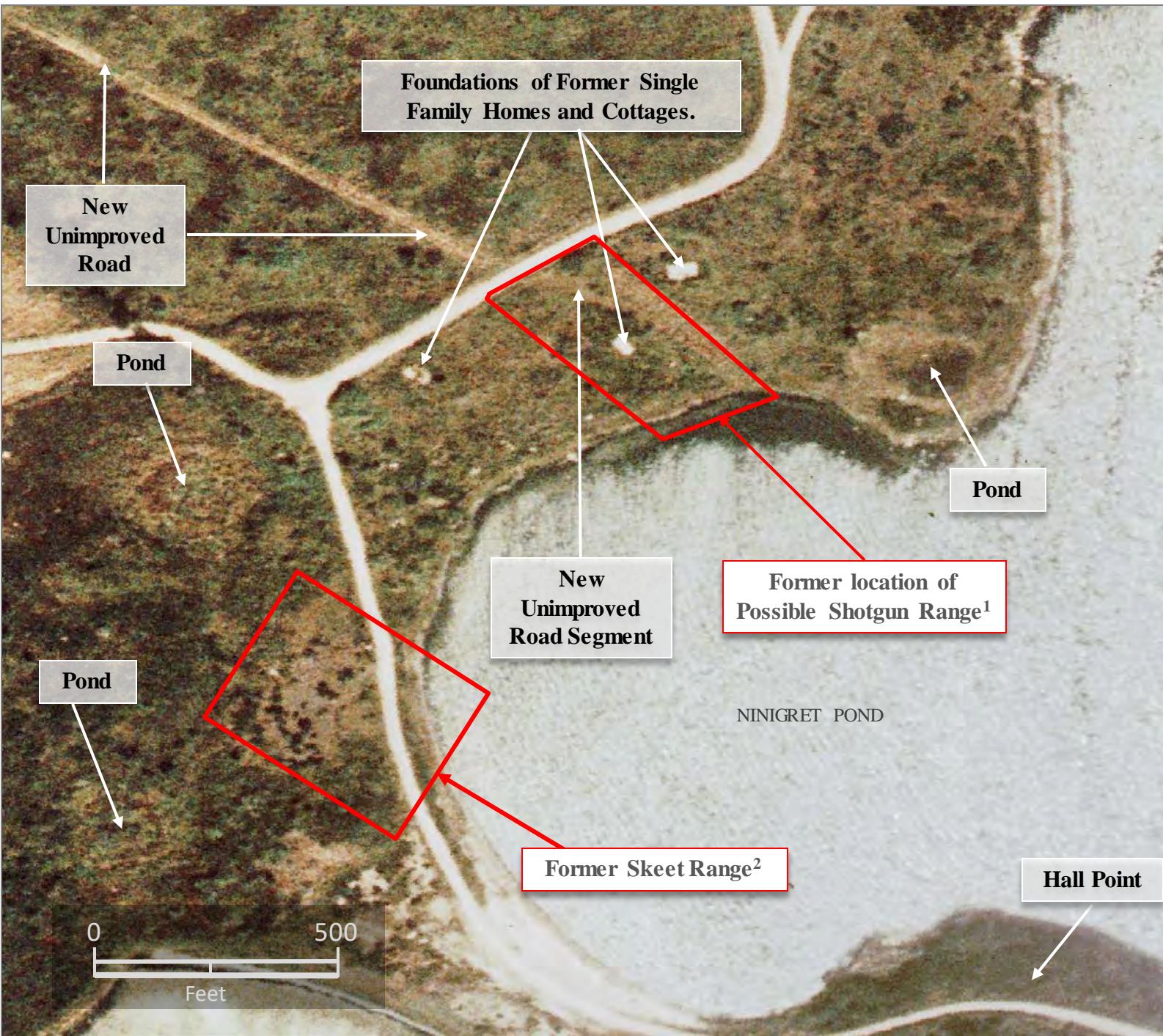


MRS 7 – RANGE COMPLEX NO. 1

1965 VERTICAL VIEW

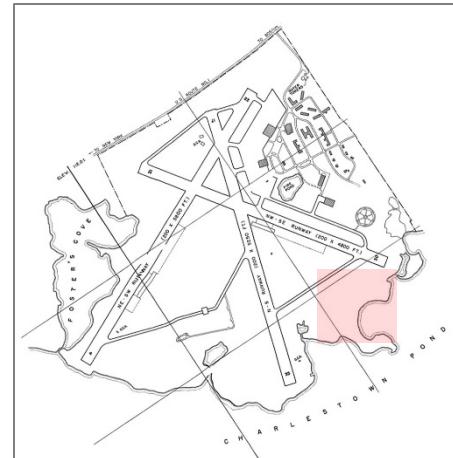


27 September 1965



Source: National Oceanic and Atmospheric Administration (NOAA)

LOCATION DIAGRAM



Only the outline remains of a Skeet Range is identified on 1965 aerial photography in MRS 7 – Range Complex No. 1 Area.

1. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

2. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

MRS = Military Response Site

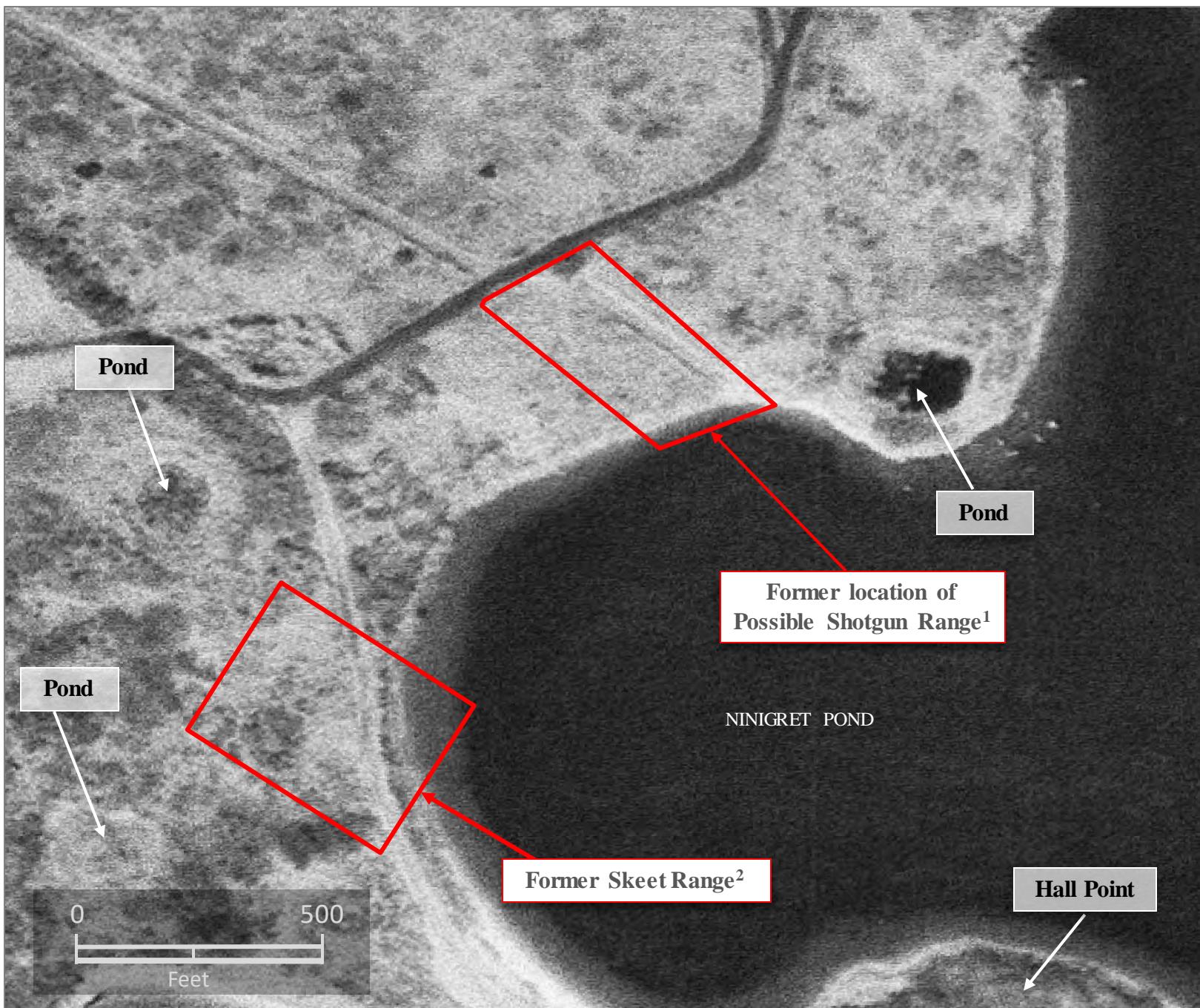


MRS 7 – RANGE COMPLEX NO. 1

1970 VERTICAL VIEW

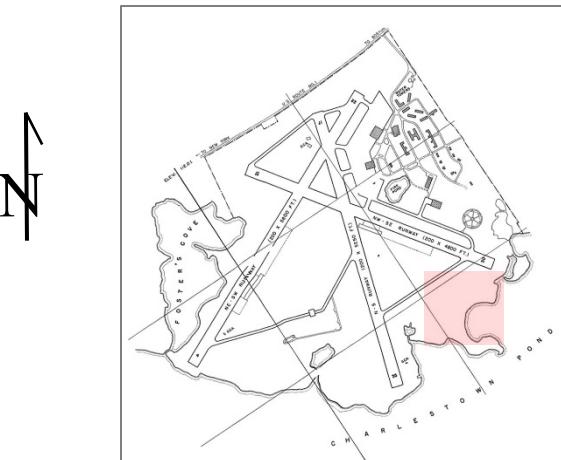


10 March 1970



Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



Only the vague outline of a former Skeet Range is identified on 1970 aerial photography in the MRS 7 – Range Complex No. 1 Area.

1. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

2. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

MRS = Military Response Site



MRS 7 – RANGE COMPLEX NO. 1

2016 VERTICAL VIEW

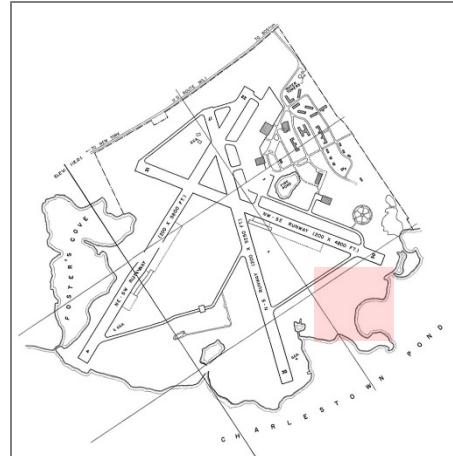


02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

LOCATION DIAGRAM



A current aerial view of the MRS 7 – Range Complex No. 1 Area. Low ground cover and trees obscure the remains of U.S. Navy military ranges that once existed along the coastline of Ningret Pond.

Special note: several years of historical imagery from 1972 to 2011³ were reviewed over the former Range Complex No. 1. No significant land use changes were identified.

1. Source: Map of N.A.A.S. Charlestown R.I., Plot Plan of Building Area, P.W.D. Drawing No. C-120, Approved August 20, 1946.

2. Source: Map of Naval Auxiliary Air Station, Charlestown, R.I., Showing Conditions on June 30 1951, Q.N.A.S. – N.A.A.S. Charlestown, R.I., Sheet Number 9.

3. Imagery reviewed: April 1972, May 1976, April 1981, March 1985, April 1988, September 1994, April 2009, and 2011.

MRS = Military Response Site

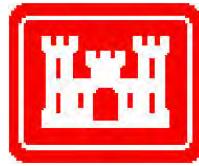


HISTORICAL PHOTO ANALYSIS – MRS 6



Pistol Range

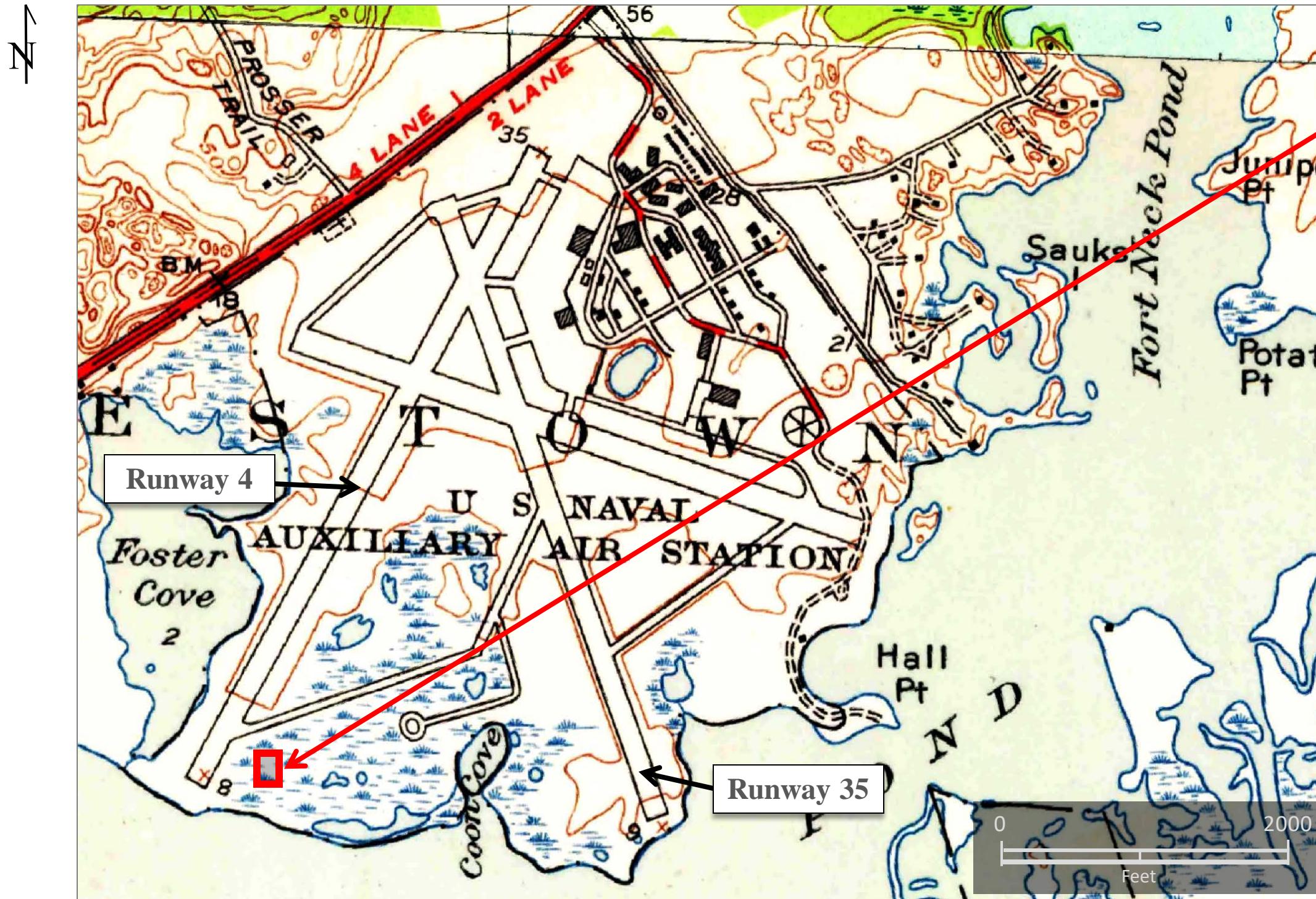
MRS = Munitions Response Site



MRS 6 – PISTOL RANGE AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



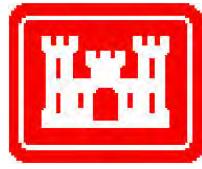
LOCATIONAL DATA – MAP INFORMATION



General area of a 25 & 50 Yard Firing Range identified graphically on a U.S. Navy layout plan, "Showing Conditions on June 30, 1943."¹

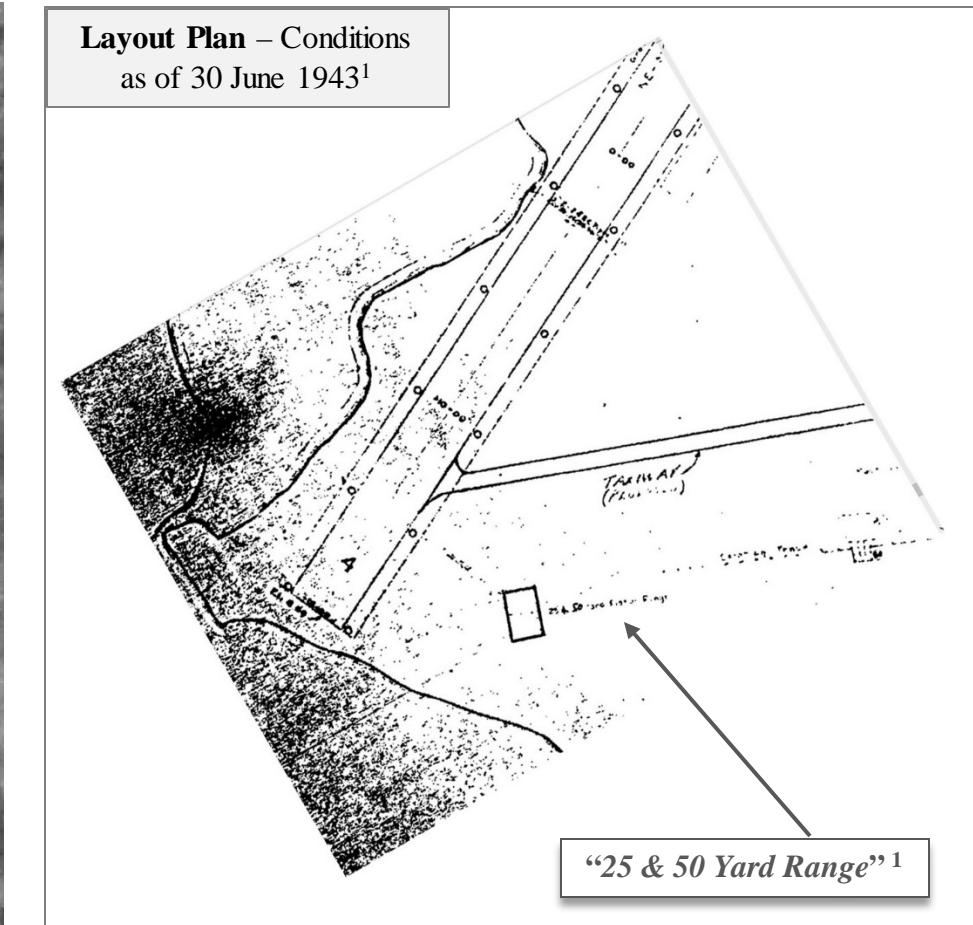
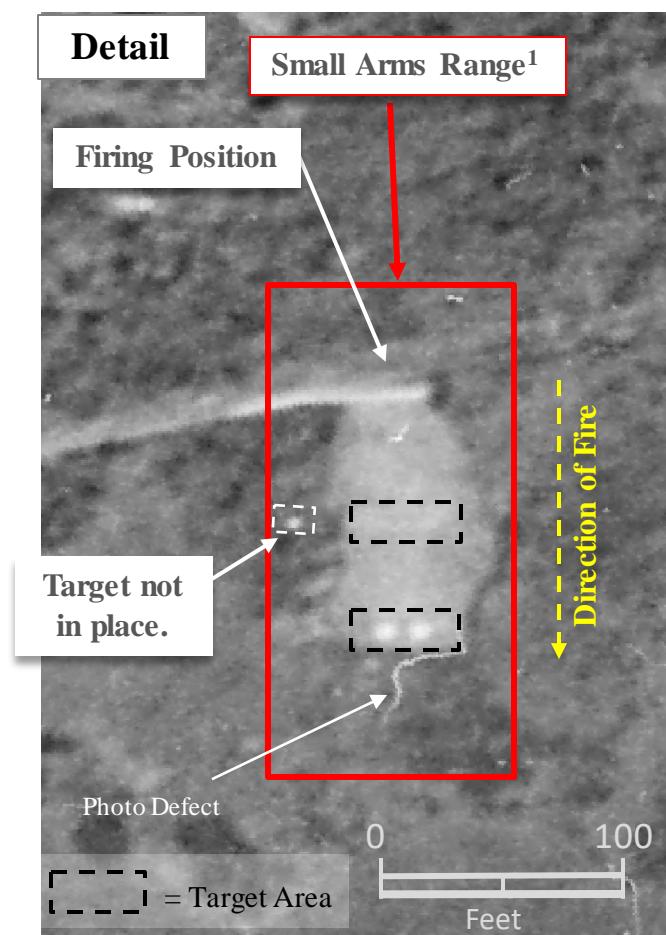
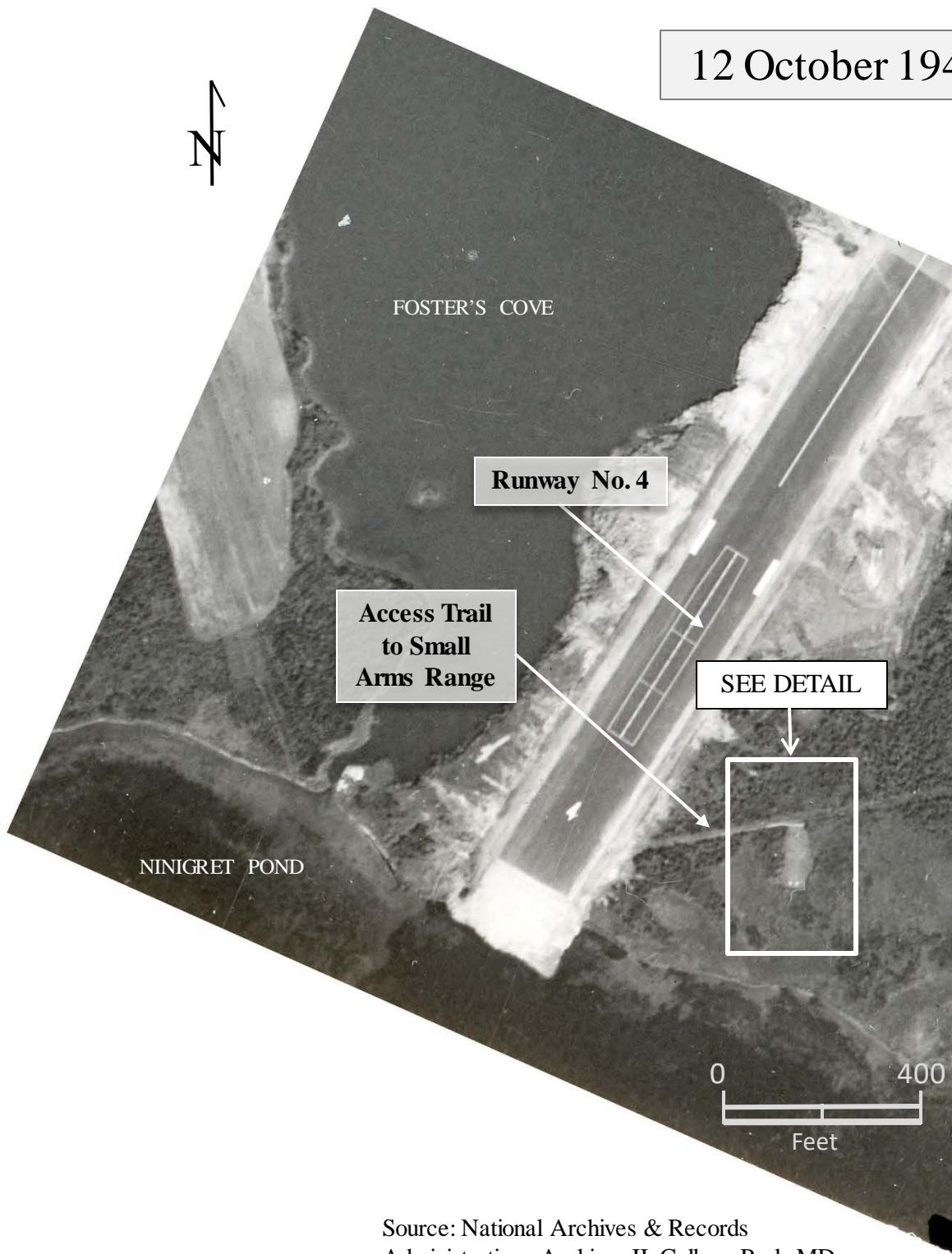
Source: DERP for FUDS - Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, Map L-8, 27 April 1999

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).



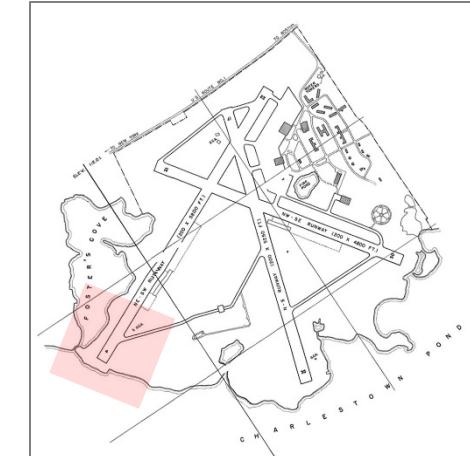
MRS 6 – PISTOL RANGE

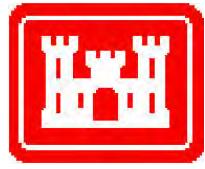
1943 VERTICAL VIEW & LAYOUT PLAN



A Small Arms Range is identified on October 1943 aerial photography in the MRS 6 area. This 25/50 yard small arms range is identified on a June 1943 layout plan (see map section below-right).¹

LOCATION DIAGRAM





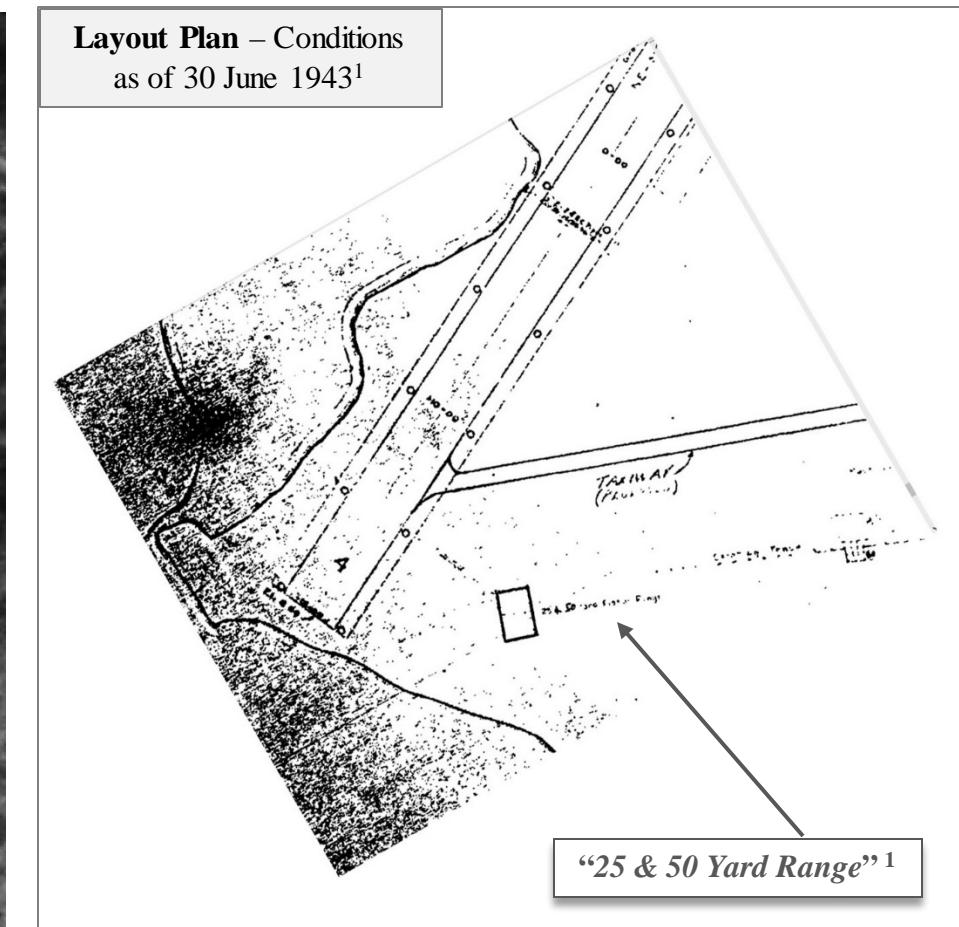
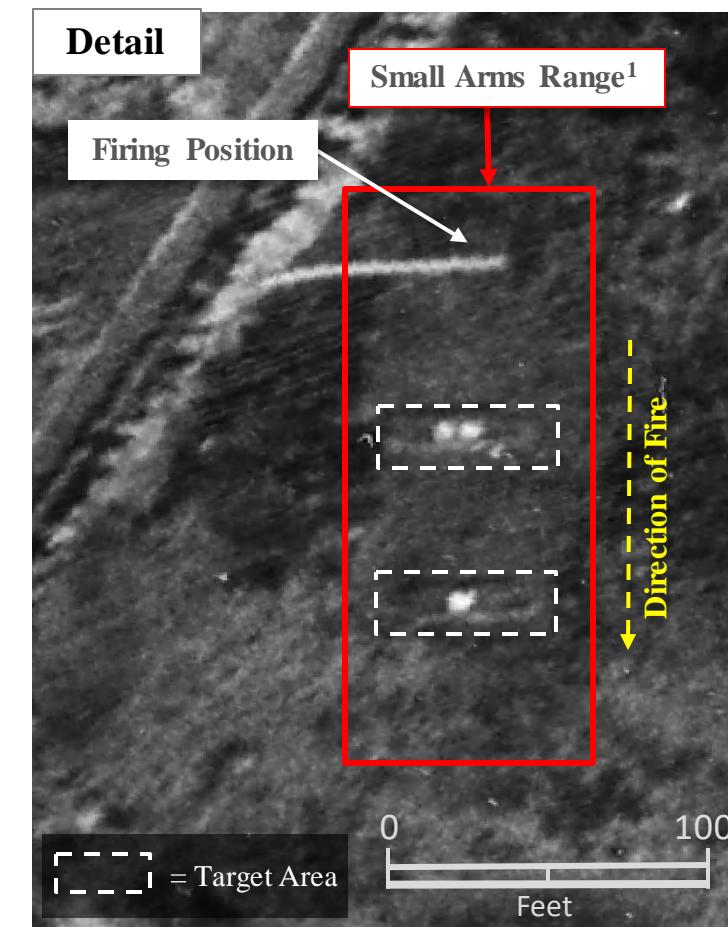
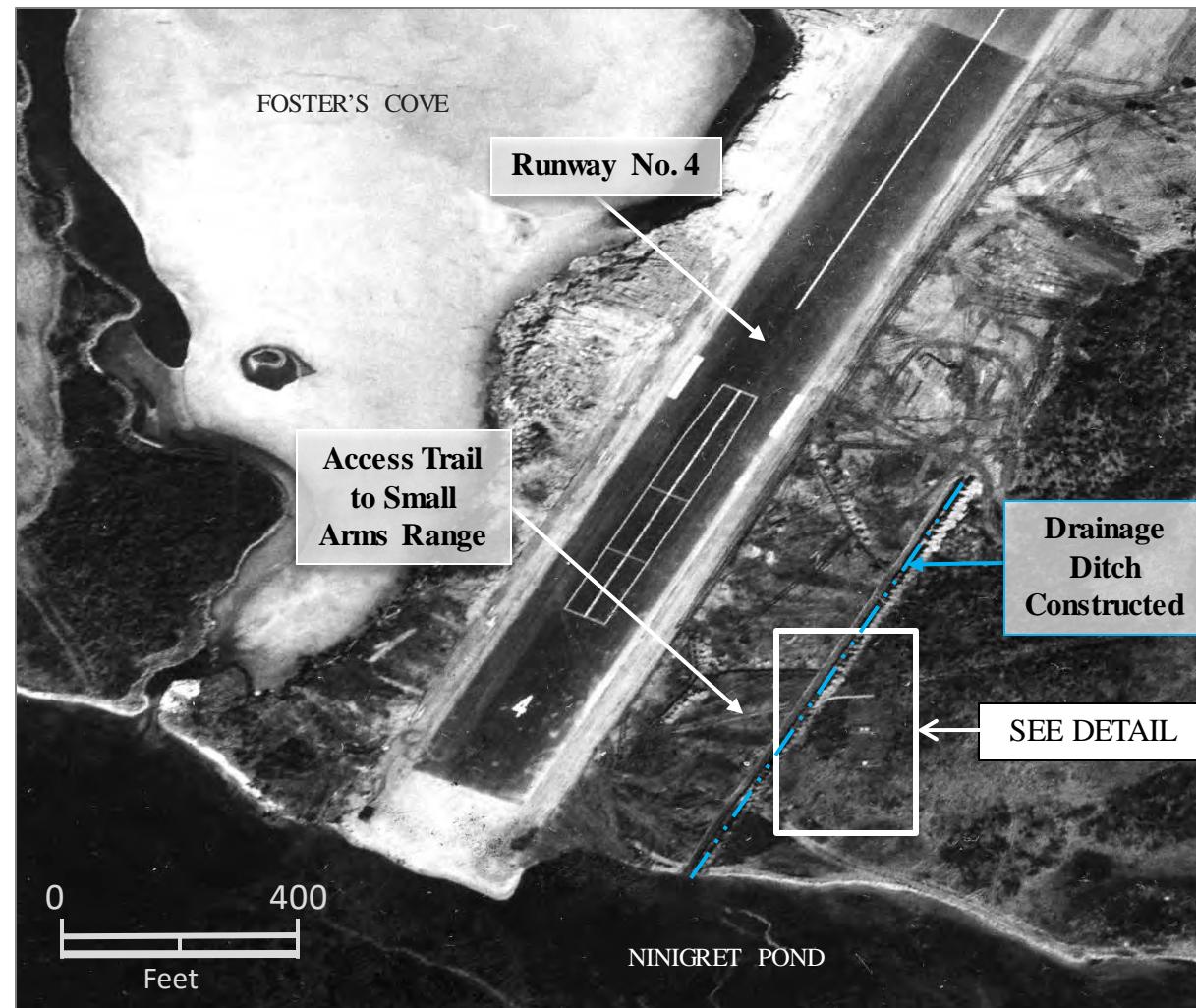
MRS 6 – PISTOL RANGE

1944 VERTICAL VIEW & LAYOUT PLAN

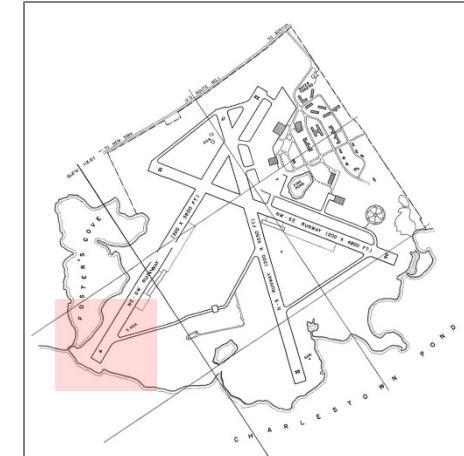


N

31 January 1944



LOCATION DIAGRAM



A Small Arms Range is identified on January 1944 aerial photography in the MRS 6 area. This 25/50 yard small arms range is identified on a June 1943 layout plan (see map section below-right).¹

Source: National Archives & Records Administration, Archives II, College Park, MD.

MRS = Military Response Site

FINAL REPORT AUGUST 2018

1. Source: DERP for FUDS - Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, Map L-8, 27 April 1999



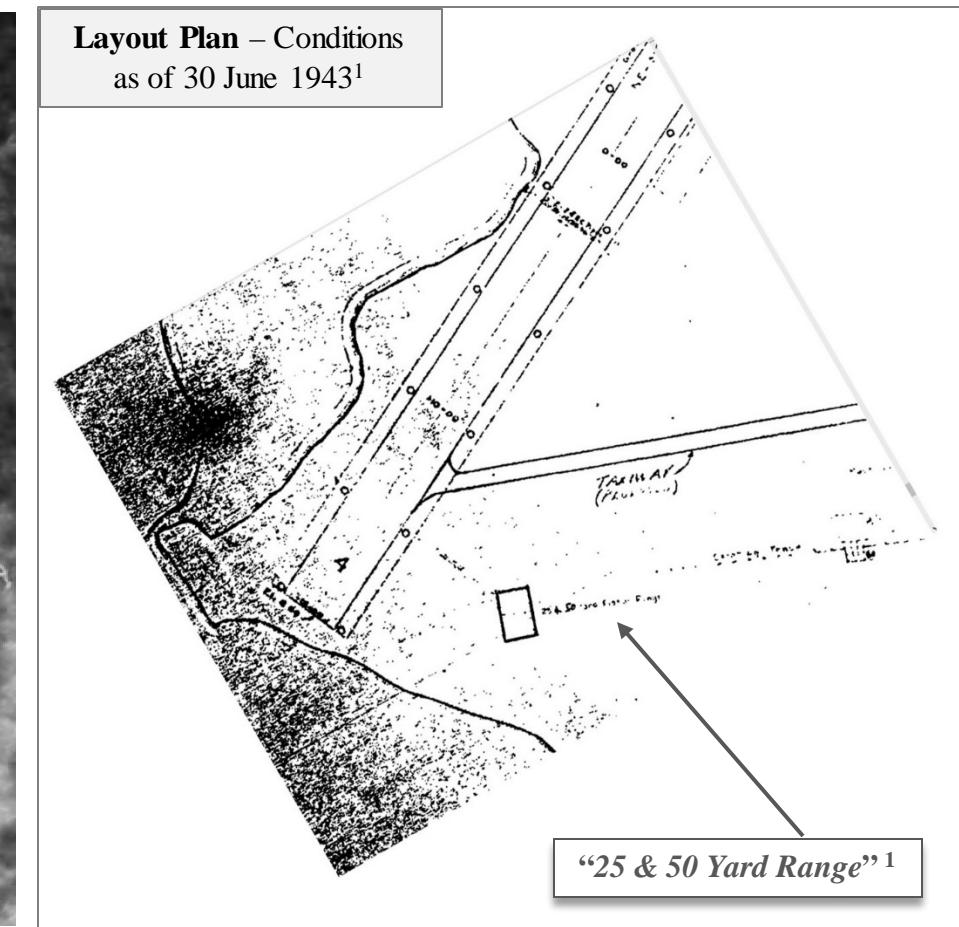
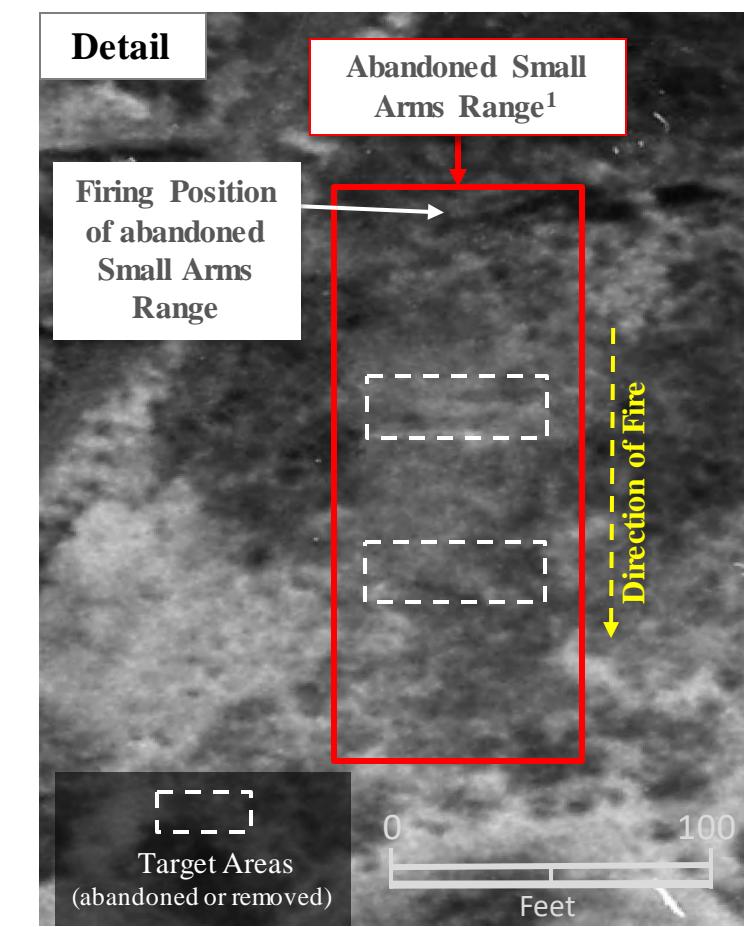
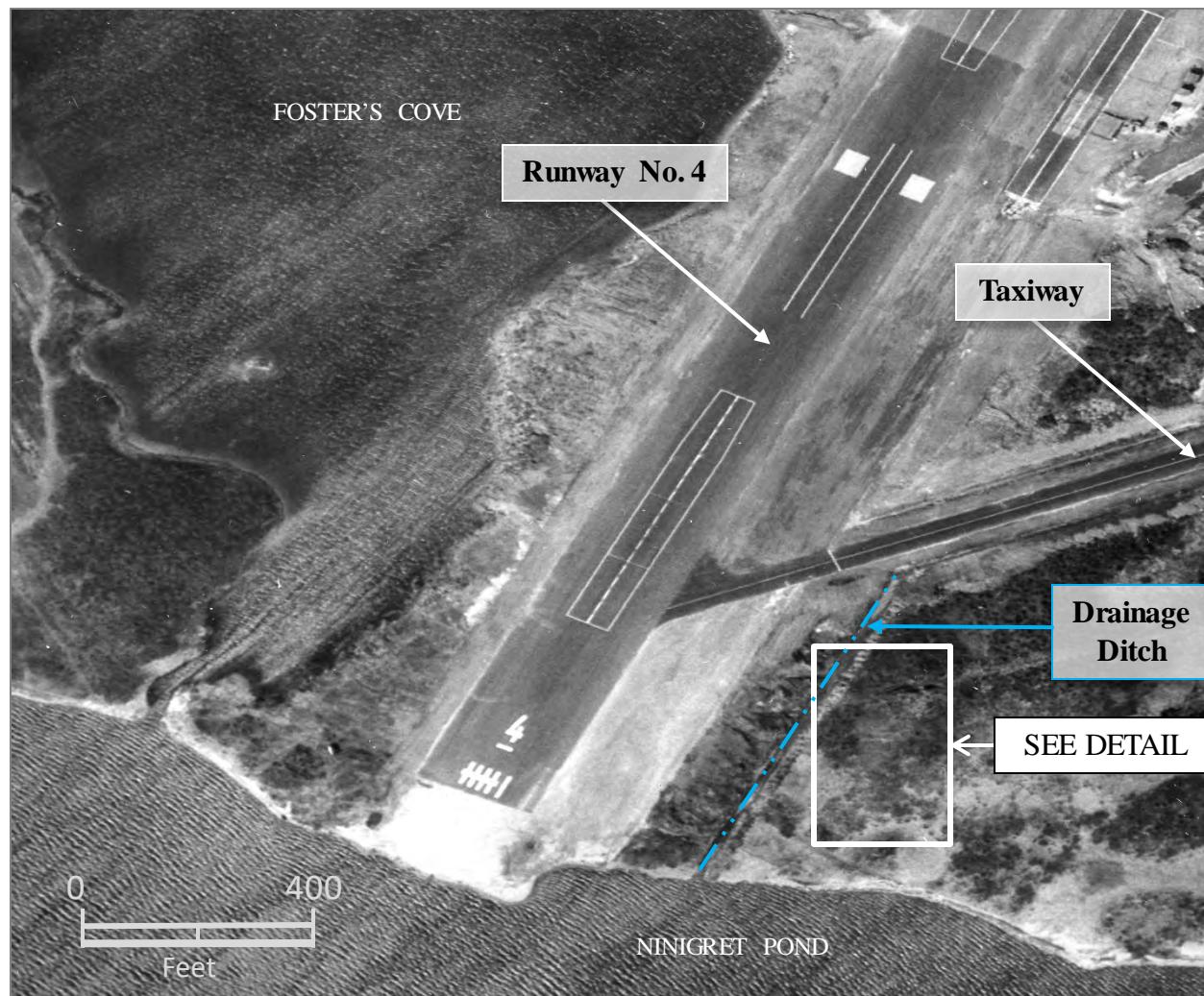
MRS 6 – PISTOL RANGE

1945 VERTICAL VIEW & LAYOUT PLAN



N

26 March 1945



Source: National Archives & Records Administration, Archives II, College Park, MD.

MRS = Military Response Site

FINAL REPORT AUGUST 2018

1. Source: DERP for FUDS - Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, Map L-8, 27 April 1999



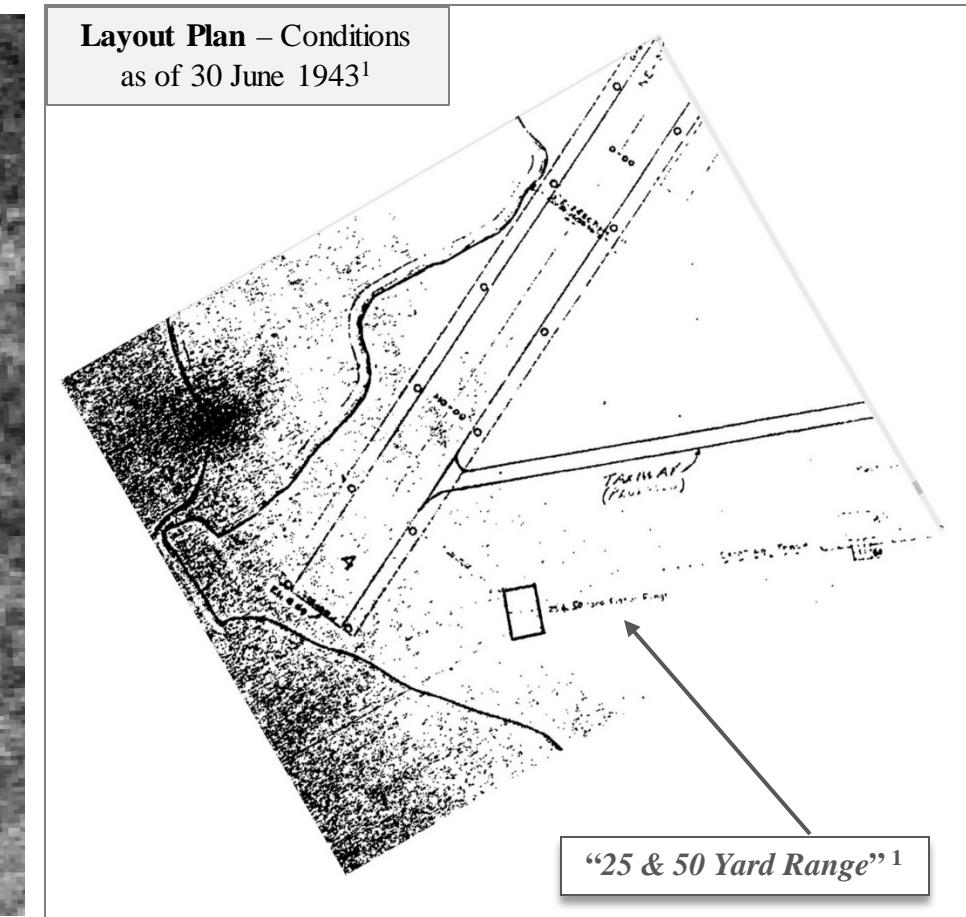
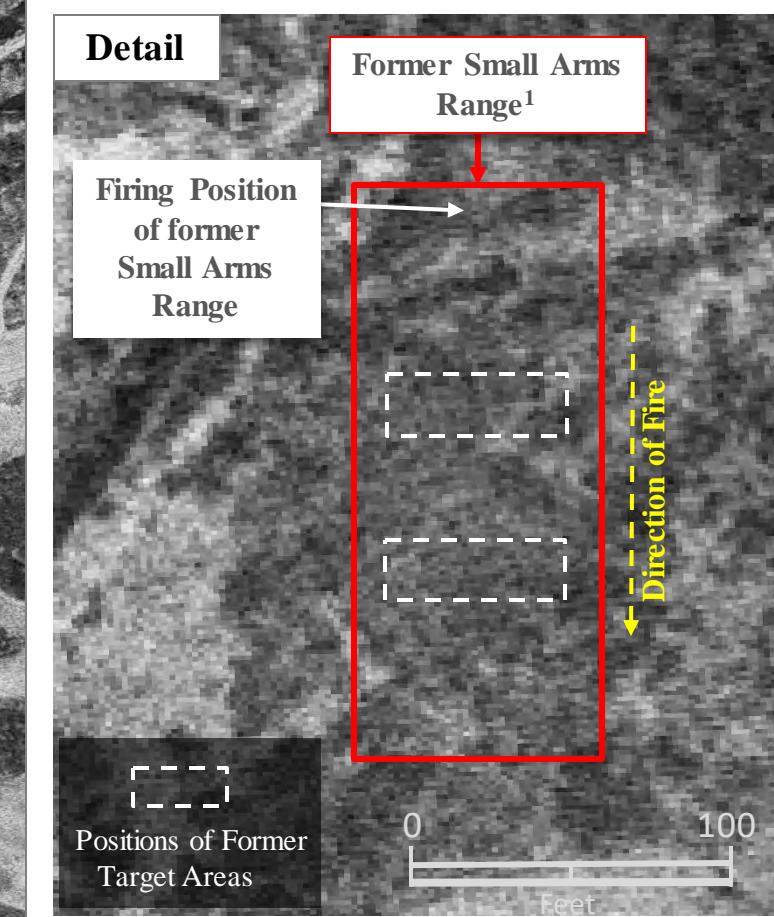
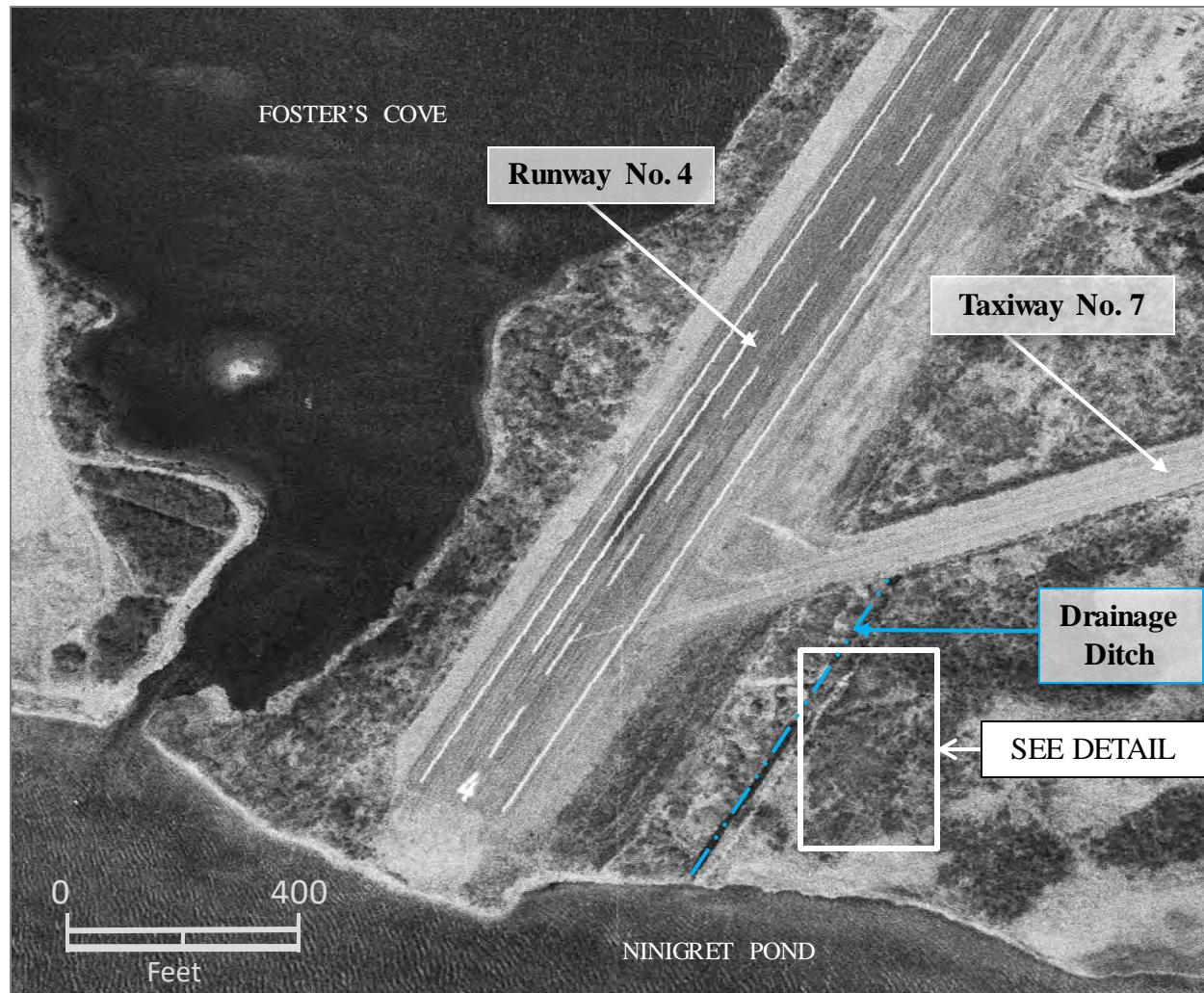
MRS 6 – PISTOL RANGE

1970 VERTICAL VIEW & LAYOUT PLAN



N

10 March 1970



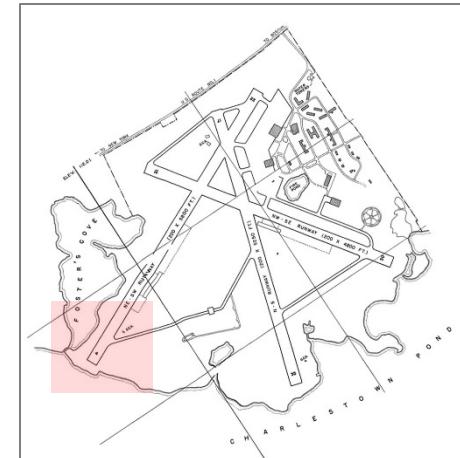
Source: U.S. Geological Survey, EarthExplorer.

MRS = Military Response Site

FINAL REPORT AUGUST 2018

1. Source: DERP for FUDS - Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, Map L-8, 27 April 1999

LOCATION DIAGRAM



Traces of an abandoned Small Arms Range are not visible on March 1970 aerial photography in the MRS 6 area. This 25/50 yard small arms range is identified on a June 1943 layout plan (see map section below-right).¹



MRS 6 – PISTOL RANGE

2016 VERTICAL VIEW & LAYOUT PLAN



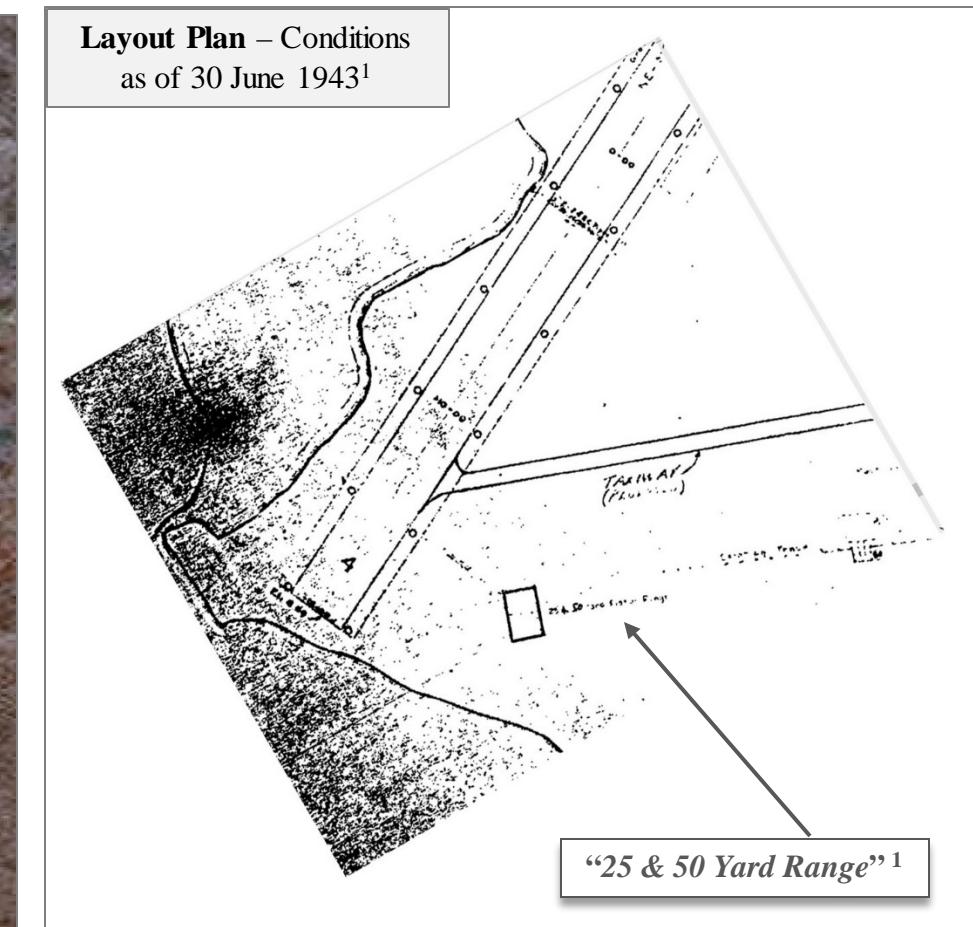
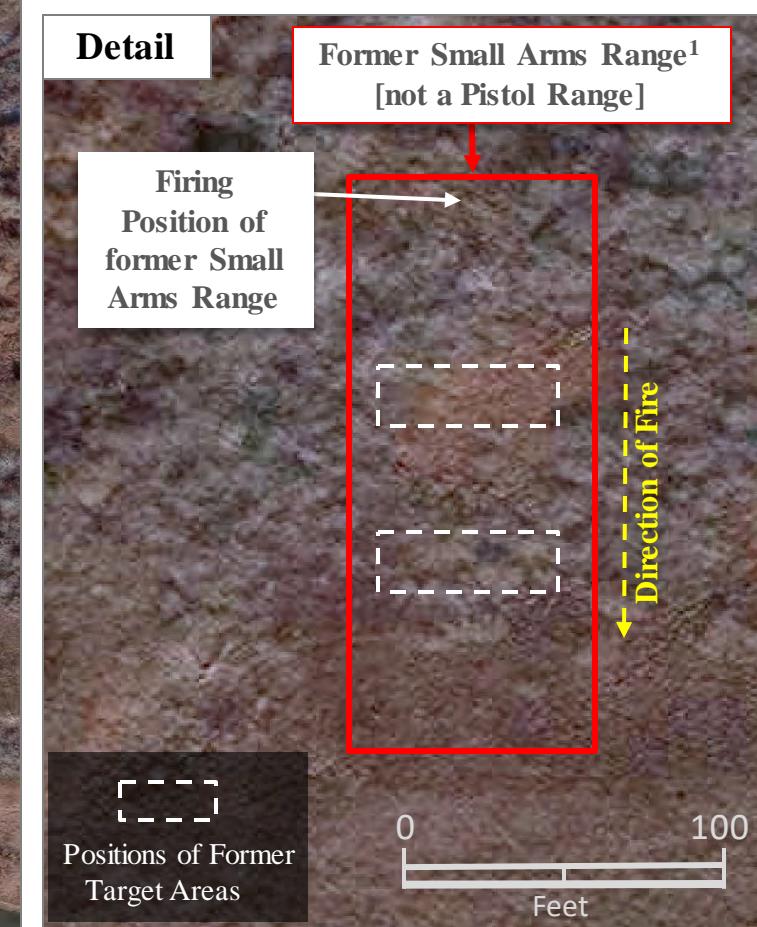
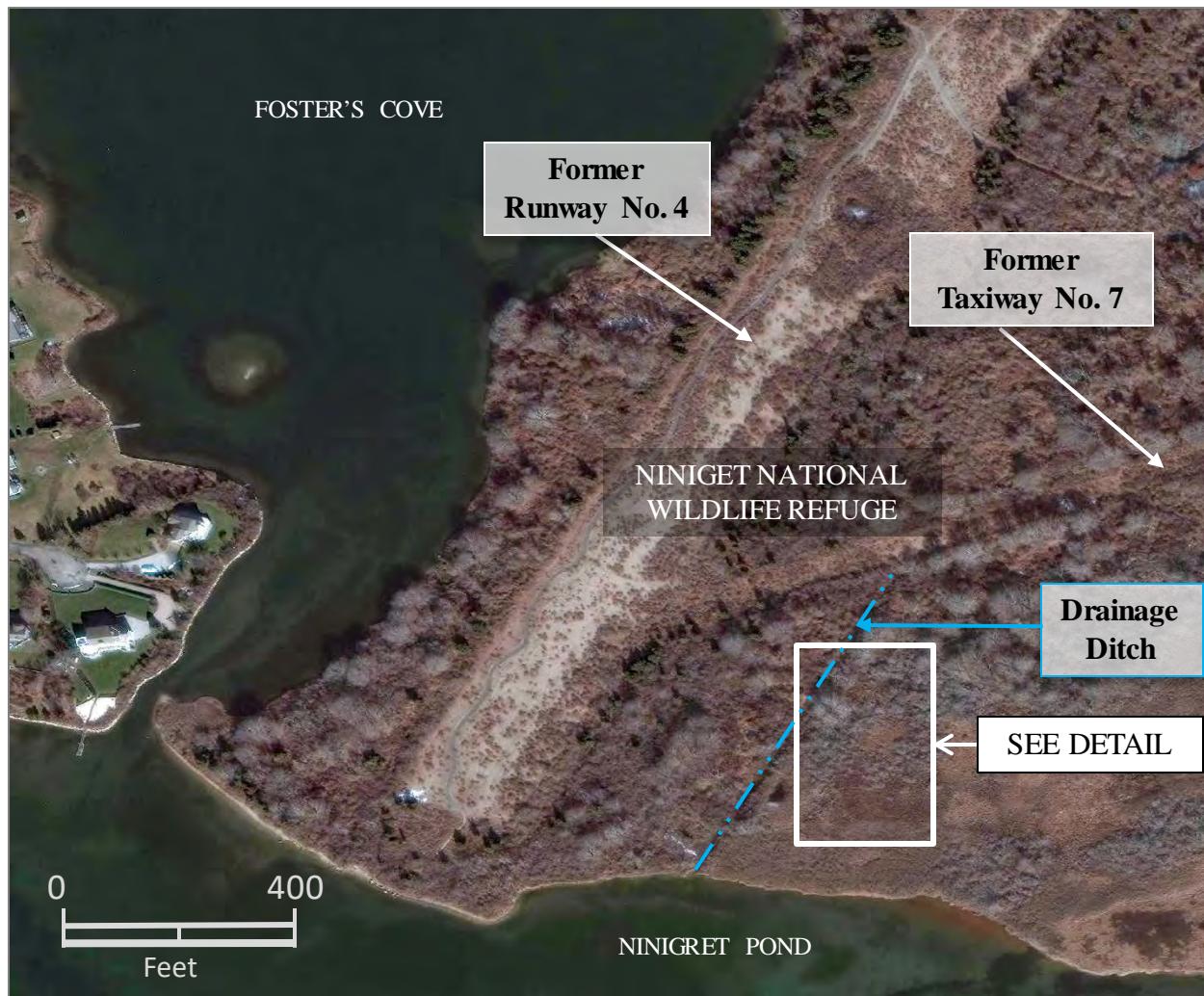
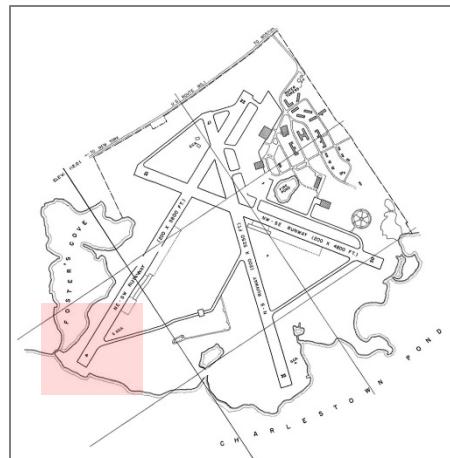
Current view of the MRS 6 – Pistol Range area. Traces of an abandoned Small Arms Range are not visible on February 2016 satellite imagery in the MRS 6 area. This 25/50 yard small arms range is identified on a June 1943 layout plan (see map section below-right).¹

02 February 2016

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It is noted that former investigations have not revealed the presence of a former range at MRS 6. To quote one source “the existence of the suspect Pistol Range (MRS 6) was not confirmed historically or during the SI. Considering the lack of historic information..., it is unlikely that this range was ever built or used...” (Final – Site Inspection Report for Naval Auxiliary Landing Field, prepared by Alion Science and Technology, Durham, SC, August 2008 - D01RI000806_01.09_0500_a.pdf).

LOCATION DIAGRAM

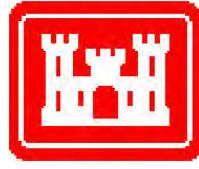


Source: National Geospatial-Intelligence Agency (NGA).

1. Source: DERP for FUDS - Ordnance and Explosives Archives Search Report for the former Naval Auxiliary Landing Field, Charlestown, Rhode Island - Final, U.S. Army Corps of Engineers, Rock Island District, Map L-8, 27 April 1999

MRS = Military Response Site SI = Site Investigation

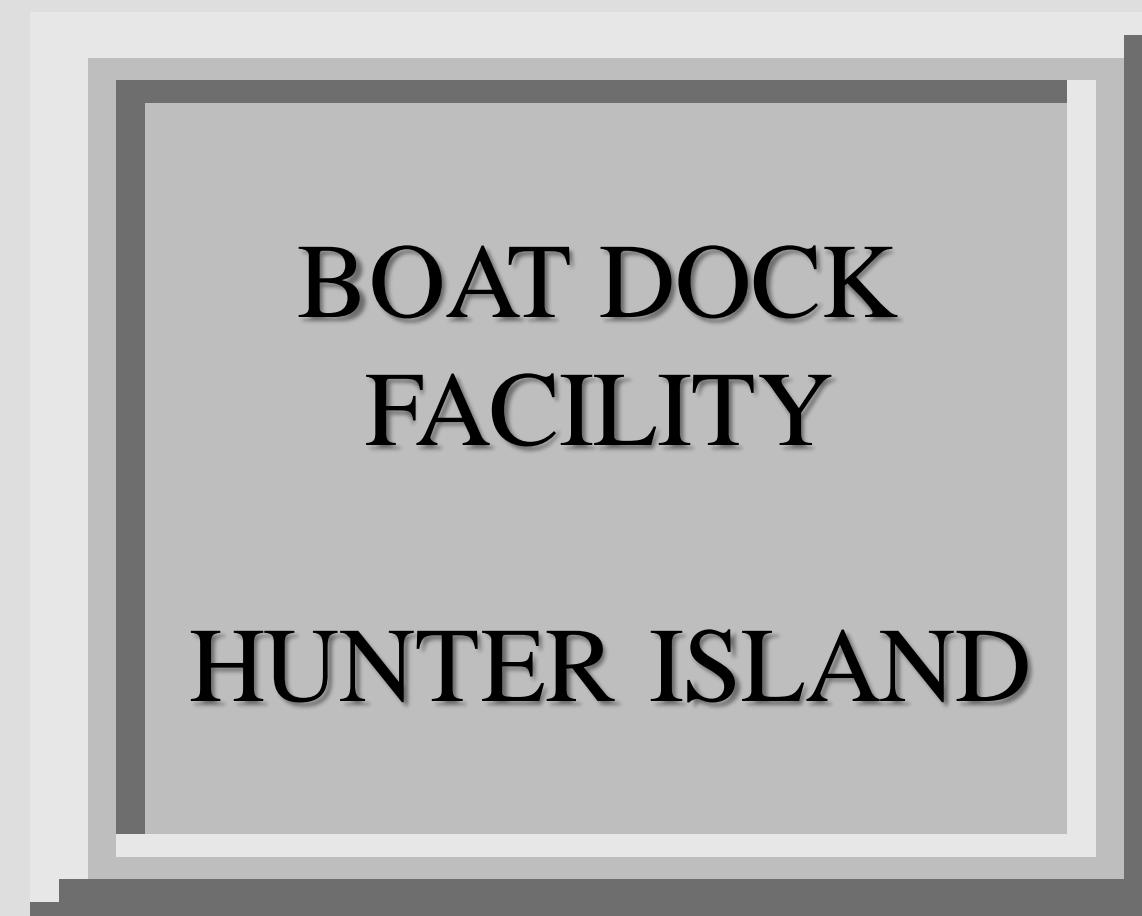
FINAL REPORT AUGUST 2018



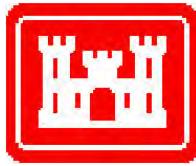
HISTORICAL PHOTO ANALYSIS – BOAT DOCK/SEAPLANE STATION INVESTIGATION



AGC was tasked by NAE to examine its collection of historical aerial photography over the former CNALF and investigate the possible existence of a dock/pier or seaplane station (to include seaplane ramp and parking) located along the shoreline of Ninigret Pond.



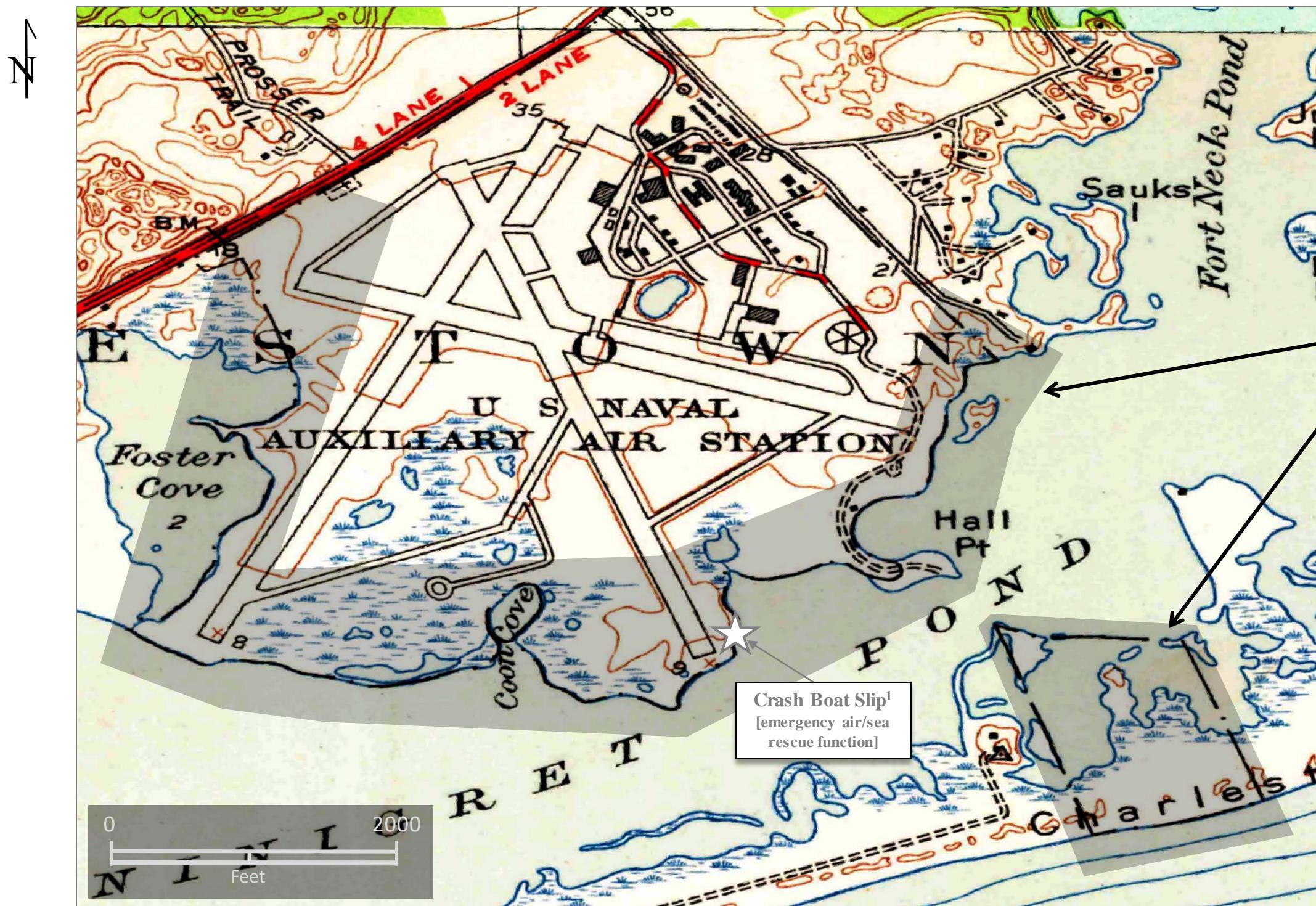
CNALF = Charlestown Naval Auxiliary Landing Field NAE = U.S. Army Corps of Engineers, New England District



LOCATION MAP DATA – SHORELINES FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD

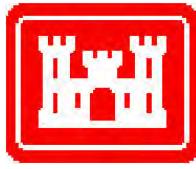


LOCATIONAL DATA – MAP INFORMATION



1. Sources: A) D01RI000801_01.04_0007_p.pdf – Map of Naval Auxiliary Air Station Charleston, R.I. Showing Conditions on June 30, 1951, Sheet No. 8, and B) 21 April 1954 NOAA aerial photography (existence verified).

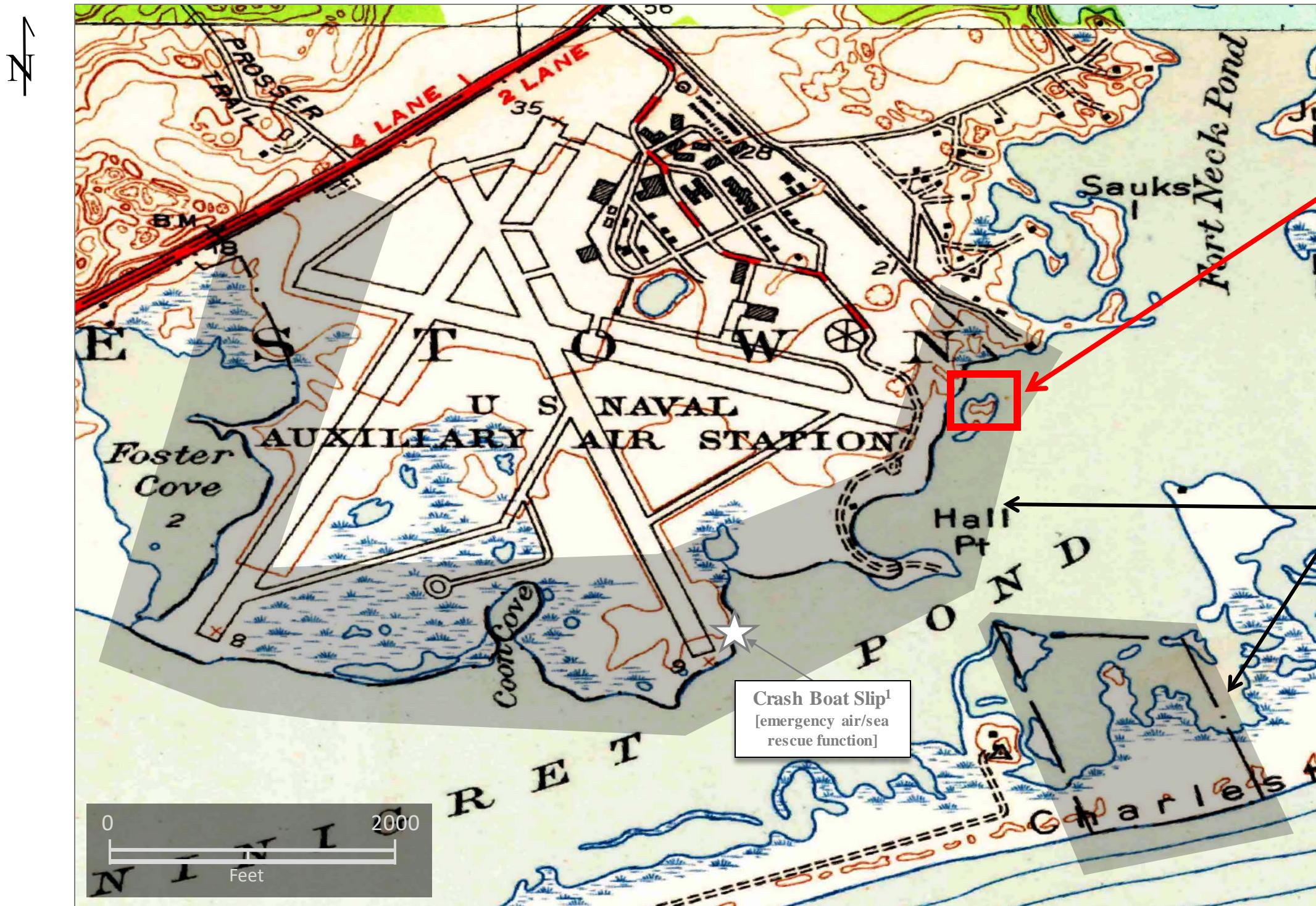
NOAA = National Oceanic & Atmospheric Administration



LOCATION MAP DATA – SHORELINES (PART TWO) FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



A boat dock facility is identified on historical aerial photography.

This installation is not referenced on available historical maps.

LAND & OPEN WATER AREAS EXAMINED ON HISTORICAL AERIAL PHOTOGRAPHY FOR THE EXISTENCE OF ANY DOCKS/PIERS OR SEAPLANE STATION/RAMP THAT WERE POSSIBLY UTILIZED BY THE U.S. NAVY FOR THE LOADING OR UNLOADING OF CARGO.

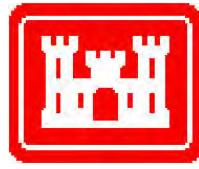
NO VISUAL EVIDENCE OF A SEAPLANE RAMP, PARKING AREA OR STATION IS DETECTED ON AVAILABLE HISTORICAL AERIAL PHOTOGRAPHY.

A BOAT DOCK/PIER, HOWEVER, IS PHOTO-IDENTIFIED ON HUNTER ISLAND.

Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

1. Sources: A) D01RI000801_01.04_0007_p.pdf – Map of Naval Auxiliary Air Station Charleston, R.I. Showing Conditions on June 30, 1951, Sheet No. 8, and B) 21 April 1954 NOAA aerial photography (existence verified).

NOAA = National Oceanic & Atmospheric Administration

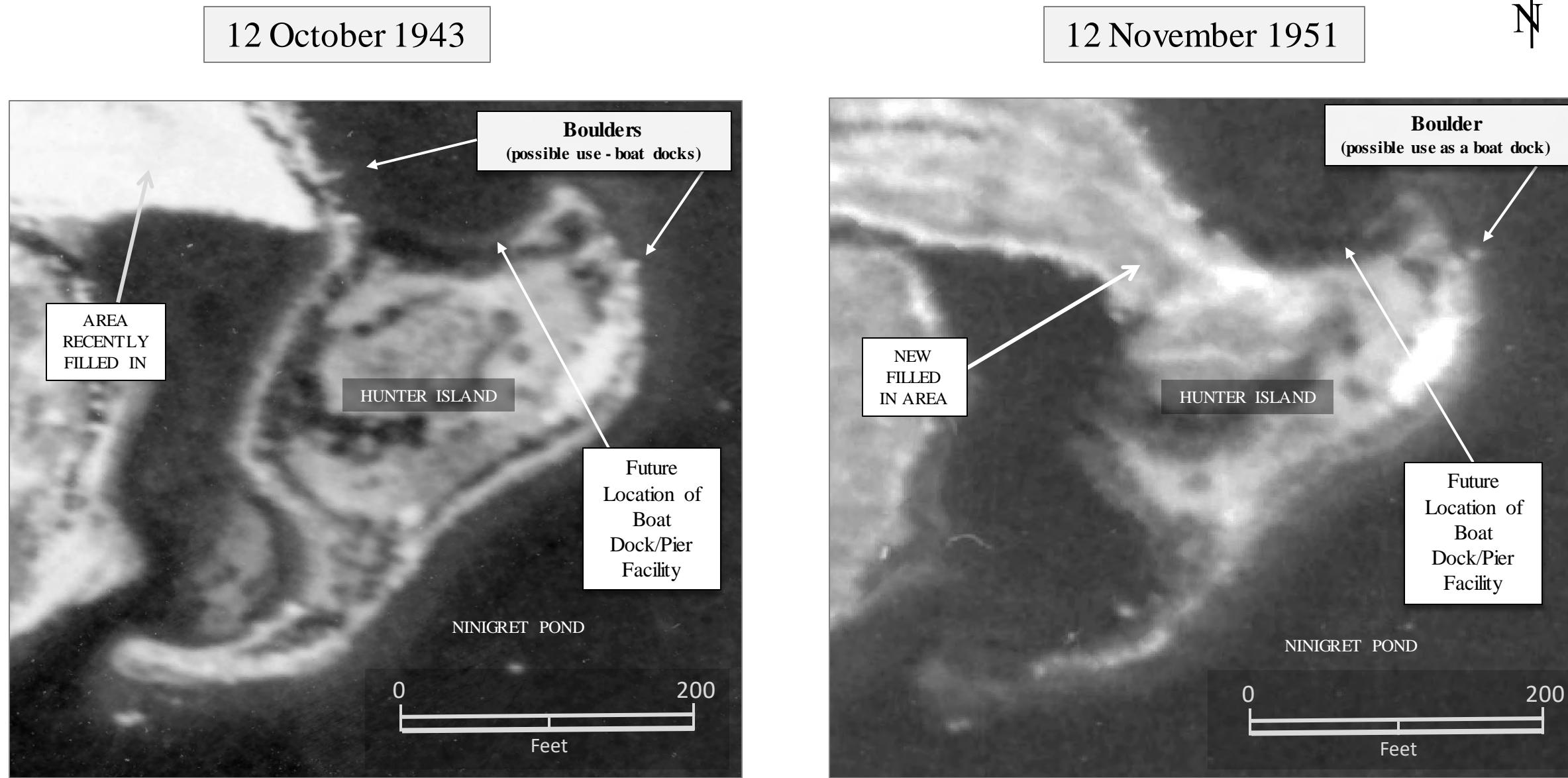


BOAT DOCK FACILITY

1943 & 1951 VERTICAL VIEWS



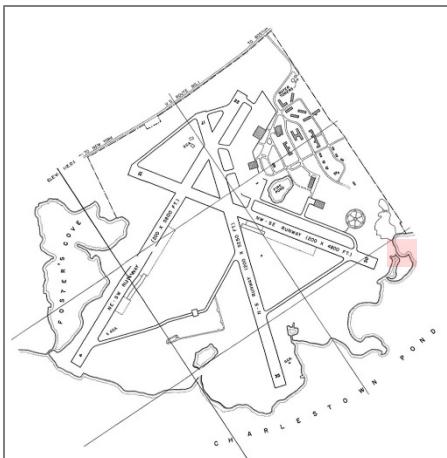
In 1943 and 1951 black and white aerial views, there is visual evidence of boulders possibly used as boat docks located along the northern shoreline of Hunter Island (which is first identified on 1943 aerial photography). The CNALF property boundary is omitted from the views shown below.¹



Source: National Archives & Records Administration, Archives II, College Park, MD.

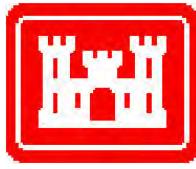
Source: Rhode Island Department Of Administration Planning Information Center

LOCATION DIAGRAM



1. Special Note: Various official U.S. Navy drawings from 1943 to 1971 seem to indicate that the property occupied by Hunter Island was not included in the original real estate land area of CNALF. It is uncertain if the Hunter Island property was ever annexed to the known property boundary of CNALF (or its predecessor designations).

CNALF = Charlestown Naval Auxiliary Landing Field



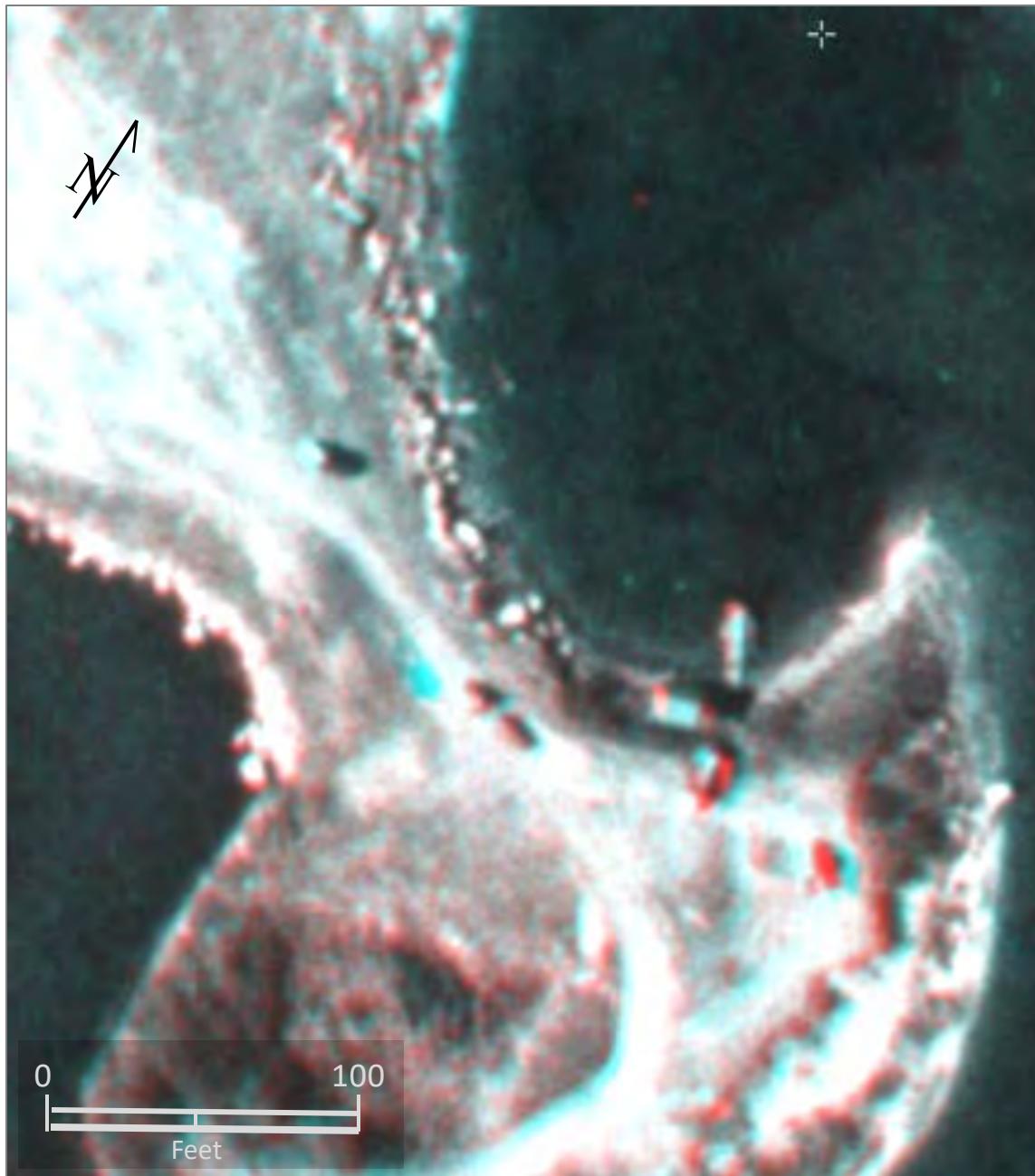
BOAT DOCK FACILITY

1954 VERTICAL VIEW

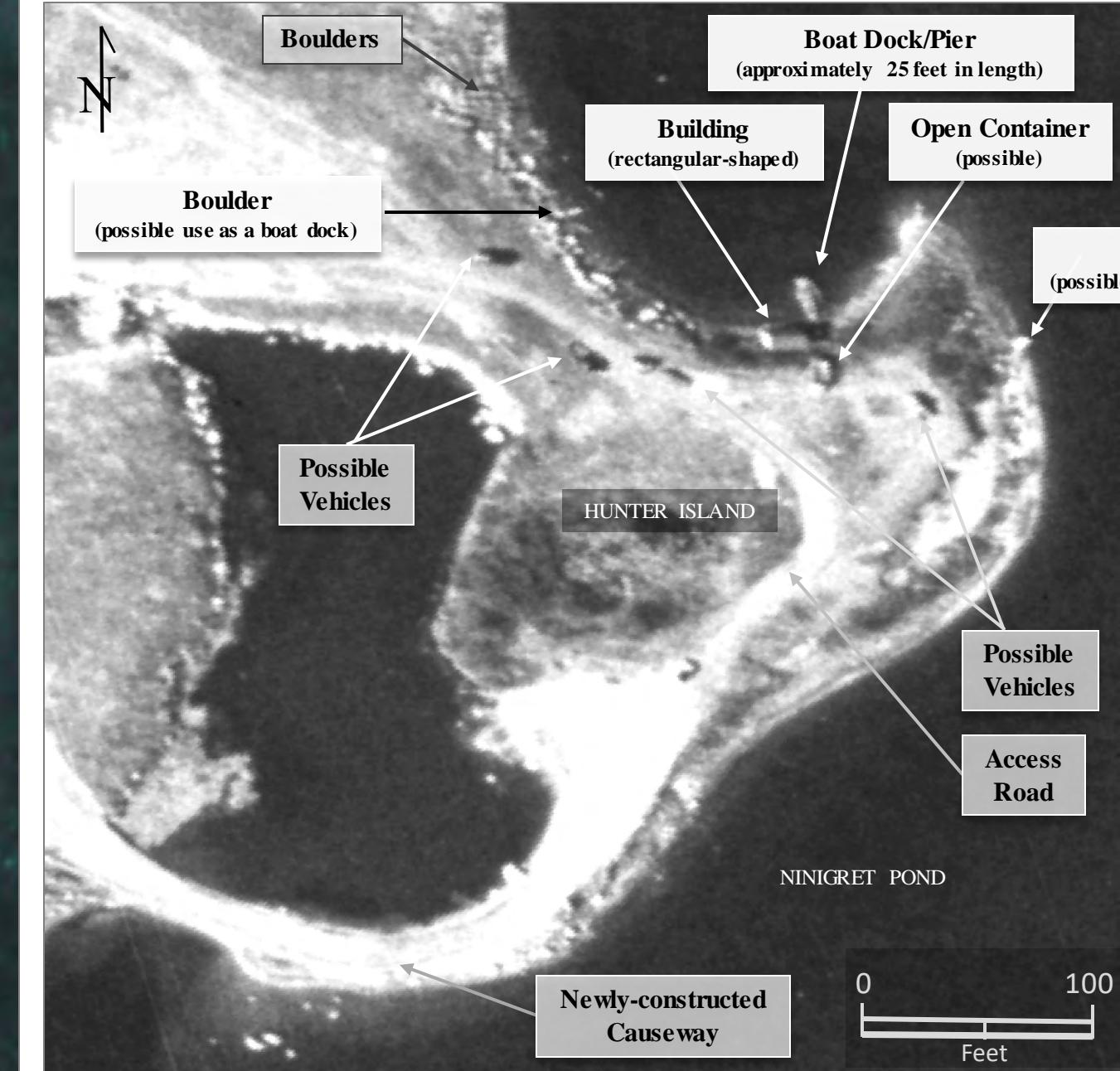


21 April 1954

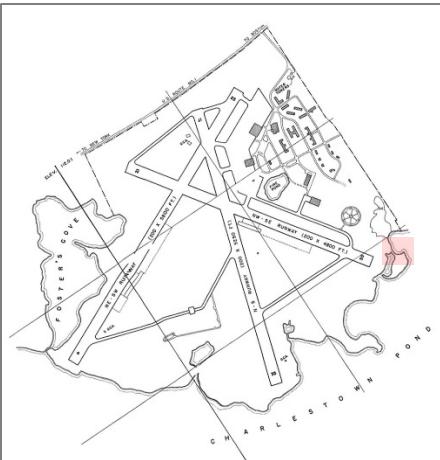
3D ANAGLYPH – CLOSE-UP¹



BLACK & WHITE VERTICAL



LOCATION DIAGRAM

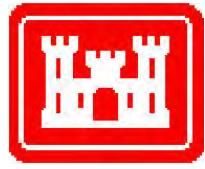


In 1954 a boat dock/pier at Hunter Island is identified which may have been actively used (although no boat is observed along side the pier). There is a building located just adjacent to the pier (only observed in 1954) and there are a number of vehicles in the immediate area.

Source: National Oceanic & Atmospheric Administration

1. Stereo viewing requires the use of red-blue 3D glasses.

NOAA = National Oceanic & Atmospheric Administration



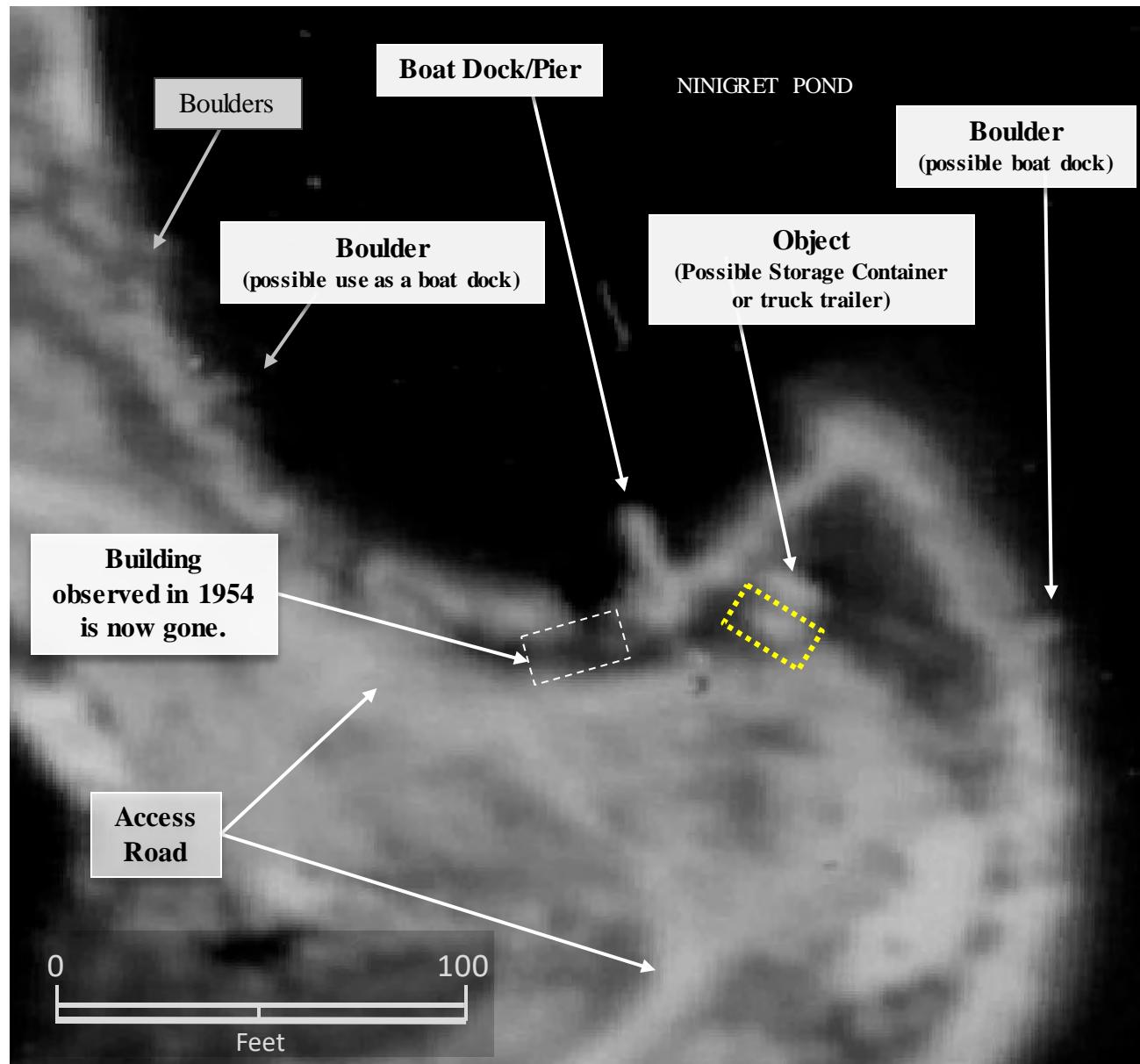
BOAT DOCK FACILITY

1964 VERTICAL VIEW

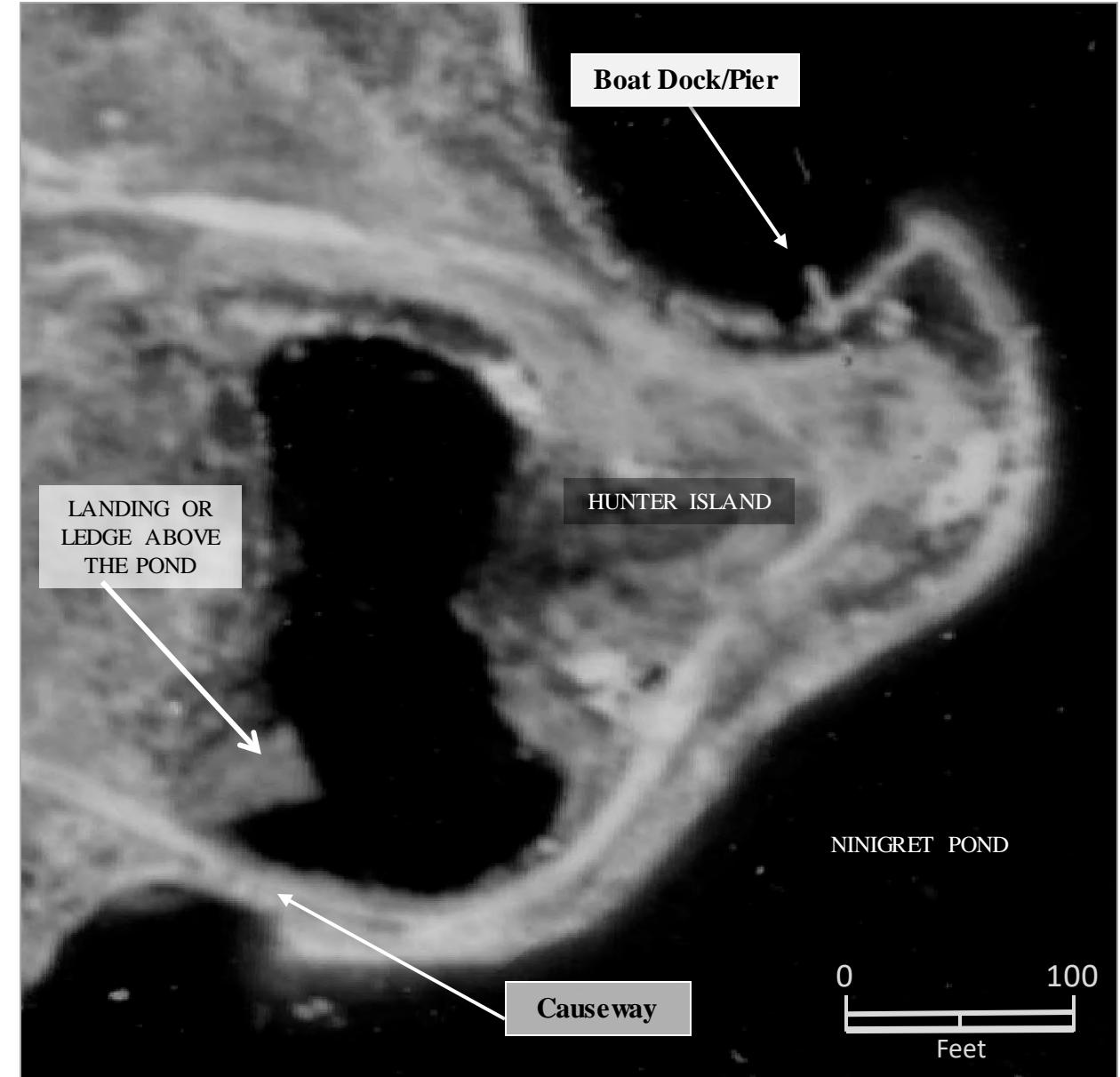


04 April 1962

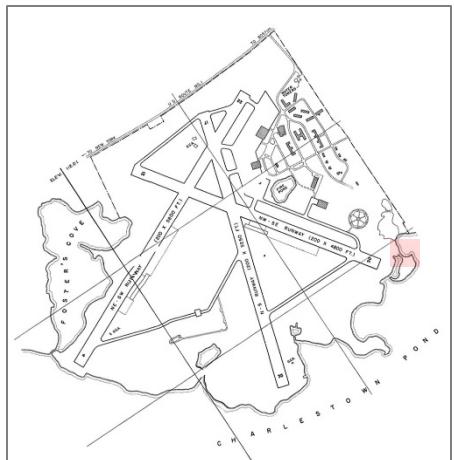
CLOSE-UP VIEW



BLACK & WHITE VERTICAL



LOCATION DIAGRAM



Source: Rhode Island Department Of Administration Planning
Information Center

..... Ground Scar



BOAT DOCK FACILITY

1965 VERTICAL VIEW

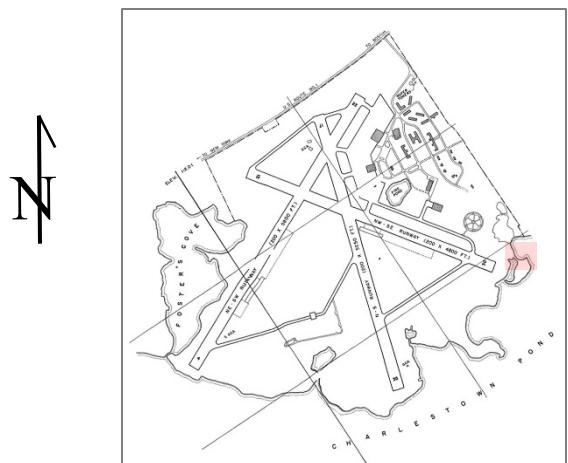


27 September 1965



Source: National Oceanic and Atmospheric Administration (NOAA)

LOCATION DIAGRAM



In September of 1965, a boat dock/pier at Hunter Island is still identified.



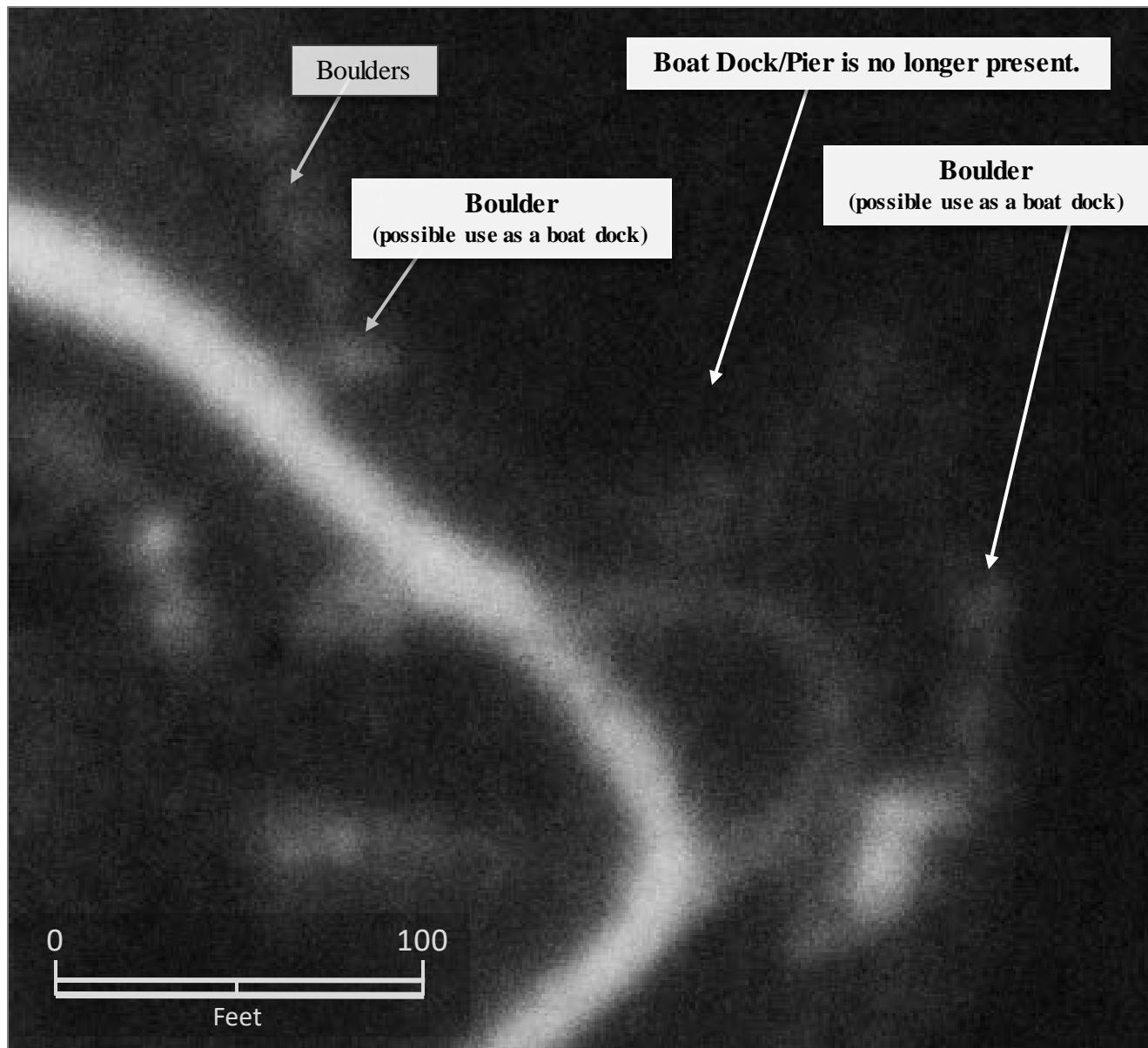
BOAT DOCK FACILITY

1968 VERTICAL VIEW

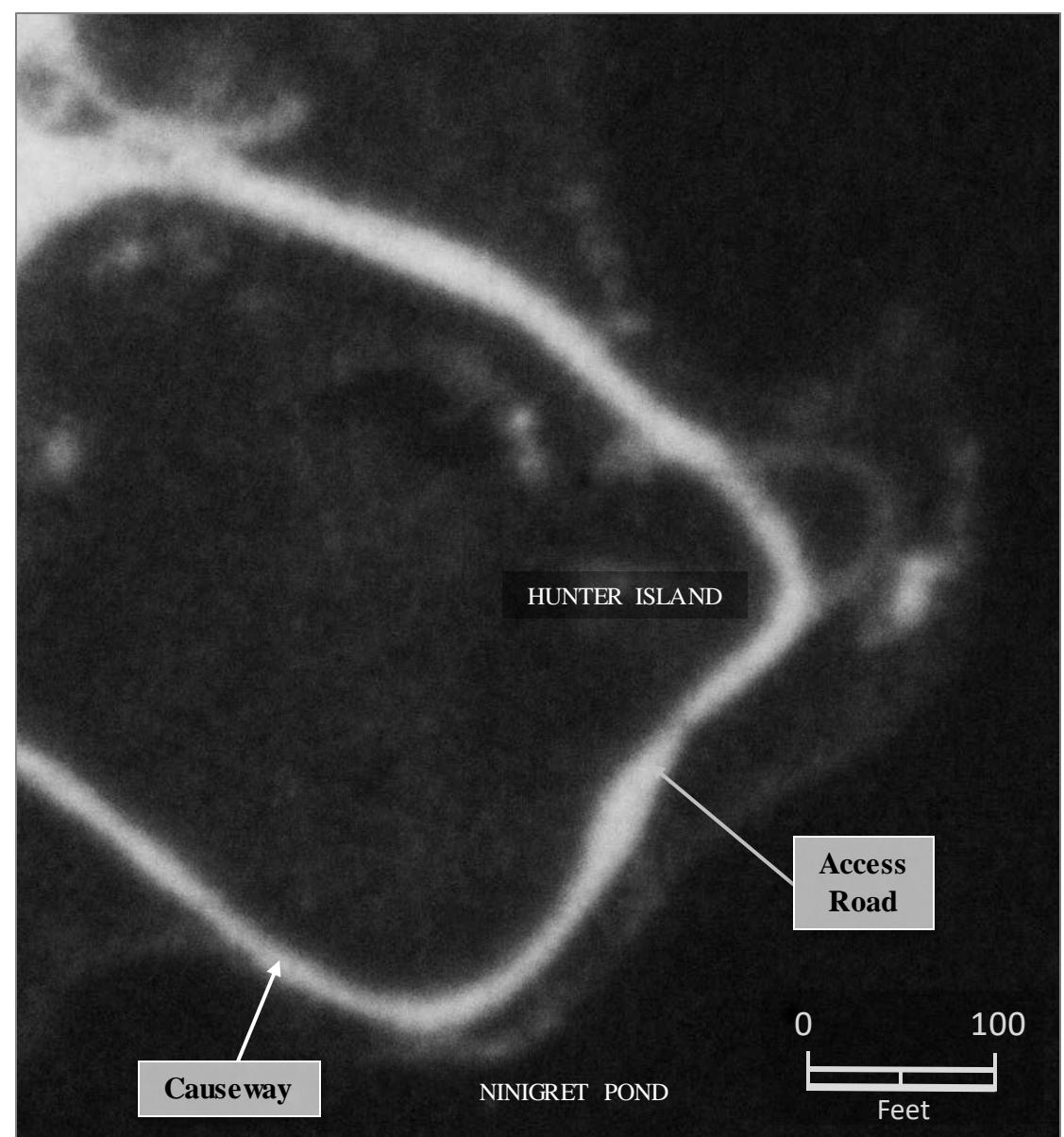


15 August 1968

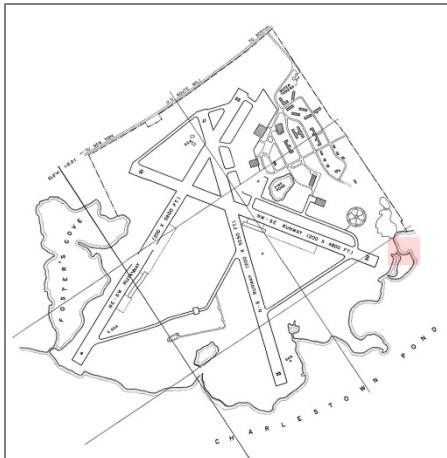
CLOSE-UP VIEW



BLACK & WHITE VERTICAL



LOCATION DIAGRAM



In August of 1968, a boat dock/pier at Hunter Island is no longer identified.¹

1. Note: By comparison, features including piers, docks, and small water craft were discernable on the same 1968 CORONA satellite image strip at other locations along the Rhode Island coast (e.g. Port Judith Harbor, located at 41 22 42 N 71 30 43 W).

Source: National Archives and Records Administration. Declassified CORONA satellite image: Mission 1104-2, Pass 127, AFT, Frame 22.



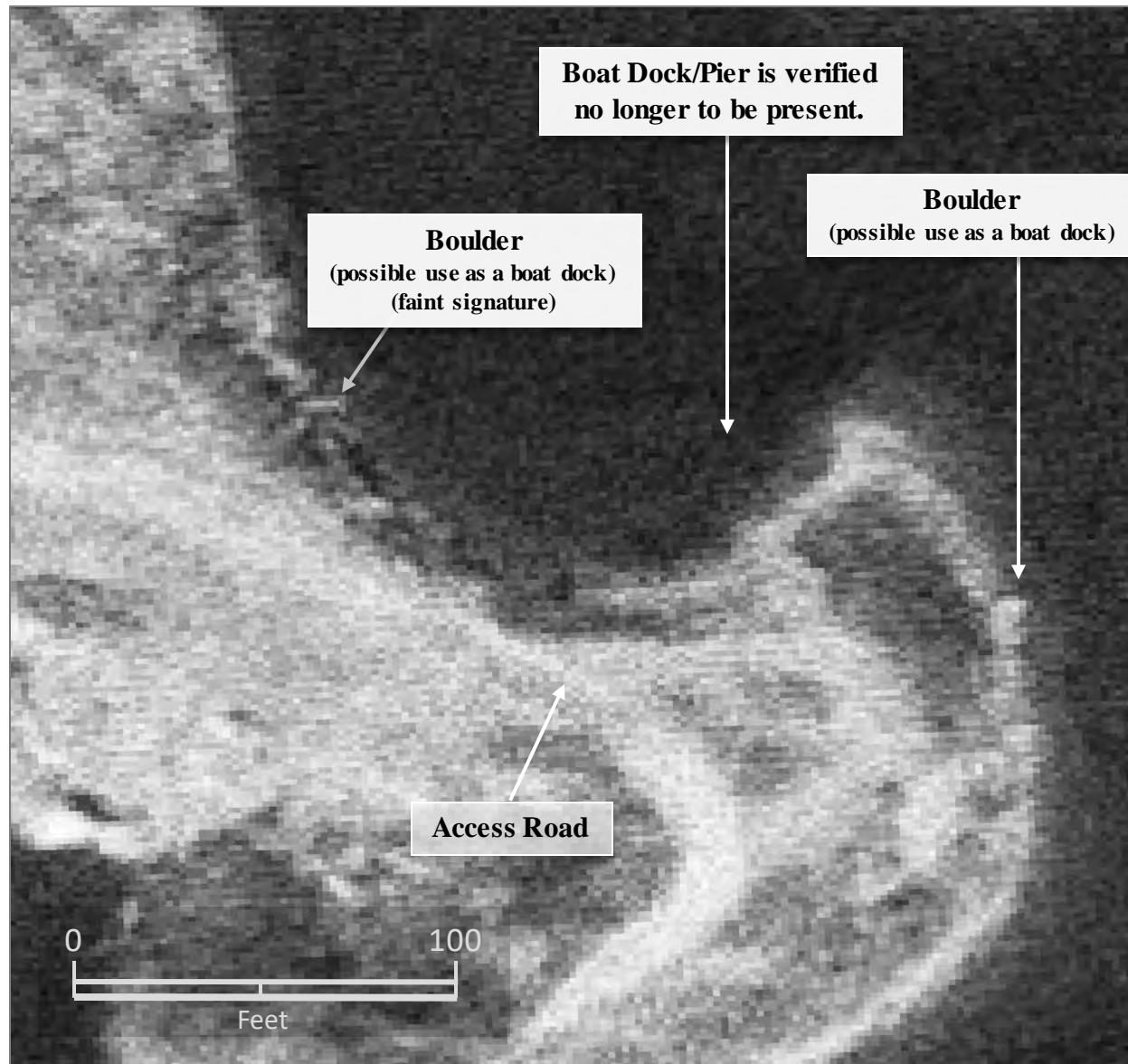
BOAT DOCK FACILITY

1970 VERTICAL VIEW

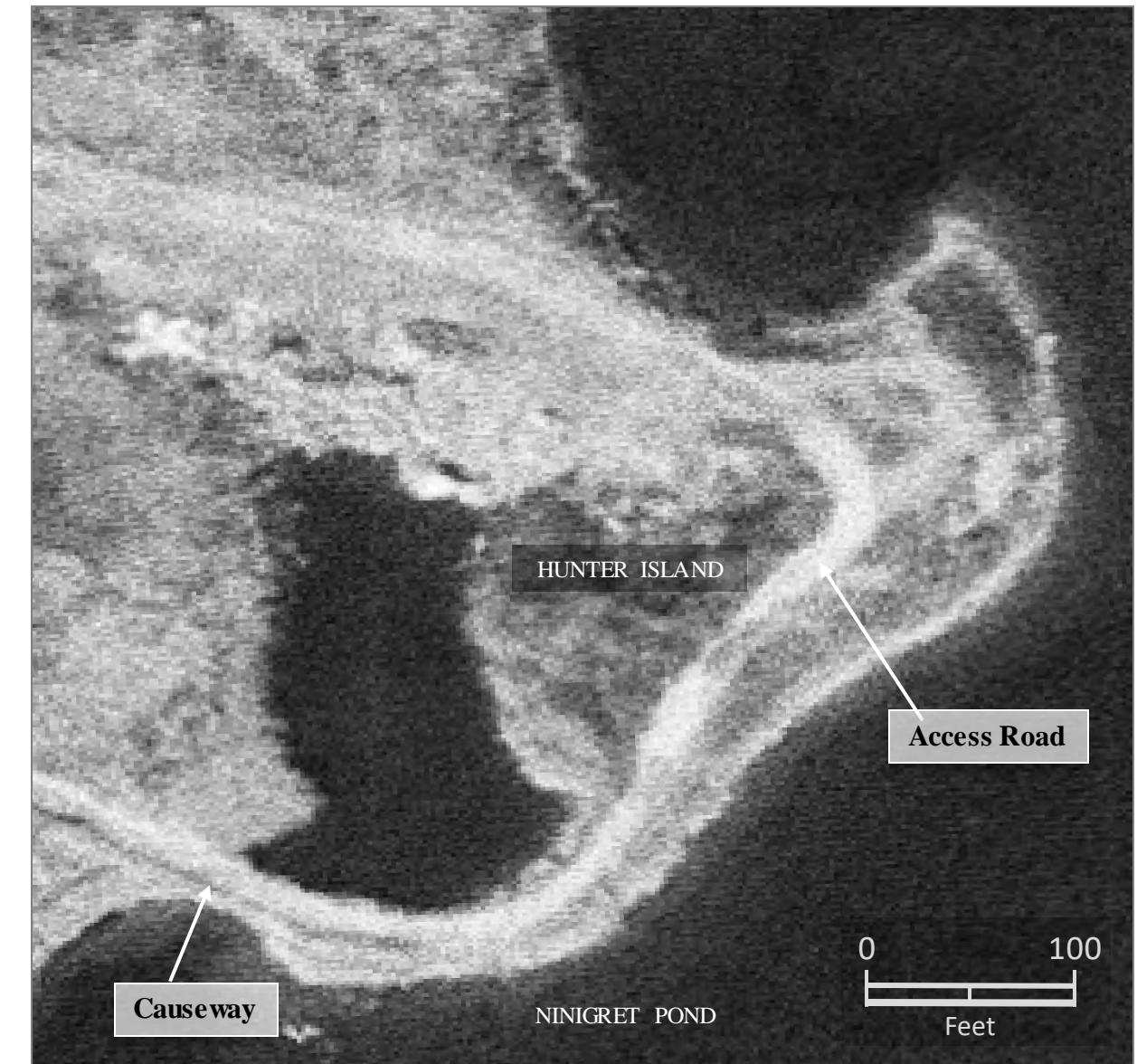


10 March 1970

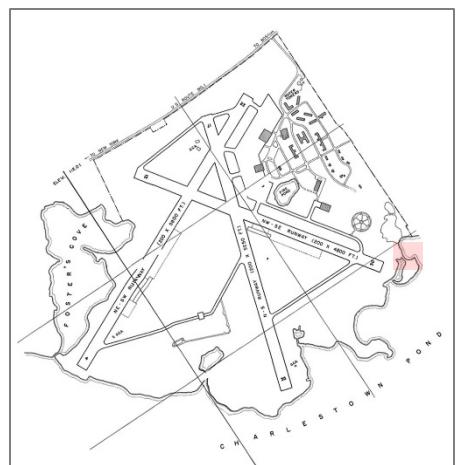
CLOSE-UP VIEW



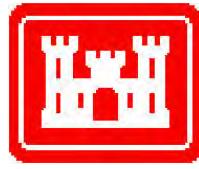
BLACK & WHITE VERTICAL



LOCATION DIAGRAM



Source: U.S. Geological Survey, EarthExplorer.

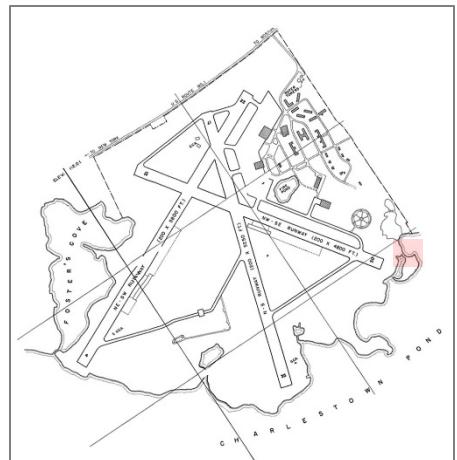


BOAT DOCK FACILITY

1985 VERTICAL & 1977 GROUND –LEVEL VIEWS

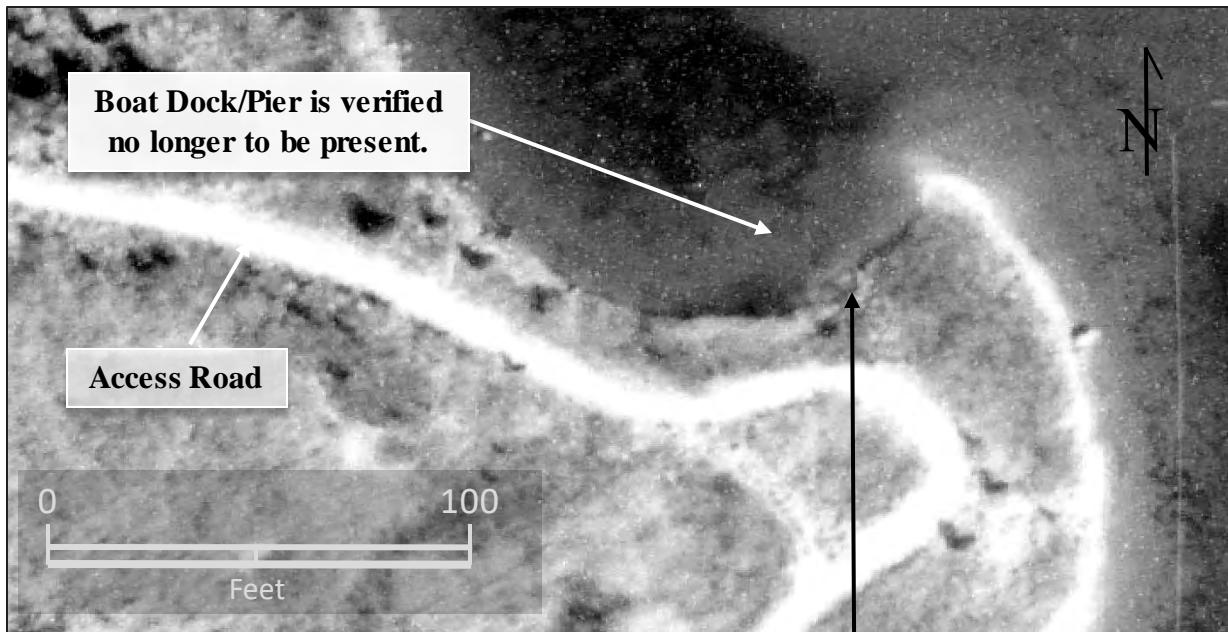


LOCATION DIAGRAM

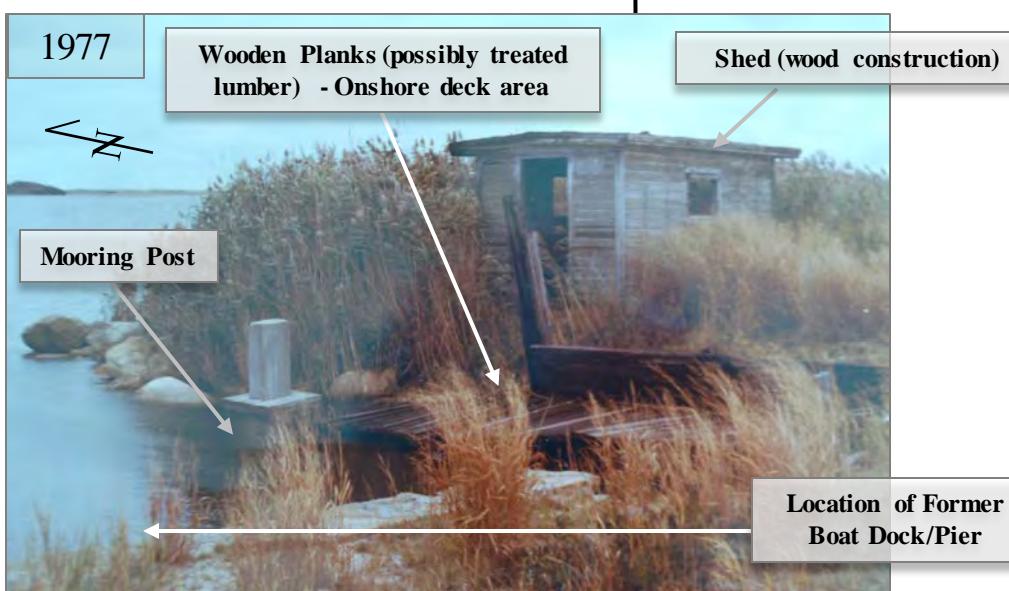


11 March 1985 Vertical Views & 1977 Ground Photo View¹

1985 CLOSE-UP VIEW



Source: U.S. Army Corps of Engineers, New England District.



Source: Larry Webster Photo Album Collection (courtesy of NAE).

1985 BLACK & WHITE VERTICAL



Source: U.S. Army Corps of Engineers, New England District.

1. Note: The 1977 ground photo provides only a partial view of the former Boat Dock/Pier area. For a full comprehensive view, refer to the 1954 vertical aerial view (appearing earlier in this report).

It should also be noted that the shed observed in the 1977 color ground photo (see lower-left) should not be confused with the rectangular-shaped building, identified in the vicinity of the pier, on the 21 April 1954 aerial photography.

NAE = U.S. Army Corps of Engineers – New England District



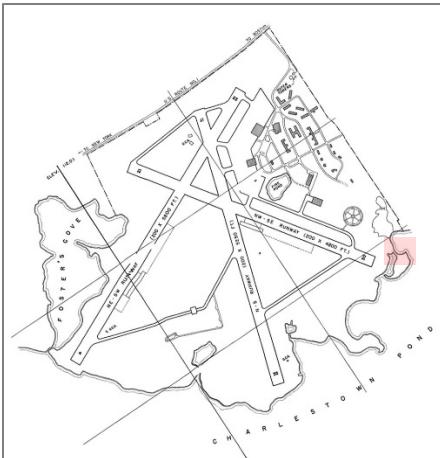
BOAT DOCK FACILITY

2016 VERTICAL VIEW

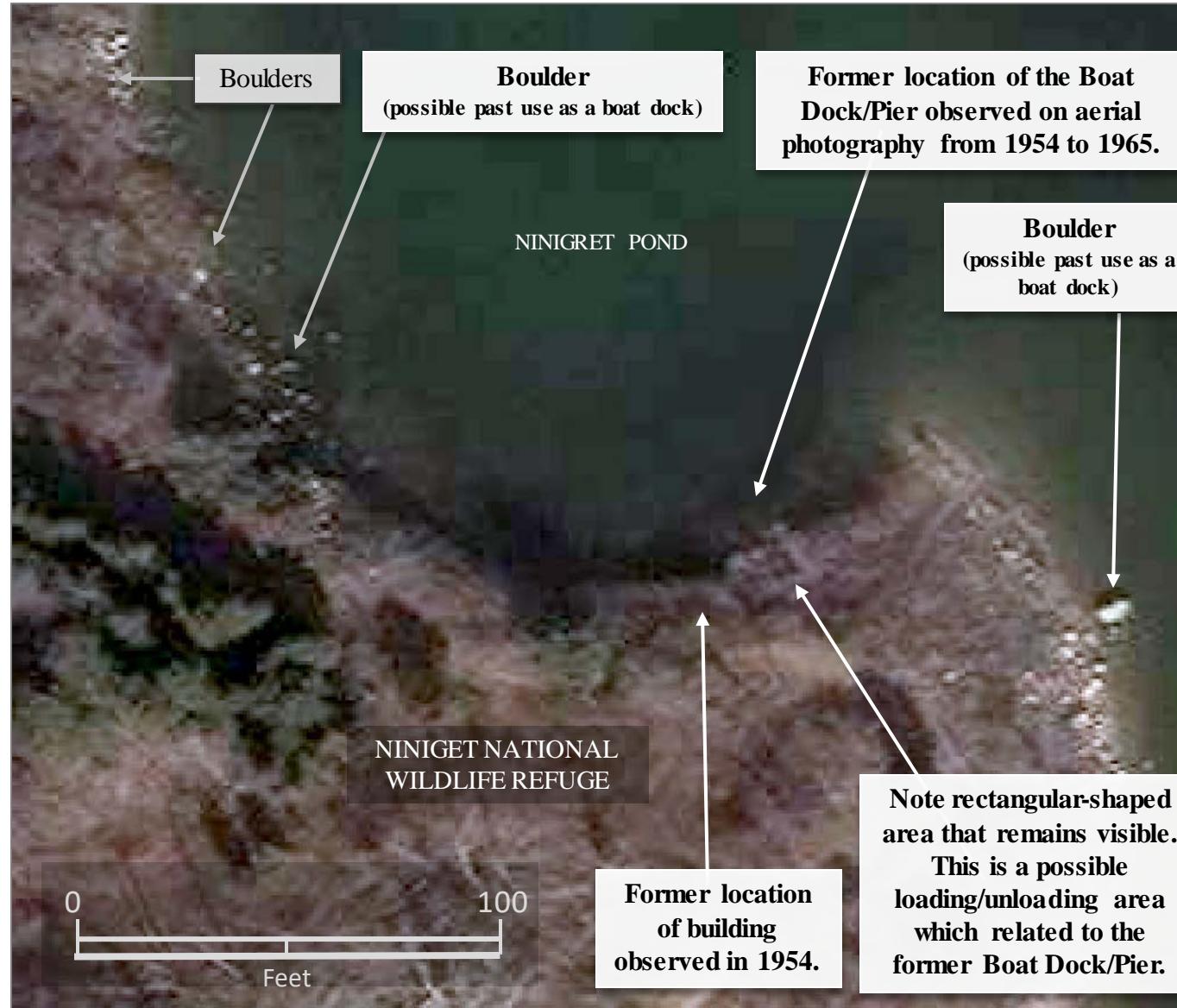


02 February 2016

LOCATION DIAGRAM



CLOSE-UP VIEW



NATURAL COLOR VERTICAL



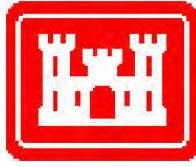
Source: National Geospatial-Intelligence Agency (NGA).



HISTORICAL PHOTO ANALYSIS

AREA OF DISTURBED GROUND IDENTIFIED WEST OF RUNWAY 12

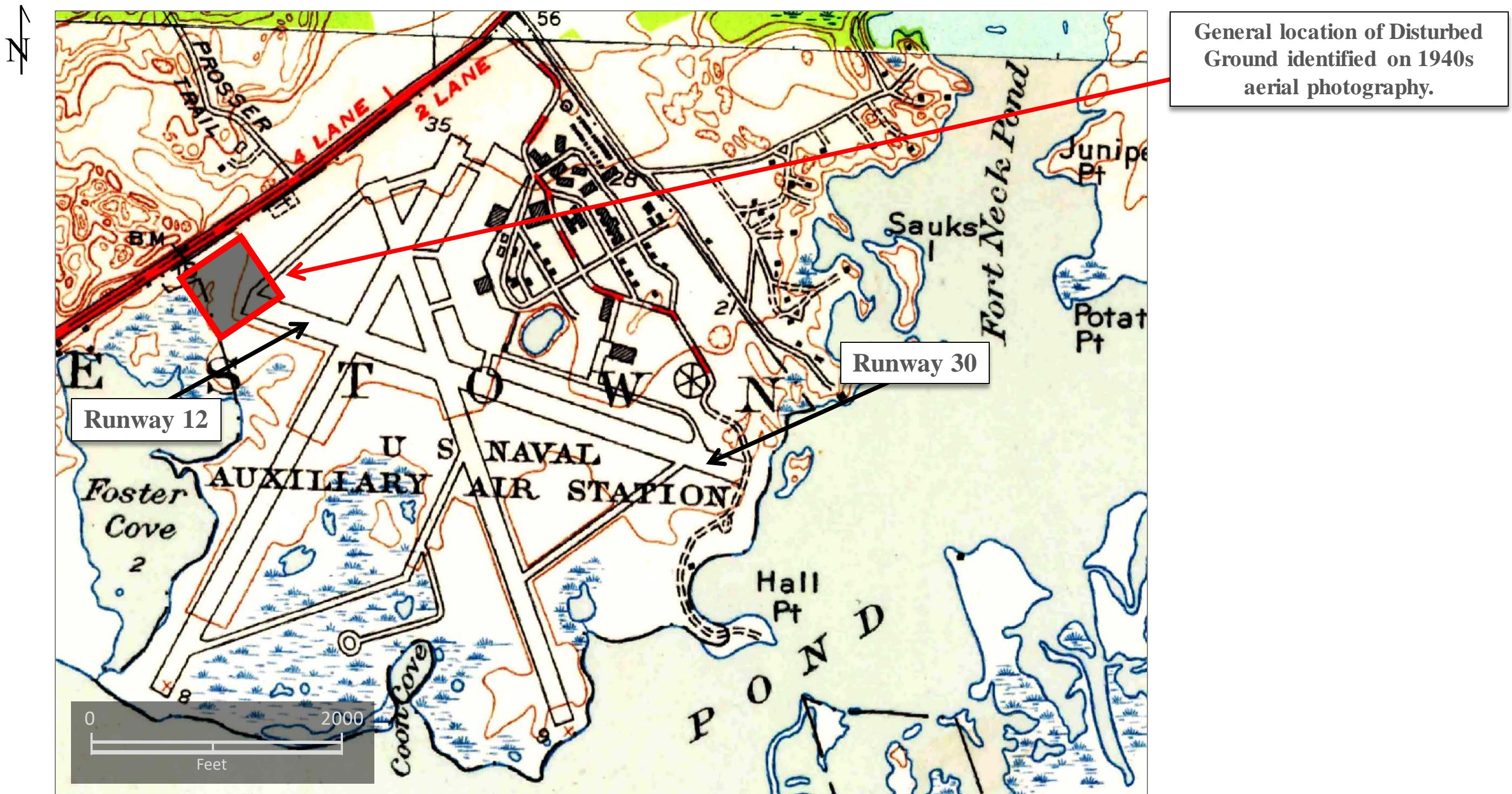




LOCATION OF DISTURBED GROUND WEST OF RUNWAY 12 AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



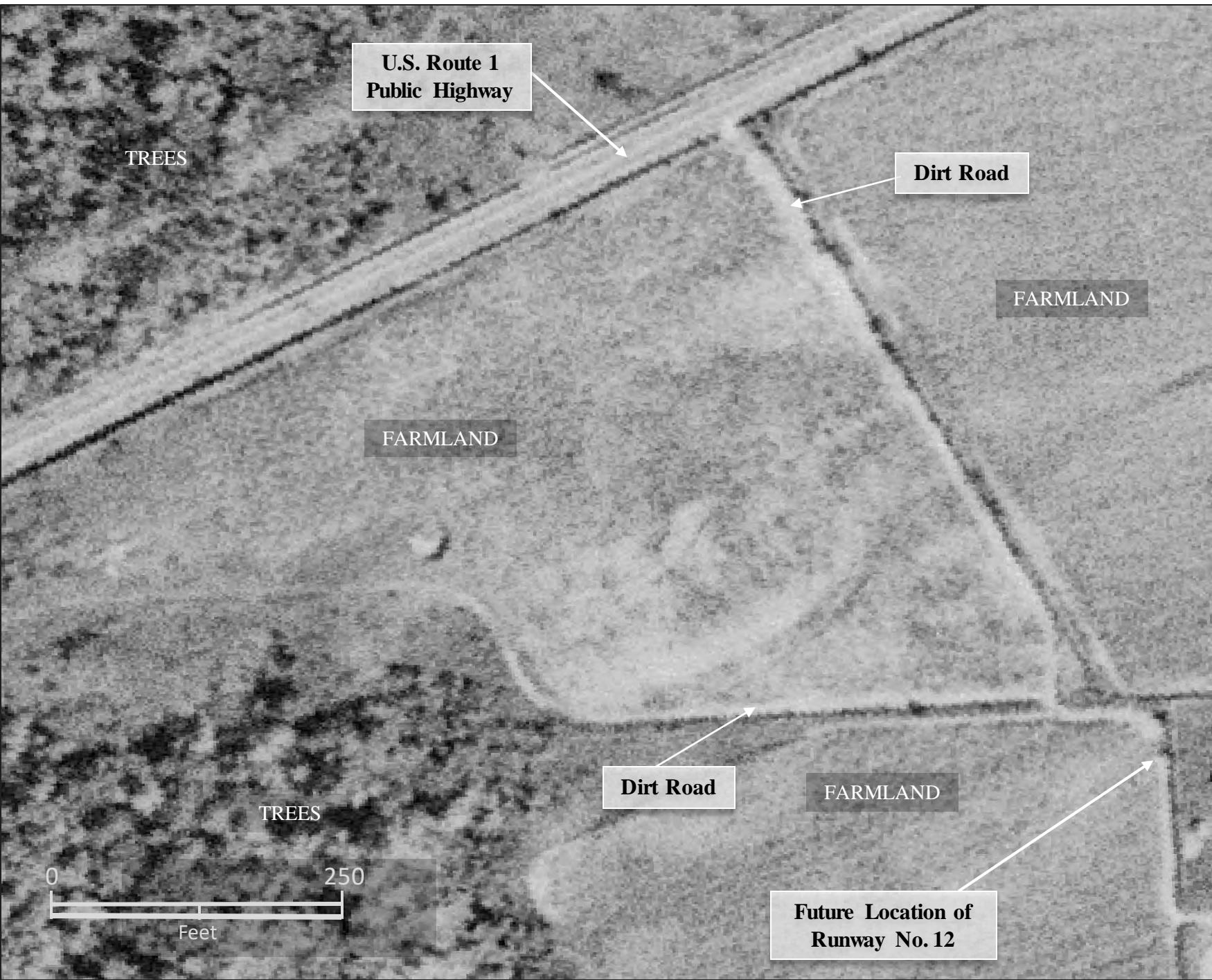
Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).



AREA OF DISTURBED GROUND WEST OF RUNWAY 12 1941 PRE-DEVELOPMENT VIEW

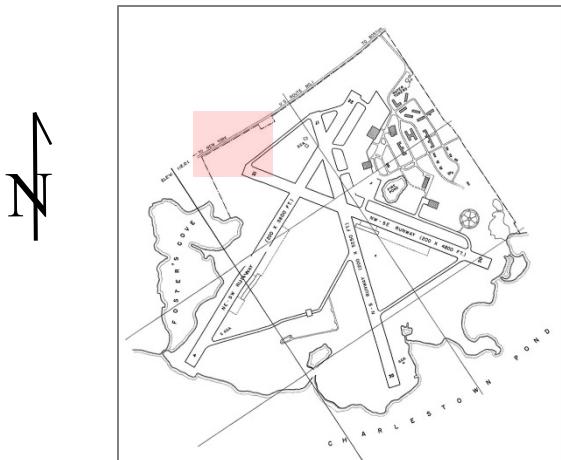


09 October 1941

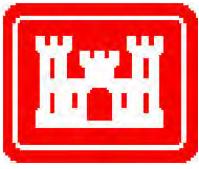


Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



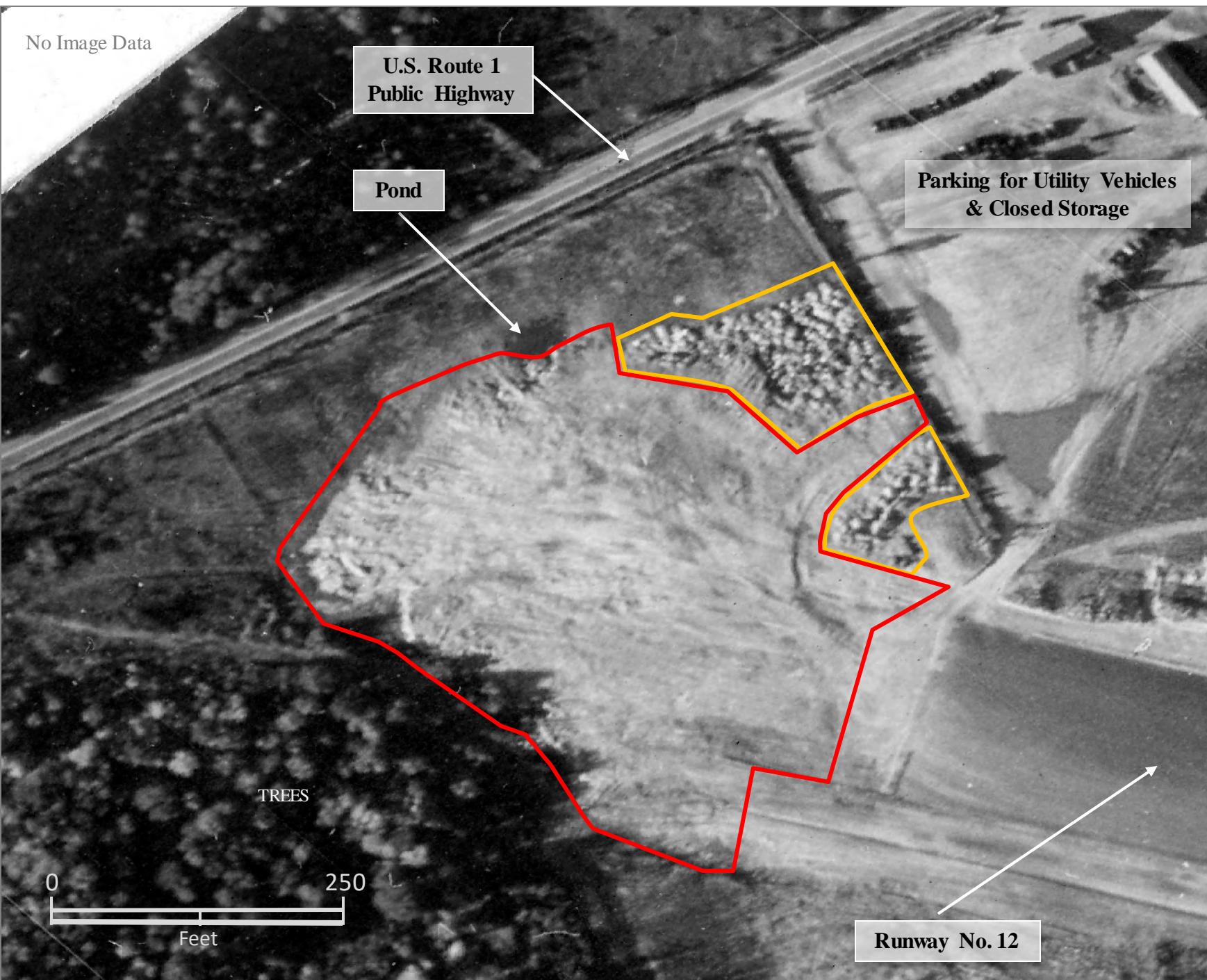
A 1941 pre-development view of disturbed ground and mounded material (first identified on October 1942 historical aerial photography - see next page).



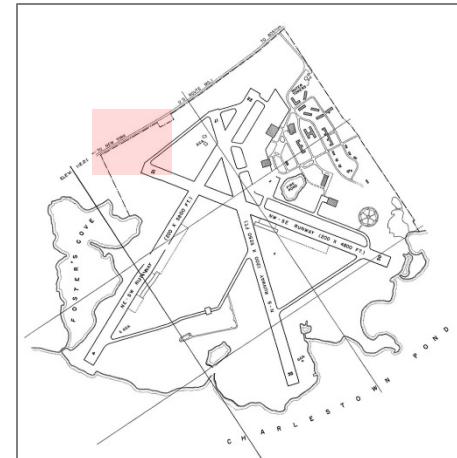
AREA OF DISTURBED GROUND WEST OF RUNWAY 12 1942 VERTICAL VIEW



09 October 1942



LOCATION DIAGRAM



Areas of disturbed ground and mounded material are first identified on October 1942 historical aerial photography.

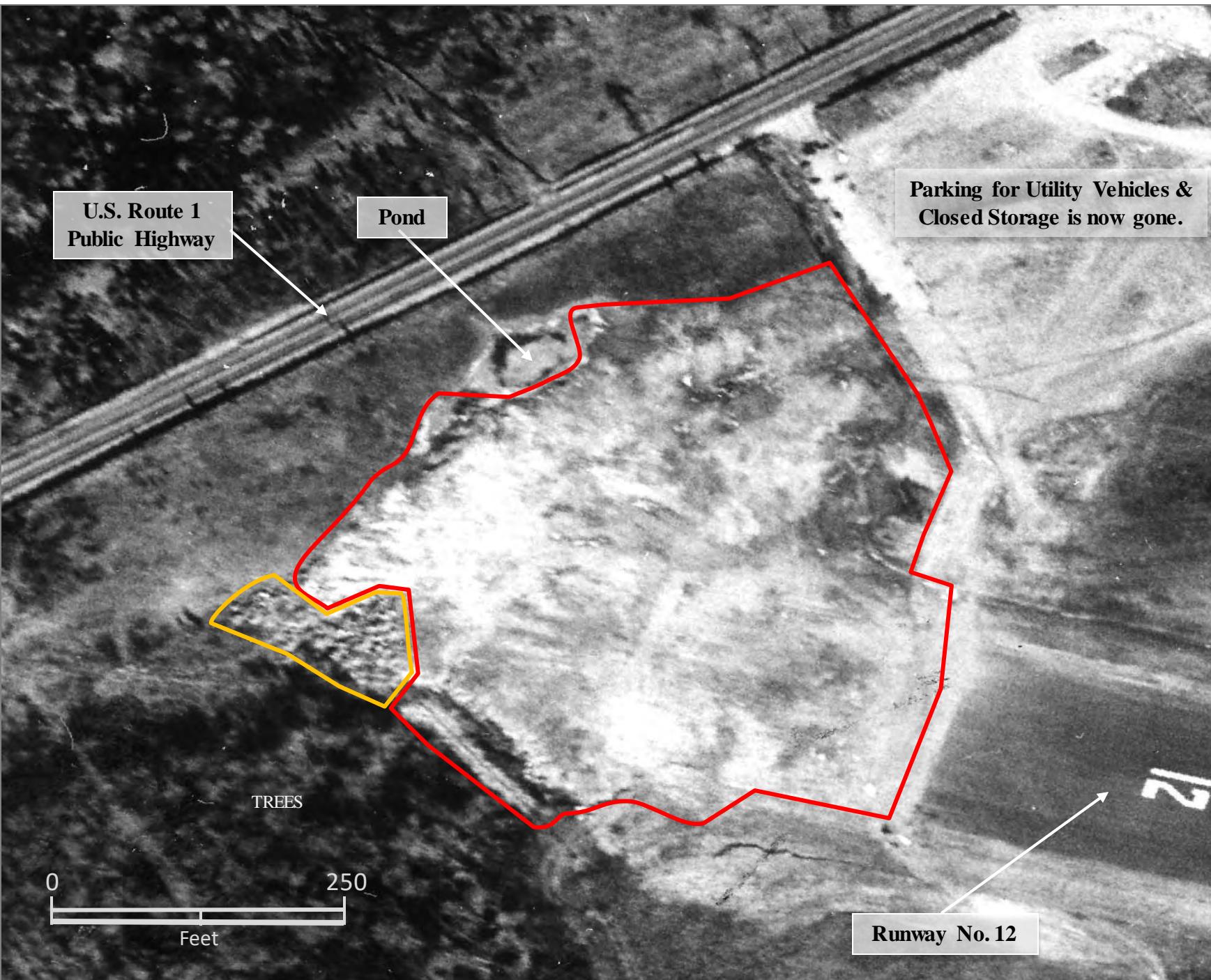
Source: National Archives & Records Administration, Archives II, College Park, MD.



AREA OF DISTURBED GROUND WEST OF RUNWAY 12 1944 VERTICAL VIEW

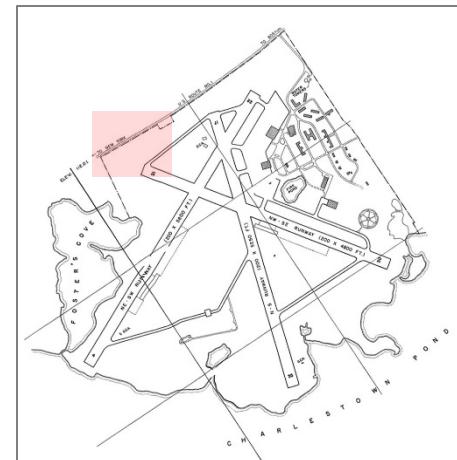


31 January 1944



Source: National Archives & Records Administration, Archives II, College Park, MD.

LOCATION DIAGRAM



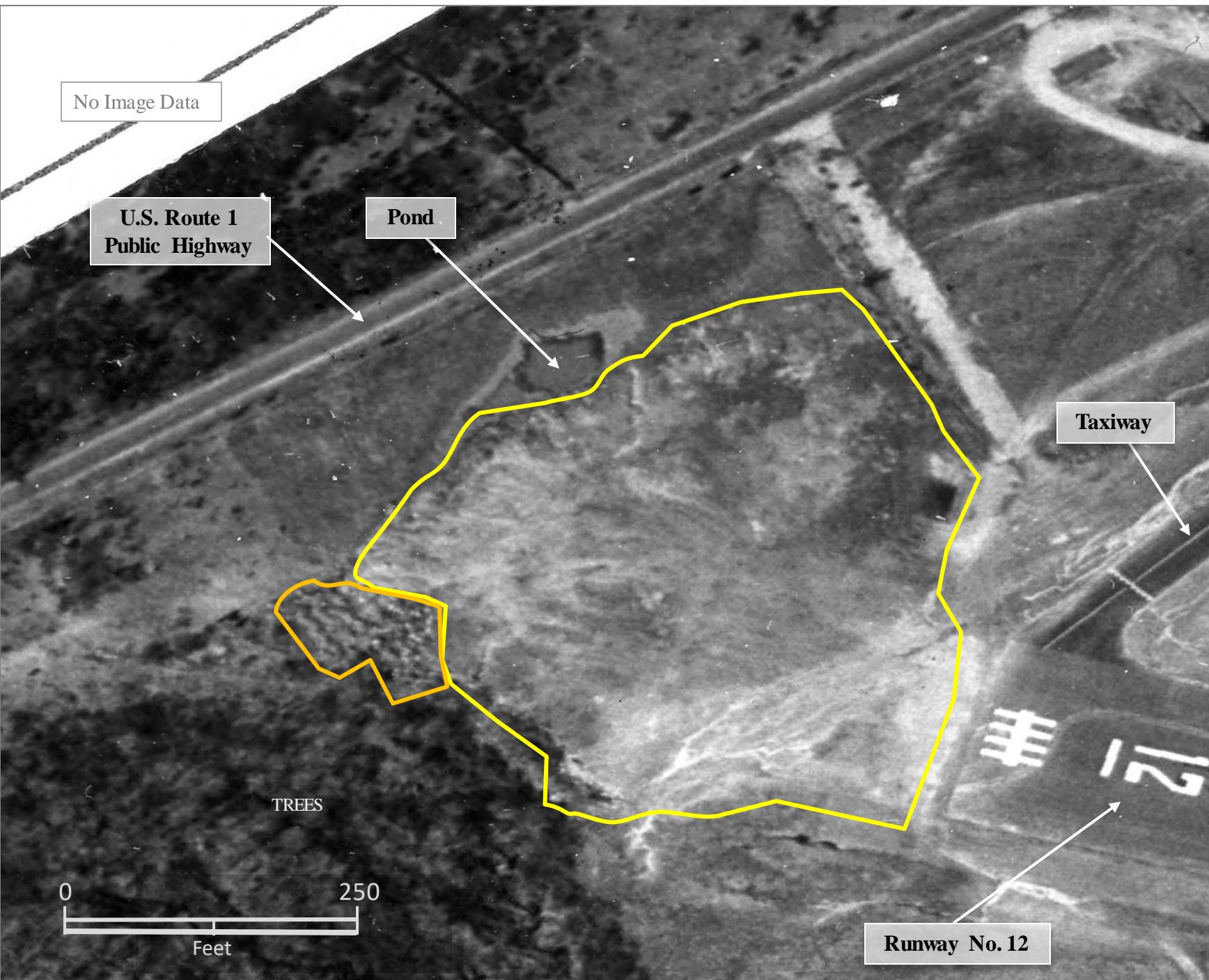
An area of disturbed ground, originally observed in 1942, and a new section of mounded material are identified on January 1944 historical aerial photography.



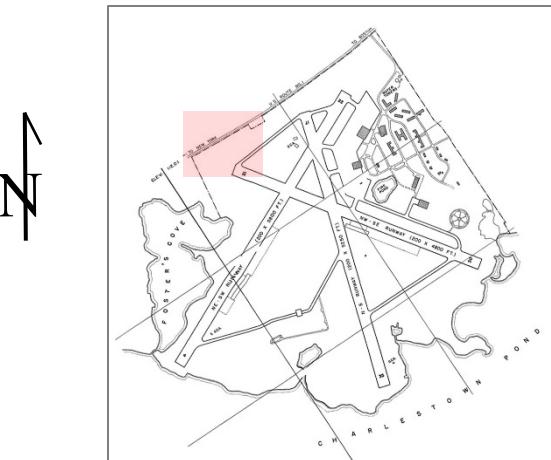
AREA OF DISTURBED GROUND WEST OF RUNWAY 12 1945 VERTICAL VIEW



26 March 1945



LOCATION DIAGRAM



An area of disturbed ground, observed in 1942 and 1944 now appears to be occupied by ground scars in March of 1945. A section of mounded material, organized in a row pattern, remains along the southwestern edge of this area.

Source: National Archives & Records Administration, Archives II, College Park, MD.

— Ground Scars — Mounded Material



AREA OF DISTURBED GROUND WEST OF RUNWAY 12 1947 VERTICAL VIEW



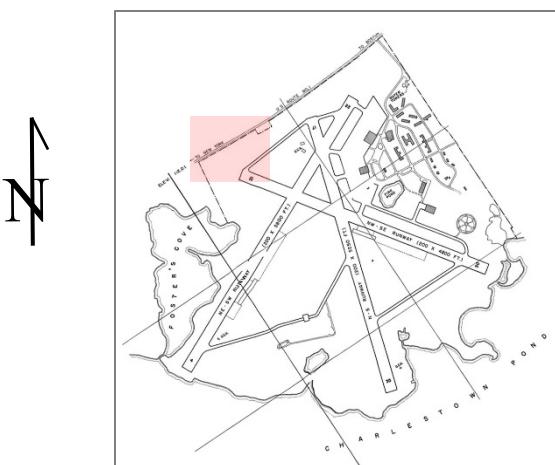
16 October 1947



Source: U.S. Fish & Wildlife Service (USFWS).

Ground Scars

LOCATION DIAGRAM



In October 1947, only scattered ground scars remain in an area adjacent to Runway No. 12.



AREA OF DISTURBED GROUND WEST OF RUNWAY 12 1970 VERTICAL VIEW

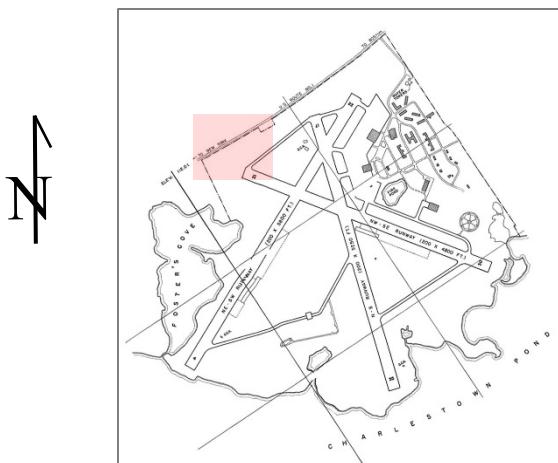


10 March 1970



Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



In March 1970, the area adjacent to Runway No. 12, formerly containing disturbed ground, mounded material, followed by ground scars, appears to be recovering with new vegetative cover.

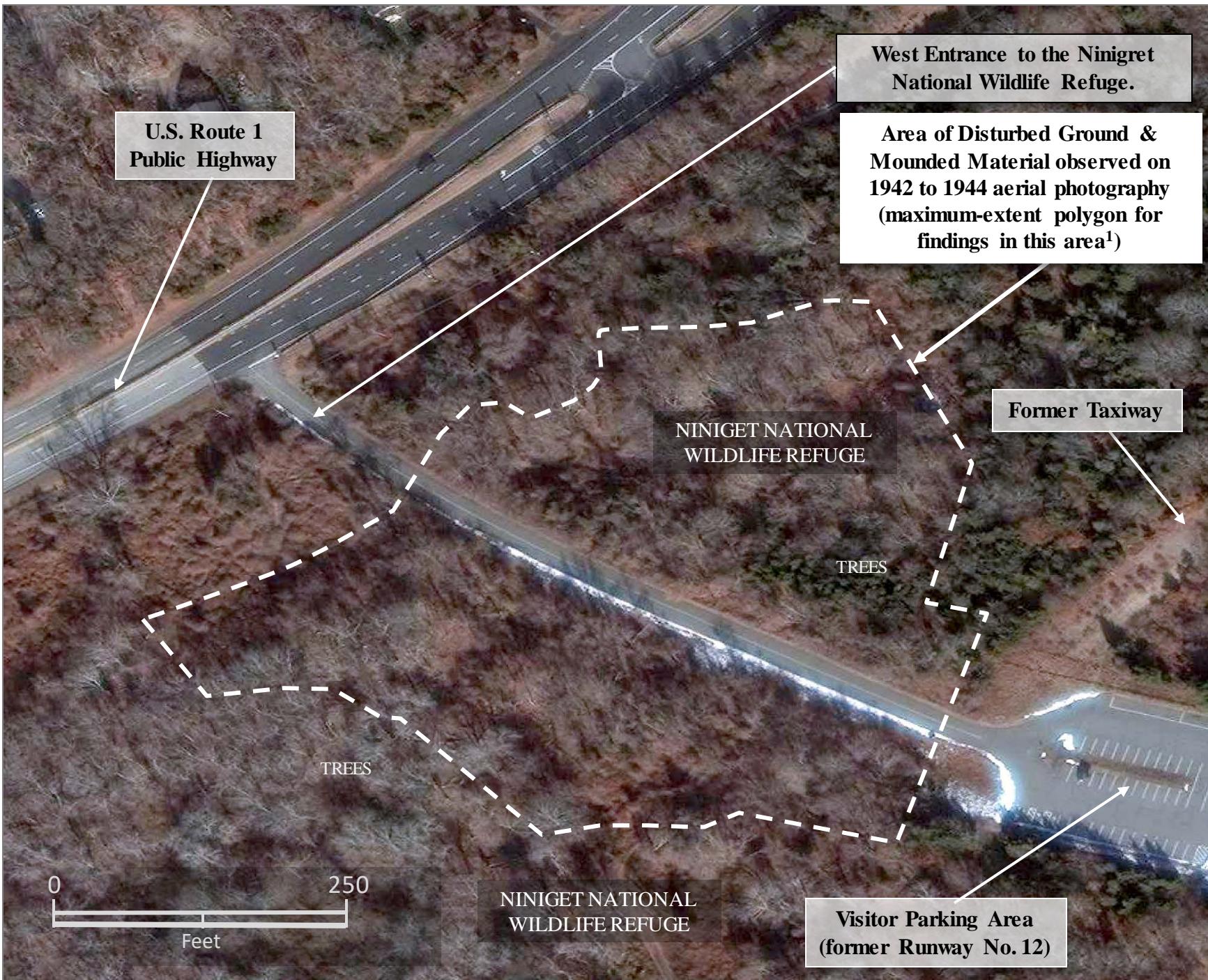


AREA OF DISTURBED GROUND WEST OF RUNWAY 12

2016 VERTICAL VIEW



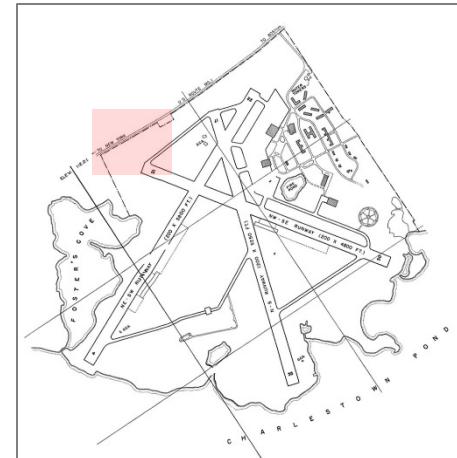
02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

1. Note: this maximum-extent polygon was generated in ArcGIS Version 10.4 operating software utilizing geo-referenced historical aerial data.

LOCATION DIAGRAM



In a February 2016 contemporary view, the entire area once occupied by disturbed ground, mounded material, and then ground scars is now covered by trees, low ground cover, and an entrance to the Ninigret Wildlife Refuge.

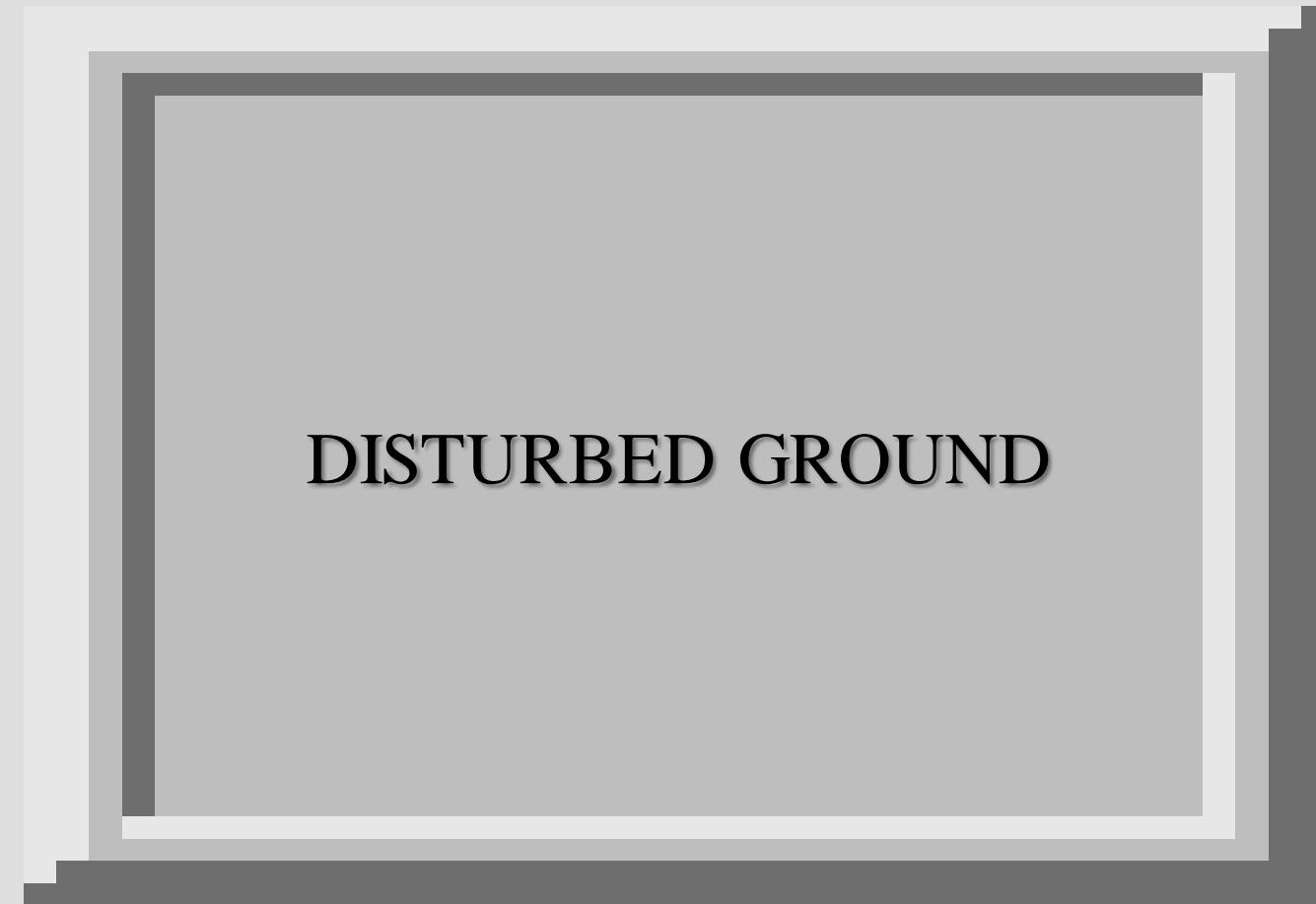
It is also noted that this finding coincides with a major portion of MRS 1 (Fill from Shoot-In-Butt). Refer to the MRS 1 Section of this report for details related to the Fill from Shoot-In-Butt.

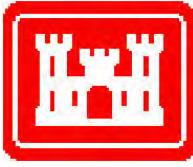
MRS = Military Response Site



HISTORICAL PHOTO ANALYSIS

AREA OF DISTURBED GROUND IDENTIFIED NEAR RUNWAYS 17 & 22

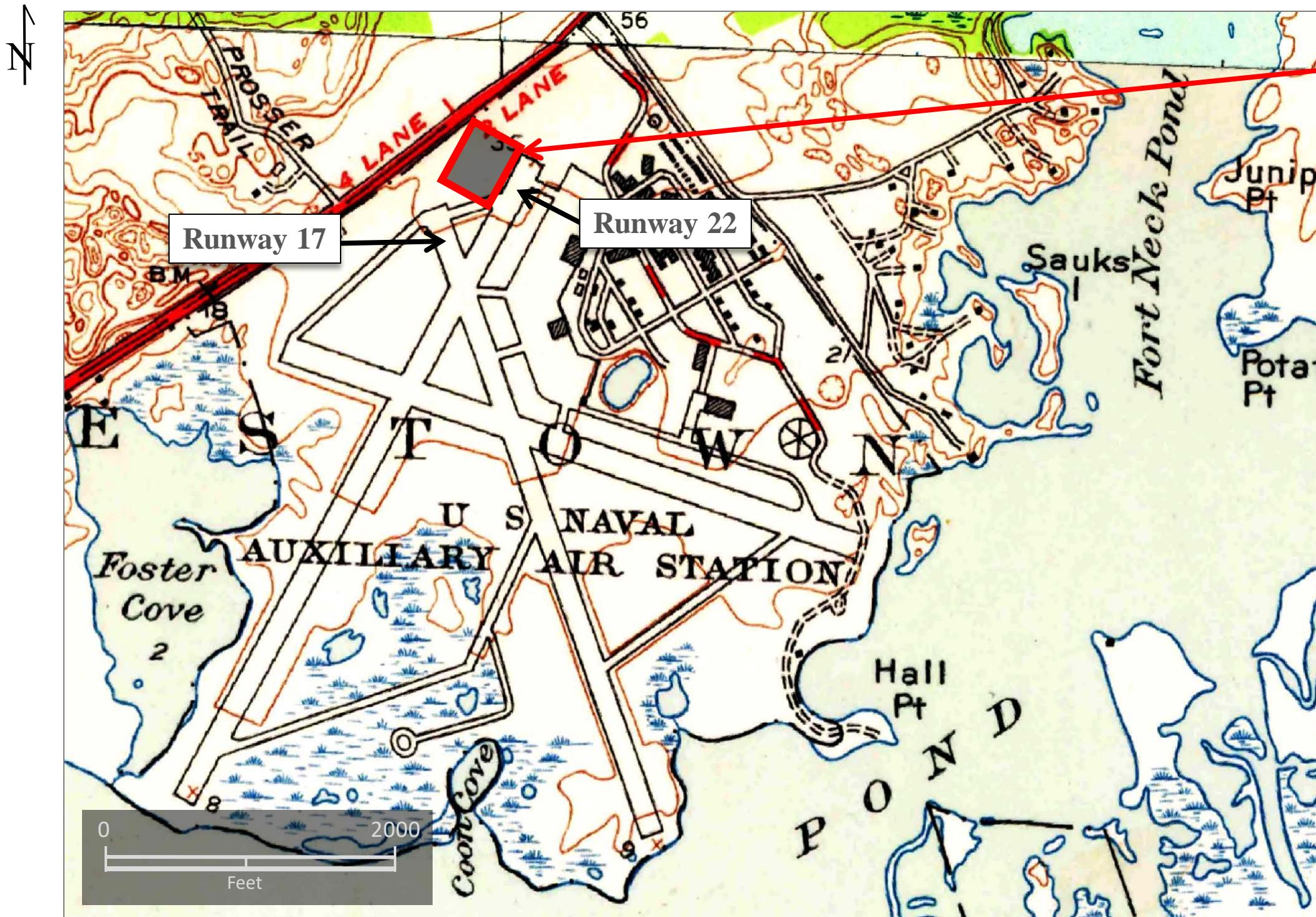




LOCATION OF DISTURBED GROUND NEAR RUNWAYS 17 & 22 AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

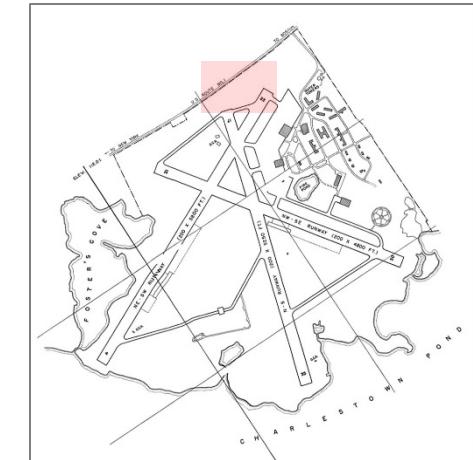
1941 PRE-DEVELOPMENT VIEW



09 October 1941



LOCATION DIAGRAM



A 1941 pre-development view of a single area of disturbed ground first identified on October 1942 historical aerial photography (see next page).

Refer (ahead) to view 12 October 1943 aerial data to observe the expansion of disturbed ground in this area.

Source: U.S. Geological Survey, EarthExplorer.



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

1942 VERTICAL VIEW



09 October 1942



Source: National Archives & Records Administration, Archives II, College Park, MD.

LOCATION DIAGRAM



A single area of disturbed ground is first identified on October 1942 historical aerial photography.



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

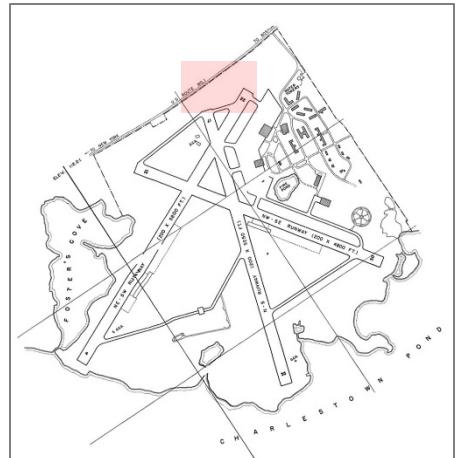
1943 VERTICAL VIEW



12 October 1943

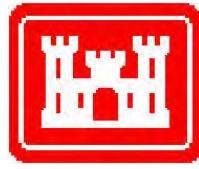


LOCATION DIAGRAM



An area of disturbed ground, first identified in October 1942, continues to appear active in October 1943. It is also noted that the areal extent of the disturbed ground has grown since last observed in 1942 (see previous page).

Source: National Archives & Records Administration, Archives II, College Park, MD.



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

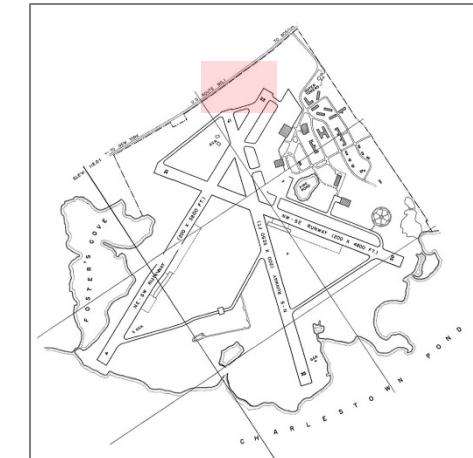
1944 VERTICAL VIEW



31 January 1944



LOCATION DIAGRAM



An area of disturbed ground, identified in October 1943 (see previous page) no longer appears active. Ground scars and latent vehicle tracks remain.

Source: National Archives & Records Administration, Archives II, College Park, MD.



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

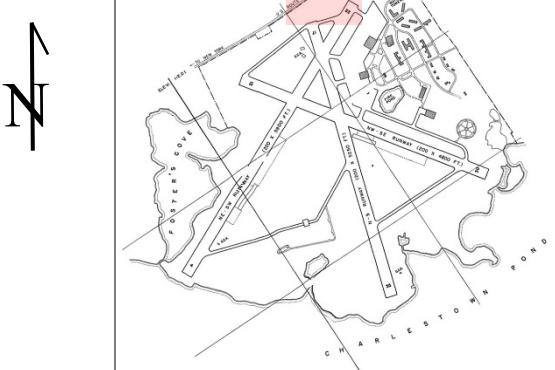
1945 VERTICAL VIEW



26 March 1945

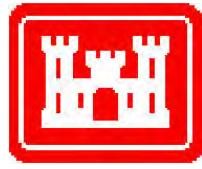


LOCATION DIAGRAM



An area previously identified as disturbed ground (1942-1943) shows a patch of ground scars on March 1945 aerial photography.

Source: National Archives & Records Administration, Archives II, College Park, MD.

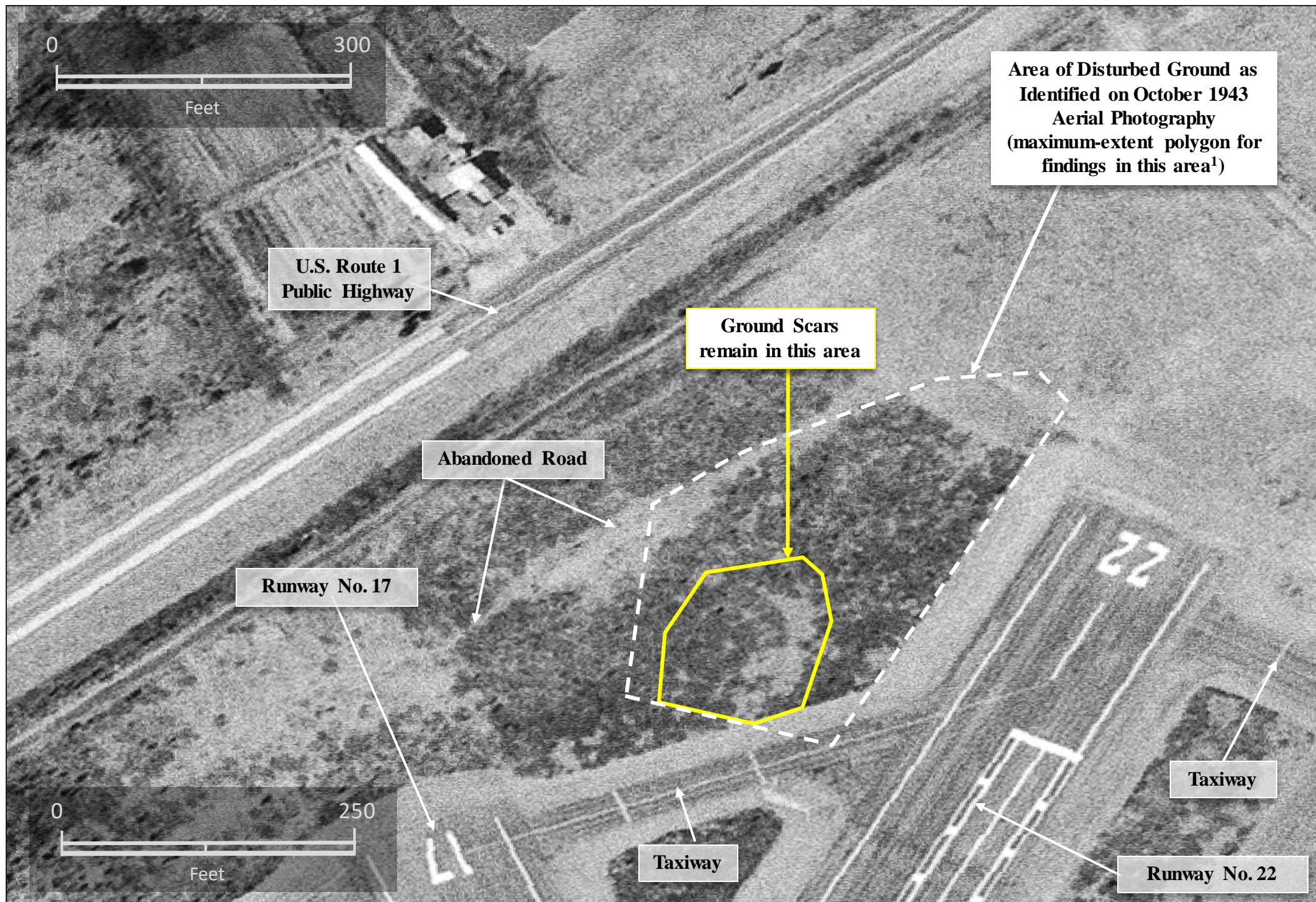


AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

1970 VERTICAL VIEW

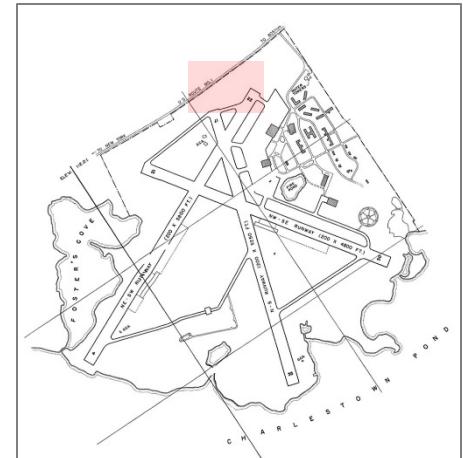


10 March 1970

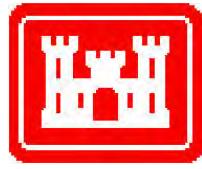


Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



In March 1970 visible signs of ground scarring near Runways 17 & 22 remain.



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

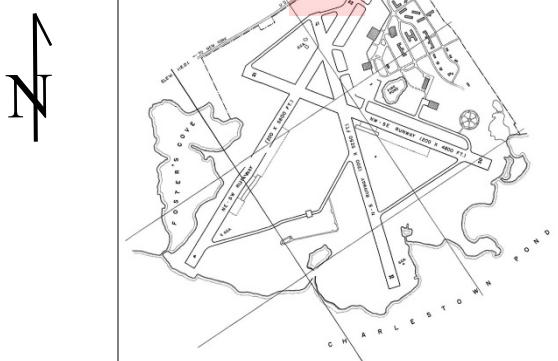
1981 VERTICAL VIEW



22 April 1981

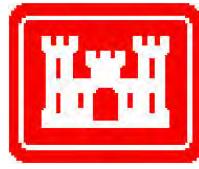


LOCATION DIAGRAM



In April 1981 visible signs of
ground scarring near former
Runways 17 & 22 remain.

Source: U.S. Geological Survey, EarthExplorer.

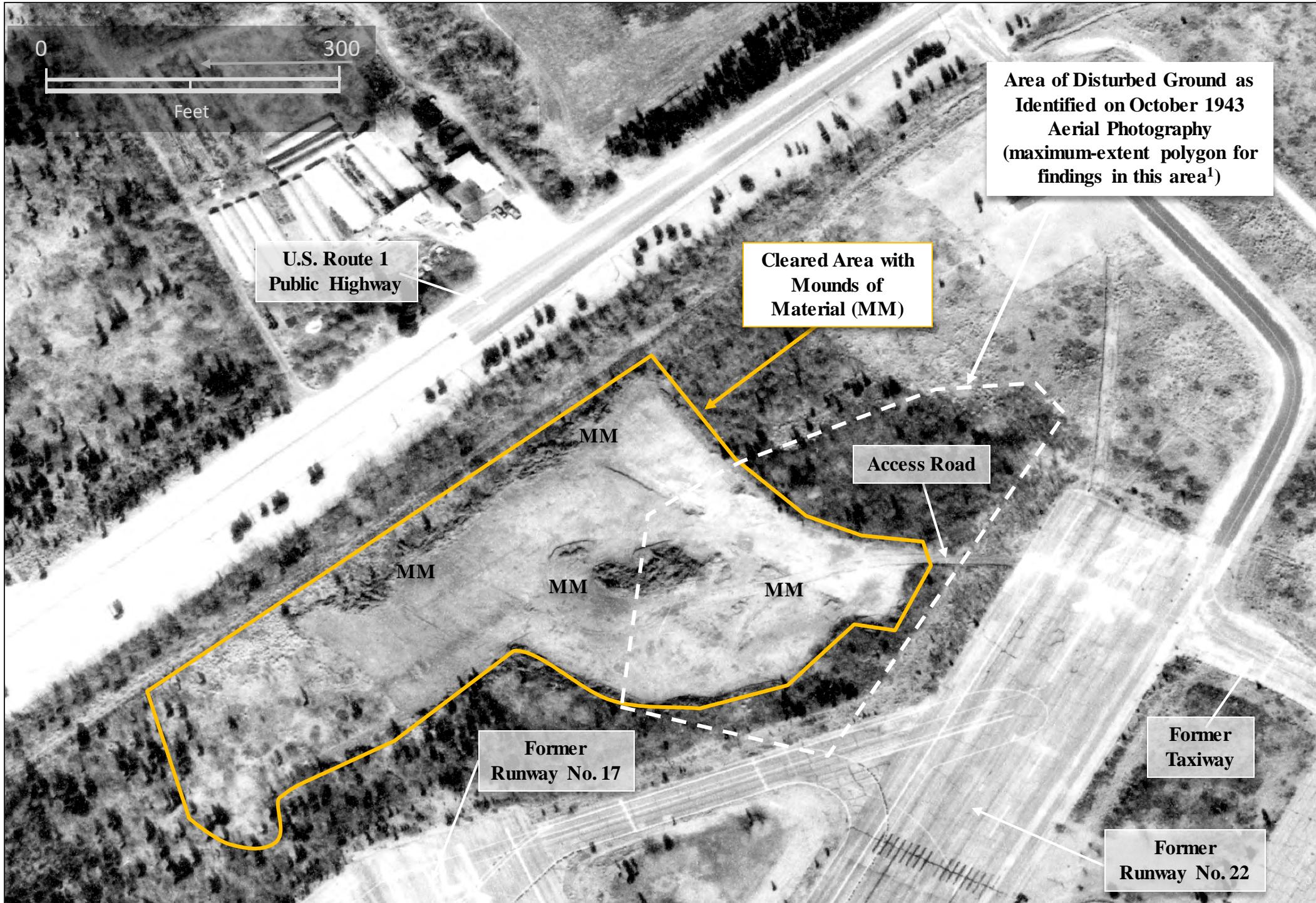


AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

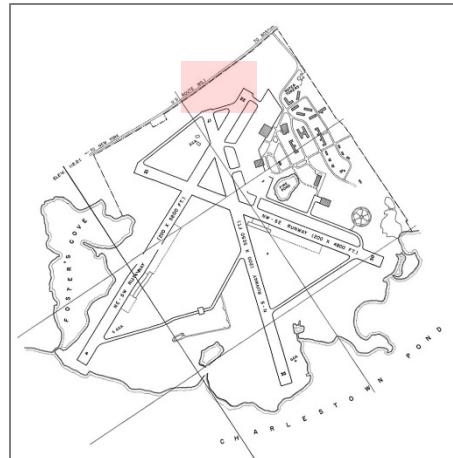
1985 VERTICAL VIEW



11 March 1985



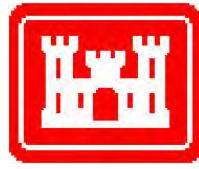
LOCATION DIAGRAM



In March 1985 visible signs of a cleared area in conjunction with mounded material occur near former Runways 17 & 22.

Source: U.S. Army Corps of Engineers, New England District.

MM = Mounded Material

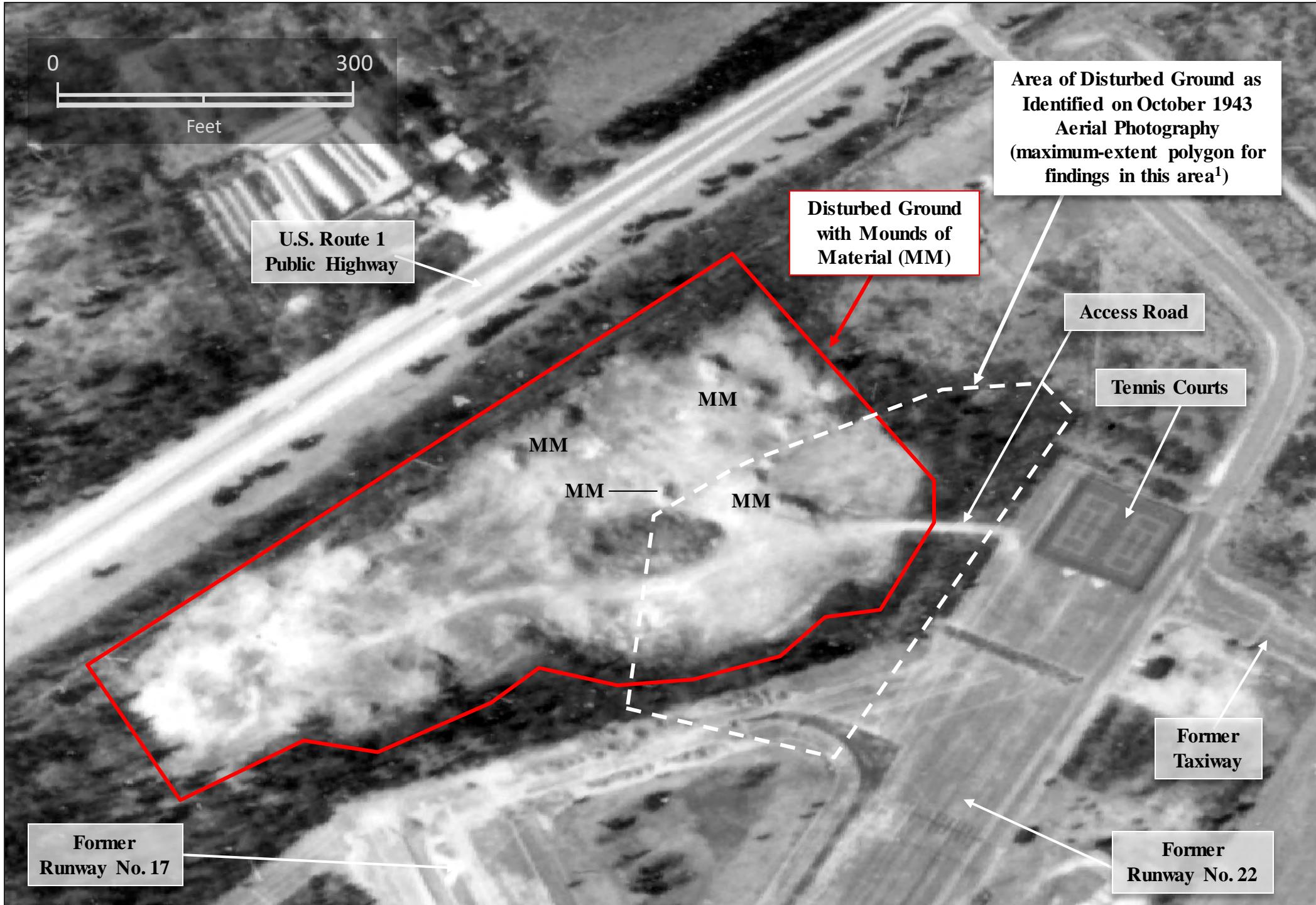


AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

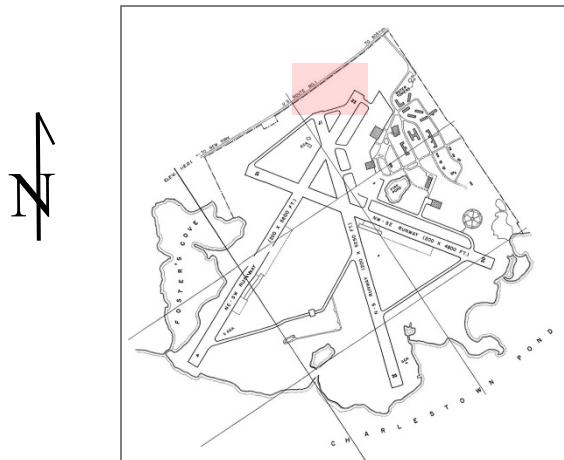
1988 VERTICAL VIEW



13 April 1988



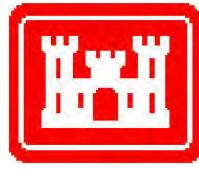
LOCATION DIAGRAM



In April 1988 visible signs of disturbed ground and mounded material occur near former Runways 17 & 22.

Source: Rhode Island Department Of Administration Planning Information Center

MM = Mounded Material



AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

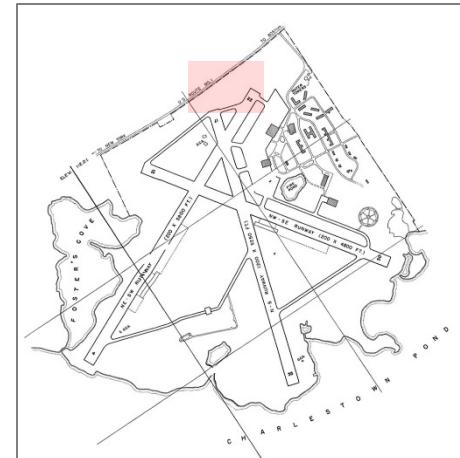
1994 VERTICAL VIEW



11 September 1994



LOCATION DIAGRAM



In September 1994 visible signs of ground scarring, related to earlier ground disturbances occurring in the 1980s, remain near former Runways 17 & 22.

Source: National Oceanic and Atmospheric Administration (NOAA)

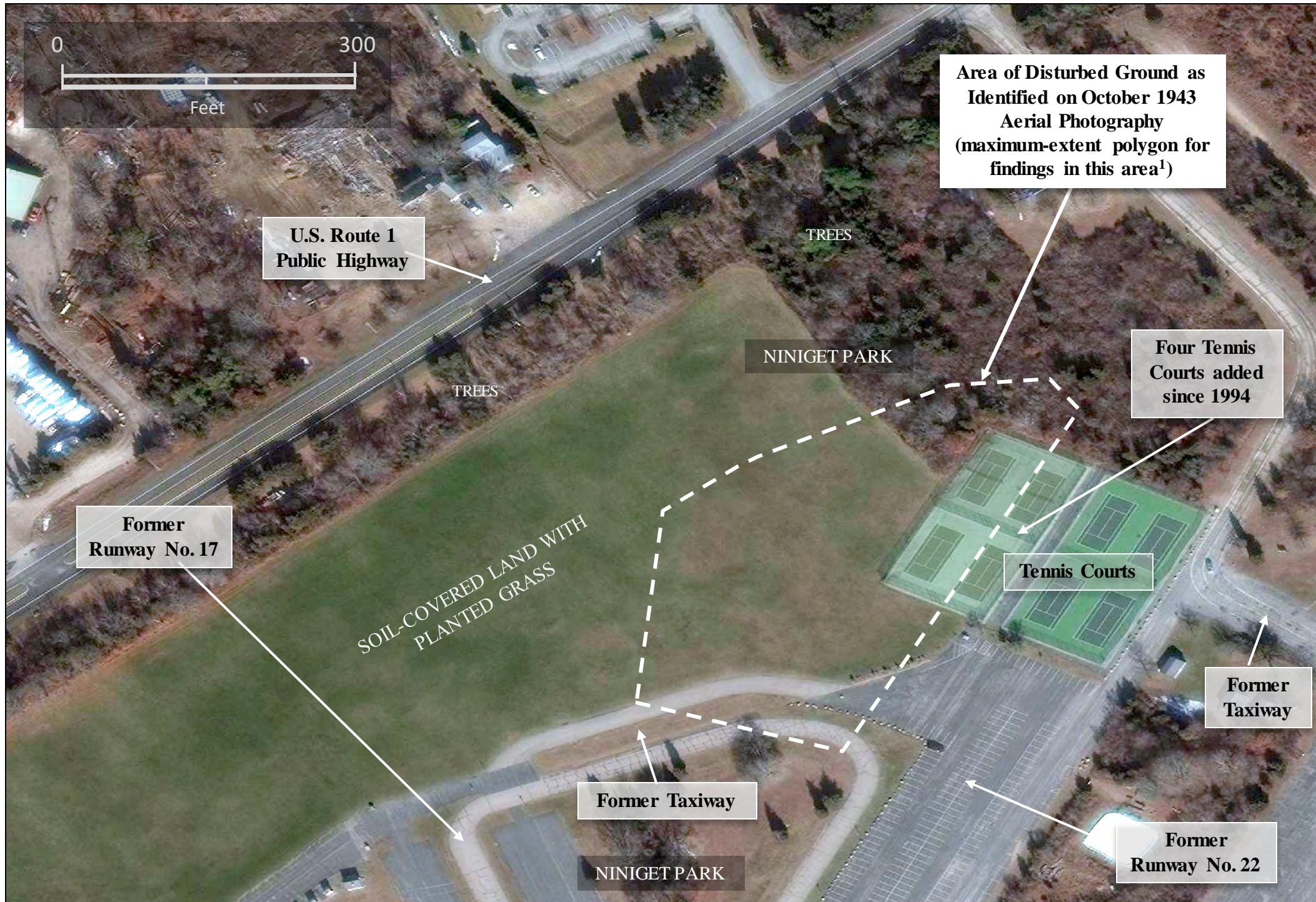


AREA OF DISTURBED GROUND NEAR RUNWAYS 17 & 22

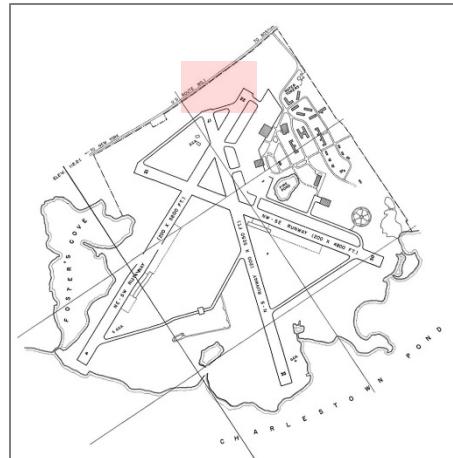
2016 VERTICAL VIEW



02 February 2016



LOCATION DIAGRAM



A February 2016 contemporary view.

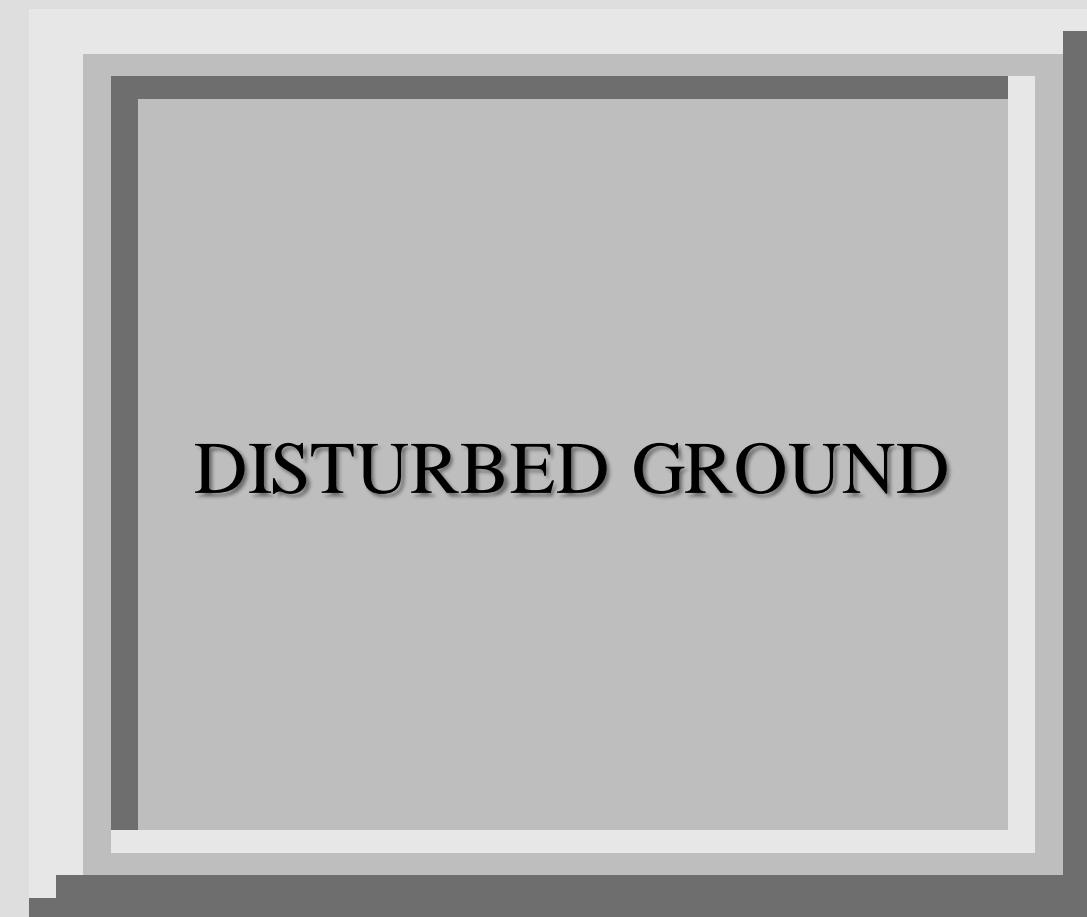
Source: National Geospatial-Intelligence Agency (NGA).

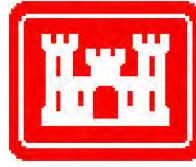
1. Note: this maximum-extent polygon was generated in ArcGIS Version 10.4 operating software utilizing geo-referenced historical aerial data.



HISTORICAL PHOTO ANALYSIS

AREA OF DISTURBED GROUND IDENTIFIED NEAR RUNWAY 4 & FOSTER COVE

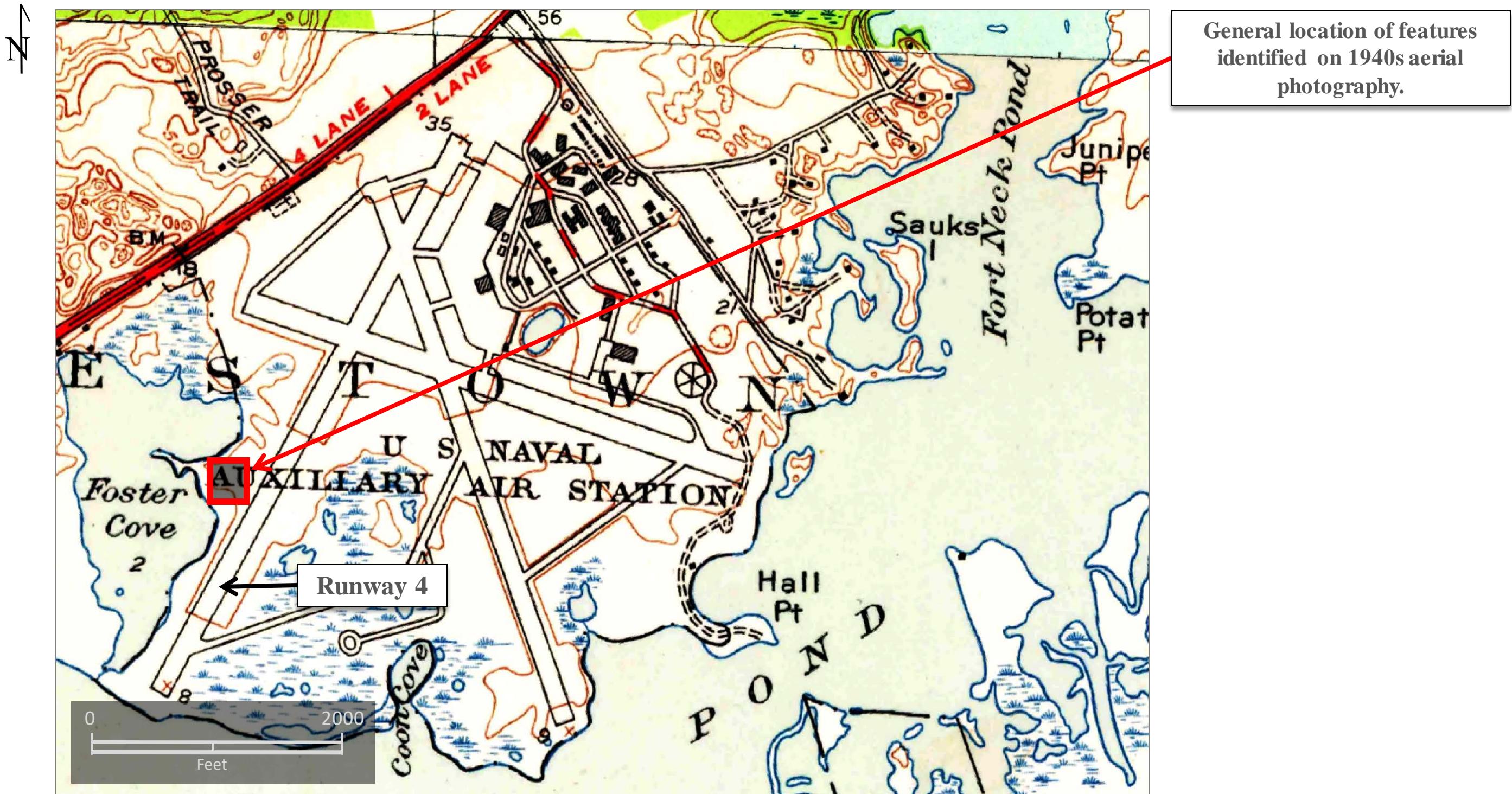




LOCATION OF DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

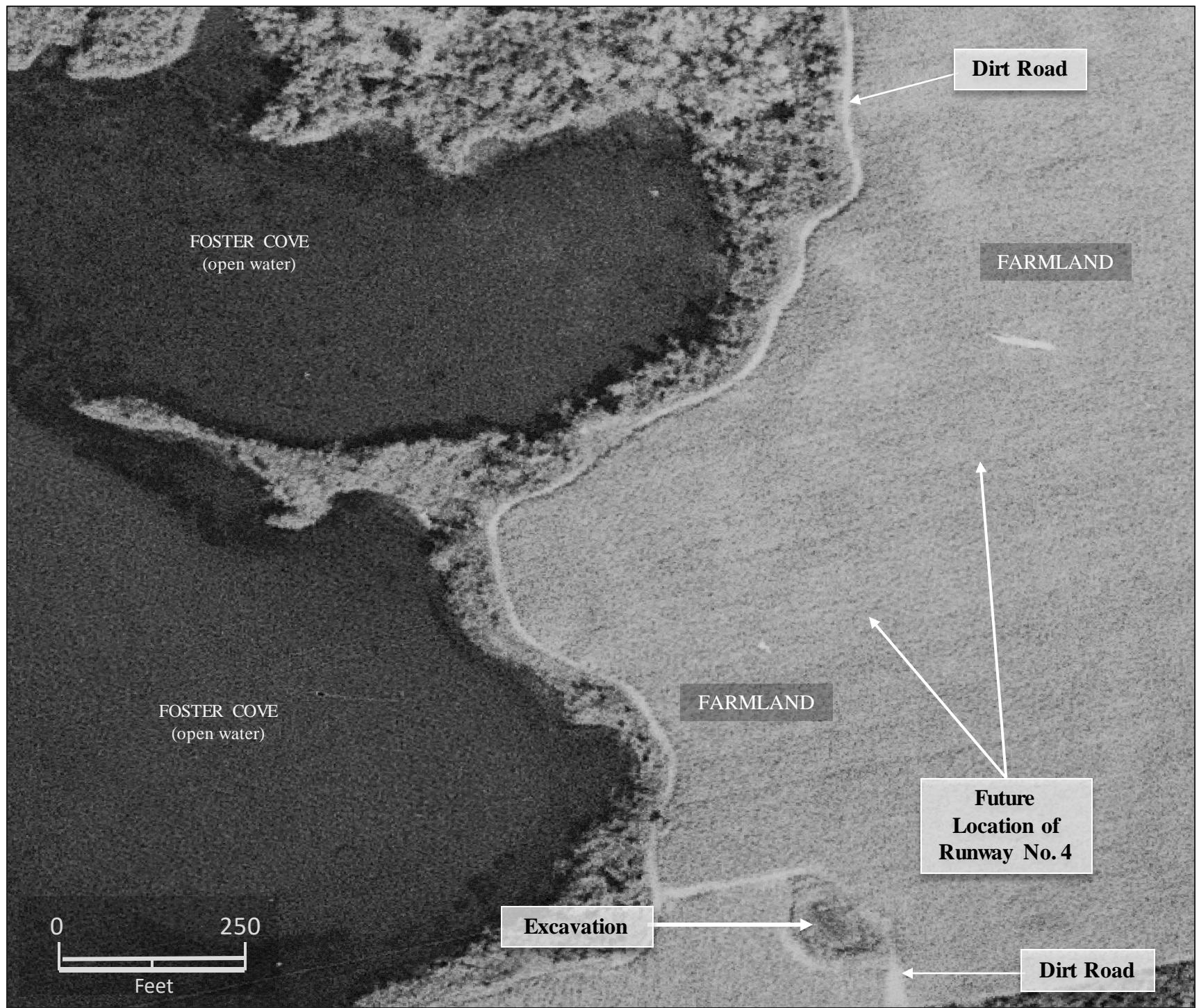


DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE

1941 PRE-DEVELOPMENT VIEW

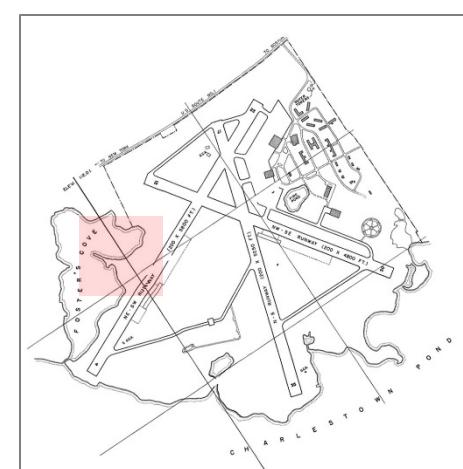


09 October 1941



An undisturbed agricultural farm field under private ownership is observed at this location near Foster Cove on October 1941 aerial photography.

LOCATION DIAGRAM



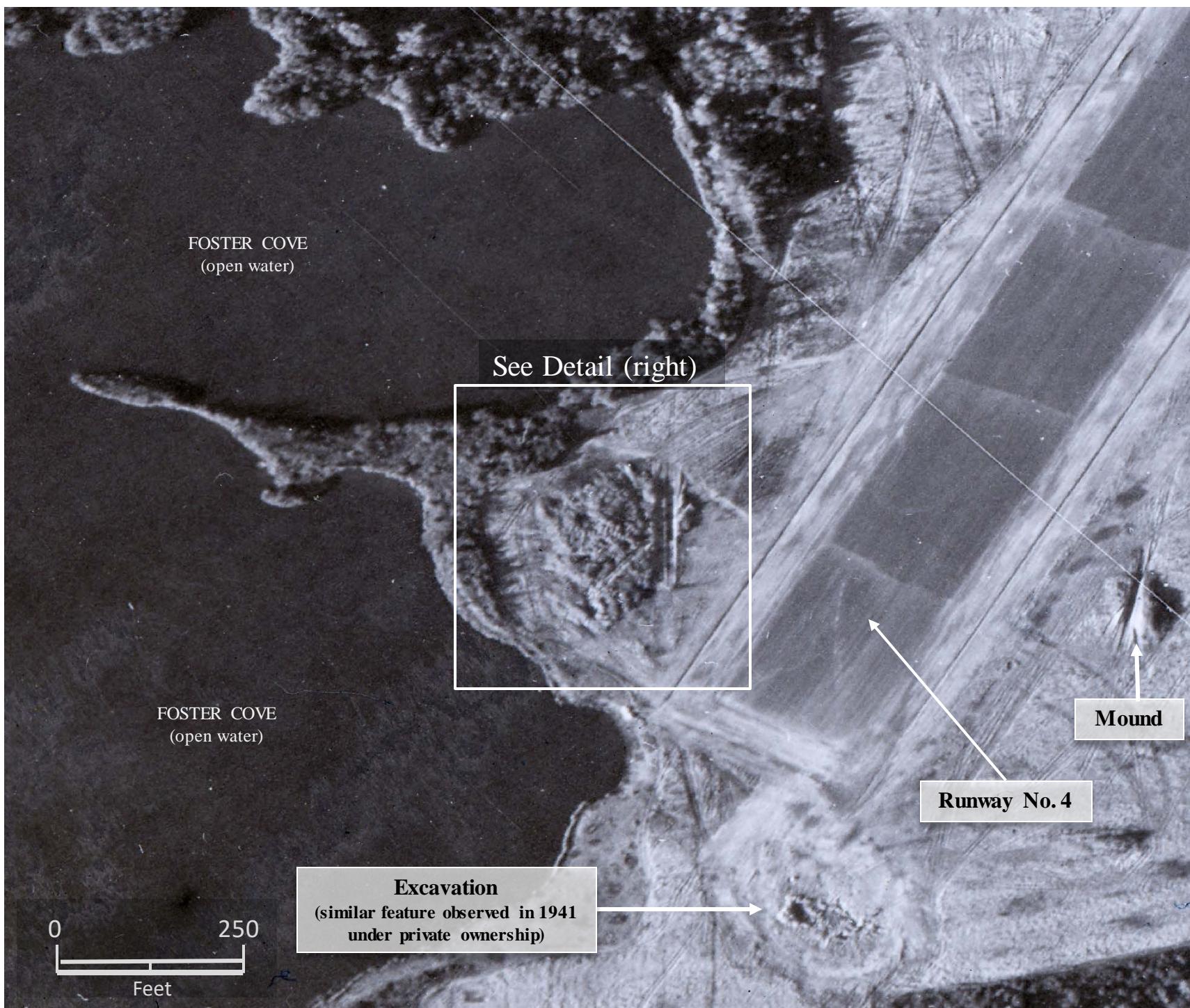
Source: U.S. Geological Survey, EarthExplorer.



DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE 1942 VERTICAL VIEW

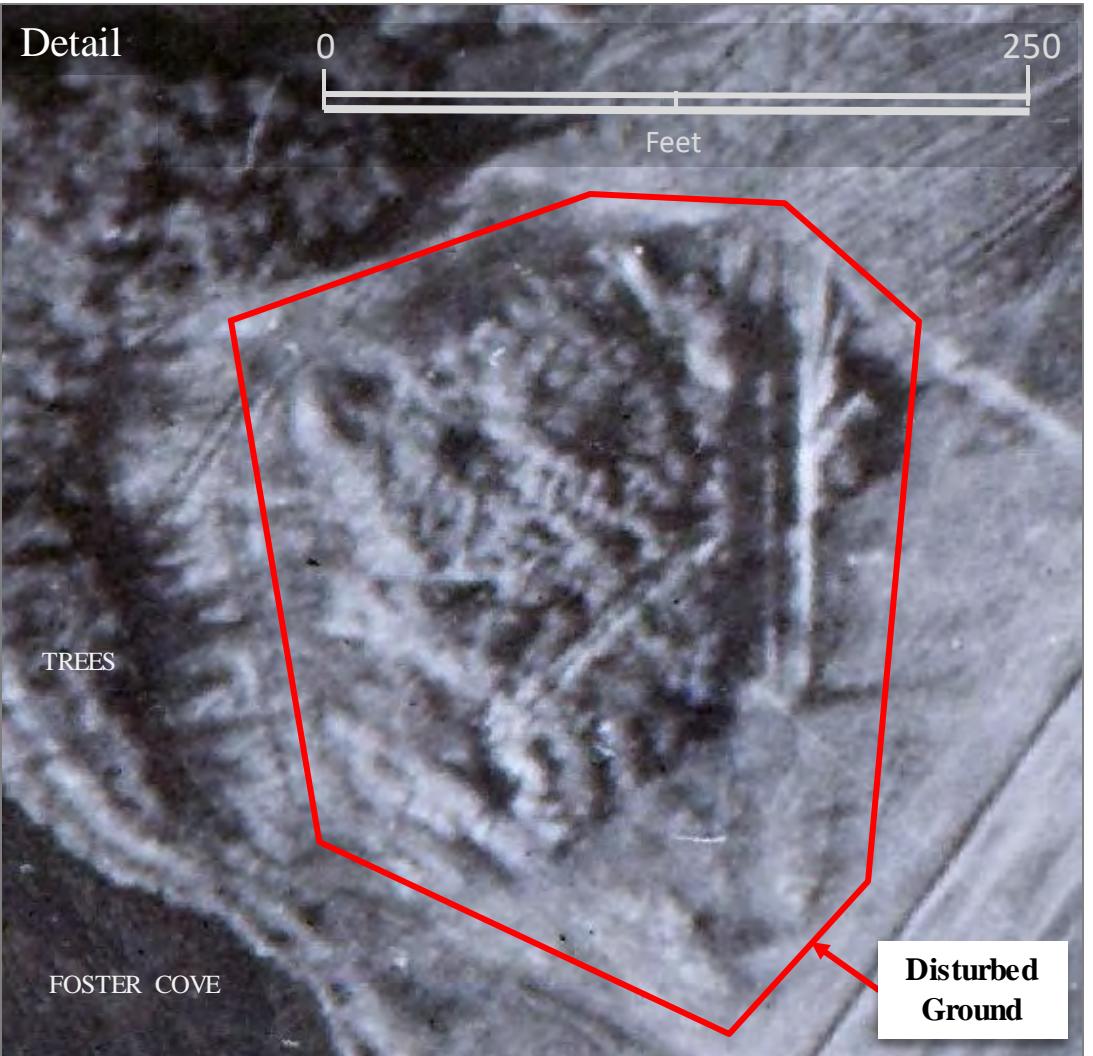
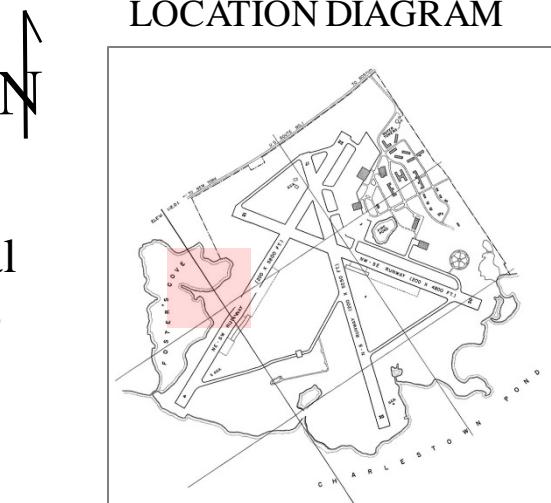


09 October 1942



An area of disturbed ground is identified on October 1942 aerial photography between Runway 4 and Foster Cove.

LOCATION DIAGRAM



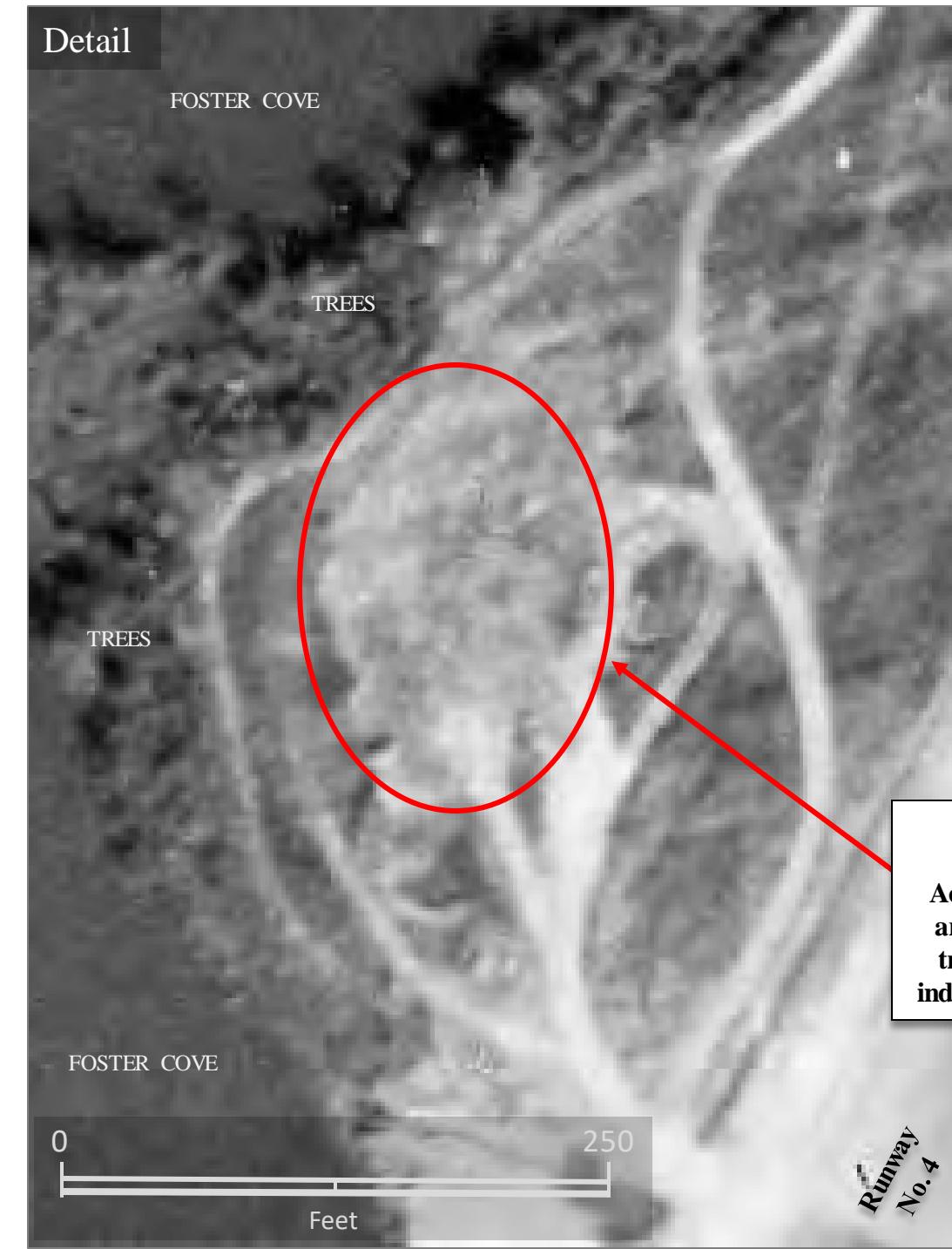
Source: National Archives & Records Administration, Archives II, College Park, MD.



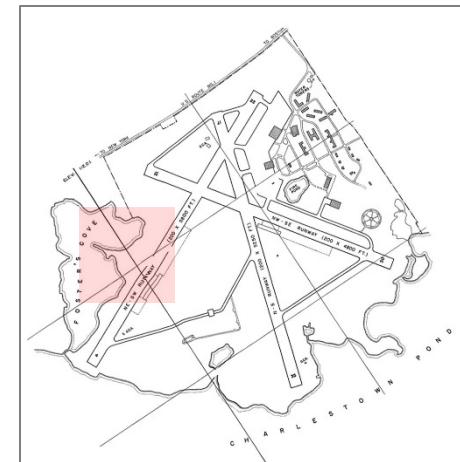
DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE 1943 VERTICAL VIEW



12 October 1943



LOCATION DIAGRAM



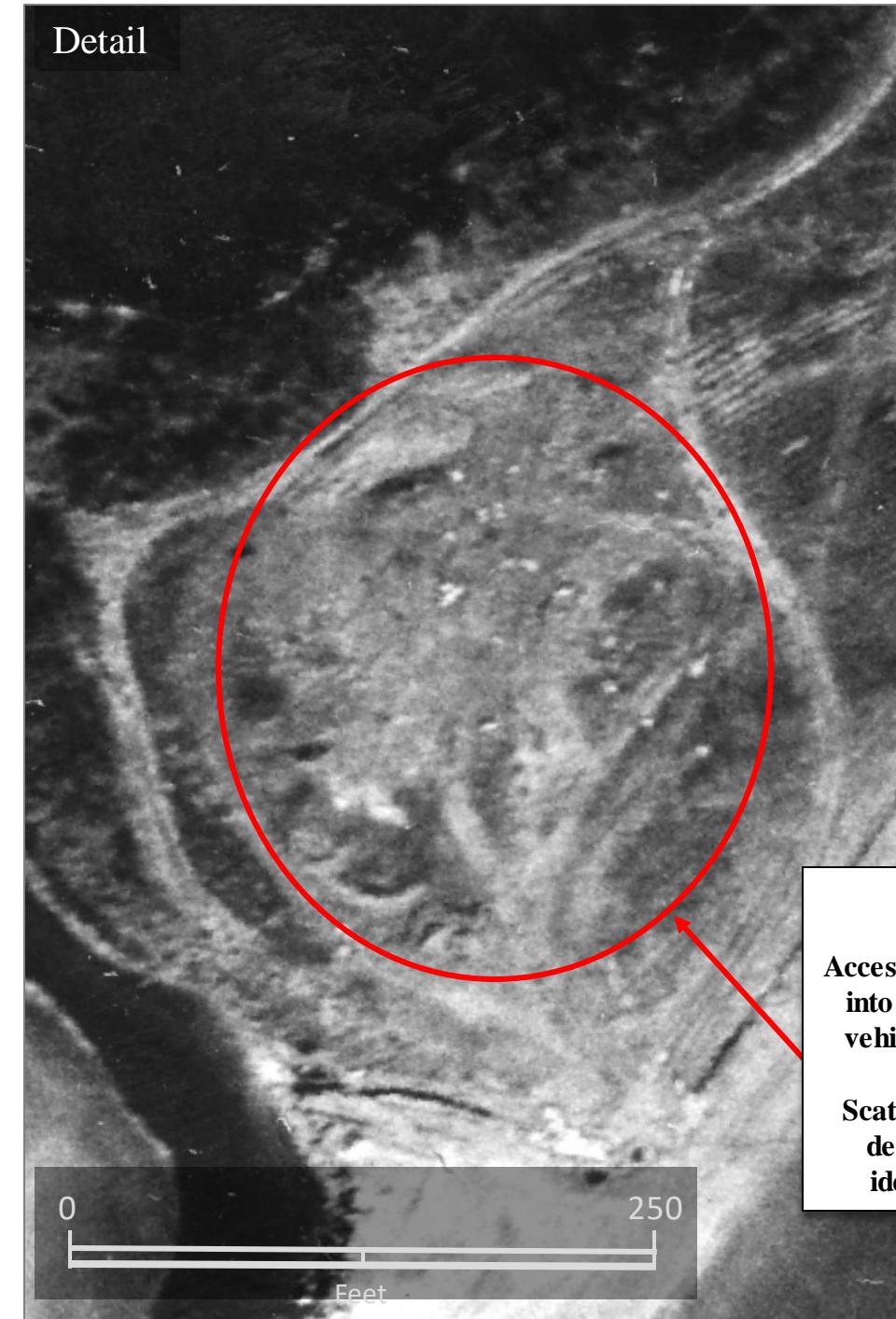
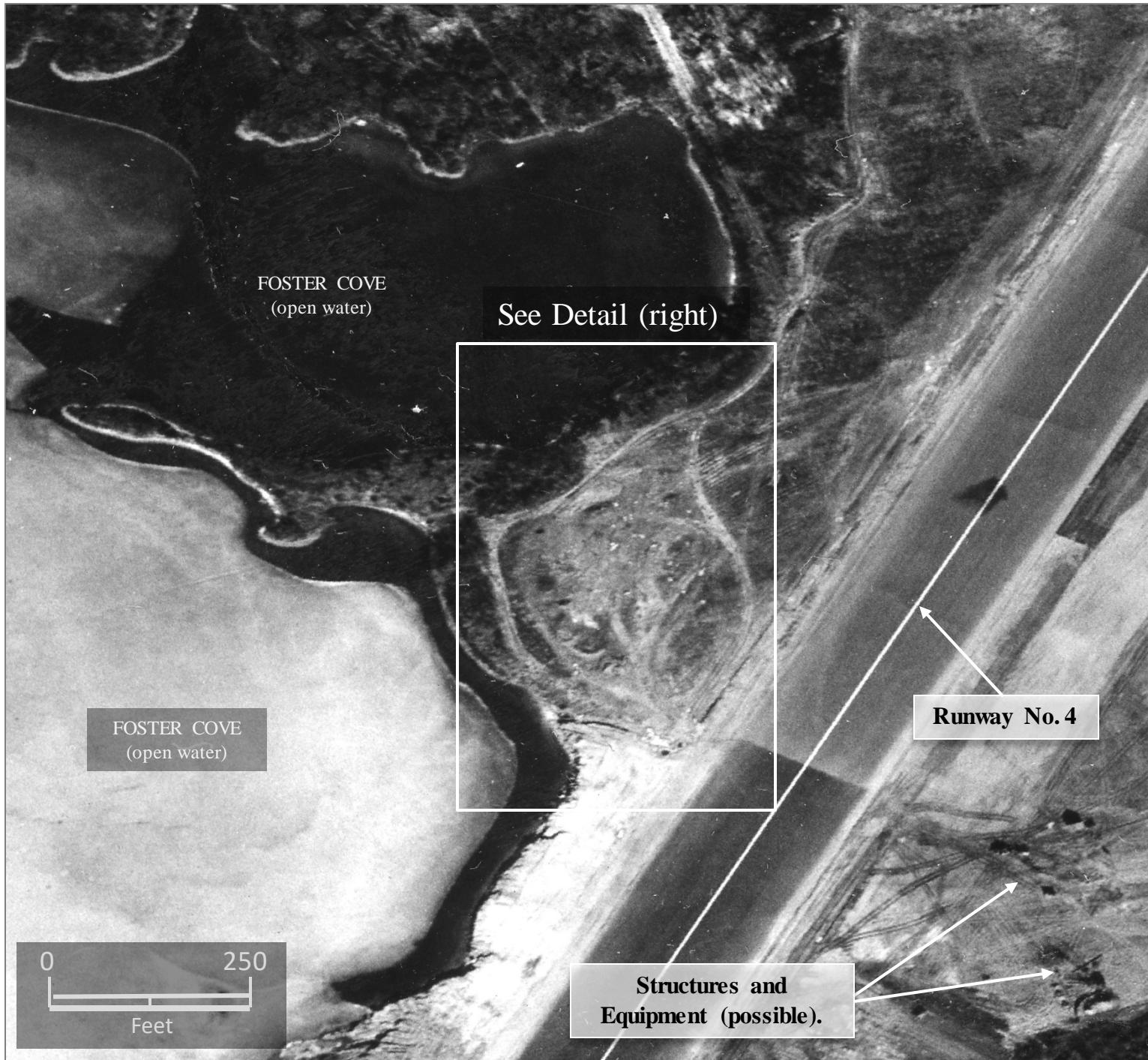
Source: National Archives & Records Administration, Archives II, College Park, MD.



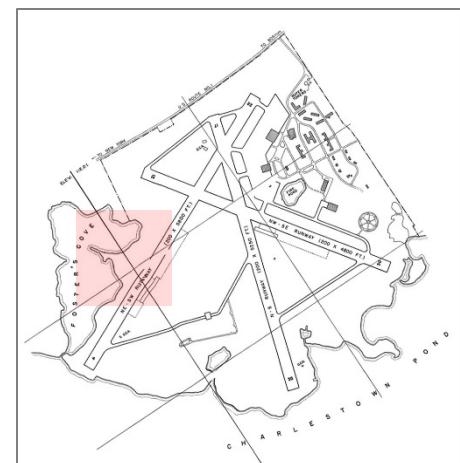
DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE 1944 VERTICAL VIEW



31 January 1944



LOCATION DIAGRAM



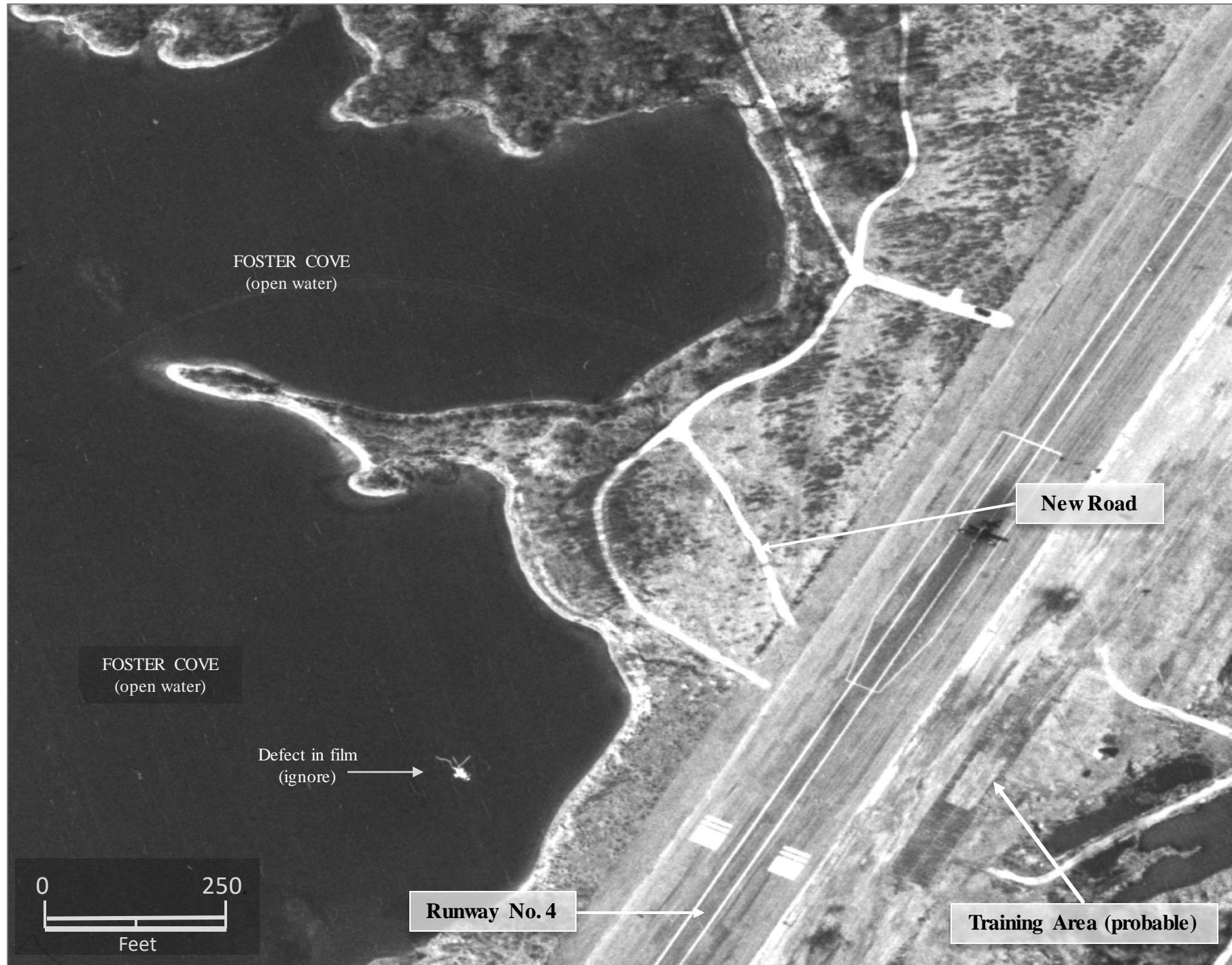
Source: National Archives & Records Administration, Archives II, College Park, MD.



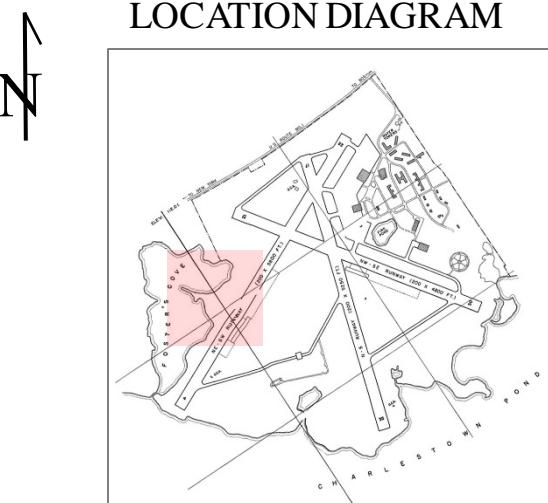
DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE 1954 VERTICAL VIEW



21 April 1954



LOCATION DIAGRAM



In April 1954 there are no visible signs of ground disturbance near Runway 4 and Foster Cove. Scattered shrubs are now evident. A new road, however, is identified on the aerial photography (see left).

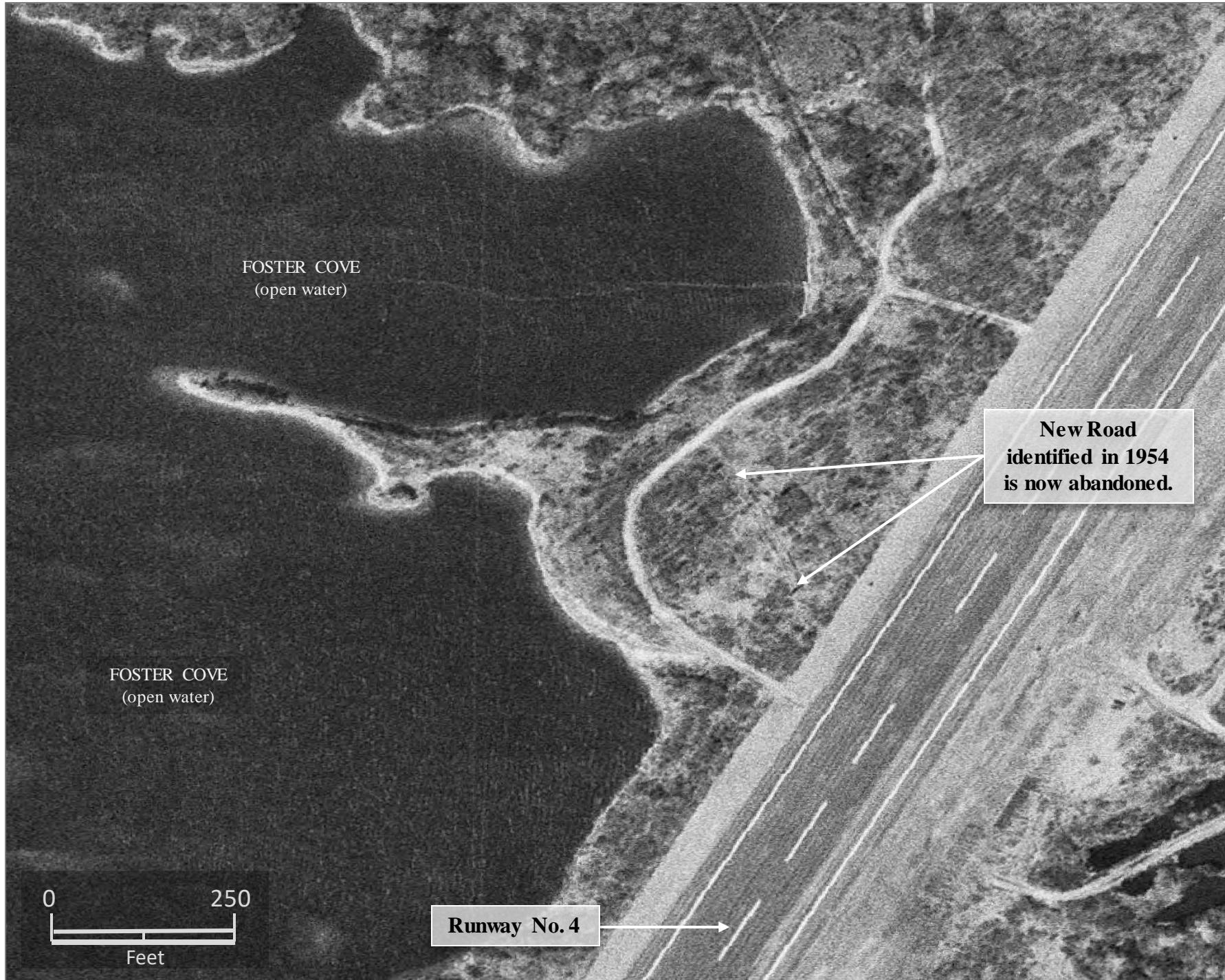
Source: National Oceanic and Atmospheric Administration (NOAA).



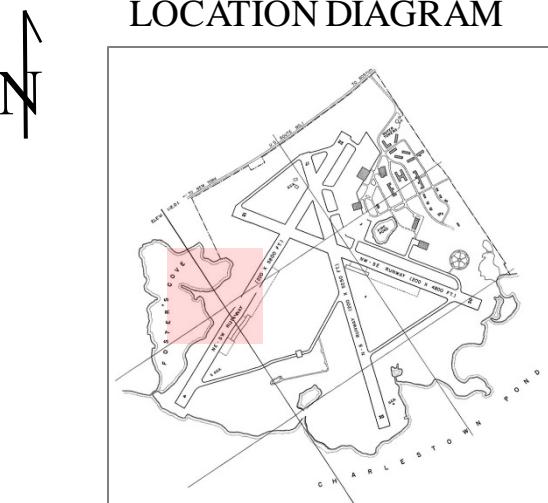
DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE 1970 VERTICAL VIEW



10 March 1970



LOCATION DIAGRAM



In March 1970, scattered shrubs & other types of low ground cover continue to grow over the area once observed as disturbed ground.

Source: U.S. Geological Survey, EarthExplorer.



DISTURBED GROUND NEAR RUNWAY 4 & FOSTER COVE

2016 VERTICAL VIEW

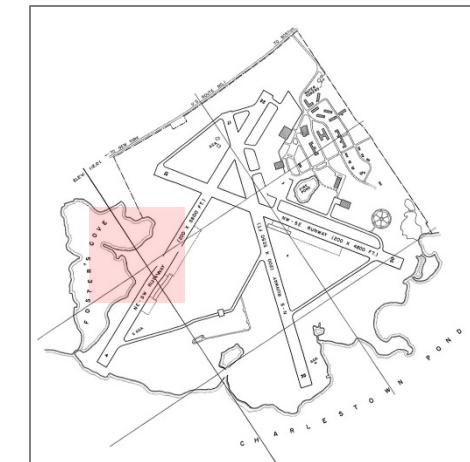


02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

LOCATION DIAGRAM



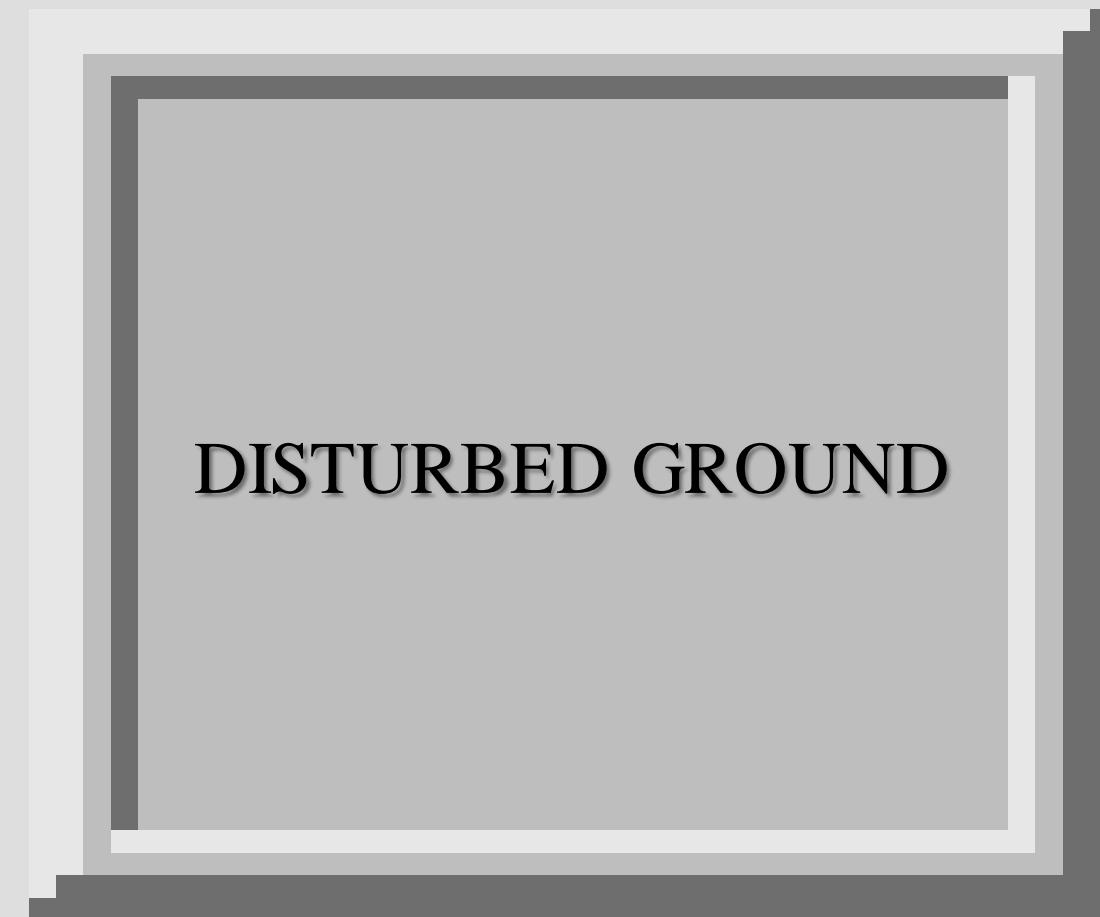
A February 2016 contemporary view.

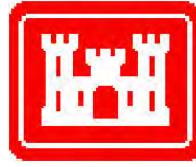
1. Note: This maximum-extent polygon was generated in ArcGIS Version 10.4 operating software utilizing geo-referenced historical aerial data.
2. Source: Proceedings of the 12th Biennial Coastal Zone Conference, Cleveland, OH, July 15-19, 2001.



HISTORICAL PHOTO ANALYSIS

AREA OF DISTURBED GROUND IDENTIFIED NEAR TAXIWAY NO. 6

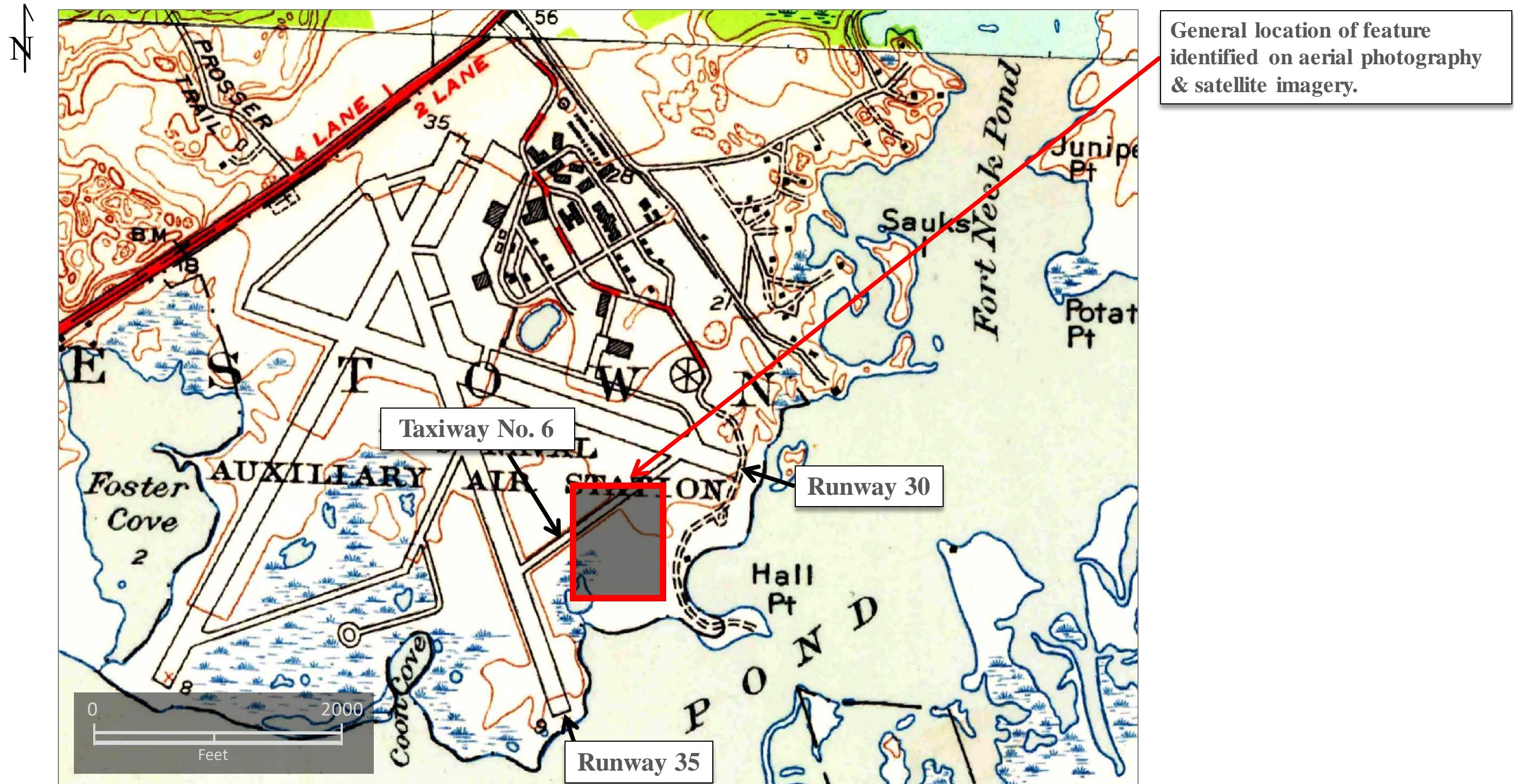




LOCATION OF DISTURBED GROUND NEAR TAXIWAY NO. 6 AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).

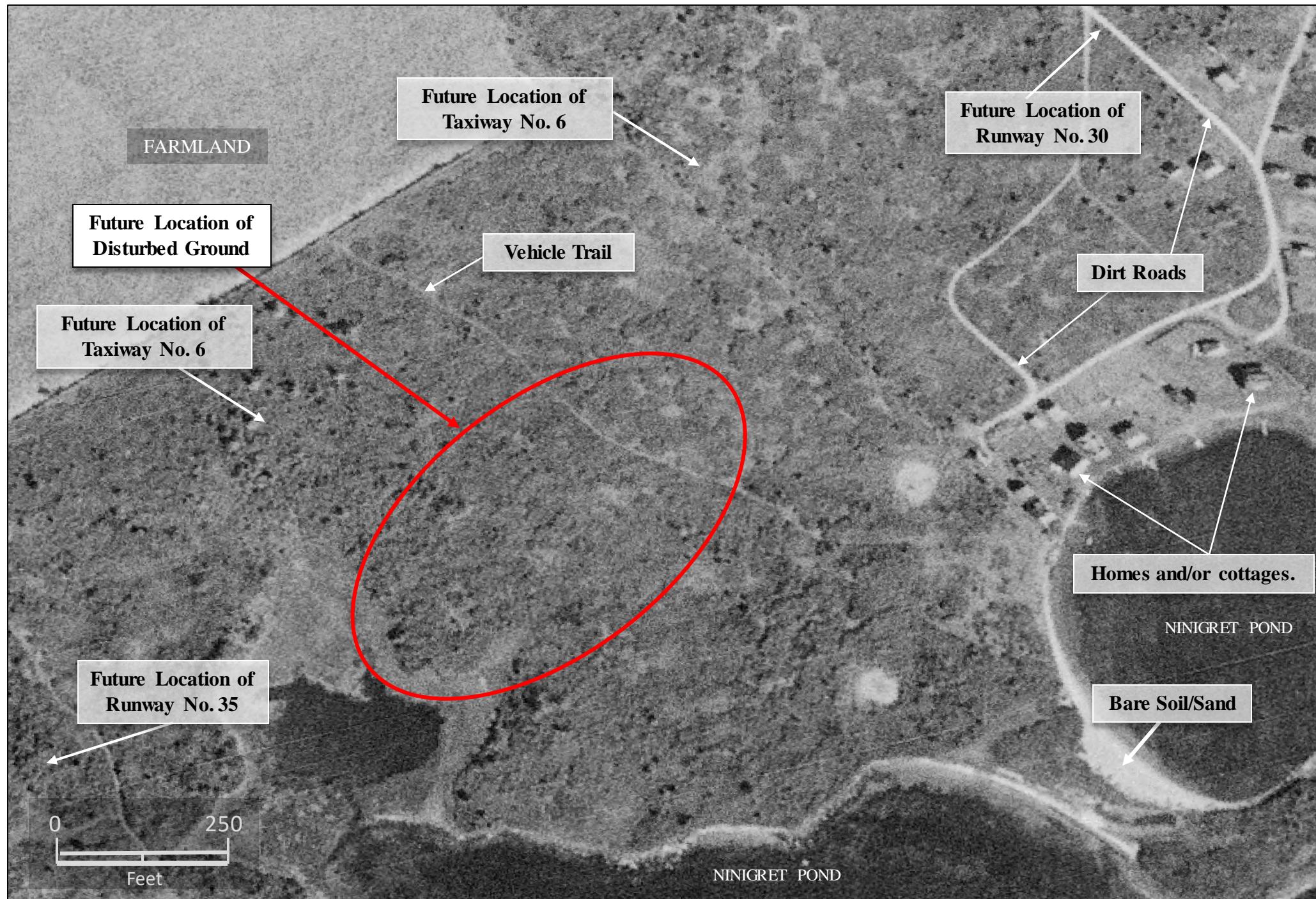


DISTURBED GROUND NEAR TAXIWAY NO. 6

1941 PRE-DEVELOPMENT VIEW



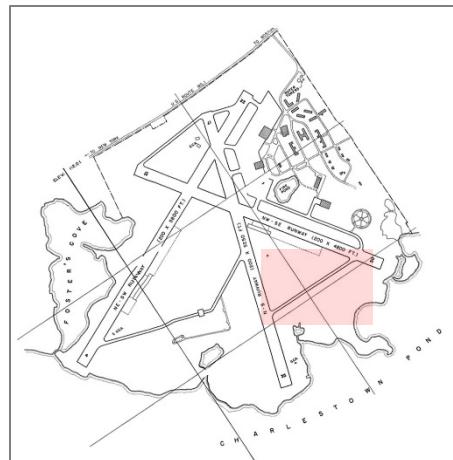
09 October 1941



Source: U.S. Geological Survey, EarthExplorer.



LOCATION DIAGRAM



A pre-development view of an oblong-shaped area of disturbed ground as identified for the first time on November 1951 aerial photography.



DISTURBED GROUND NEAR TAXIWAY NO. 6

1947 PRE-DEVELOPMENT VIEW

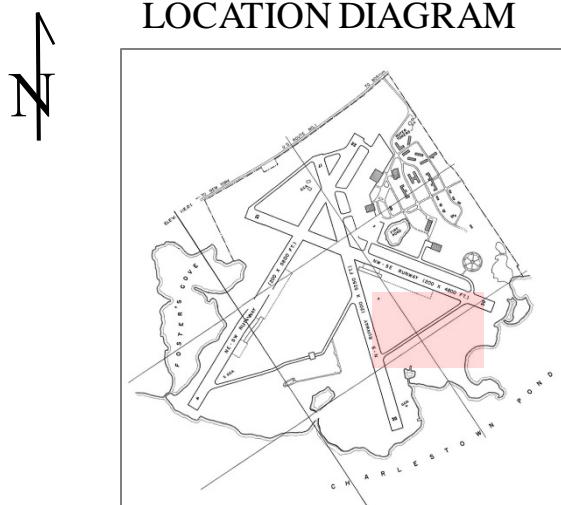


16 October 1947



Source: Rhode Island Department Of Administration Planning Information Center

LOCATION DIAGRAM



A pre-development view of an oblong-shaped area of disturbed ground is identified for the first time on November 1951 aerial photography (see next page).



DISTURBED GROUND NEAR TAXIWAY NO. 6

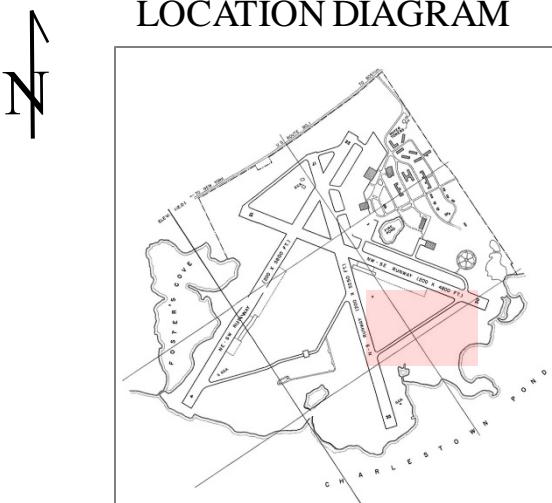
1951 VERTICAL VIEW



12 November 1951



LOCATION DIAGRAM



An oblong-shaped area of disturbed ground is identified for the first time on November 1951 aerial photography (see left).

Source: Rhode Island Department Of Administration Planning Information Center

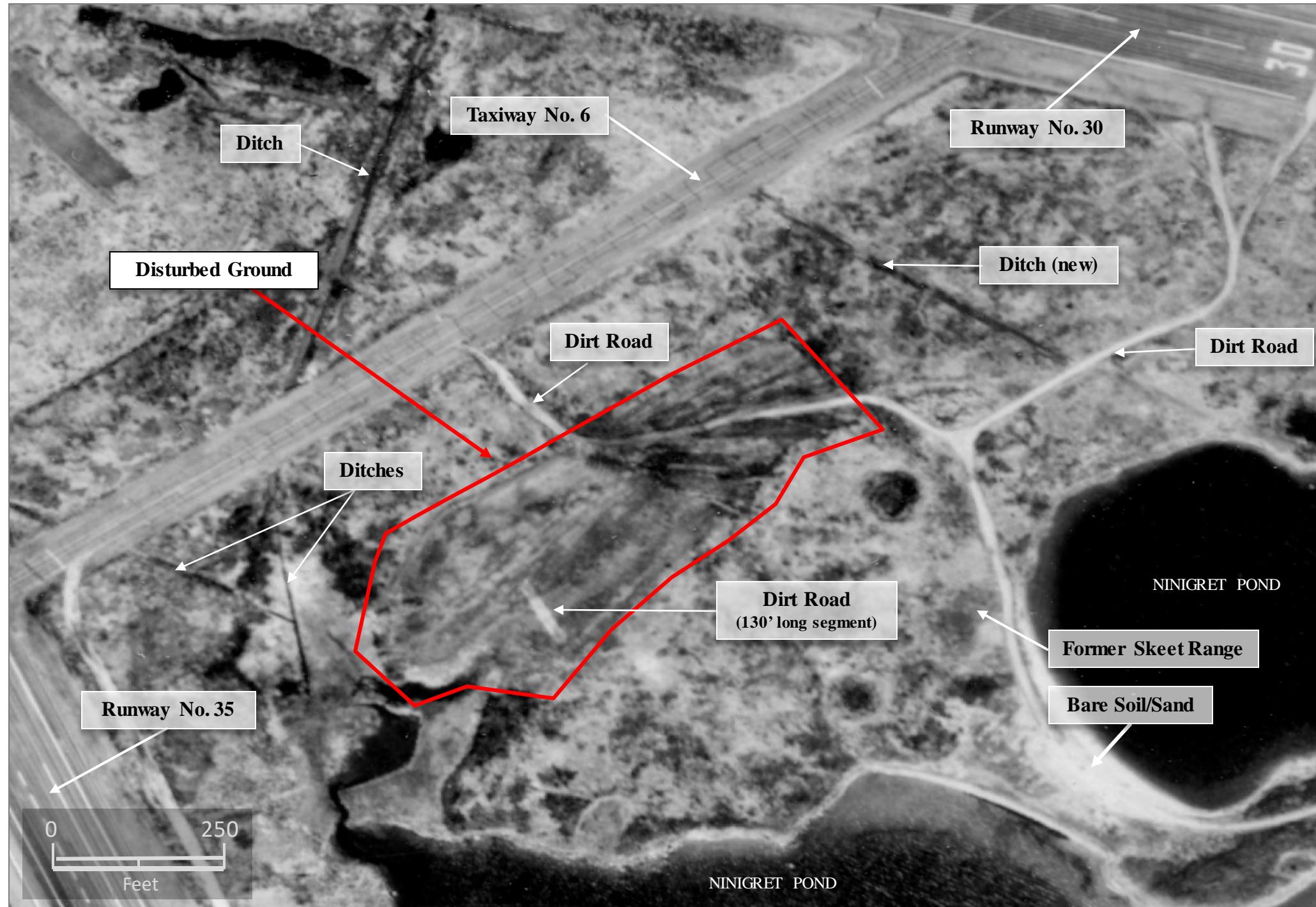


DISTURBED GROUND NEAR TAXIWAY NO. 6

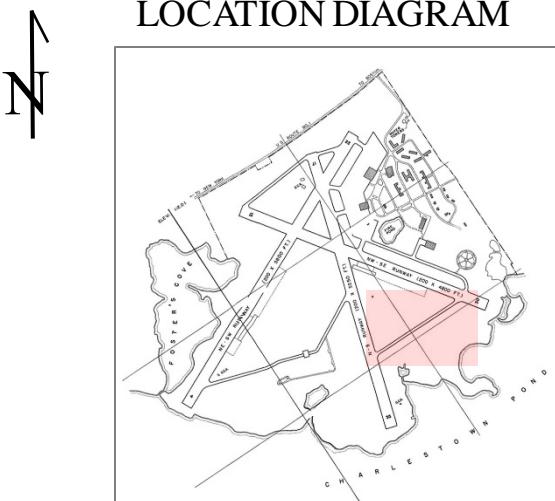
1962 VERTICAL VIEW



04 April 1962



LOCATION DIAGRAM



An area of disturbed ground is identified on April 1962 aerial photography (see left). It appears that the area has been recently surface-scraped. It is also noted that the areal extent of this feature has increased since last observed on November 1951 aerial photography (to the northeast).

Source: Rhode Island Department Of Administration Planning Information Center



DISTURBED GROUND NEAR TAXIWAY NO. 6

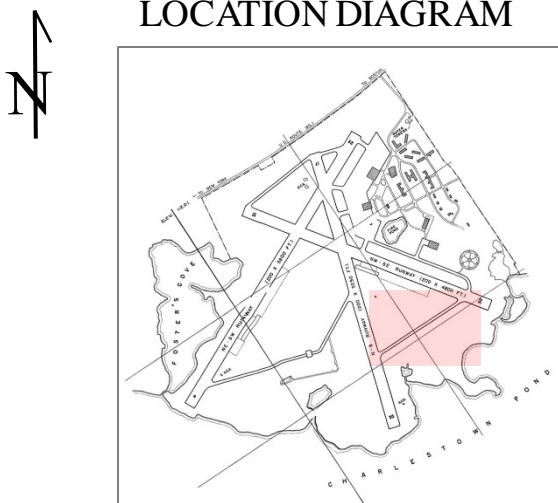
1965 VERTICAL VIEW



27 September 1965



LOCATION DIAGRAM



An area of disturbed ground is identified on September 1965 aerial photography (see left). The majority of this area appears leveled/cleared and contains only a few small patches of vegetation.

Source: National Oceanic and Atmospheric Administration (NOAA).



DISTURBED GROUND NEAR TAXIWAY NO. 6

1970 VERTICAL VIEW



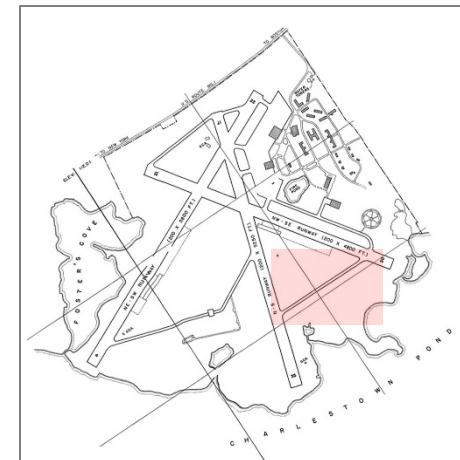
10 March 1970



Source: U.S. Geological Survey, EarthExplorer.



LOCATION DIAGRAM

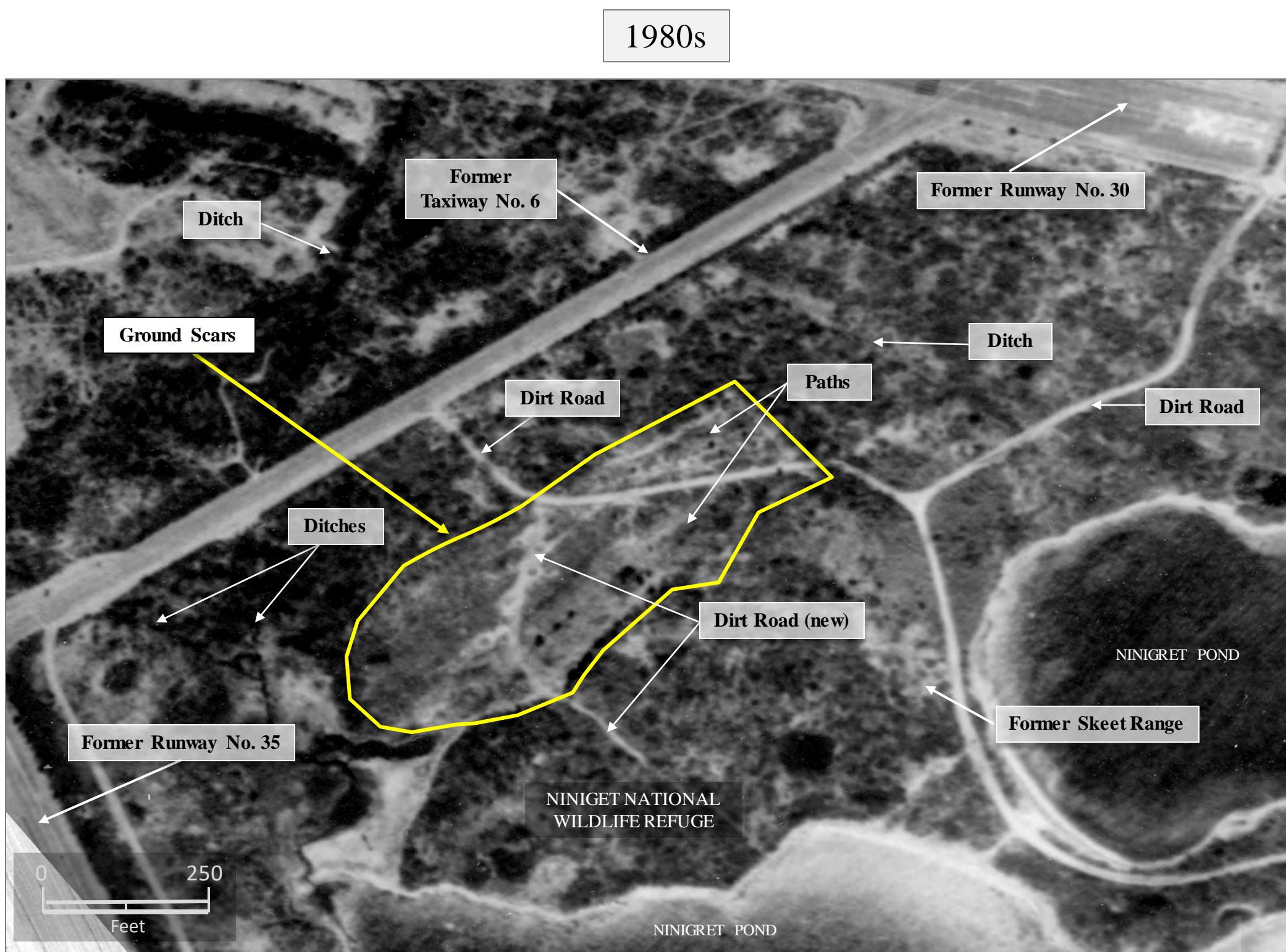


A former area of disturbed ground is identified on March 1970 aerial photography as ground scars (see left).

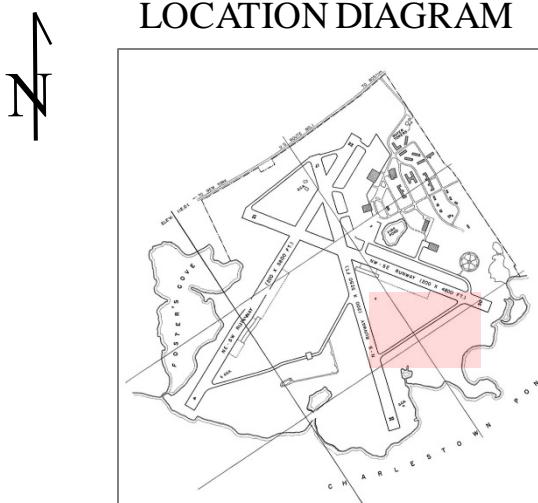


DISTURBED GROUND NEAR TAXIWAY NO. 6

1980s VERTICAL VIEW



Source: U.S. Fish & Wildlife Service (USFWS)



A former area of disturbed ground remains to be identified as ground scars in 1980 (see left). Unlike the aerial view of 1970, it is noted that native grasses appear to be growing on the surface of this ground scarred area (in 1980).



DISTURBED GROUND NEAR TAXIWAY NO. 6

2016 VERTICAL VIEW



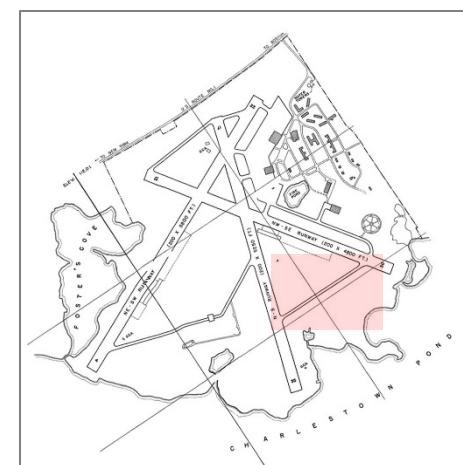
02 February 2016



Source: National Geospatial-Intelligence Agency (NGA).

1. Note: this maximum-extent polygon was generated in ArcGIS Version 10.4 operating software utilizing geo-referenced historical aerial data.

LOCATION DIAGRAM



A February 2016 contemporary view.



HISTORICAL PHOTO ANALYSIS

AREAS OF DISTURBED GROUND IDENTIFIED SOUTH OF RUNWAY 12

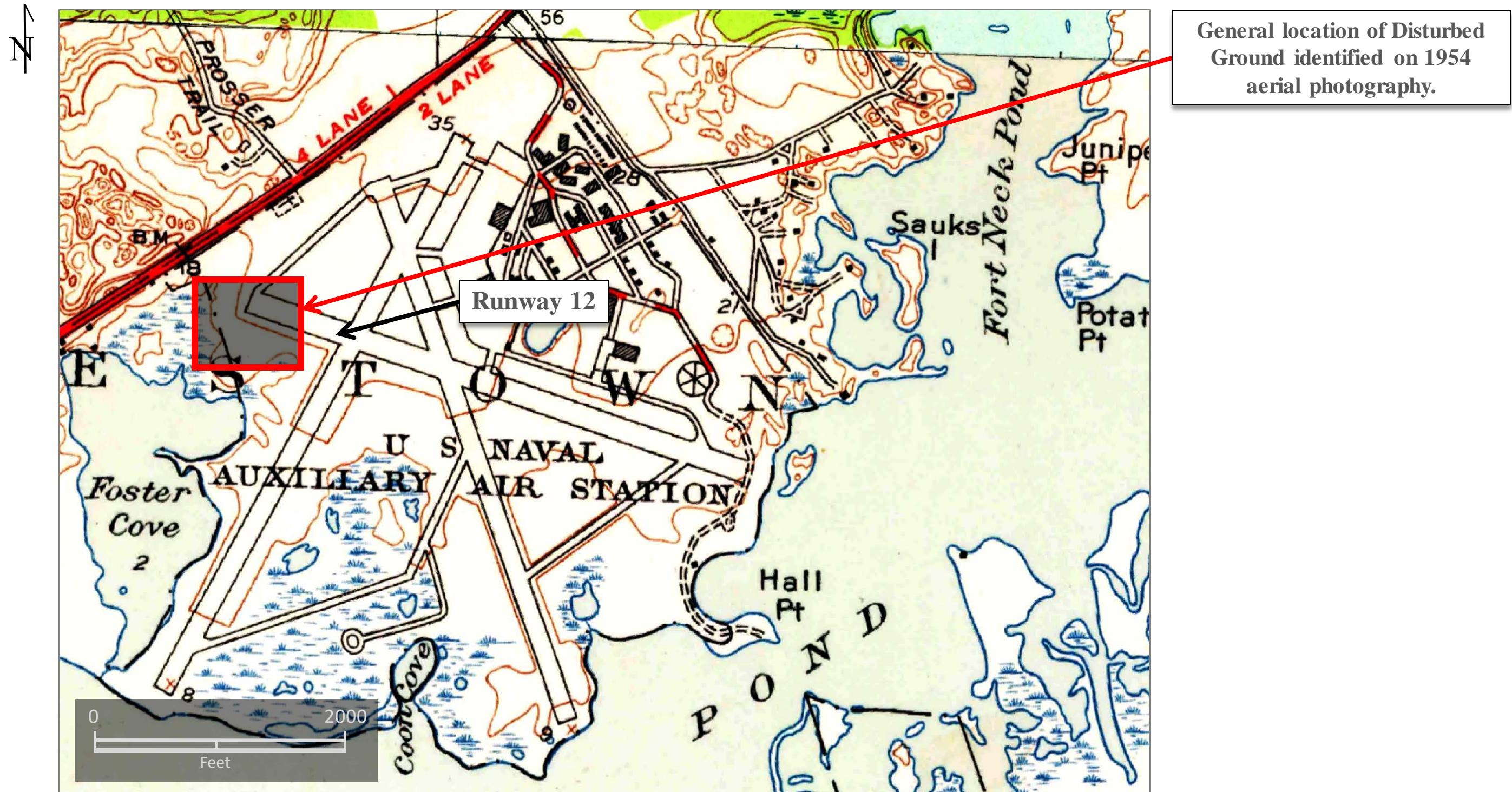




LOCATION OF DISTURBED GROUND SOUTH OF RUNWAY 12 AT THE FORMER CHARLESTOWN NAVAL AUXILIARY LANDING FIELD



LOCATIONAL DATA – MAP INFORMATION



Map Source: Quonochontaug and Carolina, Rhode Island Quadrangles, 1953, U.S. Geological Survey (USGS).



DISTURBED GROUND SOUTH OF RUNWAY 12

1941 PRE-DEVELOPMENT VIEW

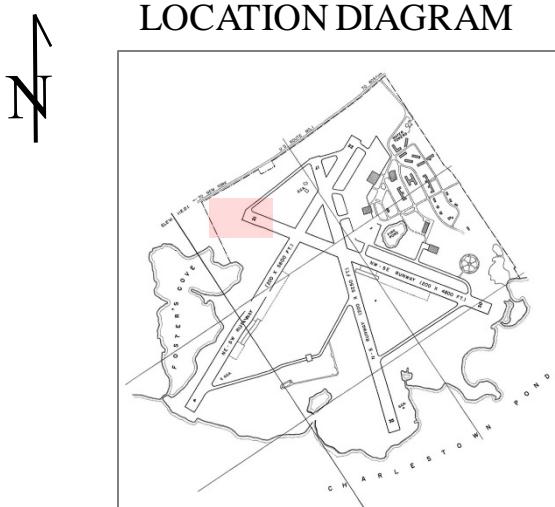


12 October 1941



Source: U.S. Geological Survey, EarthExplorer.

LOCATION DIAGRAM



An October 1941 pre-development view of a future location of disturbed ground situated just south of Runway 12 (yet to be built in 1941)..

The general area is dominated by farmland and woodland vegetation.

Acquisition of land by the U.S. Navy has not yet occurred.

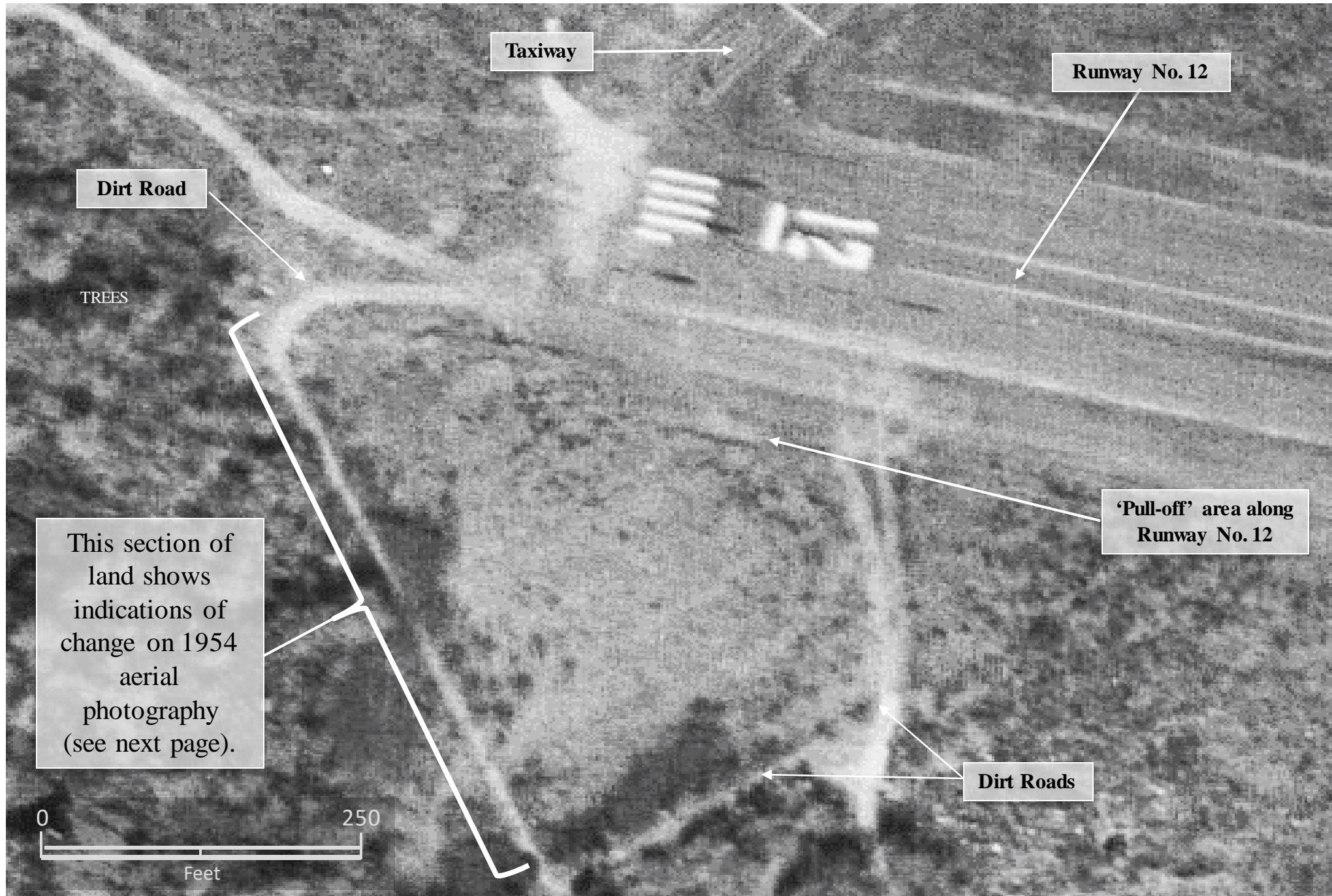


DISTURBED GROUND SOUTH OF RUNWAY 12

1951 PRE-DEVELOPMENT VIEW

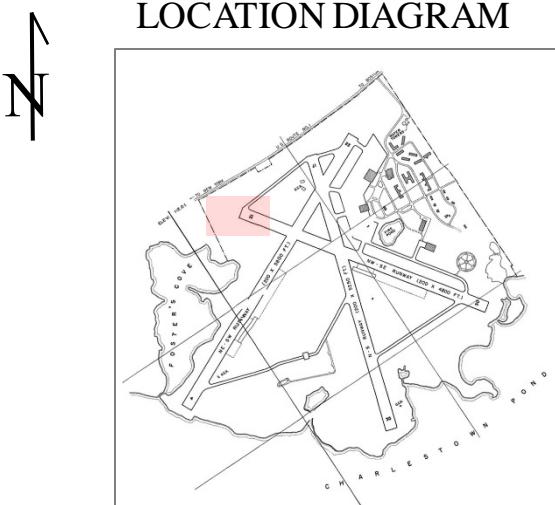


12 November 1951



Source: Rhode Island Department Of Administration Planning Information Center

LOCATION DIAGRAM



An area of future disturbed ground is identified on November 1951 aerial photography (see left – center of photo). A single ground scar is identified – adjacent to Runway No. 12. This appears to be a 'pull-off' area from the runway (observed on aerial photography from 1942-1965).

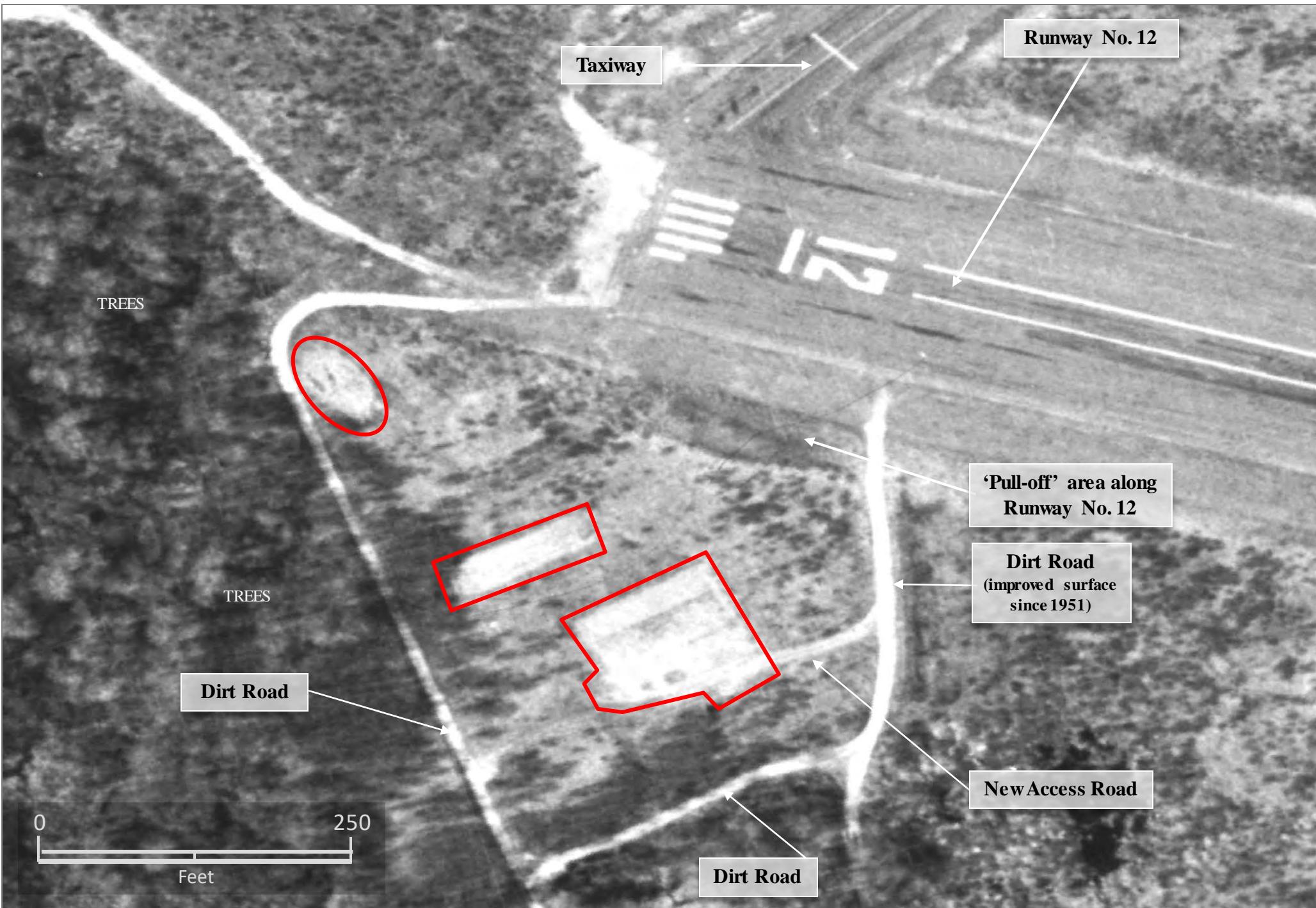


DISTURBED GROUND SOUTH OF RUNWAY 12

1954 VERTICAL VIEW



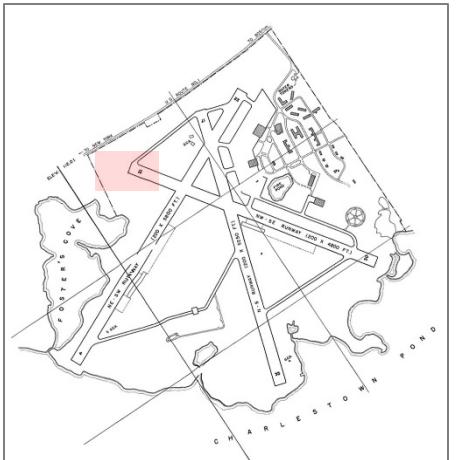
21 April 1954



Source: National Oceanic and Atmospheric Administration (NOAA).



LOCATION DIAGRAM



Three patches of disturbed ground are identified on April 1954 aerial photography (see left).

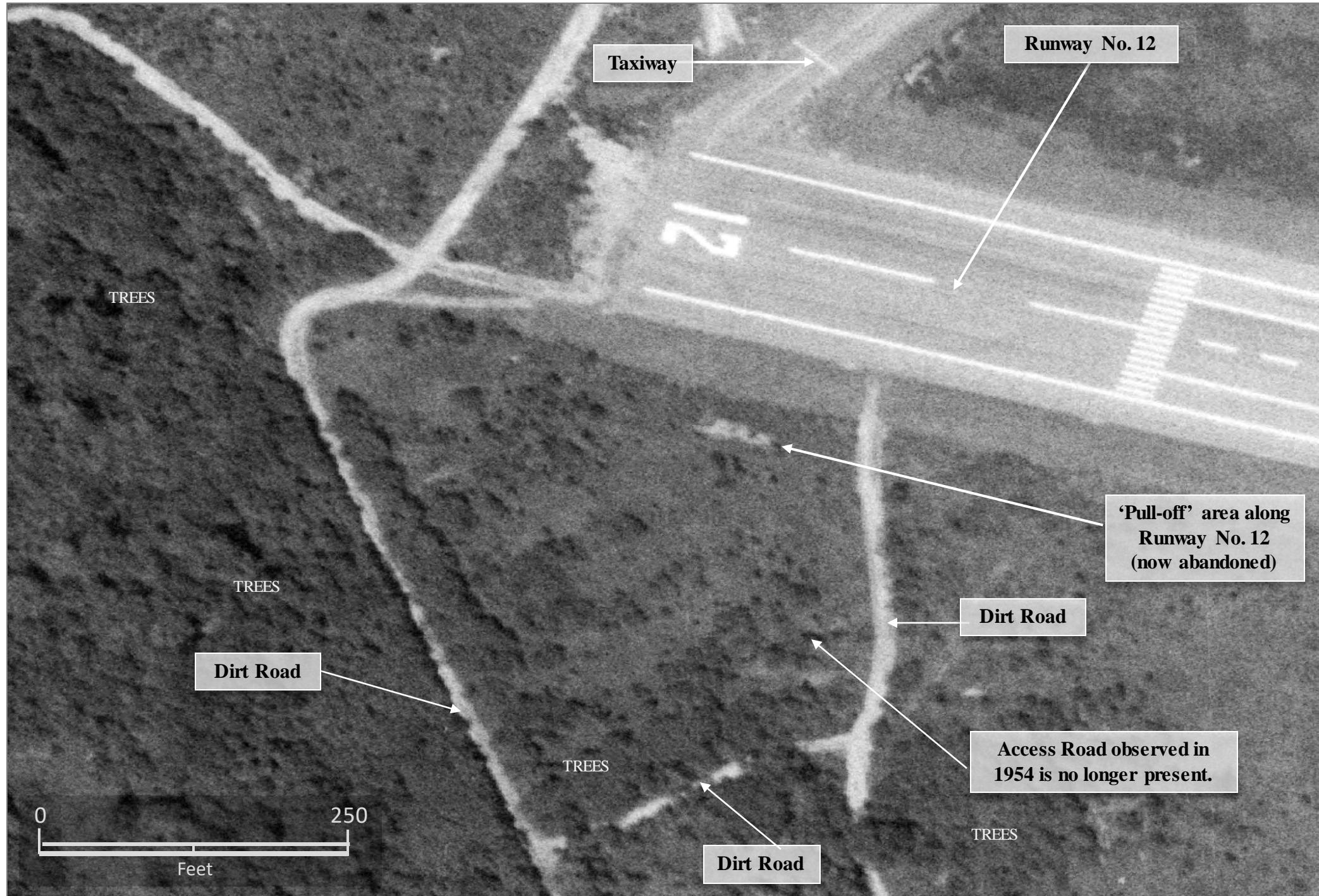


DISTURBED GROUND SOUTH OF RUNWAY 12

1963 VERTICAL VIEW



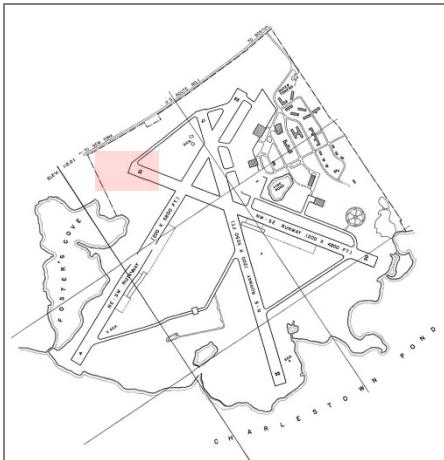
02 September 1963



Source: U.S. Department of Agriculture, Farm Service Agency (FSA).



LOCATION DIAGRAM



Three patches of disturbed ground identified on April 1954 aerial photography are no longer visible near Runway No. 12 (see left).



DISTURBED GROUND SOUTH OF RUNWAY 12 1965 VERTICAL VIEW

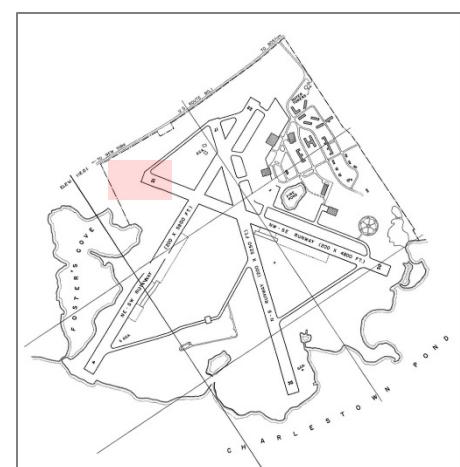


27 September 1965



Source: National Oceanic and Atmospheric Administration (NOAA).

LOCATION DIAGRAM



A 1965 aerial view of the CNALF property just south of Runway No. 12 and the taxiway heading northeast from the runway.

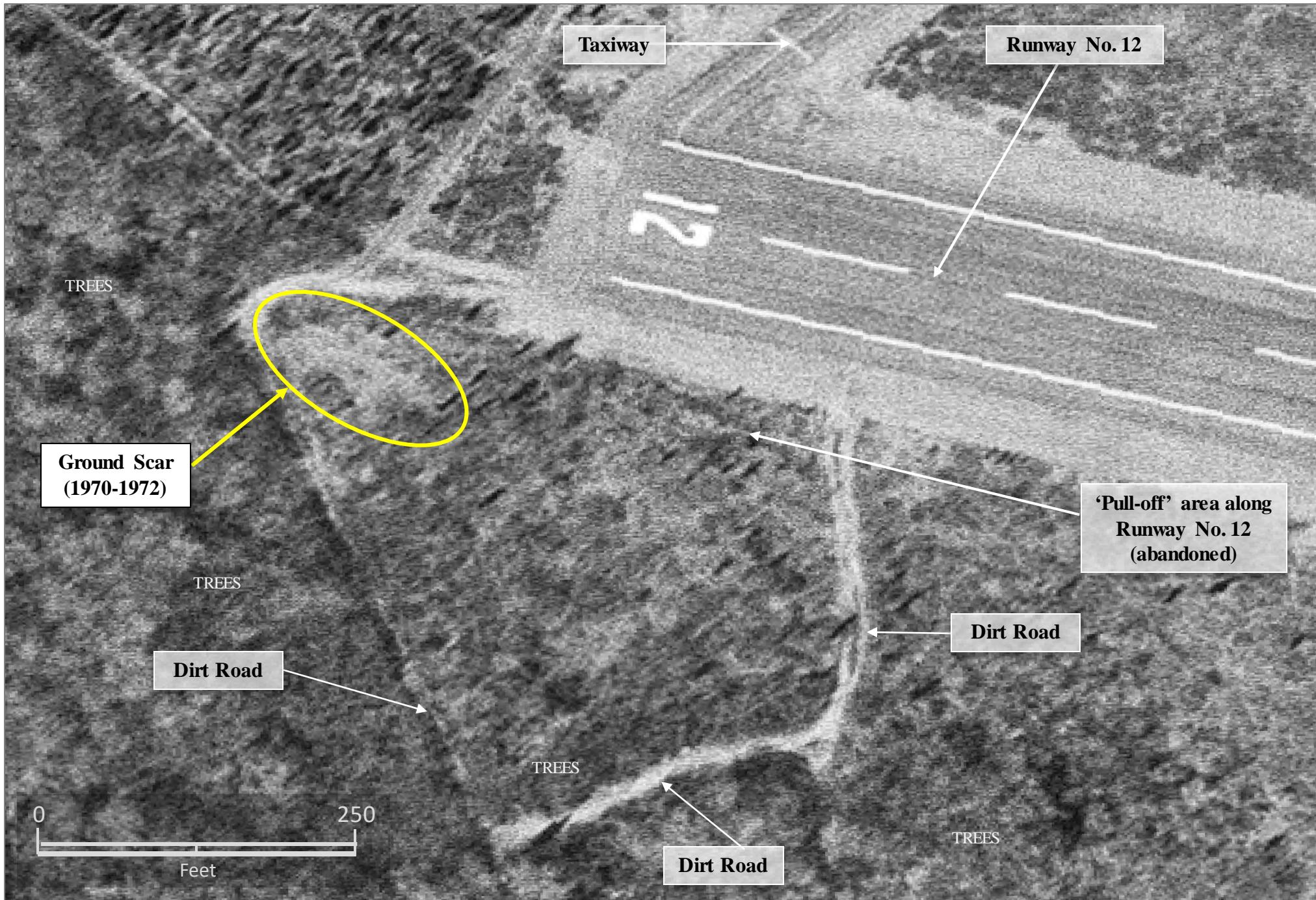


DISTURBED GROUND SOUTH OF RUNWAY 12

1970 VERTICAL VIEW



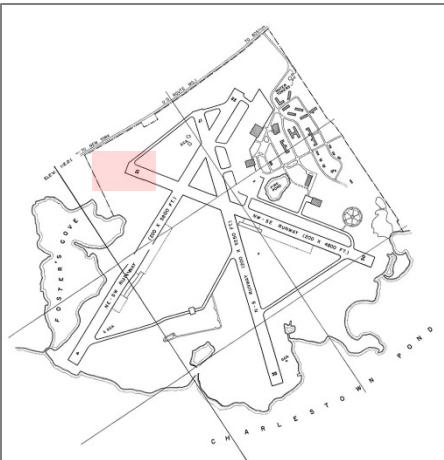
10 March 1970



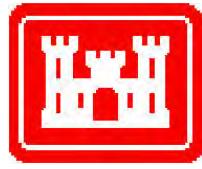
Source: U.S. Geological Survey, EarthExplorer.



LOCATION DIAGRAM



A 1970 aerial view of the CNALF property just south of Runway No. 12 and the taxiway heading northeast from the runway. A ground scar (see left) is observed on both 1970 and 1972 aerial photography.



DISTURBED GROUND SOUTH OF RUNWAY 12

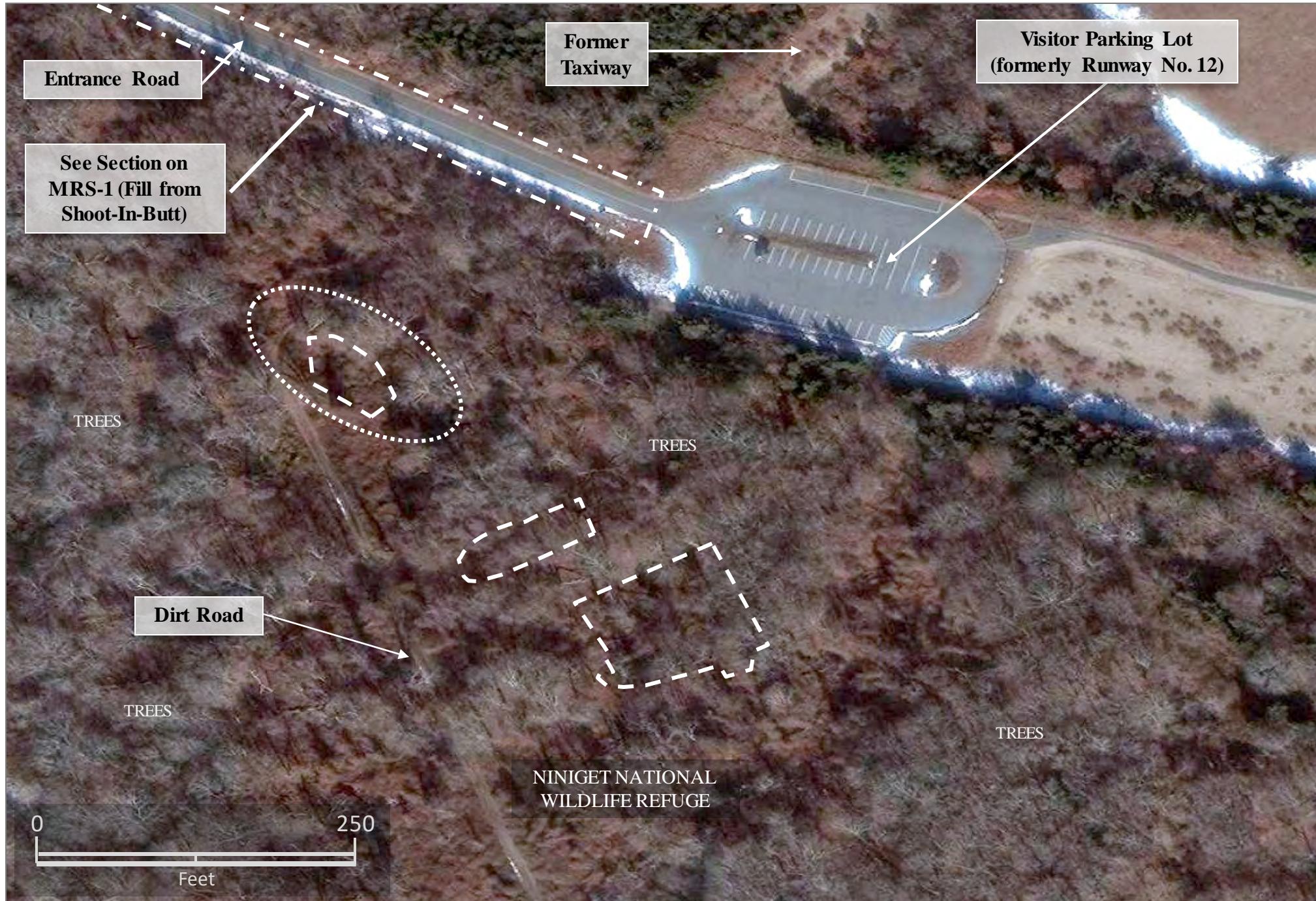
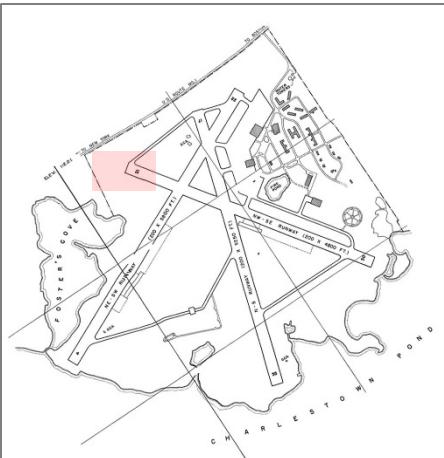
2016 VERTICAL VIEW



02 February 2016



LOCATION DIAGRAM

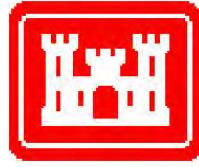


Source: National Geospatial-Intelligence Agency (NGA).

A February 2016 contemporary view.

Note the proximity of these findings to MRS-1 (Fill from Shoot-In-Butt) located along the Entrance Road which leads to the Visitor Parking Lot.

Note: the maximum-extent polygons shown (left) were generated in ArcGIS Version 10.4 operating software utilizing geo-referenced historical aerial data.



APPENDIX A: 3D & LIDAR AERIAL VIEWS

3D & LIDAR
AERIAL VIEWS
OVER SELECTED
CNALF AREAS

CNALF = Charlestown Naval Auxiliary Landing Field

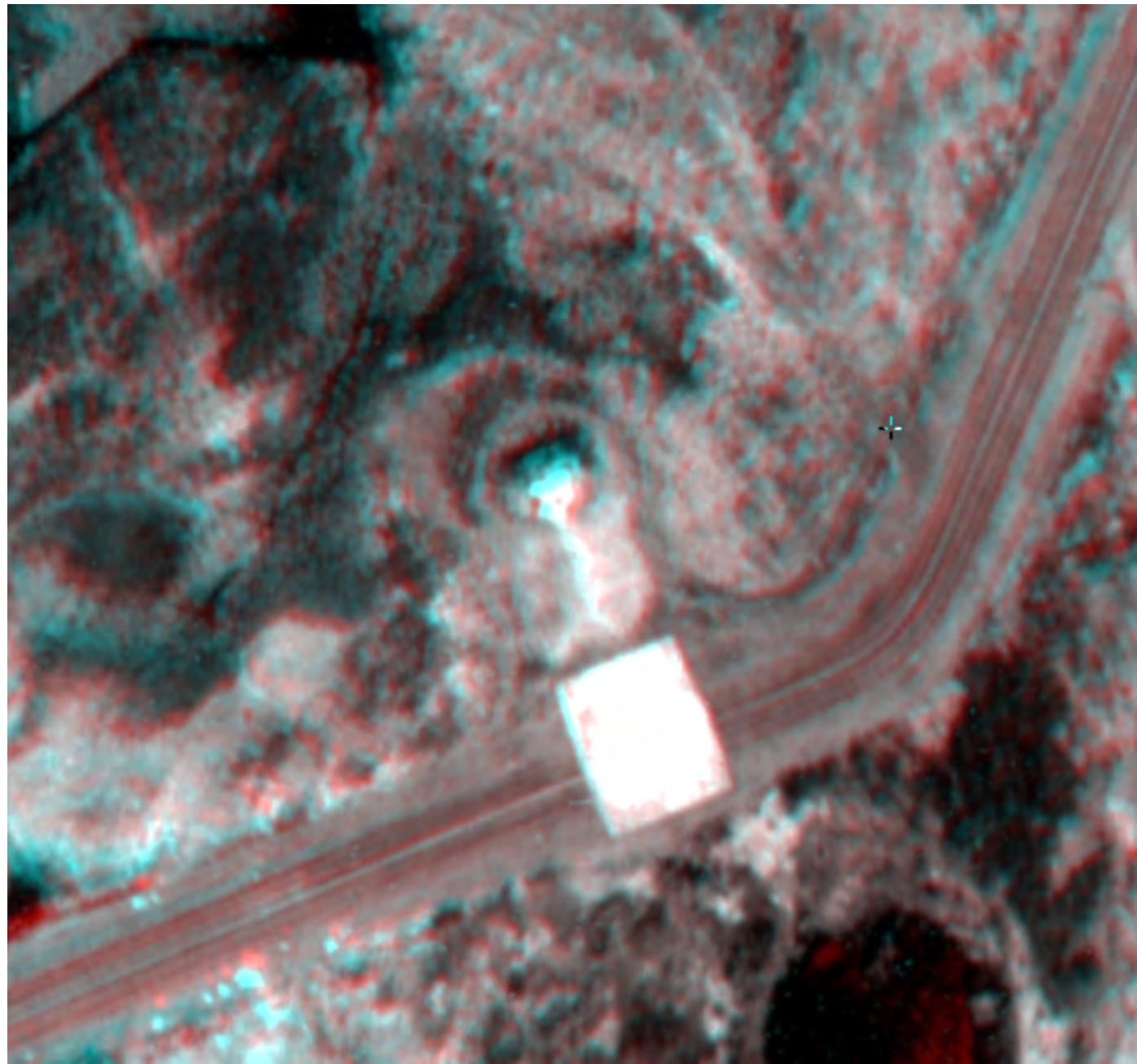


3D VERTICAL VIEW

SHOOT-IN-BUTT – MACHINE GUN RANGE (MRS Site No. 5)



04 April 1962

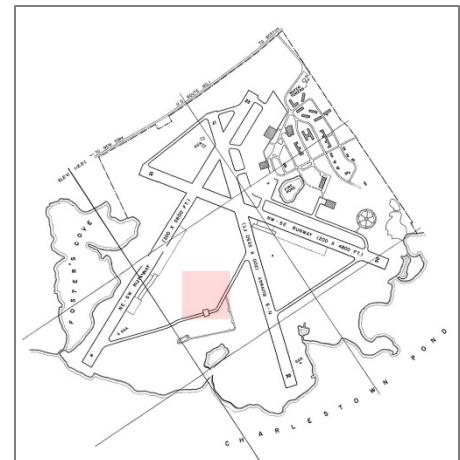


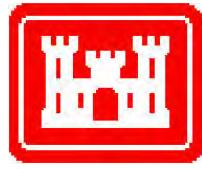
Source: Rhode Island Department Of Administration Planning Information Center

NOTE: Use red/blue glasses to employ 3-D viewing.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munition Response Site

LOCATION DIAGRAM



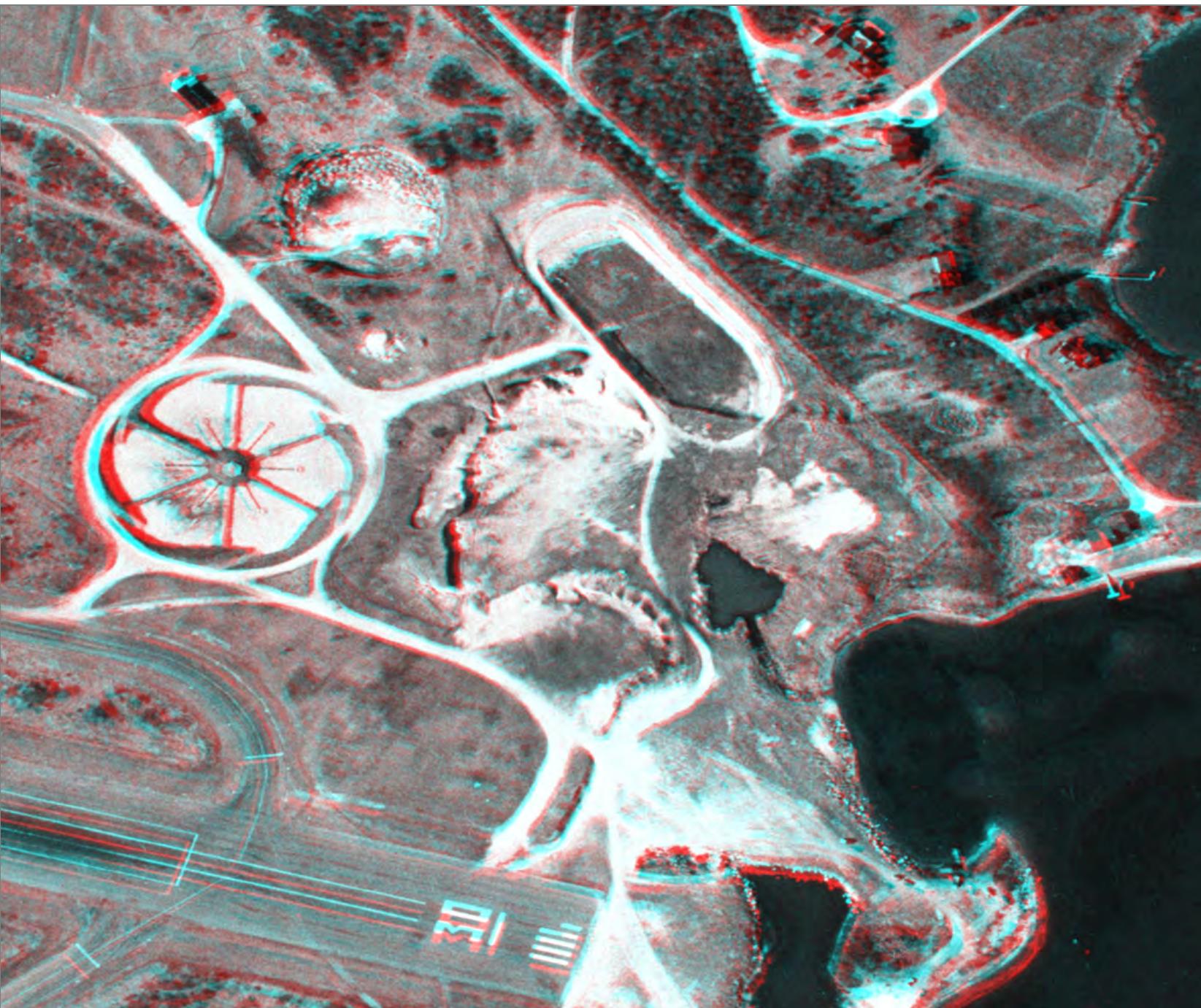


3D VERTICAL VIEW

CHARLESTOWN LANDFILL (HTRW SITE NO. 1/MRS Site No. 4) & VICINITY



21 April 1954



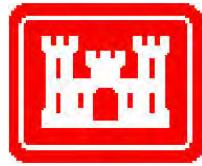
Source: National Oceanic and Atmospheric Administration (NOAA).

NOTE: Use red/blue glasses to employ 3-D viewing.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munition Response Site

LOCATION DIAGRAM



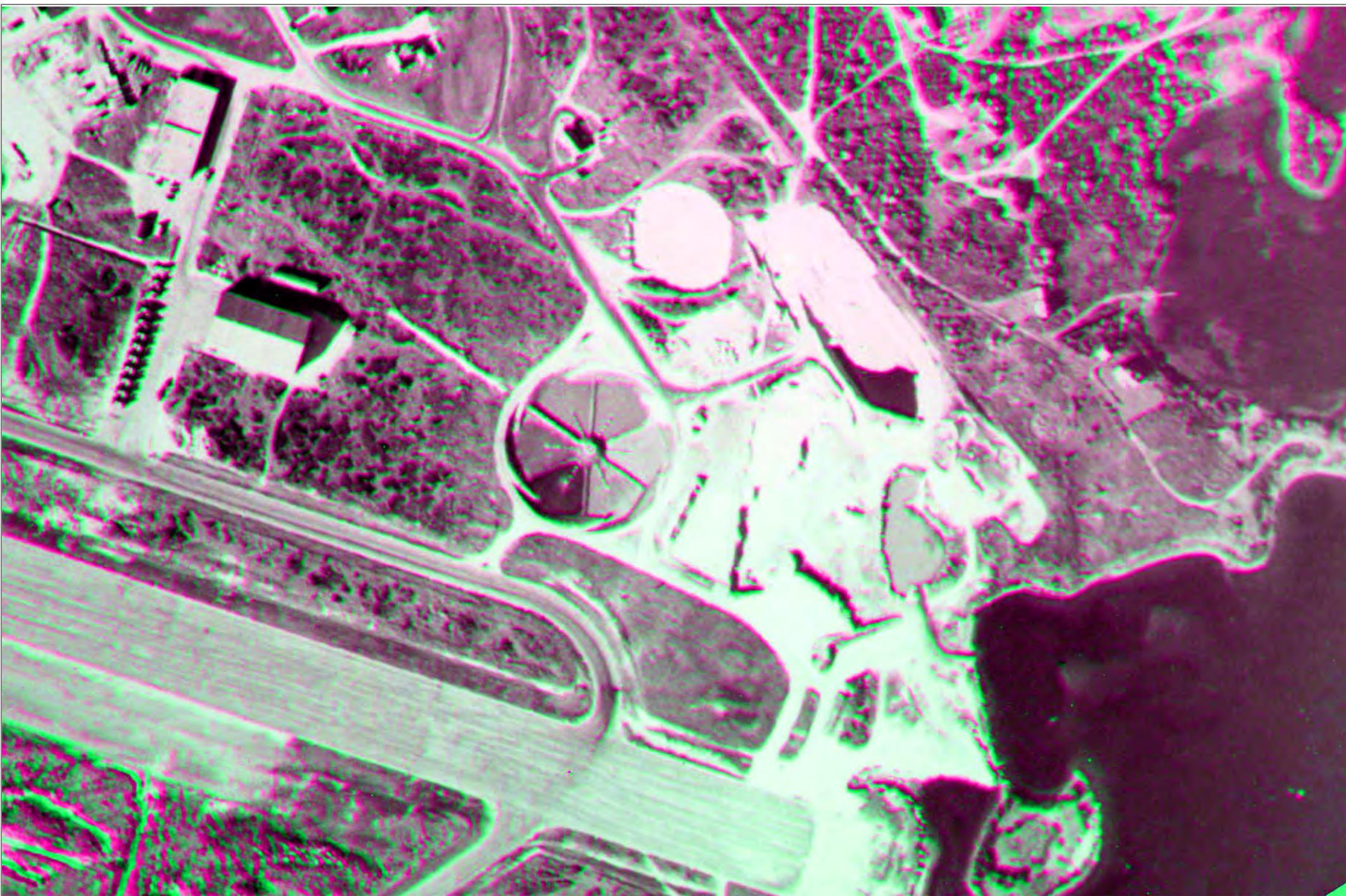


3D VERTICAL VIEW

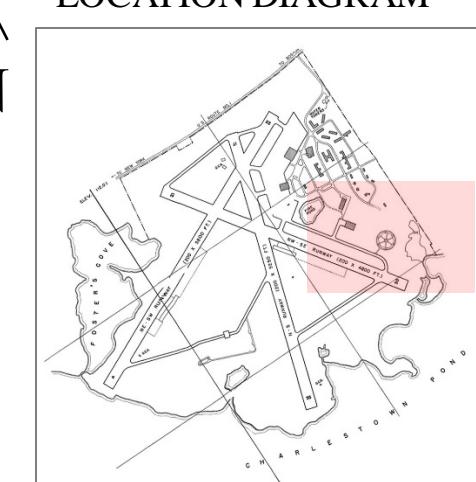
CHARLESTOWN LANDFILL (HTRW SITE NO. 1/MRS Site No. 4) & VICINITY



16 October 1947



LOCATION DIAGRAM



Source: U.S. Fish & Wildlife Service (FWS).

NOTE: Use red/blue glasses to employ 3-D viewing.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munition Response Site



3D VERTICAL VIEW

CHARLESTOWN LANDFILL (HTRW SITE NO. 1/MRS Site No. 4), EASTERN LANDFILL/HUNTER ISLAND DUMP (HTRW SITE NO. 2/MRS SITE NO. 3)

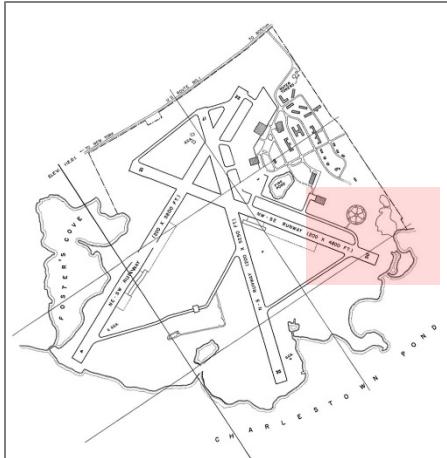


27 September 1965



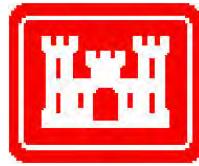
Source: National Oceanic and Atmospheric Administration (NOAA).

LOCATION DIAGRAM



NOTE: Use red/blue glasses to
employ 3-D viewing.

HTRW = Hazardous, Toxic, and Radioactive Waste MRS = Munition Response Site



LIDAR VERTICAL VIEW COMPARISON

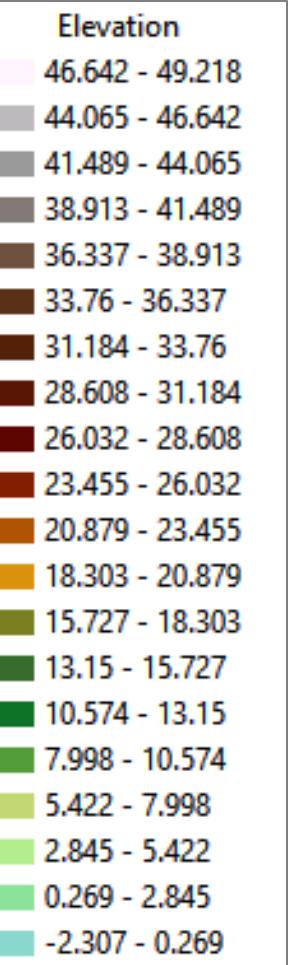
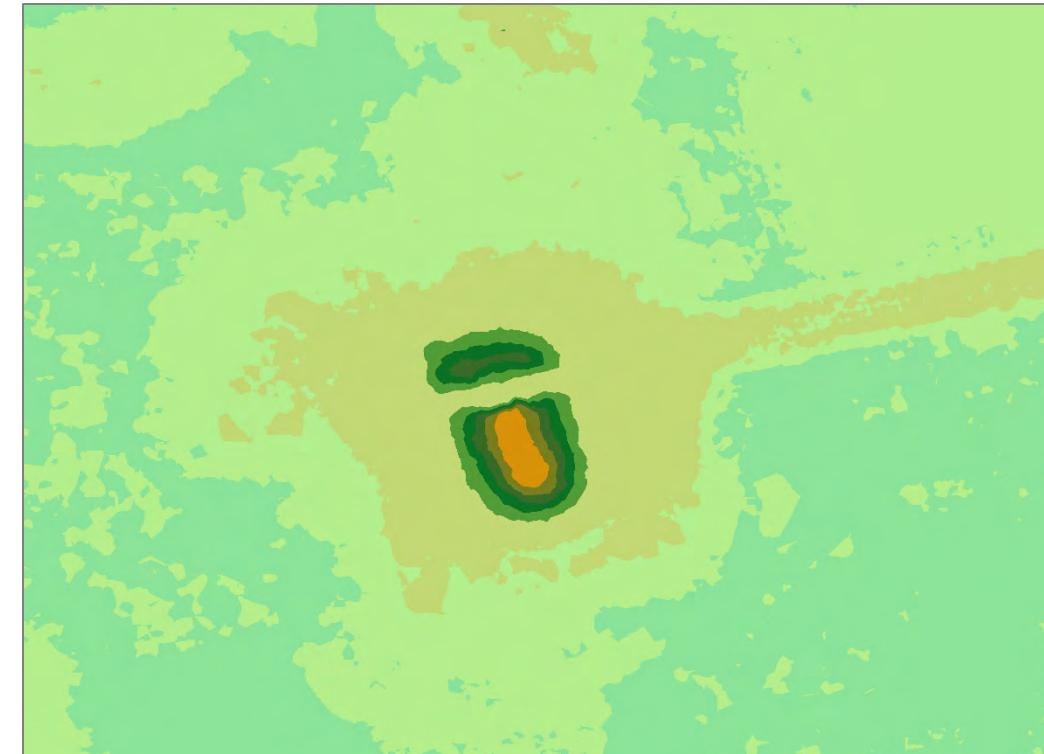
NINIGRET WILDLIFE REFUGE LANDFILL/INLAND TOXIC WASTE DUMP: BUNKER & BLAST WALL (HTRW SITE NO. 4/MRS Site No. 2)



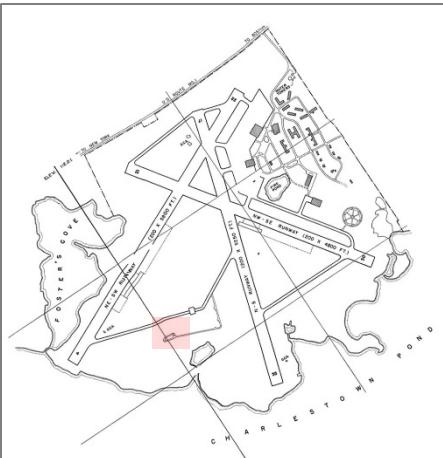
April 2007
Ortho-rectified Imagery



April 2007 Lidar
Raster Image from Terrain DEM



LOCATION DIAGRAM



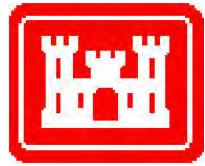
Source: Sky Research, Inc. (courtesy U.S. Army Corps of Engineers, New England District).

Interpretation of the April 2007 ortho-rectified image (upper left) reveals the service road but no clear evidence of the High Explosive Storage Bunker (Building No. 60) or the concrete Blast Wall.

April 2007 LiDAR coverage (right raster image) displayed in ArcMap clearly indicates the existence of the former High Explosive Storage Bunker and concrete Blast Wall, service road, and surrounding wetlands.

Elevation in feet.
1.5 foot pixel resolution,
32 bit data.

DEM = Digital Elevation Model HTRW = Hazardous, Toxic, and Radioactive Waste LiDAR = Light Detection and Ranging MRS = Munition Response Site



LIDAR VERTICAL VIEW COMPARISON

AIRCRAFT MACHINE GUN RANGE: SHOOT-IN-BUTT (MRS Site No. 5)

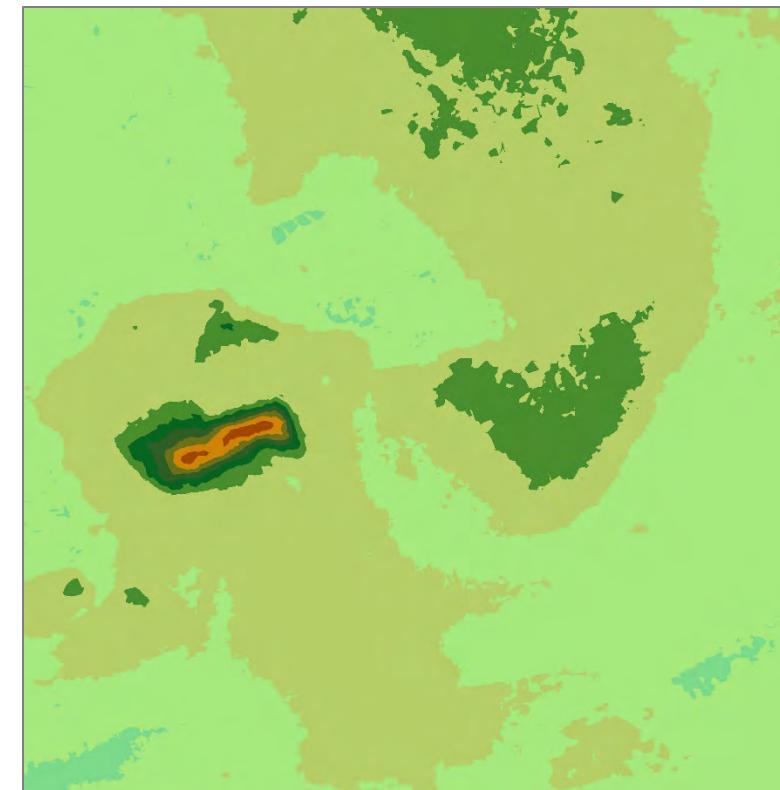


April 2007
Ortho-rectified Imagery



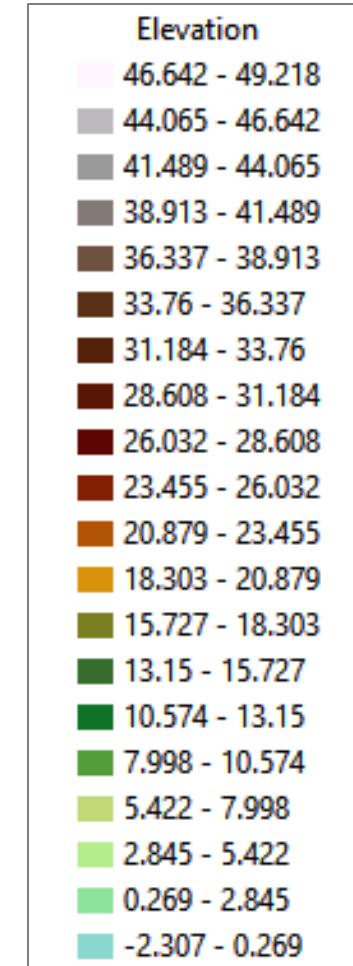
N

April 2007 Lidar
Raster Image from Terrain DEM



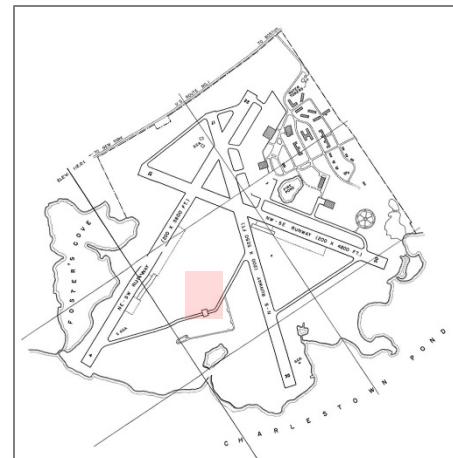
Source: Sky Research, Inc. (courtesy U.S. Army Corps of Engineers, New England District).

Interpretation of the April 2007 ortho-rectified image (upper left) reveals the service road and concrete hardstand but no discernment of the remains of the Shoot-In-Butt. The April 2007 LiDAR coverage (right raster image) displayed in ArcMap clearly indicates that the soil removal action that took place at the Shoot-In-Butt of (refer to Pages 85 to 107 of this report) did not result in a complete demolition of the Shoot-In-Butt. Remains of the Shoot-In-Butt are clearly depicted in the 2007 Lidar raster image as an elongated feature (center-left side of Lidar raster image).

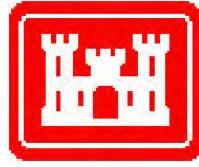


Elevation in feet.
1.5 foot pixel resolution,
32 bit data.

LOCATION DIAGRAM



DEM = Digital Elevation LiDAR = Light Detection and Ranging MRS = Munition Response Site



APPENDIX B: NINIGRET PARK GRAPHIC

PHOTOGRAPHIC ANALYSIS, SECTION ONE - AREA OF INTEREST NO. 1



FINAL MASTER PLAN DOCUMENT: NINIGRET PARK, RI

Ninigret Park Final Master Plan; Submitted to the Town of Charlestown Parks and Recreation Committee, Prepared by Vanassee Hangen Brustlin, Inc., *Existing Conditions Plan*, April 2008.

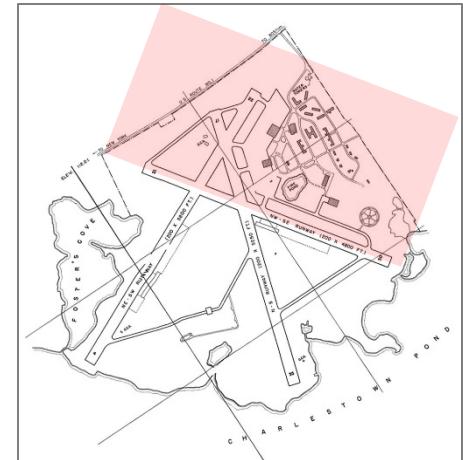


NINIGRET PARK

EXISTING CONDITIONS PLAN – APRIL 2008

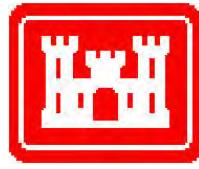


LOCATION DIAGRAM



Note that the 55-acre Municipal tract, Town of Charlestown (yellow-dashed boundary) is depicted on this graphic.

Source: Ninigret Park Final Master Plan; Submitted to the Town of Charlestown Parks and Recreation Committee, Prepared by Vanassee Hangen Brustlin, Inc., Existing Conditions Plan, April 2008.

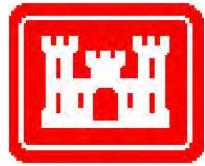


APPENDIX C: SITE 8 - REMEDIAL ACTION CLOSURE REPORT

PHOTOGRAPHIC ANALYSIS, SECTION ONE - AREA OF INTEREST NO. 1



HTRW = Hazardous, Toxic, and Radioactive Waste

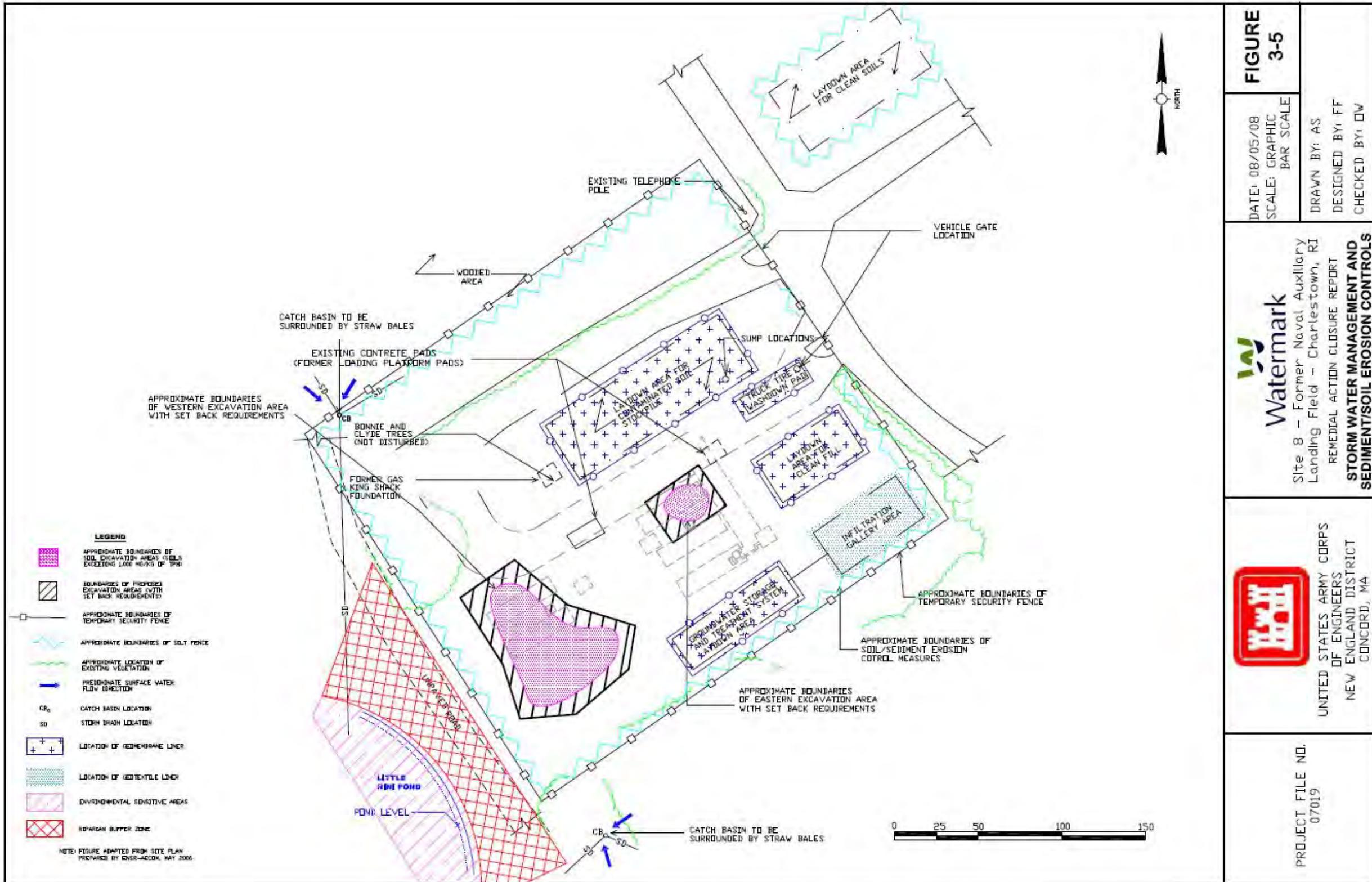


HTRW SITE NO. 8

REMEDIAL ACTION CLOSURE REPORT – APRIL 2008

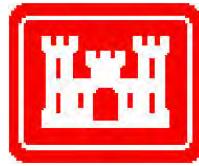


LOCATION DIAGRAM



Source: Site No. 8 – Former Naval Auxiliary Landing Field – Charlestown, RI, Watermark, Figure 5-5, US August 2008

HTRW = Hazardous, Toxic, and Radioactive Waste



GLOSSARY



BORROW PIT – An area where material (usually soil, gravel, or sand) has been dug for use at another location.

BUILDING – A relatively permanent, usually box-like and roofed, man-made structure.

CATAPULT (AIRCRAFT) - a device used to launch aircraft from ships. Aircraft catapult training has also occurred, on land, at selected U.S. Navy air installations.

CLEARED AREA – An area from which man has removed the trees, shrubs, or other natural vegetative cover.

CLINKER – Waste from industrial processes, particularly those involving smelting metals, welding, burning of fossil fuels, and use of a blacksmith's forge. Clinker often forms a loose, dark deposit consisting of waste materials such as coke, coal, slag, charcoal, and grit.

DEBRIS – The scattered remains of something discarded or destroyed which typically include the following: rubble, wreckage, or discarded refuse.

DISTURBED GROUND – A rough ground surface which has been cleared, overturned, dug up, filled and/or changed from the immediate environs in some manner for an unknown purpose.

DITCH – A narrow channel dug in the ground, typically used for drainage alongside a road or the edge of a field.

DUMP SITE - A location on or below the ground surface that contains either refuse, residual materials, solid waste, or other discarded substances.

EXCAVATION – A cavity in the earth formed by digging or scooping out materials (e.g. to facilitate construction). An area where earthen materials, such as minerals, sand, gravel, or metals have been removed for use elsewhere.

FILL AREA – An area where material, either earthen and/or non-earthen, has been deposited either for disposal, to cover or level the ground surface, or to eliminate a wet area.

FIRE POND - a water source developed, typically at military installations; built for potential fire suppression.

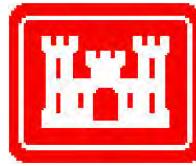
GRAVEL PIT – a mined area for the extraction of gravel.

GROUND SCAR - A surface, vegetated or unvegetated, where marks from a previous activity or feature, or from a subterranean feature are visible. Ground scars can result from many things and therefore vary greatly in appearance.

LANDFILL – A land disposal site, usually for solid waste which intermittently employs a cover material.

MATERIAL – A substance (usually non-liquid, if that distinction can be made) placed, bulldozed, graded, mixed, spread, etc. over an area.

MOUNDED MATERIAL – A substance, usually non-liquid, which has been placed in piles.



GLOSSARY



OBJECTS – Features identified on historic aerial photography, presumed man-made, that cannot be clearly identified or otherwise described in great detail.

OPEN STORAGE – An open-air, outdoor area for storage of materials, supplies, vehicles, and/or equipment. May or may not be enclosed by a fence

OVERFLOW POND – Impoundment/lagoon that is used for sewage (waste) and/or water storage, disposal, or treatment.

PIT – A relatively deep, steep-sided hole in the ground surface

REVEGETATION - ground surface, once denuded, changed, or barren, now displaying a new vegetative cover.

SALT WATER POND - a water body that can form in salt marshes; supports a high diversity of marine and brackish water species.

SAND FILTER (WASTEWATER TREATMENT) – constructed of beds of sand or other suitable granular material usually two or three feet deep. Sand filters treat wastewater using naturally occurring physical, biological, and chemical processes.

SHOOT-IN-BUTT (AIRCRAFT MACHINE GUN FIRING RANGE) – a backstop portion of an aircraft machine gun range; designed to establish and confirm the accuracy of aircraft machine guns and cannons.

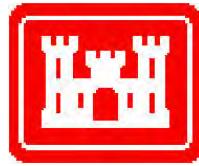
SHRUBS – small to medium-sized woody plants, distinguished by trees by their multiple stems and shorter height.

STAIN – An area that is soiled or discolored and distinct from the surrounding area.

STRUCTURE – A man-made feature which cannot be classified as a building or shed. Something that is made up of a number of parts that are held or put together in a particular way.

TRENCH – A long narrow section of the ground surface that has been deeply scraped or dug out in some particular fashion.

WETLAND – land consisting of marshes or swamps; saturated land. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic hydric soils.



SOURCES OF INFORMATION



Abandoned & Little-Known Airfields: Rhode Island (Internet web-based site).
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Larry Webster (archive collection), Charlestown, RI 02813
National Archives at College Park, 8601 Adelphi Road, College Park, MD 20740-6001.
National Oceanic and Atmospheric Administration, National Geodetic Survey, 1315 East-West Highway, Silver Spring, MD 20910-3282.
National Geospatial-Intelligence Agency, Fort Belvoir, Springfield, VA 22150.
Northwestern University Library, 1970 Campus Drive, Evanston, IL 60208 (web-based site).
Project Information and Retrieval System for FUDS – PIRS V 2.0 (web-based site).
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Quonset Development Corporation, Quonset Business Park, 95 Cripe Street, North Kingstown, RI 02852.
Rhode Island Department Of Administration Planning Information Center, One Capitol Hill, 3rd Floor, Providence, RI 02903
University of Rhode Island, Kingston Campus, West Kingston, RI 02881..
U.S. Army Corps of Engineers, New England District., 696 Virginia Road, Concord, MA 01742.
U.S. Army Corps of Engineers, Rock Island District, 1500 Rock Island Drive, Rock Island, IL 61201.
U.S. Army Geospatial Center, 7701 Telegraph Road, Alexandria, VA 22315-3864.
U.S. Department of Agriculture, Farm Service Agency, Aerial Photography Field Office, 2222 West 2300 South, Salt Lake City, UT 84119.
U.S. Fish and Wildlife Service, Refuge Administrative Office, Charlestown, RI 02813
U.S. Geological Survey, EarthExplorer (Internet web-based site).
U.S. Geological Survey, Historical Topographic Map Collection (Internet web-based site).
U.S. Naval War College, 686 Cushing Road, Newport, RI 02841-1207.